TRUEMAN'S *Specific* Series®

1

THE LIVING WORLD

1. Employment of hereditary principles in the improvement of human race is **[1990]**
(a) Euthenics (b) Eugenics
(c) Euphenics (d) Ethnology

2. Pedology is science of **[1991]**
(a) earth (b) soil
(c) diseases (d) pollution

3. Study of fossils is **[1991]**
(a) Palaeontology (b) Herpetology
(c) Saurology (d) Organic evolution

4. Glycogen is a polymer of **[1998]**
(a) galactose (b) glucose
(c) fructose (d) sucrose

5. Adenine is **[1992]**
(a) purine (b) pyrimidine
(c) nucleoside (d) nucleotide

6. The CO_2 content by volume, in the atmospheric air is about **[1997]**
(a) 0.0314 % (b) 0.34 %
(c) 3.34 % (d) 4 %

7. If there was no CO_2 in the earth's atmosphere the temperature of earth's surface would be **[1998]**
(a) higher than the present
(b) less than the present
(c) the same
(d) dependent on the amount of oxygen in the atmosphere

8. The most important feature of all living systems is to **[2000]**
(a) utilize oxygen to generate energy
(b) replicate the genetic information
(c) produce gametes
(d) utilize solar energy for metabolic activities

9. Most abundant organic compound on earth is **[2001]**
(a) protein (b) cellulose
(c) lipids (d) steroids

10. Reason of diversity in living being is **[2001]**
(a) mutation
(b) gradual change
(c) long term evolutionary change
(d) short term evolutionary change

11. First life on earth was **[2001]**
(a) cyanobacteria
(b) chemoheterotrophs
(c) autotrophs
(d) photoautotrophs

12. What is true for photolithotrophs? **[2001]**
(a) Obtain energy from radiations and hydrogen from organic compounds

(b) Obtain energy from radiations and hydrogen from inorganic compounds
(c) Obtain energy from organic compounds
(d) Obtain energy from inorganic compounds

13. There is no life on moon due to the absence of **[2002]**
(a) O_2 (b) water
(c) light (d) temperature

14. According to Oparin, which one of the following was not present in the primitive atmosphere of the earth? **[2004]**
(a) Methane (b) Oxygen
(c) Hydrogen (d) Water vapour

15. More then 70% of world's fresh water is contained in **[2005]**
(a) Antarctica
(b) Greenland
(c) Glaciers and Mountains
(d) Polar ice

16. Carbohydrates, the most abundant bio-molecules on earth, are produced by **[2005]**
(a) all bacteria, fungi and algae
(b) fungi, algae and green plant cells
(c) some bacteria, algae and green plant cells
(d) viruses, fungi and bacteria

17. Which one of the following is not a living fossil? **[2006]**
(a) King crab (b) Sphenodon
(c) Archaeopteryx (d) Peripatus

18. Which one of the following is an example of negative feedback loop in humans? **[2007]**
(a) Constriction of skin blood vessels and contraction of skeletal muscles when it is too cold
(b) Secretion of tears after falling of sand particles into the eye
(c) Salivation of mouth at the sight of delicious food
(d) Secretion of sweat glands and constriction of skin blood vessels when it is too hot

19. Biological organization starts with **[2007]**
(a) submicroscopic molecular level
(b) cellular level
(c) organismic level
(d) atomic level

20. The living organisms can be unexceptionally distinguished from the non-living things on the basis of their ability for **[2007]**
(a) responsiveness to touch
(b) interaction with the environment and progressive evolution
(c) reproduction
(d) growth and movement

21. Which one of the following aspects is an exclusive characteristic of living things ? **[Mains 2011]**
(a) Increase in mass by accumulation of material both on surface as well as internally.
(b) Isolated metabolic reactions occur in *vitro.*
(c) Increase in mass from inside only
(d) Perception of events happening in the environment and their memory.

Answers

1 -b	**2 -b**	**3 -a**	**4 -b**	**5 -a**	**6 -a**	**7 -b**	**8 -b**	**9 -b**	**10 -c**
11 -b	**12 -b**	**13 -b**	**14 -b**	**15 -d**	**16 -c**	**17 -c**	**18 -a**	**19 -d**	**20 -c**
21 -c									

2A

Biological Classification – Systematics

1. Basic unit or smallest taxon of taxonomy/ classification is **[1990]**
(a) species (b) kingdom
(c) family (d) variety

2. Linnaeus evolved a system of nomenclature called **[1990, 93, 94]**
(a) mononomial (b) vernacular
(c) binomial (d) polynomial

3. A taxon is **[1990, 96]**
(a) a group of related families
(b) a group of related species
(c) a type of living organisms
(d) a taxonomic group of any ranking

4. An important criterion for modern day classification is **[1991]**
(a) resemblances in Morphology
(b) anatomical and physiological traits
(c) breeding habits
(d) presence or absence of notochord

5. Sequence of taxonomic categories is **[1992]**
(a) class-phylum-tribe-order-family-genus-species
(b) division-class-family-tribe-order-genus-species
(c) division-class-order-family-tribe-genus-species
(d) phylum-order-class-tribe-family-genus-species

6. The term "Phylum" was given by **[1992]**
(a) Cuvier (b) Haeckel
(c) Theophrastus (d) Linnaeus

7. Binomial nomenclature means **[1993]**
(a) one name given by two scientists
(b) one scientific name consisting of a generic and a specific name
(c) two names, one Latinised, other of a person
(d) None of the above

8. "Taxonomy without phylogeny is similar to bones without flesh" is the statement of **[1994]**
(a) Oswald Tippo
(b) John Hutchinson
(c) Takhtajan
(d) Bentham and Hooker

9. Binomial nomenclature consists of two words **[1994]**
(a) genus and species
(b) order and family
(c) family and genus
(d) species and variety

10. Phylogenetic classification is based on **[1994]**
(a) utilitarian system
(b) habits

(c) overall similarities
(d) common evolutionary descent

11. Species is **[1994,2003]**
(a) basic unit of classification
(b) unit in the evolutionary history of a tree
(c) specific class of evolution
(d) not related to evolution

12. The closely related morphologically similar sympatric populations, but reproductively isolated, are designated as **[1995]**
(a) clines (b) demes
(c) clones (d) sibling species

13. If two or more species occupy overlapping areas, they are **[1996]**
(a) sibling (b) allochronic
(c) keystone (d) sympatric

14. In the five-kingdom system of classification, which single kingdom out of the following can include blue-green algae, nitrogen-fixing bacteria and methanogenic archaebacteria? **[1998]**
(a) Fungi (b) Plantae
(c) Protista (d) Monera

15. A system of classification in which a large number of traits are considered, is **[1999]**
(a) artificial system
(b) synthetic system
(c) natural system
(d) phylogenetic system

16. The book "Genera Plantarum" was written by **[1999]**
(a) Bessey
(b) Hutchinson
(c) Engler and Prantl
(d) Bentham and Hooker

17. Species restricted to a given area are called as **[1999]**
(a) sibling (b) sympatric
(c) allopatric (d) endemic

18. One of the following includes most closely linked organisms **[2001]**
(a) species (b) genus
(c) family (d) class

19. What is true for individuals of same species? **[2002]**
(a) live in same niche
(b) Live in same habitat
(c) Interbreeding
(d) live in different habitat

20. In five-kingdom system, the main basis of classification is **[2002]**
(a) structure of nucleus
(b) mode of nutrition
(c) structure of cell wall
(d) asexual reproduction

21. Biosystematics aims at **[2003]**
(a) identification and arrangement of organisms on the basis of their cytological characteristics
(b) the classification of organisms based on broad morphological characters
(c) delimiting various taxa of organisms and establishing their relationships
(d) the classification of organisms based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies

22. In which kingdom would you classify the archaebacteria and nitrogen-fixing organisms, if the five kingdom system of classification is used? **[2003]**
(a) Monera (b) Plantae
(c) Fungi (d) Protista

23. Plants reproducing by spores such as mosses and ferns are grouped under the general term **[2003]**
(a) thallophytes (b) cryptogams
(c) bryophytes (d) sporophytes

24. Phenetic classification is based on **[2003]**
(a) sexual characteristics
(b) the ancestral lineage of existing organisms

(c) observable characteristics of existing organisms
(d) dendrograms based on DNA characteristics

25. Which of the following is not true for a species? **[2005]**
(a) Members of a species can interbreed
(b) Gene flow does not occur between the populations of a species
(c) Each species is reproductively isolated from every other species
(d) Variations occur among members of a species

26. ICBN stands for **[2007]**
(a) Indian Congress of Biological Names
(b) International Code of Botanical Nomenclature
(c) International Congress of Biological Names
(d) Indian Code of Botanical Nomenclature

27. Two plants can be conclusively said to belong to the same species if they **[2007]**
(a) can reproduce freely with each other and form seeds
(b) have more than 90% similar genes
(c) look similar and possess identical secondary metabolites
(d) have same number of chromosomes

28. Phylogenetic system of classification is based on: **[2009]**
(a) Chemical constituents
(b) Floral characters
(c) Evolutionary relationships
(d) Morphological features

29. Which one of the following animals is correctly matched with its particular named taxonomic category ? **[Pre 2011]**
(a) Tiger - tigris, the species
(b) Cuttlefish - Mollusca, a class
(c) Humans - Primata, the family
(d) Housefly - Musca, an order

30. Which one of the following is not a correct statement ? **[NEET 2013]**
(a) Herbarium houses dried, pressed and preserved plant specimens
(b) Botanical gardens have collection of living plants for reference
(c) A museum has collection of photographs of plants and animals
(d) Key is a taxonomic aid for identification of specimens

31. Five kingdom system of classification suggested by R.H. Whittaker is not based on **[AIPMT 2014]**
(a) Presence or absence of a well defined nucleus
(b) Mode of reproduction
(c) Mode of nutrition
(d) Complexity of body organization

Answers

1-a	2-c	3-d	4-b	5-c	6-a	7-b	8-c	9-a	10-d
11-a	12-d	13-d	14-d	15-c	16-d	17-d	18-a	19-c	20-b
21-d	22-a	23-b	24-c	25-b	26-b	27-a	28-c	29-a	30-c
31-a									

2B

Biological Classification – Kingdom Protista

1. The vector for sleeping sickness is **[1989]**
(a) house fly (b) tse-tse fly
(c) sand fly (d) fruit fly

2. The infective state of malarial parasite Plasmodium that enters human body is **[1989]**
(a) merozoite (b) sporozoite
(c) trophozoite (d) minuta form

3. Trypanosoma belongs to class **[1989]**
(a) Sarcodina (b) Zooflagellata
(c) Ciliata (d) Sporozoa

4. Malaria fever coincides with liberation of
(a) cryptomerozoites **[1989]**
(b) metacryptomerozoites
(c) merozoites (d) trophozoites

5. Plasmodium, the malarial parasite, belongs to class **[1990]**
(a) Sarcodina (b) Ciliata
(c) Sporozoa (d) Dinophyceae

6. Amoebiasis is prevented by **[1990]**
(a) eating balanced food
(b) eating plenty of fruits
(c) drinking boiled water
(d) using mosquito nets

7. Genetic information in Paramecium is contained in **[1990]**
(a) micronucleus (b) macronucleus
(c) Both (a) & (b) (d) mitochondria

8. What is true about Trypanosoma? **[1990]**
(a) Polymorphic (b) Monogenetic
(c) Facultative parasite
(d) Non-pathogenic

9. African sleeping sickness is due to **[1991]**
(a) Plasmodium vivax transmitted by tse-tse fly
(b) Trypanosoma lewsii transmitted by bed bug
(c) Trypanosoma gambiense transmitted by Glossina palpalis
(d) Entamoeba gingivalis spread by house fly

10. Who discovered Plasmodium in RBC of human beings? **[1991]**
(a) Ronald Ross (b) Mendel
(c) Laveran (d) Stephen

11. Malignant tertian malaria is caused by **[1991]**
(a) Plasmodium falciparum
(b) P. vivax
(c) P. ovale (d) P. malariae

12. In Amoeba and Paramecium osmoregulation occurs through **[1991, 2002]**
(a) pseudopodia (b) nucleus
(c) contractile vacuole (d) general surface

13. The part of life cycle of malarial parasite Plasmodium vivax, that is passed in female Anopheles is **[1992]**
(a) sexual cycle

(b) pre-erythrocytic schizogony
(c) exo-erythrocytic schizogony
(d) post-erythroeytic schizogony

14. If all ponds and puddles are destroyed, the organism likely to be destroyed is **[1993]**
(a) Leishmania (b) Trypanosoma
(c) Ascaris (d) Plasmodium

15. Entamoeba coli causes **[1994]**
(a) pyorrhoea (b) diarrhoea
(c) dysentery (d) None of these

16. Protists obtain food as **[1994]**
(a) photosynthesizers, symbionts and holotrophs
(b) photosynthesizers
(c) chemosynthesizers (d) holotrophs

17. Protistan genome has **[1994]**
(a) membrane bound nucleoproteins embedded in cytoplasm
(b) free nucleic acid aggregates
(c) gene containing nucleoproteins condensed together in loose mass
(d) nucleoprotein in direct contact with cell substance

18. Macro and micronucleus are the characteristic feature of **[1995, 2002, 05]**
(a) Paramecium and Vorticella
(b) Opalina and Nictotherus
(c) Hydra and Balantidium
(d) Vorticella and Nictotherus

19. Excretion in Amoeba occurs through **[1995]**
(a) lobopodia (b) uroid portion
(c) plasma membrane
(d) contractile vacuole

20. Which of the following organisms possesses characteristics of both a plant and an animal?
(a) Bacteria (b) Mycoplasma **[1995]**
(c) Euglena (d) Paramecium

21. The chief advantage of encystment to an Amoeba is **[2003]**
(a) the chance to get rid of accumulated waste products
(b) the ability to survive during adverse physical conditions
(c) the ability to live for some time without ingesting food
(d) protection from parasites and predators

22. When a fresh water protozoan possessing a contractile vacuole is placed in a glass containing marine water, the vacuole will **[2004]**
(a) increase in number (b) disappear
(c) increase in size (d) decrease in size

23. What is common about Trypanosoma, Noctiluca, Monocystis and Giardia **[2006]**
(a) These are all unicellular protists
(b) They have flagella
(c) They produce spores
(d) These are all parasites

24. Single-celled eukaryotes are included in
(a) Protista (b) Fungi **[2010]**
(c) Archaea (d) Monera

25. Which one of the following organisms is not an example of eukaryotic cells ? **[2011]**
(a) *Paramecium caudatum*
(b) *Escherichia coli*
(c) *Euglena viridis*
(d) *Amoeba proteus*

26. Which of the following sets of items in option 1-4 are correctly categorized with one exception in it? **[2012]**

	Items	**Category**	**Exception**
(a)	Kangaroo, Koala, Wombat	Australian marsupials	Wombat
(b)	*Plasmodium, Cuscuta, Trypanosoma*	Protozoan parasites	*Cuscuta*
(c)	Typhoid, Pneumonia, Diphtheria	Bacterial diseases	Diphtheria
(d)	UAA, UAG, UGA	Stop codons	UAG

27. In which group of organisms the cells walls form two thin overlapping shells which fit together? **[RE-AIPMT 2015]**

(a) Slime moulds
(b) Chrysophytes
(c) Euglenoids
(d) Dinoflagellates

28. Which of the following diseases is caused by a protozoan ? **[RE-AIPMT 2015]**

(a) Blastomycosis
(b) Syphilis
(c) Influenza
(d) Babesiosis

Answers

1 -b	**2 -b**	**3 -b**	**4 -c**	**5 -c**	**6 -c**	**7 -a**	**8 -a**	**9 -c**	**10 -c**
11 -a	**12 -c**	**13 -a**	**14 -d**	**15 -b**	**16 -a**	**17 -a**	**18 -a**	**19 -d**	**20 -c**
21 -b	**22 -b**	**23 -a**	**24-a**	**25 -b**	**26 -b**	**27 -b**	**28 -d**		

2C

Biological Classification – Kingdom Monera

1. Which one belongs to Monera? **[1990]**
(a) Amoeba (b) Escherichia
(c) Gelidium (d) Spirogyra

2. A non-photosynthetic aerobic nitrogen fixing soil bacterium is **[1990,94, 97]**
(a) Rhizobium (b) Clostridium
(c) Azotobacter (d) Klebsiella

3. The main difference in Gram (+)ve and Gram (-)ve bacteria resides in their **[1990, 2001]**
(a) cell wall (b) cell membrane
(c) cytoplasm (d) flagella

4. Bacteria lack alternation of generation because there is **[1991]**
(a) neither syngamy nor reduction division
(b) distinct chromosomes are absent
(c) no conjugation
(d) no exchange of genetic material

5. Name the organisms which do not derive energy directly or indirectly from sun **[1991]**
(a) chemosynthetic bacteria
(b) pathogenic bacteria
(c) symbiotic bacteria
(d) mould

6. Genophore bacterial genome or nucleoid is made of **[1993]**
(a) histones and nonhistones
(b) RNA and histones
(c) a single double stranded DNA
(d) a single stranded DNA

7. Escherichia coli is used extensively in biological research as it is **[1993]**
(a) easily cultured (b) easily available
(c) easy to handle
(d) easily multiplied in host

8. Rickettsiae constitute a group under **[1994]**
(a) bacteria (b) viruses
(c) independent group between bacteria and viruses
(d) fungi

9. The term antibiotic was first used by **[1994]**
(a) Fleming (b) Pasteur
(c) Waksman (d) Lister

10. Temperature tolerance of thermal blue-green algae is due to **[1994]**
(a) cell wall structure
(b) cell organization
(c) mitochondrial structure
(d) homopolar bonds in their proteins

11. Non-symbiotic nitrogen fixers are **[1994]**
(a) Azotobacter (b) Pseudomonas
(c) soil fungi (d) blue-green algae

12. Nitrogen fixer soil organisms belong to **[1994]**

(a) mosses (b) bacteria
(c) green algae (d) soil fungi

13. The plasmid **[1995]**
(a) helps in respiration
(b) genes found inside nucleus
(c) is a component of cell wall of bacteria
(d) is the genetic part in addition to DNA in micro-organisms

14. Azotobacter and Bacillus polymyxa are the examples of **[1996]**
(a) symbiotic nitrogen-fixers
(b) non-symbiotic nitrogen-fixers
(c) ammonifying bacteria
(d) disease-causing bacteria

15. In bacterial chromosomes, the nucleic acid polymers are **[1996]**
(a) linear DNA molecule
(b) circular DNA molecule
(c) of two types-DNA and RNA
(d) linear RNA molecule

16. Sex factor in bacteria is **[1996]**
(a) chromosomal replicon
(b) F-replicon
(c) RNA (d) sex-pilus

17. The site of respiration in bacteria is **[1997]**
(a) episome (b) mesosome
(c) ribosome (d) microsome

18. The hereditary material present in the bacterium Escherichia coli is **[1997,98]**
(a) single stranded DNA
(b) deoxyribose sugar
(c) double stranded DNA
(d) single stranded.RNA

19. The main role of bacteria in the carbon cycle involves **[1998]**
(a) photosynthesis
(b) chemosynthesis
(c) digestion or breakdown of organic compounds
(d) assimilation of nitrogenous compounds

20. Two bacteria found to be very useful in genetic engineering experiments are **[1998]**
(a) Escherichia and Agrobacterium
(b) Nitrobacter and Azotobacter
(c) Rhizobium and Diplococcus
(d) Nitrosomonas and Klebsiella

21. Transfer of genetic information from one bacterium to another in the transduction process is through **[1998]**
(a) conjugation
(b) bacteriophages released from the donor bacterial strain
(c) another bacterium
(d) physical contact between donor and recipient strain

22. A few organisms are known to grow and multiply at temperatures of 100-105°C. They belong to **[1998]**
(a) marine archaebacteria
(b) thermophilic sulphur bacteria
(c) hot-spring blue-green algae (cyanobacteria)
(d) thermophilic, subaerial fungi

23. Due to which of the following organisms, yield of rice has been increased? **[1998]**
(a) Anabaena
(b) Bacillus papilliae
(c) Sesbania
(d) Bacillus polymyxa

24. Photosynthetic bacteria have pigments in **[1999]**
(a) leucoplasts (b) chloroplasts
(c) chromoplasts (d) chromatophores

25. Plasmid is **[2000,01]**
(a) fragment of DNA which acts as vector
(b) fragment which joins two genes
(c) mRNA which acts as carrier
(d) autotrophic fragment

26. What is true for cyanobacteria? **[2001]**
(a) Oxygenic with nitrogenase
(b) Oxygenic without nitrogenase

(c) Non-oxygenic with nitrognase
(d) Non-oxygenic without nitrogenase

27. What is true for archaebacteria? **[2001]**
(a) All halophiles (b) All photosynthetic
(c) All fossils (d) Oldest living beings

28. The semilog of per minute growing bacteria is plotted against time. What will be the shape of graph? **[2002]**
(a) Sigmoid (b) Hyperbola
(c) Ascending straight line
(d) Descending straight line

29. Which statement is correct for bacterial transduction? **[2002]**
(a) Transfer of some genes from one bacteria to another bacteria through virus
(b) Transfer of genes from one bacteria to another bacteria by conjugation
(c) Bacteria obtained its DNA directly
(d) Bacteria obtained DNA from other external source

30. In bacteria, plasmid is **[2002]**
(a) extra-chromosomal material
(b) main DNA
(c) non-functional DNA
(d) repetitive gene

31. Which bacteria is utilized in gobar gas plant? **[2002]**
(a) Methanogens
(b) Nitrifying bacteria
(c) Ammonifying bacteria
(d) Denitrifying bacteria

32. Choose the correct sequence of stages of growth curve for bacteria **[2002]**
(a) lag, log, stationary, decline phase
(b) lag, log, stationary phase
(c) stationary, lag, log, decline phase
(d) decline, lag, log phase

33. Chromosomes in a bacterial cell can be 1-3 in number and **[2003]**
(a) can be circular as well as linear within the same cell
(b) are always circular
(c) are always linear
(d) can be either circular or linear, but never both within the same cell

34. The most thoroughly studied of the known bacteria-plant interactions is the **[2004]**
(a) cyanobacterial symbiosis with some aquatic ferns
(b) gall formation on certain angiosperms by Agrobacterium
(c) nodulation of Sesbania stems by nitrogen fixing bacteria
(d) plant growth stimulation by phosphate solublising bacteria

35. Which one of the following pairs is not correctly matched? **[2004]**
(a) Streptomyces — Antibiotic
(b) Serratia — Drug addiction
(c) Spirulina — Single cell protein
(d) Rhizobium — Biofertilizer

36. For retting of jute the fermenting microbe used is **[2005]**
(a) Methophilic bacteria
(b) Butyric acid bacteria
(c) Helicobacter pylori
(d) Streptococcus lactis

37. All of the following statements concerning the Actinomycetes filamentous soil bacterium and Frankia are correct except that Frankia **[2005]**
(a) can induce root nodules on many plant species
(b) cannot fix nitrogen in the free-living - state
(c) forms specialized vesicles in which the nitrogenase is protected from oxygen by a chemical involving triterpene hepanoids
(d) like Rhizobium, it usually infects its host plant through root hair deformation and stimulates cell proliferation in the host's cortex

38. Basophilic prokaryotes **[2005]**
(a) grow slowly in highly alkaline frozen lakes at high altiudes
(b) occur in water containing high concentrations of barium hydroxide
(c) grow and multiply in very deep marine sediments
(d) readily grown and divides in sea water enriched in any soluble salt of barium

39. Which antibiotic inhibits interaction between tRNA and mRNA during bacterial protein synthesis? **[2006]**
(a) Neomycin (b) Streptomycin
(c) Tetracycline (d) Erythromycin

40. The bacterium (Clostridium botulinum) that causes botulism is **[2006]**
(a) a facultative anaerobe
(b) an obligate anaerobe
(c) a facultative aerobe
(d) an obligate aerobe

41. Which one of the following pairs is not correct matched ? **[2007]**
(a) Methanogens — Gobar gas
(b) Yeast — Ethanol
(c) Streptomycetes — Antibiotic
(d) Coliforms — Vinegar

42. Which one of the following statements about mycoplasma is wrong ? **[2007]**
(a) They are also called PPLO
(b) They are pleomorphic
(c) They are sensitive to penicillin
(d) They cause disease in plants

43. In the light of recent classification of living organisms into three domains of life (bacteria, archaea and eukarya), which one of the following statement is true about archaea? **[2008]**
(a) Archaea resemble eukarya in all respects
(b) Archaea have some novel features that are absent in other prokaryotes and eukaryotes
(c) Archaea completely differ from both prokaryotes and eukaryotes
(d) Archaea completely differ from prokaryotes

44. Thermococcus, Methanococcus and Methanobacterium exemplify **[2008]**
(a) archaebacteria that contain protein homologous to eukaryotic core histones
(b) archaebacteria that lack any histones resembling those found in eukaryotes but whose DNA is negatively supercoiled
(c) bacteria whose DNA is relaxed or positively supercoiled but which have a cytoskeleton as well as mitochondria
(d) bacteria that contain a cytoskeleton and ribosomes

45. Bacterial leaf blight of rice is caused by a species of **[2008]**
(a) Xanthomonas (b) Pseudomonas
(c) Alternaria (d) Erwinia

46. Consider the following four measures (A-D) that could be taken to successfully grow chick pea in an area where bacterial blight disease is common **[2008]**
(A) Spray with Bordeaux mixture
(B) Control of the "insect vector of the disease pathogen"
(C) Use of only disease-free seeds
(D) Use of varieties resistant to the disease
Which two of the above measures can control the disease?
(a) B and C (b) A and B
(c) C and D (d) A and D

47. Membrane-bound organelles are absent in : **[Pre. 2010]**
(a) *Saccharomyces* (b) *Streptococcus*
(c) *Chlamydomonas* (d) *Plasmodium*

48. Some hyperthermophilic organisms that grow in highly acidic (pH=2) habitats belong to the two groups: **[Pre. 2010]**
(a) Eubacteria and archaea
(b) Cyanobacteria and diatoms

(c) Protists and mosses
(d) Liverworts and yeasts

49. Which one of the following is a wrong matching of a microbe and its industrial product, while the remaining three are correct ? **[Pre. 2011]**
(a) *Aspergillus niger* - citric acid
(b) Yeast – Statins
(c) *Acetobacter aceti* - acetic acid
(d) *Clostridium butylicum* - lactic acid

50. Which of the following are used in gene cloning ? **[Mains 2010]**
(a) Lomasomes (b) Mesosmes
(c) Plasmids (d) Nucleoids

51. Which one of the following cannot be used for preparation of vaccines against plague ? **[Mains 2010]**
(a) Avirulent live bacteria
(b) Synthetic capsular polysaccharide material
(c) Heat-killed suspension of virulent bacteria
(d) Formalin-inactivated suspensions of virulent bacteria

52. Select the correct combination of the statement (a-d) regarding the *characteristics* of certain organisms – **[Mains 2010]**
(1) Methanogens are Archaebacteria which produce methane in marshy areas
(2) Nostoc is filamentous blue-green alga which fixes atmospheric nitrogen
(3) Chemosynthetic autotrophic bacteria synthesize cellulose from glucose
(4) Mycoplasma lack cell wall and can survive without oxygen
The correct statements are :
(a) (1), (2), (3) (b) (2), (3), (4)
(c) (1), (2), (4) (d) (2), (3)

53. A prokaryotic autotrophic nitrogen fixing symbiont is found in **[Pre. 2011]**
(a) Alnus (b) Cycas
(c) Cicer (d) Pisum

54. In eubacteria, a cellular component that resemble eukaryotic cell is :- **[Pre. 2011]**
(a) Plasma membrane (b) Nucleus
(c) Ribosomes (d) Cell wall

55. Organisms called Methanogens are most abundant in a **[Pre. 2011]**
(a) Sulphur rock (b) Cattle yard
(c) Polluted stream (d) Hot spring

56. Maximum nutritional diversity is found in the group **[Pre. 2012]**
(a) Monera (b) Plantae
(c) Fungi (d) Animalia

57. Nuclear membrane is absent in **[Pre. 2012]**
(a) *Volvox* (b) *Nostoc*
(c) *Penicillium* (d) *Agaricus*

58. Which one of the following does not differ in *E.coli* and *Chlamydomonas* ? **[Pre. 2012]**
(a) Cell wall (b) Cell membrane
(c) Ribosomes
(d) Chromosomal Organization

59. The cyanobacteria are also referred to as
(a) Slime moulds **[Pre. 2012]**
(b) Blue green algae
(c) Protists (d) Golden algae

60. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are ones categorised as **[Pre. 2012]**
(a) Chemosynthetic autotrophs
(b) Heterotrophic bacteria
(c) Cyanobacteria
(d) Archaebacteria

61. Besides paddy fields, cyanobacteria are also found inside vegetative part of **[2013]**
(a) *Pinus* (b) *Cycas*
(c) *Equisetum* (d) *Psilotum*

62. Pigment-containing membranous extensions in some cyanobacteria are **[2013]**
(a) Heterocysts (b) Basal bodies
(c) Pneumatophores (d) Chromatophores

63. Which of the following are likely to be present in deep sea water ? **[2013]**
(a) Archaebacteria (b) Eubacteria
(c) Blue-green algae
(d) Saprophytic fungi

64. Archaebacteria differ from eubacteria in **[AIPMT 2014]**
(a) Cell membrane structure
(b) Mode of nutrition
(c) Cell shape
(d) Mode of reproduction

65. Which one of the following living organisms completely lacks a cell wall? **[AIPMT 2014]**
(a) Cyanobacteria (b) Sea - fan (Gorgonia)
(c) Saccharomyces
(d) Blue - green algae

66. The motile bacteria are able to move by **[AIPMT 2014]**
(a) Fimbriae (b) Flagella
(c) Cilia (d) Pili

67. True nucleus is absent in : **[AIPMT 2015]**
(a) Mucor (b) Vaucheria
(c) Volvox (d) Anabaena

68. Cell wall is absent in : **[RE-AIPMT 2015]**
(a) Nostoc (b) Aspergillus
(c) Funaria (d) Mycoplasma

69. The structures that help some bacteria to attach to rocks and/or host tissues are : **[RE-AIPMT 2015]**
(a) Holdfast (b) Rhizoids
(c) Fimbriae (d) Mesosomes

70. Pick up the wrong statement : **[RE-AIPMT 2015]**
(a) Nuclear membrane is present in Monera
(b) Cell wall is absent in Animalia
(c) Protista have photosynthetic and heterotrophic modes of nutrition
(d) Some fungi are edible

Answers

1 -b	2 -c	3 -a	4 -a	5 -a	6 -c	7 -a	8 -a	9 -c	10 -a
11 -a	12 -b	13 -d	14 -b	15 -b	16 -b	17 -b	18 -c	19 -c	20 -a
21 -b	22 -a	23 -a	24 -d	25 -a	26 -a	27 -d	28 -c	29 -a	30 -a
31 -a	32 -a	33 -b	34 -b	35 -b	36 -b	37 -b	38 -c	39 -a	40 -b
41 -d	42 -c	43 -b	44 -a	45 -a	46 -c	47 -b	48 -a	49 -d	50 -c
51 -c	52 -c	53 -b	54 -a	55 -b	56 -a	57 -b	58 -b	59 -b	60 -b
61 -b	62 -d	63 -a	64 - a	65 -b	66 - b	67 - d	68 - d	69 - c	70 -a

2D

Biological Classification – Kingdom Fungi

1. Absorptive heterotrophic nutrition is exhibited by **[1990]**
(a) algae (b) fungi
(c) bryophytes (d) pteridophytes

2. Ustilago caused plant diseases are called smuts because **[1994]**
(a) they parasitise cereals
(b) mycelium is black
(c) they develop sooty masses of spores
(d) affected parts become completely black

3. Decomposers are organisms that **[1994]**
(a) elaborate chemical substances, causing death of tissues
(b) operate in living body and simplifying organic substances of cells step by step
(c) attack and kill plants as well as animals
(d) operate in relay terms, simplifying step by step the organic constituents of dead body

4. Claviceps purpurea is causal organism of **[1994]**
(a) smut of barley
(b) rust of wheat
(c) ergot of rye
(d) powdery mildew of pea

5. The chemical compounds produced by the host plants to protect themselves against fungal infection is **[1995]**
(a) phytotoxin (b) pathogen
(c) phytoalexins (d) hormone

6. White rust disease is caused by **[1995]**
(a) Claviceps (b) Alternaria
(c) Phytophthora (d) Albugo candida

7. Most of the lichens consist of **[1997]**
(a) blue-green algae and Basidomycetes
(b) blue-green algae and Ascomycetes
(c) red algae and Ascomycetes
(d) brown algae and Phycomycetes

8. Yeast-Saccharomyces cerevisiae is used in the industrial production of **[1998]**
(a) citric acid (b) tetracycline
(c) ethanol (d) butanol

9. Which one of the following micro-organisms is used for production of citric acid in industries? **[1998]**
(a) Penicillium citrinum
(b) Aspergillus niger
(c) Rhizopus nigricans
(d) Lactobacillus bulgaricus

10. Puccinia forms **[1998]**
(a) uredia and aecia on wheat leaves
(b) uredia and telia on wheat leaves
(c) uredia and aecia on barbery leaves
(d) uredia and pycnia on barbery leaves

11. Black rust of wheat is caused by **[2000]**
(a) Puccinia
(b) Mucor
(c) Aspergillus
(d) Rhizopus

12. In fungi stored food material is **[2000]**
(a) glycogen
(b) starch
(c) sucrose
(d) glucose

13. Adhesive pad of fungi penetrates the host with the help of **[2001]**
(a) mechanical pressure and enzymes
(b) hooks and suckers
(c) softening by enzymes
(d) only by mechanical pressure

14. Plant decomposers are **[2001]**
(a) Monera and Fungi
(b) Fungi and Plants
(c) Protista and Animalia
(d) Animalia and Monera

15. During the formation of bread it becomes porous due to release of CO_2 by the action of **[2002]**
(a) yeast (b) bacteria
(c) virus (d) protozoans

16. Which fungal disease spreads by seed and flowers? **[2002]**
(a) Loose smut of wheat
(b) Corn stunt
(c) Covered smut of barley
(d) Soft rot of potato

17. Which of the following environmental conditions are essential for optimum growth of Mucor on a piece of bread? **[2006]**
(i) Temperature of about 25°C
(ii) Temperature of about 5°C
(iii) Relative humidity of about 5%
(iv) Relative humidity of about 95%
(v) A shady place
(vi) A brightly illuminated place
Choose the answer from the following options
(a) (i), (iv) and (v) only
(b) (ii), (iv) and (v) only
(c) (ii), (iii) and (vi) only
(d) (i), (iii) and (v) only

18. The thalloid body of a slime mold (Myxomycetes) is known as **[2006]**
(a) Plasmodium
(b) fruiting body
(c) mycelium
(d) protonema

19. Ergot of rye is caused by a species of **[2007]**
(a) Phytophthora
(b) Uncinula
(c) Ustilago
(d) Claviceps

20. Which pair of the following belongs to Basidiomycetes? **[2007]**
(a) Birds nest fungi and Pufballs
(b) Pufballs and Claviceps
(c) Peziza and Stink horns
(d) Morchella and Mushrooms

21. Which of the following is a slime mold? **[2007]**
(a) Rhizopus
(b) Physarum
(c) Thiobacillus
(d) Anabaena

22. Trichoderma harzianum has proved a useful micro-organism for **[2008]**
(a) bioremediation of contaminated soils
(b) reclamation of wastelands
(c) gene transfer in higher plants
(d) biological control of soil-borne plant pathogens

23. Cellulose is the major component of cell walls of **[2008]**
(a) Pythium
(b) Xanthomonas

(c) Pseudomonas
(d) Saccharomyces

24. Which one is the *wrong* pairing for the disease and its causal organism ? **[2009]**
(a) Loose smut of wheat - *Ustilago nuda*
(b) Root-knot of vegetables - *Meloidogyne sp*
(c) Late blight of potato - *Alternaria solani*
(d) Black rust of wheat - *Puccinia graminis*

25. An example of endomycorrhiza is ? **[Mains 2010]**
(a) *Glomus* (b) *Agaricus*
(c) *Rhizobium* (d) *Nostoc*

26. Black (stem) rust of wheat is caused by **[Mains 2010]**
(a) *Ustilago nuda*
(b) *Puccinia graminis*
(c) *Xanthomonas oryzae*
(d) *Alternaria solani*

27. Ethanol is commercially produced through a particular species of **[Pre. 2011]**
(a) *Saccharomyces*
(b) *Clostridium*
(c) *Trichoderma*
(d) *Aspergillus*

28. Which one of the following is wrongly matched **[Pre. 2011]**
(a) Root pressure – Guttation
(b) *Puccinia* – Smut
(c) Root – Exarch
(d) *Cassia* - Imbricate aestivation

29. Yeast is used in the production of
(a) Bread and beer **[Pre. 2012]**
(b) Cheese and butter
(c) Citric acid and lactic acid
(d) Lipase and pectinase

30. Which one single organism or the pair of organisms is correctly assigned to its or their named taxonomic group ? **[Pre. 2012]**
(a) *Yeast* used in making bread and beer is a fungus
(b) *Nostoc* and *Anabaena* are examples of protista
(c) *Paramecium* and *Plasmodium* belong to the same kingdom as that of *Penicillium*
(d) Lichen is a composite organism formed from the symbiotic association of an algae and a protozoan

31. *Monascus purpureus* is a yeast used commercial in the production of **[Pre. 2012]**
(a) Citric acid
(b) Blood chlolesterol lowering statins
(c) Ethanol
(d) Streptokinase for removing clots from the blood vessels.

32. A good producer of citric acid is **[2013]**
(a) Aspergillus
(b) Pseudomonas
(c) Clostridium
(d) Saccharomyces

33. Which one of the following fungi contains hallucinogens? **[AIPMT 2014]**
(a) Morchella esculenta
(b) Amanita muscaria
(c) Neurospora sp.
(d) Ustilago sp.

34. Which one one of the following matches is correct ? **[AIPMT 2015]**
(a) Alternaria - Sexual reproduction absent - Deuteromycetes
(b) Mucor - Reproduction by Conjugation - Ascomycetes
(c) Agaricus - Parasitic fungus - Basidiomycetes
(d) Phytophthora - Aseptate mycelium - Basidiomycetes

35. The imperfect fungi which are decomposers of litter and help in mineral cycling belong to : **[RE-AIPMT 2015]**
(a) Ascomycetes (b) Deuteromycetes
(c) Basidiomycetes (d) Phycomycetes

36. Which the following are most suitable indicator of SO_2 pollution in the environment? [RE-AIPMT 2015]

(a) Fungi (b) Lichens
(c) Conifers (d) Algae

37. Which one is a wrong statement ?
[RE-AIPMT 2015]

(a) Brown algae have chlorophyll a and c, and fucoxanthin
(b) Archegonia are found in Bryophyta, Pteridophyta and Gymnosperms
(c) Mucor has biflagellate zoospores
(d) Haploid endosperm is typical feature of gymnosperms

38. Choose the wrong statement :
[RE-AIPMT 2015]

(a) Yeast is unicellular and useful in fermentation
(b) Penicillium is multicellular and produces antibiotics
(c) Neurospora is used in the study of biochemical genetics
(d) Morels and truffles are poisonous mushrooms

Answers

1-b	**2-c**	**3-d**	**4-c**	**5-c**	**6-d**	**7-b**	**8-c**	**9-b**	**10-b**
11-a	**12-a**	**13-a**	**14-a**	**15-a**	**16-a**	**17-a**	**18-a**	**19-d**	**20-a**
21-b	**22-d**	**23-a**	**24-c**	**25-a**	**26-b**	**27-a**	**28-b**	**29-a**	**30-a**
31-b	**32-a**	**33-b**	**34-a**	**35-b**	**36-b**	**37-c**	**38-d**		

2E

Biological Classification – Virus

1. Reverse transcriptase is **[1994]**
(a) RNA dependent RNA polymerase
(b) DNA dependent RNA polymerase
(c) DNA dependent DNA polymerase
(d) RNA dependent DNA polymerase

2. Tobacco Mosaic Virus (TMV) genes are **[1994]**
(a) double stranded RNA
(b) single stranded RNA
(c) polyribonucleotides
(d) proteinaceous

3. Interferons are **[1996]**
(a) antiviral proteins
(b) antibacterial proteins
(c) anticancer proteins
(d) complex proteins

4. In which one of the following pairs of diseases both are caused by viruses? **[1996]**
(a) Tetanus and typhoid
(b) Whooping cough and sleeping sickness
(c) Syphilis and AIDS
(d) Measles and rabies

5. Influenza virus has **[1996]**
(a) DNA
(b) RNA
(c) Both (a) and (b)
(d) only proteins and no nucleic acids

6. Which one of the following statements about viruses is correct? **[1997]**
(a) Viruses possess their own metabolic system
(b) Viruses contain either DNA or RNA
(c) Viruses are facultative parasites
(d) Viruses are readily killed by antibiotics

7. Human Immunodeficiency Virus (HIV) has a protein coat and a genetic material which is **[1998]**
(a) single stranded DNA
(b) single stranded RNA
(c) double stranded RNA
(d) double stranded DNA

8. Small proteins produced by vertebrate cells naturally in response to viral infections and which inhibit multiplication of viruses are called **[2000]**
(a) immunoglobulins
(b) interferons
(c) antitoxins
(d) lipoproteins

9. Cauliflower mosaic virus contains **[2001]**
(a) ssRNA
(b) dsRNA
(c) dsDNA
(d) ssDNA

10. Interferons are synthesized in response to **[2001]**

(a) mycoplasma (b) bacteria
(c) viruses (d) fungi

11. Which one of the following statements about viruses is correct? **[2003]**

(a) Nucleic acid of viruses is known as capsid
(b) Viruses possess their own metabolic system
(c) All viruses contain both RNA and DNA
(d) Viruses are obligate parasites

12. Viruses are no more "alive" than isolated chromosomes because **[2003]**

(a) both require the environment of a cell to replicate
(b) they require both RNA and DNA
(c) they both need food molecules
(d) they both require oxygen for respiration

13. Tobacco mosaic virus is a tubular filament of size **[2003]**

(a) 700 × 30 nm (b) 300 × 10 nm
(c) 300 × 5 nm (d) 300 × 18 nm

14. Which of the following statements is not true for retroviruses? **[2004]**

(a) DNA is not present at any stage in the life cycle of retroviruses
(b) Retroviruses carry gene for RNA dependent DNA polymerase
(c) The genetic material in mature retroviruses is RNA
(d) Retroviruses are causative agents for certain kinds of cancer in man

15. Viruses that infect bacteria, multiply and cause their lysis, are called **[2004]**

(a) lysozymes (b) lytic
(c) lipolytic (d) lysogenic

16. The causative agent of mad-cow disease is a **[2006]**

(a) bacterium (b) prion
(c) worm (d) virus

17. Which of the following is a pair of viral diseases ? **[2009]**

(a) Dysentery, Common cold
(b) Typhoid, Tuberculosis
(c) Ringworm, AIDS
(d) Common cold, AIDS

18. T.O. Diener discovered a : **[2009]**

(a) Infectious protein
(b) Bacteriophage
(c) Free infectious RNA
(d) Free infectious DNA

19. Virus envelope is known as: **[Pre. 2010]**

(a) Capsid (b) Virion
(c) Nucleoprotein (d) Core

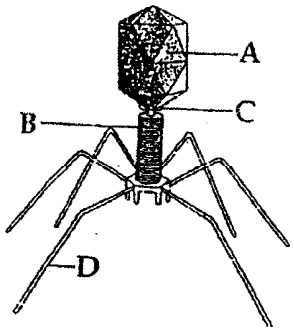
20. Which one of the following does not follow the central dogma of molecular biology? **[Pre. 2010]**

(a) Pea (b) Mucor
(c) Chlamydomonas (d) HIV

21. Infectious proteins are present in : **[Pre. 2010]**

(a) Gemini viruses (b) Prions
(c) Viroids (d) Satellite viruses

22. Given below is the diagram of a bacteriophage. In which one of the options all the four parts A, B, C and D are correct ? **[Mains 2010]**



Options :

	A	B	C	D
(1)	Sheath	Collar	Head	Tail fibres
(2)	Head	Sheath	Collar	Tail fibres
(3)	Collar	Tail fibres	Head	Sheath
(4)	Tail fibres	Head	Sheath	Collar

23. The unequivocal proof of DNA as the genetic material came from the studies on a : **[Mains 2011]**

(a) Bacterial virus (b) Bacterium
(c) Fungus (d) Viroid

24. Common cold is not cured by antibiotics because it is: **[Mains 2011]**

(a) not an infectious disease
(b) caused by a virus
(c) caused by a Gram-positive bacterium
(d) caused by a Gram-negative bacterium

25. Which statement is wrong for viruses ? **[Pre. 2012]**

(a) They have ability to synthesize nucleic acids and proteins
(b) Antibiotics have no effect on them
(c) All are parasites
(d) All of them have helical symmetry

26. Which part would be most suitable for raising virus-free plants for micropropagation? **[Pre. 2012]**

(a) Meristem
(b) Node
(c) Bark
(d) Vascular tissue

27. Which of the following shows coiled RNA strand and capsomeres? **[AIPMT 2014]**

(a) Polio virus
(b) Tobacco mosaic virus
(c) Measles virus
(d) Retrovirus

28. Viruses have **[AIPMT 2014]**

(a) DNA enclosed in a protein coat
(b) Prokaryotic nucleus
(c) Single chromosome
(d) Both DNA and RNA

29. Select the wrong statement : **[RE-AIPMT 2015]**

(a) Mosaic disease in tobacco and AIDS in human being are caused by viruses
(b) The viroids were discovered by D.J. Ivanowski
(c) W.M. Stanley showed that viruses could be crystallized
(d) The term 'contagium vivum fluidum' was coined by M.W. Beijerinek

Answers

1-d	2-b	3-a	4-d	5-b	6-b	7-b	8-b	9-c	10-c
11-d	12-a	13-d	14-a	15-b	16-b	17-d	18-c	19-a	20-d
21-b	22-b	23-a	24-b	25-d	26-a	27-b	28-a	29-b	

3

PLANT KINGDOM

1. In Pinus / gymnosperms, the haploid structure are **[1989]**
(a) megaspore, endosperm and embryo
(b) megaspore, pollen grain and endosperm
(c) megaspore, integument and root
(d) pollen grain, leaf and root

2. Sperms of both Funaria and Pteris were released together near the archegonia of Pteris. Only Pteris sperms enter the archegonia as **[1989]**
(a) Pteris archegonia repel Funaria sperms
(b) Funaria sperms get killed by Pteris sperms
(c) Funaria sperms are less mobile
(d) Pteris archegonia release chemical to attract its sperms

3. Evolutionary important character of Selaginella is **[1989]**
(a) heterosporous nature
(b) rhizophore
(c) strobili
(d) ligule

4. Moss peristome takes part in **[1990]**
(a) spore dispersal (b) photosynthesis
(c) protection (d) absorption

5. Apophysis in the capsule of Funaria is **[1990]**
(a) lower part (b) upper part
(c) middle part (d) fertile part

6. Protonema occurs in the life cycle of **[1990, 93]**
(a) Riccia
(b) Funaria
(c) Chlamydomonas
(d) Spirogyra

7. The product of conjugation in Spirogyra or fertilization of Chlamydomonas is **[1991]**
(a) zygospore (b) zoospore
(c) oospore (d) carpospore

8. The common mode of sexual reproduction in Chlamydomonas is **[1991]**
(a) isogamous (b) anisogamous
(c) oogamous (d) hologamous

9. Which one has the largest gametophyte? **[1991]**
(a) Cycas (b) Angiosperm
(c) Selaginella (d) Moss

10. Bryophytes are amphibians because **[1991, 96]**
(a) they require a layer of water for carrying out sexual reproduction
(b) they occur in damp places
(c) they are mostly aquatic
(d) All of the above

11. The plant group that produces spores and embryo but lacks vascular tissues and seeds is **[1992]**

(a) Pteridophyta (b) Rhodophyta
(c) Bryophyta (d) Phaeophyta

12. In Pinus, the pollen grain has 6 chromosomes then its endosperm will have the chromosome **[1992]**
(a) 12 (b) 18
(c) 6 (d) 24

13. A plant having seeds but lacking flowers and fruits belongs to **[1992]**
(a) pteridophytes
(b) mosses
(c) ferns
(d) gymnosperms

14. Resin and terpentine are obtained from **[1992]**
(a) Cycas (b) Pinus
(c) Cedrus (d) Abies

15. Which one of the following is not common between Funaria and Selaginella? **[1992]**
(a) Archegonium
(b) Embryo
(c) Flagellate sperms
(d) Roots

16. A plant in which sporophytic generation is represented by zygote is **[1992]**
(a) Pinus
(b) Selaginella
(c) Chlamydomonas
(d) Dryopteris

17. In *Ulothrix / Spirogyra,* reduction division (meiosis) occurs at the time of **[1993]**
(a) gamete formation
(b) zoospore formation
(c) zygospore germination
(d) vegetative reproduction

18. Pteridophytes differ from mosses / bryophytes in possessing **[1993]**
(a) independent gametophyte
(b) well developed vascular system
(c) archegonia
(d) flagellate spermatozoids

19. Pyrenoids are the centres for formation of **[1993]**
(a) porphyra (b) enzymes
(c) fat (d) starch

20. Chloroplast of *Chlamydomonas* is **[1993]**
(a) stellate (b) cup-shaped
(c) collar-shaped (d) spiral

21. *Pinus* differs from mango in having **[1993]**
(a) tree habit
(b) green leaves
(c) ovules not enclosed in ovary
(d) wood

22. Which one is the most advanced from evolutionary point of view? **[1993]**
(a) *Selaginella*
(b) *Funaria*
(c) *Chlamydomonas*
(d) *Pinus*

23. The 'wing' of *Pinus* seed is derived from **[1994]**
(a) testa
(b) testa and tegmen
(c) surface of ovuliferous scale
(d) All of the above

24. Unique features of bryophytes is that they **[1994]**
(a) produce spores
(b) have sporophyte attached to gametophyte
(c) lack roots
(d) lack vascular tissues

25. In Chlorophyceae, sexual reproduction occurs by **[1994]**
(a) isogamy and anisogamy
(b) isogamy, anisogamy and oogamy
(c) oogamy only
(d) anisogamy and oogamy

26. Which of the following cannot fix nitrogen? **[1994]**
(a) *Nostoc* (b) *Azotobacter*
(c) *Spirogyra* (d) *Anabaena*

27. A well developed archegonium with neck consisting of 4-6 rows of neck canal cells, characterises **[1995]**
(a) gymnosperms only
(b) bryophytes and pteridophytes
(c) pteridophytes and gymnosperms
(d) gymnosperms and flowering plants

28. Agar is commercially obtained from **[1995]**
(a) red algae
(b) green algae
(c) brown algae
(d) blue-green algae

29. The absence of chlorophyll, in the lowermost cell of *Ulothrix*, shows **[1995]**
(a) functional fission
(b) tissue formation
(c) cell characteristic
(d) beginning of labour division

30. The plant body of moss *(Funaria)* is **[1995, 2006]**
(a) completely sporophyte
(b) completely gametophyte
(c) predominantly sporophyte with gametophyte
(d) predominantly gametophyte with sporophyte

31. Which one of the following is a living fossil? **[1996]**
(a) *Pinus* (b) *Opuntia*
(c) *Ginkgo* (d) *Thuja*

32. Blue-green algae belong to **[1996]**
(a) eukaryotes
(b) prokaryotes
(c) Rhodophyceae
(d) Chlorophyceae

33. In which one of these the elaters are present along with mature spores in the capsule (to help in spore dispersal)? **[1996]**
(a) *Riccia*
(b) *Marchantia*
(c) *Funaria* (d) *Sphagnum*

34. *Ulothrix* filaments produce **[1997]**
(a) isogametes
(b) anisogametes
(c) heterogametes
(d) basidiospores

35. An alga very rich in protein is **[1997]**
(a) *Spirogyra*
(b) *Ulothrix*
(c) *Oscillatoria*
(d) *Chlorella*

36. Bryophytes can be separated from algae because they **[1997]**
(a) are thalloid forms
(b) have no conducting tissue
(c) possess archegonia with outer layer of sterile cells
(d) contain chloroplasts in their cells

37. Which one of the following is a living fossil? **[1997]**
(a) Pinus longifolia
(b) Dalbergia sissoo
(c) Mirabilis
(d) Ginkgo biloba

38. Brown algae is characterized by the presence of **[1997]**
(a) phycocyanin
(b) phycoerythrin
(c) fucoxanthin
(d) haematochrome

39. Multicellular branched rhizoids and leafy gametophytes are characteristics of **[1997]**
(a) all bryophytes
(b) some bryophytes
(c) all pteridophytes
(d) some pteridophytes

40. Bryophytes are dependent on water because **[1998]**
(a) water is essential for fertilization for their homosporous nature
(b) water is essential for their vegetative propagation

(c) the sperms can easily reach upto egg in the archegonium
(d) archegonium has to remain filled with water for fertilization

41. Which one of the following statements about Cycas is incorrect? **[1998]**
(a) It does not have a well-organised female flower
(b) It has circinate vernation
(c) Its xylem is mainly composed of xylem vessels
(d) Its roots contain some blue-green algae

42. Largest sperms in the plant world are found in **[1998]**
(a) Pinus (b) Banyan
(c) Cycas (d) Thuja

43. Ulothrix can be described as a **[1998]**
(a) non-motile colonial alga lacking zoospores
(b) filamentous alga lacking flagellated reproductive stages
(c) membranous alga producing zoospores
(d) filamentous alga with flagellated reproductive stages

44. Bryophytes comprise **[1999]**
(a) sporophyte of longer duration
(b) dominant phase of sporophyte which is parasitic
(c) dominant phase of gametophyte which produces spores
(d) small sporophyte phase generally parasitic on gametophyte

45. Which of the following is true about bryophytes? **[1999]**
(a) They possess archegonia
(b) They contain chloroplast
(c) They are thalloid
(d) All of the above

46. The "walking fern" is so named because **[1998]**
(a) it is dispersed through the agency of walking animals
(b) it propagates vegetatively by its leaf tips
(c) it knows how to walk by itself
(d) its spores are able to walk

47. The antherozoids of Funaria are **[1999]**
(a) aciliated
(b) biflagellated
(c) multiciliated
(d) monociliated

48. Dichotomous branching is found in **[1999]**
(a) fern (b) Funaria
(c) liverworts (d) Marchantia

49. In which of the following would you place the plants having vascular tissue, lacking seeds? **[1999]**
(a) Algae (b) Bryophytes
(c) Pteridophytes (d) Gymnosperms

50. Columella is a specialised structure found in the sporangium of **[1999]**
(a) Ulothrix (b) Rhizopus
(c) Spirogyra (d) None of these

51. The largest ovules, largest male and female gametes and largest plants are found among **[2000]**
(a) angiosperms
(b) tree ferns and some monocots
(c) gymnosperms
(d) dicotyledonous plants

52. A research student collected certain alga and found that its cells contained both chlorophyll-a and chlorophyll-d as well as phycoerythrin. The alga belongs to **[2000]**
(a) Rhodophyceae
(b) Bacillariophyceae
(c) Chlorophyceae
(d) Phaeophyceae

53. In ferns meiosis occurs when **[2000]**
(a) spore germinates
(b) gametes are formed
(c) spores are formed
(d) antheridia and archegonia are formed

54. Cycas has two cotyledons but not included in angiosperms because of **[2001]**
(a) naked ovules
(b) seems like monocot
(c) circinate ptyxis
(d) compound leaves

55. Which of the following is without exception in angiosperms? **[2002]**
(a) Presence of vessels
(b) Double fertilization
(c) Secondary growth
(d) Autotrophic nutrition

56. Which of the following plants produces seeds but not flowers? **[2002]**
(a) Maize (b) Mint
(c) Peepal (d) Pinus

57. Which one the following pairs of plants are not seed producers? **[2003]**
(a) Ficus and Chlamydomonas
(b) Punica and Pinus
(c) Fern and Funaria
(d) Funaria and Ficus

58. Which one of the following is categorised under living fossils? **[2003]**
(a) Metasequoia
(b) Pinus
(c) Cycas
(d) Selaginella

59. Which one pair of examples will correctly represent the grouping spermatophyta according to one of the schemes of classifying plants? **[2003]**
(a) Rhizopus, Triticum
(b) Ginkgo, Pisum
(c) Acacia, Sugarcane
(d) Pinus, Cycas

60. Sexual reproduction in Spirogyra is an advanced feature because it shows **[2003]**
(a) physiologically differentiated sex organs
(b) different size of motile sex organs
(c) same size of motile sex organs
(d) morphologically different sex organs

61. Which one of the following is categorised under living fossils? **[2003,04]**
(a) Selaginella (b) Pinus
(c) Cycas (d) Metasequoia

62. Which of the following propagates through leaf-tip? **[2004]**
(a) Walking fern
(b) Sproux-leaf plant
(c) Marchantia
(d) Moss

63. Match items in column-I with those in column-II **[2005]**

Column I	**Column II**
A. Peritrichous flagellation	1. Ginkgo
B. Living fossil	2. Macrocystis
C. Rhizophore	3. Escherichia coli
D. Smallest flowering plant	4. Selaginella
E. Largest perennial alga	5. Wolffia

	A	**B**	**C**	**D**	**E**
(a)	3	1	4	5	2
(b)	2	1	3	4	5
(c)	5	3	2	5	1
(d)	1	2	5	3	2

64. Which one of the following is a living fossil? **[2004]**
(a) Cycas
(b) Moss
(c) Saccharomyces
(d) Spirogyra

65. A free living nitrogen-fixing cyanobacterium which can also form symbiotic association with the water fern Azolla is **[2004]**
(a) Tolypothrix
(b) Chlorella
(c) Nostoc
(d) Anabaena

66. Angiosperms have dominated the land flora primarily because of their **[2004]**
(a) power of adaptability in diverse habitat
(b) property of producing large number of seeds
(c) nature of some pollination
(d) domestication by man

67. Ectophloic siphonostele is found in **[2005]**
(a) Adiantum and Cucurbitaceae
(b) Osmunda and Equisetum
(c) Marsilea and Botrychium
(d) Dicksonia and Maiden hair fern

68. Top-shaped, multiciliate male gametes and the mature seed which bears only one embryo with two cotyledons, are characteristic features of **[2005]**
(a) polypetalous angiosperms
(b) gamopetalous angiosperms
(c) conifers
(d) cycads

69. In which one pair both the plants can be vegetatively propagated by leaf pieces? **[2005]**
(a) Bryophyllum and Kalanchoe
(b) Chrysanthemum and Agave
(c) Agave and Kalanchoe
(d) Asparagus and Bryophyllum

70. Conifers differ from grasses in the **[2006]**
(a) lack of xylem tracheids
(b) absence of pollen tubes
(c) formation of endosperm before fertilization
(d) production of seeds from ovules

71. Peat moss is used as a packing material for sending flowers and live plants to distant places because **[2006]**
(a) it is hygroscopic
(b) it reduces transpiration
(c) it serves as a disinfectant
(d) it is easily available

72. Flagellated male gametes are present in all the three of which one of the following sets ? **[2007]**
(a) Anthoceros, Funaria and Spirogyra
(b) Zygnema, Saprolegnia and Hydrilla
(c) Fucus, Marsilea and Calotropis
(d) Riccia, Dryopteris and Cycas

73. In gymnosperms, the pollen chamber represents **[2007]**
(a) a cell in the pollen grain in which the sperms are formed
(b) a cavity in the ovule in which pollen grains are stored after pollination
(c) an opening in the megagametophyte through which the pollen tube approaches the egg
(d) the microsporangium in which pollen grains develop

74. If you are asked to classify the various algae into distinct groups, which of the following characters you should choose? **[2007]**
(a) Types of pigments present in the cell
(b) Nature of stored food materials in the cell
(c) Structural organization of thallus
(d) Chemical composition of the cell wall

75. In the prothallus of a vascular cryptogam, the antherozoids and eggs mature at different times, as a result **[2007]**
(a) there is no change in success rate of fertilization
(b) there is high degree of sterility
(c) one can conclude that the plant is apomictic
(d) self fertilization is prevented

76. Spore dissemination in some liverworts is aided by **[2007]**
(a) elaters (b) indusium
(c) calyptra
(d) peristome teeth

77. In which one of the following, male and female gametophytes don't have free living independent existence? **[2008]**

(a) Pteris (b) Funaria
(c) Polytrichum (d) Cedrus

78. Replum is present in the ovary of flower of **[2008]**
(a) lemon (b) mustard
(c) sunflower (d) pea

79. Select one of the following pairs of important features distinguishing Gnetum from Cycas and Pinus and showing affinities with angiosperms **[2008]**
(a) absence of resin duct and leaf venation
(b) presence of vessel elements and absence of archegonia
(c) perianth and two integuments
(d) embryo development and apical meristem

80. Which one of the following is heterosporous? **[2008]**
(a) Dryopteris
(b) Salvinia
(c) Adiantum
(d) Equisetum

81. Which one of the following is considered important in the development of seed habit ? **[2009]**
(a) Haplontic life cycle
(b) Free-living gametophyte
(c) Dependent sporophyte
(d) Heterospory

82. Which one of the following is a vascular cryptogam? **[2009]**
(a) Marchantia
(b) Cedrus
(c) Equisetum
(d) Ginkgo

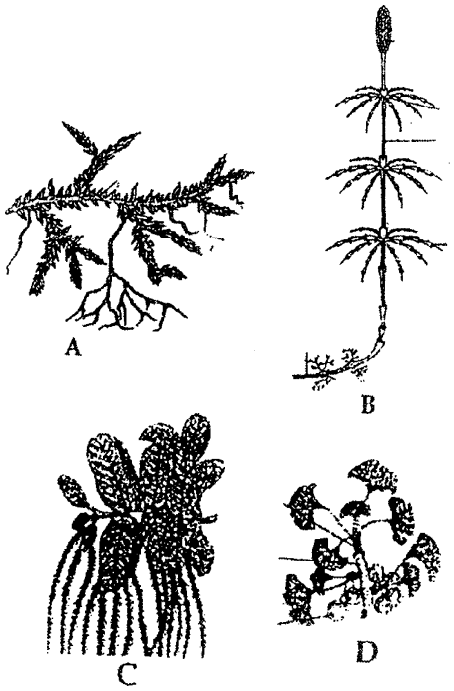
83. Which one of the following plants is monoecious ? **[2009]**
(a) Cycas
(b) Papaya
(c) Marchantia
(d) Pinus

84. Which one of the following has haplontic life cycle? **[2009]**
(a) Ustilago (b) Wheat
(c) Funaria (d) Potytrichum

85. Mannitol is the stored food in: **[2009]**
(a) Fucus (b) Gracillaria
(c) Chara (d) Porphyria

86. Algae have cell wall made up of **[Pre. 2010]**
(a) Cellulose, galactans and mannans
(b) Hemicellulose, pectins and proteins
(c) Pectins, cellulose and proteins
(d) Cellulose, hemicellulose and pectins

87. Examine the figure A, B, C and D. In which one of the four options all the items A, B, C and D are correct ? **[Mains 2010]**

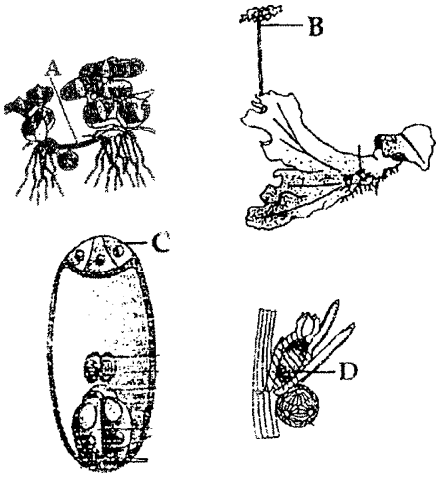


Options :

	A	B	C	D
(1)	*Equisetum*	*Ginkgo*	*Selaginella*	*Lycopodium*
(2)	*Selaginella*	*Equisetum*	*Salvinia*	*Ginkgo*
(3)	*Funaria*	*Adiantum*	*Salvinia*	*Riccia*
(4)	*Chara*	*Marchantia*	*Fucus*	*Pinus*

88. Examine the figures (A-D) given below and select the right option out of 1-4, in which all the four structures A, B, C and D are identified correctly **[Mains 2010]**

Structures :



	A	B	C	D
(1)	Runner	Archego-niophore	Synergid	Antheridium
(2)	Offset	Antheri-diophore	Antipodals	Oogonium
(3)	Sucker	Seta	Megaspore mother cell	Gemma cup
(4)	Rhizome	Sporan-giophore	Polar cell	Globule

89. Archegoniophore is present in **[Pre. 2011]**

(a) *Marchantia* (b) *Chara*
(c) *Adiantum* (d) *Funaria*

90. Agarose extracted from sea weeds finds use in **[Pre. 2011]**

(a) Spectrophotometry
(b) Tissue Culture
(c) PCR
(d) Gel electrophoresis

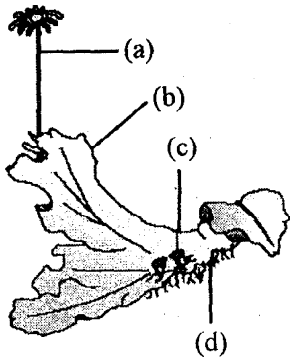
91. Compared with the gametophytes of the bryophytes, the gametophytes of vascular plants tend to be **[Pre. 2011]**

(a) Smaller but to have larger sex organs
(b) Larger but to have smaller sex organs
(c) Larger and to have larger sex organs
(d) Smaller and to have smaller sex organs

92. The gametophyte is not an independent, free living generation in **[Pre. 2011]**

(a) *Polytrichum* (b) *Adiantum*
(c) *Marchantia* (d) *Pinus*

93. Examine the figure given below and select the right option giving all the four parts (a, b, c, d) correctly identified. **[Mains 2011]**



	(a)	(b)	(c)	(d)
(1)	Antheridi-ophore	Male thallus	Globule	Roots
(2)	Archego-niophore	Female thallus	Gemma cup	Rhizoids
(3)	Archego-niophore	Female thallus	Bud	Foot
(4)	Seta	Sporo-phyte	Proto-nema	Rhizoids

94. *Selaginella* and *Salvinia* are considered to represent a significant step toward evolution of seed habit because **[Mains 2011]**

(a) Embryo develops in female gametophyte which is retained on parent sporophyte
(b) Female gametophyte is free and gets dispersed like seeds.
(c) Female gametophyte lacks archegonia
(d) Megaspores possess endosperm and embryo surrounded by seed coat.

95. Consider the following four statements whether they are correct or wrong **[Mains 2011]**

(a) The sporophyte in liverworts is more elaborate than that is mosses.
(b) *Salvinia* is heterosporous
(c) The life-cycle in all seed-bearing plants is diplontic.

(d) In Pinus male and female cones are borne on different trees.

The two wrong statements together are :

(1) Statements (a) and (b)
(2) Statements (a) and (c)
(3) Statements (a) and (d)
(4) Statements (b) and (c)

96. How many organisms in the list given below are autotrophs ? **[Mains 2012]**

Lactobacillus, Nostoc, Chara, Nitrosomonas, Nitrobacter, Streptomyces, Sacharomyces, Trypanosoma, Porphyra, Wolfia

(a) Five (b) Six
(c) Three (d) Four

97. Consider the following four statements (a-d) and select the option which includes all the correct ones only : **[Mains 2012]**

(A) Single cell Spirulina can produce large quantities of food rich in protein, minerals, vitamins etc.
(B) Body weight-wise the microorganisms Methylophilus methylotrophus may be able to produce several times more proteins than the cow per day
(C) Common button mushrooms are a very rich source of vitamin C
(D) A rice variety has been developed which is very rich in calcium

Options :

(a) Statements (A), (C) and (D)
(b) Statements (B), (C) and (D)
(c) Statements (A), (B)
(d) Statements (C), (D)

98. Read the following five statements (A - E) and answer as asked next to them. **[Mains 2012]**

(A) In Equisetum the female gametophyte is retained on the parent sporophyte
(B) In Ginkgo male gametophyte is not independent
(C) The sporophyte in Riccia is more developed than that in Polytrichum
(D) Sexual reproduction in Volvox is isogamous
(E) The spores of slime molds lack cell walls

How many of the above statements are correct ?

(a) Three (b) Four
(c) One (d) Two

99. Which one of the following pairs is wrongly matched ? **[Mains 2012]**

(a) Salvinia – Prothallus
(b) Viroids – RNA
(c) Mustard - Synergids
(d) Ginkgo-Archegonia

100. *Cycas* and *Adiantum* resemble each other in having. **[Pre. 2012]**

(a) Cambium (b) Vessels
(c) Seeds (d) Motile sperms

101. Which one of the following is common to multicellular fungi, filamentous algae and protonema of mosses **[Pre. 2012]**

(a) Mode of Nutrition
(b) Multiplication by fragmentation
(c) Diplontic life cycle
(d) Members of kingdom Plantae

102. In the five-kingdom classification, Chlamydomonas and Chlorella have been included in **[Pre. 2012]**

(a) Algae (b) Plantae
(c) Monera (d) Protista

103. Which one of the following is a correct statement ? **[Pre. 2012]**

(a) Antheridiophores and archegoniophores are present in pteridophytes
(b) Origin of seed habit can be traced in pteridophytes
(c) Pteridophyte gametophyte has a protonemal and leafy stage
(d) In gymnosperms female gametophyte is free living

104. Which of the following is not correctly matched for the organism and its cell wall degrading enzyme ? **[2013]**

(a) Bacteria - Lysozyme

(b) Plant cell – Cellulase
(c) Algae – Methylase
(d) Fungi - Chitinase

105. Select the **wrong** statement **[2013]**
(a) Isogametes are similar in structure, function and behavior
(b) Anisogametes differ either in structure, function of behavior
(c) In Oomycetes female gamete is smaller and motile, while male gamete is larger and non-motile
(d) *Chlamydomonas* exhibits both isogamy and anisogamy and *Fucus* shows oogamy

106. Isogamous condition with non-flagellated gametes is found in **[2013]**
(a) *Chlamydomonas* (b) *Spirogyra*
(c) *Volvox* (d) *Fucus*

107. Read the following statements (A– E) and answer the question which follows them **[2013]**
(A) In liverworts, mosses and ferns gametophytes are free-living
(B) Gymnosperms and some ferns are heterosporous
(C) Sexual reproduction in *Fucus*, *Volvox* and *Albugo* is oogameous
(D) The sporophytes in liverworts is more elaborate than that in mosses
(E) Both, *Pinus* and *Marchantia* are dioecious

How many of the above statements are correct?
(a) One (b) Two
(c) Three (d) Four

108. Monoecious plant of *Chara* shows occurrence of **[2013]**
(a) Antheridiophore and archegoniophore on the same plant
(b) Stamen and carpel on the same plant
(c) Upper antheridium and lower oogonium on the same plant
(d) Upper oogonium and lower antheridium on the same plant

109. Which one of the following shows isogamy with non-flagellated gametes? **[AIPMT 2014]**
(a) Sargassum
(b) Ectocarpus
(c) Ulothrix
(d) Spirogyra

110. Which one of the following is wrong about Chara? **[AIPMT 2014]**
(a) Upper oogonium and lower round antheridium
(b) Globule and nucule present on the same plant
(c) Upper antheridium and lower oogonium
(d) Globule is male reproductive structure

111. Which of the following is responsible for peat formation? **[AIPMT 2014]**
(a) Marchantia
(b) Riccia
(c) Funaria
(d) Sphagnum

112. An alga which can be employed as food for human being is - **[AIPMT 2014]**
(a) Ulothrix
(b) Chlorella
(c) Spirogyra
(d) Polysiphonia

113. In which of the following gametophyte is not independent/free living ? **[AIPMT 2015]**
(a) Marchantia
(b) Pteris
(c) Pinus
(d) Funaria

114. Read the following five statements (A to E) and select the option with all correct statements :- **[AIPMT 2015]**
(A) Mosses and Lichens are the first organisms to colonise a bare rock.
(B) Selaginella is a homosporous pteridophyte

(C) Coralloid roots in Cycas have VAM
(D) Main plant body in bryophytes is gametophytic, whereas in pteridophytes it is sporophytic
(E) In gymnosperms, male and female gametophytes are present within sporangia located on sporophyte
(a) (B), (C) and (D)
(b) (A), (D) and (E)
(c) (B), (C) and (E)
(d) (A), (C) and (D)

115. Male gemetes are flagellated in : **[AIPMT 2015]**
(a) Anabaena
(b) Ectocarpus
(c) Spirogyra
(d) Polysiphonia

116. Which one of the following statements is wrong ? **[AIPMT 2015]**
(a) Agar - agar is obtained from Gelidium and Gracilaria
(b) Chlorella and Spirulina are used as space food
(c) Mannitol is stored food in Rhodophyceae
(d) Algin and carragen are products of algae.

117. Which of the following pairs is not correctly matched? (Mode of reproduction – Example) **[RE-AIPMT 2015]**
(a) Conidia - Penicillium
(b) Offset - Water hyacinth
(c) Rhizome - Banana
(d) Binary fission – Sargassum

Answers

1-b	2-d	3-a	4-a	5-a	6-b	7-a	8-a	9-d	10-a
11-c	12-c	13-d	14-b	15-d	16-c	17-c	18-b	19-d	20-b
21-c	22-d	23-c	24-b	25-b	26-c	27-b	28-a	29-d	30-d
31-c	32-b	33-b	34-a	35-d	36-c	37-d	38-c	39-b	40-c
41-c	42-c	43-d	44-d	45-d	46-b	47-b	48-d	49-c	50-b
51-c	52-a	53-c	54-a	55-b	56-d	57-c	58-c	59-b	60-a
61-c	62-a	63-a	64-a	65-d	66-a	67-b	68-d	69-a	70-c
71-a	72-d	73-b	74-a	75-d	76-a	77-a	78-b	79-b	80-b
81-d	82-c	83-d	84-a	85-a	86-a	87-b	88-b	89-a	90-d
91-d	92-d	93-b	94-a	95-c	96-b	97-c	98-c	99-a	100-d
101-b	102-b	103-b	104-c	105-c	106-b	107-c	108-d	109-d	110-c
111-d	112-b	113-c	114-b	115-b	116-c	117-d			

4A

Animal Kingdom – Non-Chordate Phyla

1. Jelly fish belongs to class **[1989]**
(a) Hydrozoa (b) Scyphozoa
(c) Anthozoa (d) None of these

2. Earthworms are **[1989]**
(a) useful
(b) harmful
(c) more useful than harmful
(d) more harmful

3. Photoreceptors of earthworm occur on **[1989]**
(a) clitellum (b) many eyes
(c) dorsal surface (d) lateral sides

4. Transfer of Taenia to secondary host occurs as **[1989, 90]**
(a) oncosphere (b) cysticercus
(c) morula (d) egg

5. In hot summer and cold winter, the number of malaria cases as well as Anopheles declines, reappearance of malaria in humid warm conditions is due to **[1990]**
(a) surviving malarial parasites in human carriers
(b) surviving sporozoites in surviving mosquitoes
(c) monkeys
(d) mosquito larvae in permanent waters

6. Blood of Pheretima is **[1990]**
(a) blue with haemocyanin in corpuscles
(b) blue with haemocyanin in plasma
(c) red with haemoglobin in corpuscles
(d) red with haemoglobin in plasma

7. Pheretima posthuma is highly useful as **[1990]**
(a) their burrows make the soil loose
(b) they make the soil porous, leave their castings and take organic debris in the soil
(c) they are used as fish meal
(d) they kill the birds due to biomagnification of chlorinated hydrocarbons

8. Malpighian tubules are **[1990]**
(a) excretory organs of insects
(b) excretory organs of annelids
(c) respiratory organs of insects
(d) respiratory organs of annelids

9. Kala-azar and oriental sore are spread by **[1990]**
(a) housefly (b) bed bug
(c) sand fly (d) fruit fly

10. Bladderworm/cysticercus is the larval stage of **[1991]**
(a) tapeworm (b) roundworm
(c) pinworm (d) liver fluke

11. Earthworm possesses hearts **[1991]**
(a) 6 pair (b) 4 pair
(c) 2 pair (d) 1 pair

12. The excretory structures of flat worms/Taenia are **[1991]**
(a) flame cells
(b) protonephridia
(c) Malpighian tubules
(d) green glands

13. Which one occurs in Echinodermata? **[1991]**
(a) Bilateral symmetry
(b) Radial symmetry
(c) Porous body
(d) Soft skin

14. An insect regarded as greatest mechanical carrier of diseases is **[1991]**
(a) Pediculus (b) Cimex
(c) Musca (d) Xenopsylla

15. Male and female cockroaches can be distinguished externally through **[1991]**
(a) anal styles in male
(b) anal cerci in female
(c) anal style and antennae in females
(d) Both (b) and (c)

16. Metamorphosis of insects is regulated through hormone **[1991]**
(a) pheromone
(b) thyroxine
(c) ecdysone
(d) All of these

17. Ascaris lumbricoides infection occurs through **[1991]**
(a) sole of uncovered feet
(b) contaminated cooked measly pork
(c) improperly cooked measly pork
(d) from air through inhalation

18. Classification of Porifera is based on **[1991]**
(a) branching (b) spicules
(c) reproduction (d) symmetry

19. The simplest type of canal system in Porifera is **[1992]**
(a) ascon type (b) leucon type
(c) sycon type (d) radial type

20. Ascaris larva is called **[1992]**
(a) cysticercus (b) rhabditiform
(c) hexacanth (d) onchosphere

21. What is correct about Taenia? **[1992]**
(a) Male organs occur in posterior proglottids
(b) Male organs occur in anterior proglottids
(c) Female organs occur in anterior proglottids
(d) Mature proglottids contain both male and female organs

22. **Assertion:** Periplaneta americana is nocturnal, omnivorous, household pest **[1992]**
Reason: It is because it acts as scavenger
(a) A is true but R is false
(b) A is false but R is true
(c) Both A and R are true and R is correct explanation of A
(d) Both A and R are true but R is not correct explanation of A

23. Aristotle's lantern occurs in class **[1992]**
(a) Echinoidea (b) Asteroidea
(c) Holothuroidea (d) Ophiuroidea

24. Eye of the molluscan group that resembles vertebrate eye is **[1992]**
(a) Bivalvia (b) Gastropoda
(c) Pelecypoda (d) Cephalopoda

25. Star fish belongs to **[1992]**
(a) Asteriodea (b) Ophiuroidea
(c) Holothuroidea (d) Crinoidea

26. Adult Culex and Anopheles can be distinguished with the help of **[1992]**
(a) mouth parts/colour
(b) sitting posture
(c) antennae/wings
(d) feeding habits

27. Trachea of cockroach and mammal are similar in having **[1993]**
(a) paired nature
(b) non-collapsible walls
(c) ciliated inner lining
(d) origin from head

28. A larval stage occurs in the life history of all members of the group **[1993]**
(a) frog, lizard and cockroach
(b) Ascaris, housefly and frog
(c) housefly, earthworm and mosquito
(d) butterfly, frog and mosquito

29. What is true about Taenia saginata? **[1993]**
(a) Life history has pig as intermediate host
(b) There are two large suckers on scolex
(c) Rostellar hooks are absent
(d) Rostellum has double circle of hooks

30. Which one of the following animals possesses nerve cells but no nerves? **[1993]**
(a) Hydra (b) Tapeworm
(c) Earthworm (d) Frog's tadpole

31. Budding is a normal mode of asexual reproduction in **[1993]**
(a) starfish and Hydra
(b) Hydra and sponges
(c) tapeworm and Hydra
(d) sponge and starfish

32. Give the correct matching of causative agent/germ and disease **[1993]**
(a) Anopheles—malaria
(b) Leishmania—sleeping sickness
(c) Glossina—kala-azar
(d) Wuchereria—filariasis

33. Which one assists in locomotion? **[1993]**
(a) Trichocysts in Paramecium
(b) Pedicellariae of starfish
(c) Clitellum in Pheretima
(d) Posterior sucker in Hirudinaria

34. Coelom derived from blastocoel is known as **[1994]**
(a) enterocoelom (b) schizocoelom
(c) pseudocoelom (d) haemocoelom

35. Radial symmetry is often exhibited by animals having **[1994]**
(a) one opening of alimentary canal
(b) aquatic mode of living
(c) benthos/sedentary
(d) ciliary mode of feeding

36. Point out a non-parasite **[1994]**
(a) tapeworm (b) mosquito
(c) leech (d) sea anemone

37. Tube feet occur in **[1994]**
(a) cockroach (b) starfish
(c) cuttle fish (d) cat fish

38. Special character of coelenterates is **[1994]**
(a) polymorphism (b) nematocysts
(c) flame cells
(d) hermaphroditism

39. Closed circulatory system occurs in **[1994]**
(a) snail (b) cockroach
(c) cuttle fish (d) All of these

40. Which one belongs to Platyhelminthes? **[1994]**
(a) Schistosoma (b) Trypansoma
(c) Plasmodium (d) Wuchereria

41. The organisms attached to the substratum generally, possess **[1995]**
(a) radial symmetry
(b) one single opening of digestive canal
(c) asymmetrical body
(d) cilia on surface to create water current

42. True coelom is the space lying between the alimentary canal and body wall enclosed by the layers of **[1996]**
(a) ectoderm on both sides
(b) endoderm on one side and ectoderm on the other
(c) mesoderm on one side and ectoderm on the other
(d) mesoderm on both sides

43. Radial symmetry is usually associated with **[1996]**
(a) aquatic mode of life
(b) lower grade of organisation
(c) creeping mode of locomotion
(d) sedentary mode of life

44. What is true about all sponges without exception? **[1996]**
(a) They are all marine
(b) They have flagellated collar cells
(c) They have a mixed skeleton consisting of spicules and spongin fibres
(d) They reproduce only asexually by budding

45. Functionwise, just as there are nephridia in an earthworm, so are **[1996]**
(a) parotid glands in toad
(b) statocysts in prawn
(c) flame cells in liver fluke
(d) myotomes in fish

46. What is common among silver fish, scorpion, crab and honeybee? **[1997]**
(a) Compound eyes
(b) Poison glands
(c) Jointed appendages
(d) Metamorphosis

47. Most appropriate term to describe the life cycle of Obelia is **[1998]**
(a) neoteny (b) metagenesis
(c) metamorphosis (d) All of these

48. Solenocytes are the main excretory structures in **[1998]**
(a) annelids
(b) molluscs
(c) echinodermates
(d) Platyhelminthes

49. The canal system is a characteristic feature of **[1999]**
(a) echinoderms (b) helminthes
(c) coelenterates (d) sponges

50. Life-span of a worker bee is **[1999]**
(a) 10 weeks (b) 10 days
(c) 6 weeks (d) 15 days

51. Which one of the following statements is correct with reference to honey bees? **[2000]**
(a) Bees wax is a waste (excretory) product of honey bees
(b) Communication among honey bees was discovered by von Frisch
(c) Apis indica is largest wild bee in India
(d) Honey is predominantly sucrose and arabinose .

52. What is common between Ascaris lumbricoides and Anopheles stephensi? **[2000]**
(a) Hibernation
(b) Metamerism
(c) Anaerobic respiration
(d) Sexual dimorphism

53. The enteronephric nephridia of earthworms are mainly concerned with **[2000]**
(a) digestion
(b) respiration
(c) osmoregulation
(d) excretion of nitrogenous wastes

54. In which of the following chlorocruorin pigment is found ? **[2001]**
(a) Annelida
(b) Echinodermata
(c) Insecta
(d) Lower Chordata

55. In Hydra, waste material of food digestion and nitrogenous waste material are removed from **[2001]**
(a) mouth and mouth
(b) body wall and body wall
(c) mouth and body wall
(d) mouth and tentacles

56. In which animal, dimorphic nucleus is found ? **[2002]**
(a) Amoeba

(b) Trypanosoma gambiense
(c) Plasmodium vivax
(d) Paramecium caudatum

57. In which animal nerve cell is present but brain is absent ? **[2002]**
(a) Sponge
(b) Earthworm
(c) Cockroach
(d) Hydra

58. In Protozoa like Amoeba and Paramecium, an organelle is found for osmoregulation which is **[2002]**
(a) contractile vacuole
(b) mitochondria
(c) nucleus
(d) food vacuole

59. Ommatidia serve the purpose of photoreception in **[2003]**
(a) human
(b) sunflower
(c) cockroach
(d) frog

60. Which one of the following is matching pair of an animal and a certain phenomenon it exhibits ? **[2003]**
(a) Chameleon — Mimicry
(b) Taenia — Polymorphism
(c) Pheretima — Sexual dimorphism
(d) Musca — Complete metamorphosis

61. Given below are four matchings of an animal and its kind of respiratory organ **[2003]**
(i) silver fish — trachea
(ii) scorpion — book lung
(iii) sea squirt — pharyngeal gills
(iv) dolphin — skin
The correct matchings are
(a) (ii) and (iv)
(b) (iii) and (iv)
(c) (i) and (iv)
(d) (i), (ii) and (iii)

62. Sycon belongs to a group of animals, which are best described as **[2003]**
(a) multicellular with a gastrovascular system
(b) multicellular having tissue organization, but no body cavity
(c) unicellular or acellular
(d) multicellular without any tissue organization

63. The chief advantage of encystment of an Amoeba is **[2003]**
(a) protection from parasites and predators
(b) the chance to get rid of accumulated waste products
(c) the ability to survive during adverse physical conditions
(d) the ability to live for some time without ingesting food

64. During its life cyde, Fasciola hepatica (liver fluke) infects its intermediate host and primary host at the following larval stages respectively **[2003]**
(a) metacercaria and cercaria
(b) miracidium and metacercaria
(c) redia and miracidium
(d) cercaria and redia

65. The animal with bilateral symmetry in young stage and radial pentamerous symmetry in the adult stage belong to the phylum **[2004]**
(a) Annelida
(b) Mollusca
(c) Cnidaria
(d) Echinodermata

66. When a fresh water protozoan possessing a contractile vacuole, is placed in a glass containing marine water, the vacuole will **[2004]**
(a) increase in number
(b) disappear
(c) increase in size
(d) decrease in size

67. In Arthropoda, head and thorax are often fused to form cephalothorax, but in which one of the following classes, is the body divided into head, thorax and abdomen? **[2004]**
(a) Insecta
(b) Myriapoda
(c) Crustacea
(d) Arachnida and Crustacea

68. From the following statements select the wrong one. **[2005]**
(a) Millipedes have two pairs of appendages in each segment of the body
(b) Prawn has two pairs of antennae
(c) Animals belonging to phylum-Porifera are exclusively marine
(d) Nematocysts are characteristic of the phylum-Cnidaria

69. Which of the following unicellular organism has a macro-nucleus for trophic function and one or more micro-nuclei for reproduction ? **[2005]**
(a) Euglena
(b) Amoeba
(c) Paramecium
(d) Trypanosoma

70. Which one of the following is a matching set of phylum and its three examples ? **[2006]**
(a) Cnidaria — Bonellia, Physalia, Aurelia
(b) Platyhelminthes — Planaria, Schistosoma, Enterobius
(c) Mollusca — Loligo, Teredo, Octopus
(d) Porifera—Spongilla, Euplectella, Pennatula

71. Earthworms are **[2006]**
(a) ureotelic when plenty of water is available
(b) uricotelic when plenty of water is available
(c) uricotelic under conditions of water scarcity
(d) ammonotelic when plenty of water is available

72. Two common characters found in centipede, cockroach and crab are **[2006]**
(a) compound eyes and anal cerci
(b) jointed legs and chitinous exoskeleton
(c) green gland and tracheae
(d) book lungs and antennae

73. What is common about Trypanosoma, Noctiluca, Monocystis and Giardia ? **[2006]**
(a) These are all unicellular protists
(b) They have flagella
(c) They produce spores
(d) These are all parasites

74. Biradial symmetry and lack of cnidoblasts are the characteristics of **[2006]**
(a) Starfish and sea anemone
(b) Ctenoplana and Beroe
(c) Aurelia and Paramecium
(d) Hydra and starfish

75. Which one of the following is matching pair of a body feature and the animal possessing it? **[2007]**
(a) Post-anal tail – Octopus
(b) Ventral central nervous system – Leech
(c) Pharyngeal gills slits absent in embryo – Chameleon
(d) Ventral heart – Scorpion

76. What is true about Nereis, scorpion, cockroach and silver fish ? **[2007]**
(a) They all have jointed paired appendages
(b) They all possess dorsal heart
(c) None of them is aquatic
(d) They all belong to the same phylum

77. Which one of the following phyla is correctly matched with its two general characteristics? **[2008]**
(a) Arthropoda — Body divided into head, thorax and abdomen and respiration by tracheae
(b) Chordata — Notochord at some stage and separate

anal and urinary openings to the outside

(c) Echinodermata— Pentamerous radial symmetry and mostly internal fertilization

(d) Mollusca — Normally oviparous and development through a trochophore or veliger larva

78. Which one of the following groups of three animals each is correctly matched with their one characteristic morphological feature? **[2008]**

Animals	Morphological feature
(a) Liver fluke, sea anemone, sea cucumber	Bilateral symmetry
(b) Centipede, prawn, sea urchin	Jointed appendages
(c) Scorpion, spider, cockroach	Ventral solid central nervous system
(d) Cockroach, locust, Taenia	Metameric segmentation

79. Which one of the following is the true description about an animal concerned? **[2008]**

(a) Earthworm — The alimentary canal consists of a sequence of pharynx, oesophagus, stomach, gizzard and intestine

(b) Frog — Body divisible into three regions—head, neck and trunk

(c) Rat — Left kidney is slightly higher in position than the right one

(d) Cockroach — 10 pairs of spiracles (2 pairs on thorax and 8 pairs on abdomen)

80. Ascaris is characterized by **[2008]**

(a) absence of true coelom but presence of metamerism

(b) presence of neither true coelom nor metamerism

(c) presence of true coelom but absence of metamerism

(d) presence of true coelom and metamerism (metamerization)

81. Which one of the following is not a characteristic of phylum-Annelida? **[2008]**

(a) Closed circulatory system

(b) Segmentation

(c) Pseudocoelom

(d) Ventral nerve cord

82. Earthworms have no skeleton but during burrowing, the anterior end becomes turgid and acts as a hydraulic skeleton. It is due to **[2008]**

(a) coelomic fluid

(b) blood

(c) gut peristalsis

(d) setae

83. Which one of the following pair of items correctly belongs to the category of organs mentioned against it? **[2008]**

(a) Thorn of Bougainvillea and tendrils of Cucurbita - Analogous organs

(b) Nictitating membrane and blind spot in human eye - Vestigial organs

(c) Nephridia of earthworm and Malpighian tubules of cockroach - Excretory organs

(d) Wings of honey bee and wings of crow - Homologous organs

84. Which one of the following groups of animals is bilaterally symmetrical and triploblastic? **[2009]**

(a) Ctenophores (b) Sponges

(c) Coelenterates (Cnidarians)

(d) Aschelminthes (round worms)

85. If a live earthworm is pricked with a needle on its outer surface without damaging its gut, the fluid that comes out is: **[2009]**

(a) haemolymph
(b) slimy mucus
(c) excretory fluid
(d) coelomic fluid

86. Which one of the following correctly describes the location of some of parts in the earthworm *Pheretima*? **[2009]**

(a) One pair of ovaries attached at intesegmental septum of 14^{th} and 15^{th} segments.
(b) Two pairs of testes in 10^{th} and 11^{th} segments.
(c) Two pairs of accessory glands in 16-18 segments.
(d) Four pairs of spermathecae in 4-7 segments.

87. Peripatus is a connecting link between **[2009]**

(a) Annelida and Arthropoda
(b) Coelenterata and Porifera
(c) Ctenophora and Platyhelminthis
(d) Mollusca and Echinodermata

88. One example of animals having a single opening to the outside that serves both as mouth as well as anus is **[Pre. 2010]**

(a) *Octopus* (b) *Asterias*
(c) *Ascidia* (d) *Fasciola*

89. Which one of the following kinds of animals are triploblastic? **[Pre. 2010]**

(a) Flatworms (b) Sponges
(c) Ctenophores (d) Corals

90. Which one of the following statements about certain given animals is correct? **[Pre. 2010]**

(a) Round worms (Aschelminthes) are pseudocoelomates
(b) Molluses are acoelomates
(c) Insects are pseudocoelomates
(d) Flat worms (Platyhelminthes) are coelomates

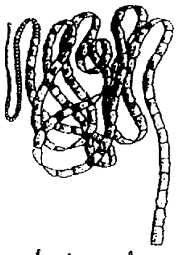
91. Which one of the following statements about all the four of Spongilla, Leech, Dolphin and Penguin is Correct? **[Pre. 2010]**

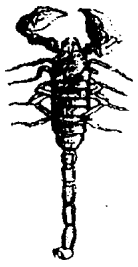
(a) Penguin is homoiothermic while the remaining three are poikilothermic
(b) Leech is a fresh water form while all others are marine
(c) Spongilla has special collared cells called choanocytes, not found in the remaining three
(d) All are bilaterally symmetrical

92. In which one of the following organisms its excretory *organs* are **correctly** stated ? **[2010]**

(1) Earthworm – Pharyngeal integumentary and septal nephridia
(2) Cockroach – Malpighian tubules and enteric caeca
(3) Frog – Kidneys, skin and buccal epithelium
(4) Humans – Kidneys, sebaceous glands and tear glands.

93. The figure shows four animals (1), (2), (3) and (4). Select the correct answer with respect to a common characteristics of two of these animals. **[Mains 2011]**

(1)  (2) 

(3)  (4) 

(a) (3) and (4) have a true coelom
(b) (1) and (4) respire mainly through body wall
(c) (2) and (3) show radial symmetry
(d) (1) and (2) have cnidoblasts for self defence.

94. Which one of the following have the highest number of species in nature ? **[Pre. 2011]**
(a) Fungi
(b) Insects
(c) Birds
(d) Angiosperms

95. Which one of the following structure in *Pheretima* is correctly matched with its function? **[Pre. 2011]**
(a) Typhlosole–Storage of extra nutrients
(b) Clitellum–secretes cocoon
(c) Gizzard–absorbs digested food
(d) Setae–defence against predators

96. One very special feature in the earthworm *Pheretima* is that **[Pre. 2011]**
(a) Fertilisation of eggs occurs inside the body
(b) The typhlosole greatly increases the effective absorption area of the digested food in the intestine
(c) The S-shaped setae embeded in the integument are the defensive weapons used against the enemies.
(d) It has a long dorsal tubular heart

97. Which of the following is correctly stated as it happens in the common cockroach ? **[Pre. 2011]**
(a) Malpighian tubules are excretory organs projecting out from the colon.
(b) Oxygen is transported by haemoglobin in blood.
(c) Nitrogenous excretory product is urea.
(d) The food is ground by mandibles and gizzard

98. Select the correct statement from the ones given below with respect to Periplaneta americana **[Pre. 2012]**
(a) There are 16 very long Malpighian tubules present at the junction of midgut and hindgut.
(b) Grinding of food is carried out only by the mouth parts
(c) Nervous system is locate dorsally , consists of segmentally arranged ganglia joined by a pair of longitudinal connectives
(d) Males bear a pair of short thread like anal styles

99. Pheretima and its close relative derive nourishment from **[Pre. 2012]**
(a) Soil insects
(b) Small pieces of fresh fallen leave of maize, etc
(c) Sugar roots
(d) Decaying fallen leave and soil organic matter

100. In which one of the following, the genus name, its two characters and its phylum are not correctly matched, whereas the remaining three are correct? **[Pre. 2012]**

	Genus Name	Two characters	Phylum
(a)	*Sycon*	(1) Pore bearing (2) Canal system	Porifera
(b)	*Periplaneta*	(1) Jointed appendages (2) Chitinuous exoskeleton	Arthropoda
(c)	*Pila*	(1) Body segmented (2) Mouth with Radula	Mollusca
(d)	*Asterias*	(1) Spiny skinned (2) Water vascular system	Echinodermata

101. Which of the following are correctly matched with respect of their taxonomic classification? **[2013]**
(a) Flying fish, cuttlefish, silverfish – Pisces
(b) Centipede, millipede, spider, scorpion–Insecta
(c) House fly, butterfly, tsetsefly, silverfish–Insecta

(d) Spiny anteater, sea urchin, sea cucumber–Echinodermata

102. Which group of animals belong to the same phylum ? **[2013]**

(a) Malarial parasite, *Amoeba*, Mosquito
(b) Earthworm, Pinworm, Tapeworm
(c) Prawn, Scorpion, *Locusta*
(d) Sponge, Sea anemone, Starfish

103. One of the representatives of Phylum Arthropoda is **[2013]**

(a) cuttlefish
(b) silverfish
(c) pufferfish
(d) flying fish

104. What external changes are visible after the last moult of a cockroach nymph ? **[2013]**

(a) Mandibles become harder
(b) Anal cerci develop
(c) Both fore wings and hind wings develop
(d) Labium develops

105. Infection of *Ascaris* usually occurs by : **[2013]**

(a) drinking water containing eggs of *Ascaris*
(b) eating imperfectly cooked pork
(c) Tse-tse fly
(d) mosquito bite

106. Select the Taxon mentioned that represents both marine and fresh water species **[AIPMT 2014]**

(a) Echinoderms
(b) Ctenophora
(c) Cephalochordata
(d) Cnidaria

107. Planaria possess high capacity of **[AIPMT 2014]**

(a) Metamorphosis
(b) Regeneration
(c) Alternation of generation
(d) Bioluminescence

108. Which of the following characteristics is mainly responsible for diversification of insects on land ? **[AIPMT 2015]**

(a) Bilateral symmetry
(b) Exoskeleton
(c) Eyes
(d) Segmentation

109. Metagenesis refers to : **[RE-AIPMT 2015]**

(a) Presence of a segmented body and parthenogenetic mode of reproduction
(b) Presence of different morphic forms
(c) Alternation of generation between asexual and sexual phases of an organism
(d) Occurrence of a drastic change in form during post-embryonic development

110. Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristics of phylum : **[RE-AIPMT 2015]**

(a) Protozoa
(b) Coelenterata
(c) Porifera
(d) Mollusca

Answers

1-b	2-a	3-c	4-a	5-d	6-d	7-b	8-a	9-c	10-a
11-b	12-a	13-b	14-c	15-a	16-c	17-b	18-b	19-a	20-b
21-d	22-a	23-a	24-d	25-a	26-b	27-b	28-d	29-c	30-a
31-b	32-d	33-d	34-c	35-c	36-d	37-b	38-b	39-c	40-a
41-a	42-d	43-b	44-b	45-c	46-c	47-b	48 -d	49-d	50-a
51-b	52-d	53-d	54-a	55-c	56-d	57-d	58-a	59-c	60-d
61-d	62-d	63-c	64-b	65-d	66-b	67-a	68-b	69-c	70-c
71-d	72-b	73-a	74-b	75-b	76-c	77-a	78-c	79-d	80-b
81-c	82-a	83-c	84-d	85-d	86-b	87-a	88-d	89-a	90-a
91-c	92-a	93-a	94-b	95-b	96-b	97-d	98-d	99-d	100-c
101-c	102-c	103-b	104-c	105-a	106-d	107-b	108-b	109-c	110-c

4B

Animal Kingdom – Phylum Chordata

1. A chordate character is **[1989]**
(a) gills
(b) spiracles
(c) post-anal tail
(d) chitinous exoskeleton

2. Fish which can be used in biological control of mosquitoes/larvicidal fish is **[1989,1999, 2001]**
(a) eel
(b) carp
(c) cat fish
(d) Gambusia

3. Eutherians are characterised by **[1989]**
(a) hairy skin
(b) true placentation
(c) ovoviviparity
(d) glandular skin

4. Flight muscles of bird are attached to **[1989]**
(a) clavicle
(b) keel of sternum
(c) scapula
(d) coracoid

5. Wish bone of birds is formed from **[1989]**
(a) pelvic girdle
(b) skull
(c) hindlimbs
(d) pectoral girdle/clavicles

6. Skin is a respiratory organ in **[1990]**
(a) lizards
(b) birds
(c) primitive mammals
(d) frog

7. Penguin occurs in **[1990]**
(a) Australia
(b) Antarctica
(c) Africa
(d) America

8. Kidney of adult rabbit is **[1991]**
(a) pronephros
(b) metanephros
(c) mesonephros
(d) opisthonephros

9. Bull frog of India is **[1992]**
(a) Rana tigrina
(b) R. sylvatica
(c) R. Catesbiana
(d) R. esculenta

10. An egg laying mammal is **[1992, 2000]**
(a) kangaroo
(b) platypus
(c) koala
(d) whale

11. Sound box of birds is called **[1992]**
(a) pygostyle (b) larynx
(c) syrinx (d) synsacrum

12. Gorilla, chimpanzee, monkeys and human belong to the same **[1993]**
(a) species (b) genus
(c) family (d) order

13. What is common in whale, bat and rat? **[1993, 2000, 04]**
(a) Absence of neck
(b) Muscular diaphragm between thorax and abdomen
(c) Extra-abdominal testes to avoid high temperature of body
(d) Presence of external ears

14. Mucus helps frog in forming **[1993]**
(a) thick skin
(b) dry skin
(c) smooth skin
(d) moist skin

15. All vertebrates possess **[1993]**
(a) renal portal system
(b) dorsal, hollow central nervous system
(c) four chambered ventral heart
(d) pharyngeal gill slits

16. What is common between ostrich, penguin and kiwi? **[1993]**
(a) Running birds
(b) Migratory birds
(c) Flightless birds
(d) Four toed birds

17. Golden era/age of reptiles is **[1994]**
(a) Palaeozoic
(b) Mesozoic
(c) Recent
(d) Proterozoic

18. A common characteristic of all vertebrates is **[1994]**
(a) presence of skull
(b) division of body into head, neck, trunk and tail
(c) presence of two pairs of functional appendages
(d) body is covered with an exoskeleton

19. Closed circulatory system occurs in **[1994]**
(a) cockroach
(b) tadpole/fish
(c) mosquito
(d) house fly

20. All chordates possess **[1994]**
(a) exoskeleton
(b) limbs
(c) skull
(d) axial skeletal rod of notochord

21. Besides Annelida and Arthropoda, the metamerism is exhibited by **[1995]**
(a) Cestoda (b) Chordata
(c) Mollusca (d) Acanthocephala

22. Which one of the following is an exotic Indian fish? **[1996]**
(a) Catla catla
(b) Heteropneustes fossilis
(c) Cyprinus caprio
(d) Labeo rohita

23. Pneumatic bones are expected to be found in **[1996]**
(a) pigeon
(b) house lizard
(c) frog's tadpole
(d) flying fish

24. The flightless bird Cassowary is found in **[1996]**
(a) Mauritius
(b) Australia
(c) New Zealand
(d) Indonesia

25. The long bones are hollow and connected by air passage. They are the characteristics of **[1998]**
(a) Aves (b) mammals
(c) Reptilia (d) land vertebrates

26. Which of the following is not found in birds? **[1999]**
(a) Hindlimb (b) Pectoral girdle
(c) Pelvic girdle (d) Forelimb

27. In which of the following animal, post-anal tail is found? **[2001]**
(a) Earthworm (b) Lower invertebrate
(c) Scorpion (d) Snake

28. In which of the following notochord is present in embryonic stage ? **[2002]**
(a) All chordates (b) Some chordates
(c) Vertebrates (d) Non-chordates

29. Presence of gills in the tadpole of frog indicates that **[2004]**
(a) fishes were amphibious in the past
(b) fishes evolved from frog like ancestors
(c) frogs will have gills in future
(d) frogs evolved from gilled ancestors

30. A terrestrial animal must be able to **[2004]**
(a) excrete large amounts of water in urine
(b) conserve water
(c) actively pump salts out through the skin
(d) excrete large amounts of salts in urine

31. Which one of the following characters is not typical of the class-Mammalia ? **[2005]**
(a) Seven cervical vertebrae
(b) Thecodont dentition
(c) Ten pairs of cranial nerves
(d) Alveolar lungs

32. Which one of the following is not a living fossil ? **[2006]**
(a) King crab (b) Sphenodon
(c) Archaeopteryx (d) Peripatus

33. In which one of the following sets of animals do all the four give birth to young ones?
(a) Lion, bat, whale, ostrich **[2006]**
(b) Platypus, penguin, bat, hippopotamus
(c) Shrew, bat, cat, kiwi
(d) Kangaroo, hedgehog, dolphin, loris

34. What is common between parrot, platypus and kangaroo ? **[2007]**
(a) Homeothermy (b) Toothless jaws
(c) Functional post-anal tail
(d) Oviparity

35. Which of the following pairs are correctly matched ? **[2007]**

Animals	Morphological features
(i) Crocodile	— 4-chambered heart
(ii) Sea urchin	— Parapodia
(iii) Obelia	— Metagenesis
(iv) Lemur	— Thecodont

(a) (i), (iii) and (iv) (b) (ii), (iii) and (iv)
(c) Only (i) and (iv) (d) Only (i) and (ii)

36. What is common to whale, seal and shark ?
(a) Seasonal migration **[2007]**
(b) Thick subcutaneous fat
(c) Convergent evolution
(d) Homeothermy

37. Which one of the following in birds, indicates their reptilian ancestry? **[2008]**
(a) Scales on their hind limbs
(b) Four chambered heart
(c) Two special chambers crop and gizzard in their digestive tract
(d) Eggs with a calcareous shell

38. Which one of the following pairs of animals comprises 'jawless fishes' ? **[2009]**
(a) Lampreys and hag fishes
(b) Guppies and hag fishes
(c) Lampreys and eels
(d) Mackerals and Rohu

39. Crocodile and Penguin are similar to Whale and Dogfish in which one of the following features ? **[Mains 2010]**
(a) Lay eggs and guard them till they hatch.
(b) Possess bony skeleton
(c) Have gill slits at some stage
(d) Possess a solid single stranded central nervous system.

40. What will you look for to identify the sex of the following ? **[Pre. 2011]**
(a) Female Ascaris-Sharply curved posterior end

(b) Male frog-A copulatory pad on the first digit of the hind limb.
(c) Female cockroach-Anal cerci
(d) Male shark-Claspers borne on pelvic fins

41. Which one of the following groups of animals is correctly matched with its one characteristic feature without even a single exception ? **[Pre. 2011]**
(a) *Reptilia* : Possess 3-chambered heart with one incompletely divided ventricle
(b) *Chordata* : Possess a mouth provided with an upper and a lower jaw
(c) *Chondrichthyes* : Possess cartilaginous endoskeleton
(d) *Mammalia* : Give birth to young ones

42. In which one of the following the genus name, its two characters and its class/phylum are correctly matched ? **[Pre. 2011]**

	Genus name	Two characters	Class/ Phylum
(a)	*Ascaris*	(1) Body segmented (2) Males and females distinct	Annelida
(b)	*Salamendra*	(1) A tympanum represents ear (2) Fertilization is external	Amphibia
(c)	*Pteropus*	(1) Skin prossesses hair (2) Oviparous	Mammalia
(d)	*Aurelia*	(1) Cnidoblasts (2) Organ level of organization	Coelenterata

43. Frogs differ from the humans in possessing : **[Pre. 2011]**
(a) Thyroid as well as parathyroid
(b) Paired cerebral hemispheres
(c) Hepatic portal system
(d) Nucleated red blood cells

44. Ureters act as urinogenital ducts in **[Pre. 2011]**
(a) frog's males
(b) human males
(c) human females
(d) frog's both males and females

45. Consider the following four statements (A-D) related to the common frog *Rana tigrina,* and select the correct option stating which ones are true (T) and which ones are false (F). **[Pre. 2011]**
Statements :
(A) On dry land it would die due to lack of O_2 if its mouth is forcibly kept closed for a new days
(B) It has four-chambered heart
(C) On dry land it turns uricotelic from ureotelic
(D) Its life-history is carried out in pond water
Options :

	(A)	(B)	(C)	(D)
(a)	F	T	T	F
(b)	T	F	F	T
(c)	T	T	F	F
(d)	F	F	T	T

46. Which one of the following statement is totally wrong about the occurrence of *notochord* while the other three are correct ? **[Mains 2011]**
(a) It is present through life in *Amphioxus*
(b) It is present only in larval tail in *Ascidians*
(c) It is replaced by a vertebral column in adult frog
(d) It is absent throughout life in humans from *the* very beginning

47. Which one of the following categories of animals, is correctly described with no single exception in it ? **[Mains 2012]**
(a) All bony fishes have four pairs of gills and an operculum on each side.
(b) All sponges are marine and have collared cells.
(c) All mammals are viviparous and possess diaphragm for breathing.
(d) All reptiles possess scales, have a three chambered heart and are cold blooded (poikilothermal).

48. Which one of the following pairs of animals are similar to each other pertaining to the feature stated against them ? **[Mains 2012]**

(a) Garden lizard and Crocodile - Three chambered heart
(b) Ascaris and Ancylostoma - Metameric segmentation
(c) Sea horse and Flying fish - Cold blooded (poikilothermal)
(d) Pteropus and Ornithorhyncus- Viviparity

49. Which one of the following characteristics is common both in humans and adult frogs?
(a) Internal fertilization **[Pre. 2012]**
(b) Nucleated RBCs
(c) Ureotelic mode of excretion
(d) Four – chambered heart

50. Compared to those of humans , the erythrocytes in frog are **[Pre. 2012]**
(a) very much smaller and fewer
(b) nucleated and without haemoglobin
(c) without nucleus but with haemoglobin
(d) nucleated and with haemoglobin

51. Match the name of the animal (Column I), with one characteristics (Column II), and the phylum / class (column III) to which it belongs : **[2013]**

	Column I	**Column II**	**Column III**
(a)	*Petromyzon*	Ectoparasite	Cyclostomata
(b)	*Ichthyophis*	Terrestrial	Reptilia
(c)	*Limulus*	Body covered by chitinous exoskeleton	Pisces
(d)	*Adamsia*	Radially symmetrical	Porifera

52. A marine cartilaginous fish that can produce electric current is **[AIPMT 2014]**
(a) Pristis (b) Torpedo
(c) Trygon (d) Scoliodon

53. Which of the following endoparasites of humans does show viviparity ? **[AIPMT 2015]**
(a) Enterobius vermicularis
(b) Trichinella spiralis
(c) Ascaris lumbricoides
(d) Ancylostoma duodenale

54. Which of the following animals is not viviparous? **[AIPMT 2015]**
(a) Elephant (b) Platypus
(c) Whale (d) Flying fox (Bat)

55. Which of the following represents the correct combination without any exception? Characteristics Class **[AIPMT 2015]**
(a) Mouth ventral, gills without operculum; skin with placoid scales; persistent notochord-Chondrichthyes
(b) Sucking and circular mouth; jaws absent, integument without scales; paired appendages-Cyclostomata
(c) Body covered with feathers; skin moist and glandular; fore-limbs form wings; lungs with air sacs- Aves
(d) Mammary gland; hair on body; pinnae; two pairs of Limbs - Mammalia.

56. Which one of the following animals has two separate circulatory pathways ? **[RE-AIPMT 2015]**
(a) Shark (b) Frog
(c) Lizard (d) Whale

57. A jawless fish, which lays eggs in fresh water and whose ammocoete larvae after metamorphosis return to the ocean is : **[RE-AIPMT 2015]**
(a) Petromyzon (b) Eptatretus
(c) Myxine (d) Neomyxine

Answers

1-c	**2-d**	**3-b**	**4-b**	**5-d**	**6-d**	**7-b**	**8-b**	**9-a**	**10-b**
11-c	**12-d**	**13-b**	**14-d**	**15-b**	**16-c**	**17-b**	**18-a**	**19-b**	**20-d**
21-b	**22-c**	**23-a**	**24-b**	**25-a**	**26-d**	**27-d**	**28-a**	**29-d**	**30-b**
31-c	**32-c**	**33-d**	**34-a**	**35-a**	**36-c**	**37-a**	**38-a**	**39-c**	**40-d**
41-c	**42-b**	**43-d**	**44-a**	**45-b**	**46-d**	**47-a**	**48-c**	**49-c**	**50-d**
51-a	**52-b**	**53-b**	**54-b**	**55-a**	**56-d**	**57-a**			

5

MORPHOLOGY OF FLOWERING PLANTS

1. Floral formula of tomato/tobacco is **[1989, 92]**

(a) $\oplus\,\male\!\!\female\, K_{4-5}A_{10}G_{(2)}$

(b) $\oplus\,\male\!\!\female\, K_{2+2}\,C_4A_{2+4}G_1$

(c) $\oplus\,\male\!\!\female\, P_2A_3G_1$

(d) $Br\,\oplus\,\male\!\!\female\, K_{(5)}C_{(5)}A_5G_{(2)}$

2. Mango juice is got from **[1989]**

(a) epicarp
(b) mesocarp
(c) endocarp
(d) pericarp and thalamus

3. A family delimited by type of inflorescence is **[1990]**

(a) Fabaceae (b) Asteraceae
(c) Solanaceae. (d) Liliaceae

4. New banana plants develop from **[1990]**

(a) rhizome (b) sucker
(c) stolon (d) seed

5. Oil reserve of groundnut is present in **[1990]**

(a) embryo (b) cotyledons
(c) endosperm (d) underground tubers

6. Botanical name of cauliflower is **[1991]**

(a) Brassica oleracea var. capitata
(b) Brassica campestris
(c) Brassica oleracea var. botrytis
(d) Brassica oleracea var. gemmifera

7. Epipetalous and syngenesious stamens occur in **[1991]**

(a) Solanaceae (b) Brassicaceae
(c) Fabaceae (d) Asteraceae

8. Vegetative reproduction of Agave occurs through **[1991]**

(a) rhizome (b) stolon
(c) bulbils (d) sucker

9. Fruit of Mangifera indica is **[1991]**

(a) berry (b) drupe
(c) capsule (d) siliqua

10. Hypanthodium is **[1994]**

(a) thalamus (b) fruit
(c) inflorescence (d) ovary

11. Plant having column of vascular tissues, bearing fruits and having a tap root system is **[1994]**

(a) monocot (b) dicot
(c) gymnosperm or dicot
(d) gymnosperm or monocot

12. A perennial plant differs from biennial in **[1994]**

(a) having underground perennating structure

(b) having asexual reproductive structures
(c) being tree species
(d) not dying after seasonal production of flowers

13. Buttress roots are found in **[1995]**
(a) Sorghum (b) Banyan
(c) Terminalia (d) Pandanus

14. Tetradynamous stamens are found in family **[1995, 2001]**
(a) Malvaceae (b) Solanaceae
(c) Cruciferae (d) Liliaceae

15. Which part of the coconut produces coir? **[1996]**
(a) Seed coat (b) Mesocarp
(c) Epicarp (d) Pericarp

16. Which one of the following is a true fruit? **[1996]**
(a) Apple (b) Pear
(c) Cashewnut (d) Coconut

17. Heterospory and seed habit are often discussed in relation to a structure called **[1997]**
(a) spathe (b) bract
(c) petiole (d) ligule

18. The embryo in sunflower has **[1998]**
(a) one cotyledon
(b) two cotyledons
(c) many cotyledons
(d) no cotyledon

19. Floral features are chiefly used in angiosperms identification because **[1998]**
(a) flowers are of various colours
(b) flowers can be safely pressed
(c) reproductive parts are more stable and conservative than vegetative parts
(d) flowers are nice to work with

20. Edible part in litchi is **[1999, 2005, 06]**
(a) mesocarp (b) fleshy aril
(c) endosperm (d) pericarp

21. Angiosperm to which the largest flowers belong is **[1999]**
(a) total stem parasite
(b) partial stem parasite
(c) total root parasite
(d) partial root parasite

22. The plant, which bears clinging roots, is **[1999]**
(a) Trapa (b) orchid
(c) screw pine (d) Podostemon

23. The type of placentation in which ovary is syncarpous, unilocular and ovules on sutures is called **[1999]**
(a) apical placentation
(b) parietal placentation
(c) marginal placentation
(d) superficial placentation

24. Match the following and indicate which is correct? **[2000]**
(a) Cucurbitaceae — Orange
(b) Malvaceae — Cotton
(c) Brassicaceae — Wheat
(d) Leguminosae — Sunflower

25. What is eye of potato? **[2001]**
(a) Axillary bud
(b) Accessory bud
(c) Adventitious bud
(d) Apical bud

26. Which is correct pair for edible part? **[2001]**
(a) Tomato — Thalamus
(b) Maize — Cotyledons
(c) Guava — Mesocarp
(d) Date palm — Pericarp

27. Edible part of banana is **[2001]**
(a) epicarp
(b) mesocarp and less developed endocarp
(c) endocarp and less developed mesocarp
(d) epicarp and mesocarp

28. Bicarpellary gynoecium and oblique ovary occurs in **[2001]**

(a) mustard (b) banana
(c) Pisum (d) brinjal

29. Roots of which plant contains an oxidising agent? **[2001]**
(a) Carrot (b) Soyabean
(c) Mustard (d) Radish

30. Which of the following is a correct pair? **[2002]**
(a) Cuscuta — Parasite
(b) Dischidia — Insectivorous
(c) Opuntia — Predator
(d) Capsella — Hydrophyte

31. Edible part in mango is **[2002, 04]**
(a) mesocarp (b) epicarp
(c) endocarp (d) epidermis

32. Geocarpic fruit is **[2002]**
(a) potato (b) groundnut
(c) onion (d) garlic

33. Juicy hair-like structures observed in the lemon fruit develop from **[2003]**
(a) mesocarp and endocarp
(b) exocarp
(c) mesocarp
(d) endocarp

34. What type of placentation is seen in sweet pea? **[2006]**
(a) Axile (b) Free central
(c) Marginal (d) Basal

35. Pineapple (ananas) fruit develops from **[2006]**
(a) a multipistillate syncarpous flower
(b) a cluster of compactly borne flowers on a common axis
(c) a multilocular monocarpellary flower
(d) a unilocular polycarpellary flower

36. Long filamentous threads protruding at the end of the young cob of maize are **[2006]**
(a) styles (b) ovaries
(c) hairs (d) anthers

37. In a cereal grain the single cotyledon of embryo is represented by **[2006]**
(a) scutellum (b) prophyll
(c) coleoptile (d) coleorhiza

38. Dry indehiscent single-seeded fruit formed from bicarpellary syncarpous inferior ovary is **[2008]**
(a) caryopsis (b) cypsela
(c) berry (d) cremocarp

39. The fruit is chambered, developed from inferior ovary and has seeds with succulent testa in **[2008]**
(a) pomegranate (b) orange
(c) guava (d) cucumber

40. The fleshy receptacle of syconous of fig encloses a number of **[2008]**
(a) achenes (b) samaras
(c) berries (d) mericarps

41. The floral formula $\oplus\, ♂♀\, K_{(5)}\ \overset{\frown}{C_{(5)}}\ A_5\ \underline{G_{(2)}}$ is that of **[2009]**
(a) Sunnhemp (b) Tobacco
(c) Tulip (c) Soyabean

42. A fruit developed from hypanthodium inflorescence is called **[2009]**
(a) Syconus (b) Caryopsis
(c) Hesperidium (d) Sorosis

43. An example of axile placentation is **[2009]**
(a) Lemon (b) Marigold
(c) Argemone (d) Dianthus

44. In unilocular ovary with a single ovule the placentation is : **[Pre. 2010]**
(a) Marginal (b) Basal
(c) Free Central (d) Axile

45. Keel is characteristic of the flowers of **[Pre. 2010]**
(a) Gulmohur (b) *Cassia*
(c) *Calotropis* (d) Bean

46. Ovary is half-inferior in the flowers of: **[Pre. 2010]**
(a) Guava (b) Plum
(c) Brinjal (d) Cucumber

47. Male and female gametophytes are independent and free-living in **[Pre. 2010]**
(a) Mustard
(b) Castor
(c) Pinus
(d) Sphagnum

48. The technical term used for the androecium in a flower of China rose (Hibiscus rosa sinensis) is : **[Pre. 2010]**
(a) Monadelphous
(b) Diadelphous
(c) Polyandrous
(d) Polyadelphous

49. Consider the following four statements A, B, C and D and select the right option for two correct statements : **[Mains 2010]**
(A) In vexillary aestivation, the large posterior petal is called - *standard*, two lateral ones are *wings* and two small anterior petals are termed *keel*.
(B) The floral formula for Liliaceae is $\oplus \, ♀ \, P_{3+3} \, A_{3+3} G_{\underline{3}}$
(C) In pea flower the stamens are monadelphous
(D) The floral formula for Solanaceae is $\oplus \, ♂ \, K_{(3)} C_{(3)} A_{(4)} A_{(2)}$
The correct statements are :-
(a) (A) and (B)
(b) (B) and (C)
(c) (C) and (D)
(d) (A) and (C)

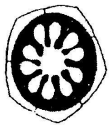
50. Vegetative propagation in *Pistia* occurs by : **[Mains 2010]**
(a) Offset
(b) Runner
(c) Sucker
(d) Stolen

51. Which one of the following is monoecious ? **[Mains 2010]**
(a) *Cycas* (b) *Pinus*
(c) *Date plam* (d) *Marchantia*

52. The corect floral formula of soyabean is :- **[Mains 2010]**
(a) $\% \, ♂ \, K_5 C_{1+(2)+2} A_{(9)+1} G_1$
(b) $\% \, ♂ \, K_{(5)} C_{1+2+(2)} A_{(9)+1} G_1$
(c) $\% \, ♂ \, K_5 C_{1+(2)+2} A_{(9)+1} G_1$
(d) $\% \, ♂ \, K_{(5)} C_{1+(2)+2} A_{(9)+1} G_1$

53. Aestivation of petals in the flower of cotton is correctly shown in **[Mains 2010]**
(a)  (b) 
(c)  (d) 

54. Which one of the following is a xerophytic plant which the stem is modified into a flat, green a succulent structure ? **[Mains 2010]**
(a) Casuarina (b) *Hydrilla*
(c) *Acacia* (d) *Opuntia*

55. Which one of the following diagrams represents the placentation in *Dianthus* ? **[Mains 2011]**
(a)  (b) 
(c)  (d) 

56. Sweet potato is homologous to **[Mains 2011]**
(a) Turnip (b) Potato
(c) Colocasia (d) Ginger

57. Whorled, simple leaves with reticulate venation are present in **[Mains 2011]**
(a) *Alstonia*
(b) *Calotropis*
(c) Neem
(d) China rose

58. Which one of the following pairs is wrongly matched while the remaining three are correct ? **[Mains 2011]**
(a) *Agave* – Bulbils
(b) *Penicillium* – Conidia
(c) Water hyacinth – Runner
(d) *Bryophyllum* - Leaf buds

59. The "Eyes" of the potato tuber are **[Pre. 2011]**
(a) Root buds
(b) Flower buds
(c) Shoot buds
(d) Axillary buds

60. Which one of the following statements is correct ? **[Pre. 2011]**
(a) In tomato, fruit is a capsule
(b) Seeds of orchids have oil-rich endosperm
(c) Placentation in *Primrose* is basal
(d) Flower of tulip is a modified shoot

61. The correct floral formula of chilli is **[Pre. 2011]**
(a) $\oplus \male\!\!\female K_{(5)}C_5A_5G_{(2)}$ (b) $\oplus \male\!\!\female K_{(5)}\overset{\frown}{C_{(5)}}A_5G_{(2)}$
(c) $\oplus \male\!\!\female K_{(5)}C_{(5)}A_{(5)}G_{\underline{2}}$ (d) $\oplus \male\!\!\female K_5\overset{\frown}{C_5}A_{(5)}G_{\underline{2}}$

62. Flowers are Zygomorphic in **[Pre. 2011]**
(a) Mustard (b) Gulmohur
(c) Tomato (d) Datura

63. The ovary is half inferior in flowers of **[Pre. 2011]**
(a) Peach (b) Cocumber
(c) Cotton (d) Guava

64. A drupe develops in **[Pre. 2011]**
(a) Mango (b) Wheat
(c) Pea (d) Tomato

65. How many plants in the list given below have marginal placentation ? **[Mains 2012]**
Mustard, Gram, Tulip, Asparagus, Arhar, Sunhemp, Chilli, Colchicine, Onion, Moong, Pea, Tobacco, Lupin
(a) Five (b) Six
(c) Three (d) Four

66. Cuscuta is an example of **[Mains 2012]**
(a) Brood parasitism
(b) Predation
(c) Endoparasitism
(d) Ectoparasitism

67. Which one of the following organisms is correctly matched with its three characteristics? **[Mains 2012]**
(a) Tomato : Twisted aestivation, Axile placentation, Berry
(b) Onion : Bulb, Imbricate aestivation, Axile placentation
(c) Maize : C3 pathway, Closed vascular bundles, Scutellum
(d) Pea : C3 pathway, Endospermic seed, Vexillary aestivation

68. Read the following four statements (A-D) **[Mains 2012]**
(A) Both, photophosphorylation and oxidative phosphorylation involve uphill transport of protons across the membrane
(B) In dicot stems, a new cambium originates from cells of pericycle at the time of secondary growth
(C) Stamens in flowers of Gloriosa and Petunia are polyandrous
(D) Symbiotic nitrogen-fixers occur in free-living state also in soil
How many of the above statements are right
(a) Three (b) Four
(c) One (d) Two

69. Placentation in tomato and lemon is **[Pre. 2012]**
(a) Marginal
(b) Axile
(c) Parietal
(d) Free-central

70. Vexillary aestivation is characteristic of the family **[Pre. 2012]**
(a) Solanaceae
(b) Brassicaceae

(c) Fabaceae
(d) Asteraceae

71. Phyllode is present in **[Pre. 2012]**
(a) Australian Acacia
(b) *Opuntia*
(c) *Asparagus*
(d) *Euphorbia*

72. How many plants in the list given below have composite fruits that develop from an inflorescence? Walnut, poppy, radish, fig, pineapple, apple, tomato, mulberry **[Pre. 2012]**
(a) Two (b) Three
(c) Four (d) Five

73. Cymose inflorescence is present in **[Pre. 2012]**
(a) *Trifolium*
(b) *Brassica*
(c) *Solanum*
(d) *Sesbania*

74. The coconut water and the edible part of coconut are equivalent to **[Pre. 2012]**
(a) Mesocarp
(b) Embryo
(c) Endosperm
(d) Endocarp

75. The ..... consists of many free pistils in flowers of **[Pre. 2012]**
(a) Papaver
(b) Michelia
(c) Aloe
(d) Tomato

76. Which one of the following is correctly matched ? **[Pre. 2012]**
(a) Chlamydomonas - Conidia
(b) Yeast-Zoospores
(c) Onion-Bulb
(d) Ginger-sucker

77. Among bitter gourd, mustard, brinjal, pumpkin, china rose, lupin, cucumber, sunnhemp, gram, guava, bean, chilli, plum, petunia, tomato, rose, withania, potato, onion, aloe and tulip how many plants have hypogynous flower ? **[2013]**
(a) Six (b) Ten
(c) Fifteen (d) Eighteen

78. In china rose the flowers are **[2013]**
(a) Actinomorphic, hypogynous with twisted aestivation
(b) Actinomorphic, epigynous with valvate aestivation
(c) Zygomorphic, hypogynous with imbricate aestivation
(d) Zygomorphic, epigynous with twisted aestivation

79. Placenta and pericarp are both edible portions in **[AIPMT 2014]**
(a) Apple
(b) Banana
(c) Tomato
(d) Potato

80. When the margins of sepals or petals overlap one another without any particular direction, the condition is termed as **[AIPMT 2014]**
(a) Vexillary
(b) Imbricate
(c) Twisted
(d) Valvate

81. Which one of the following statements is correct? **[AIPMT 2014]**
(a) The seed in grasses is not endospermic
(b) Mango is a parthenocarpic fruit
(c) A proteinaceous aleurone layer is present in maize grain
(d) A sterile pistil is called a staminode

82. An example of edible underground stem is **[AIPMT 2014]**
(a) Carrot
(b) Groundnut
(c) Sweet potato (d) Potato

83. An aggregate fruit is one which develops from **[AIPMT 2014]**

(a) Multicarpellary syncarpous gynoecium
(b) Multicarpellary apocarpus gynoecium
(c) Complete inflorescence
(d) Multicarpellary superior ovary

84. Leaves become modified into spines in : **[AIPMT 2015]**

(a) Pea (b) Onion
(c) Silk Cotton (d) Opuntia

85. $\oplus \text{⚥} \; K_{(5)} \; \overset{\frown}{C_{(5)} \; A_5} \; \underline{G}_{(2)}$ is the floral formula of : **[AIPMT 2015]**

(a) Sesbania (b) Petunia
(c) Brassica (d) Allium

86. Keel is the characteristic feature of flower of: **[AIPMT 2015]**

(a) Indigofera (b) Aloe
(c) Tomato (d) Tulip

87. Perigynous flowers are found in - **[AIPMT 2015]**

(a) Cucumber (b) China rose
(c) Rose (d) Guava

88. Axile placentation is present in : **[RE-AIPMT 2015]**

(a) Argemone (b) Dianthus
(c) Lemon (d) Pea

89. The wheat grain has an embryo with one large, shield-shaped cotyledon known as : **[RE-AIPMT 2015]**

(a) Coleoptile (b) Epiblast
(c) Coleorrhiza (d) Scutellum

90. Among china rose, mustard, brinjal, potato, guava, cucumber, onion and tulip, how many plants have superior ovary? **[RE-AIPMT 2015]**

(a) Four (b) Five
(c) Six (d) Three

91. Flowers are unisexual in : **[RE-AIPMT 2015]**

(a) Onion (b) Pea
(c) Cucumber (d) China rose

92. Roots play insignificant role in absorption of water in : **[RE-AIPMT 2015]**

(a) Wheat (b) Sunflower
(c) Pistia (d) Pea

Answers

1-d	2-b	3-b	4-b	5-b	6-c	7-d	8-c	9-b	10-c
11-b	12-d	13-c	14-c	15-b	16-d	17-d	18-b	19-c	20-b
21-c	22-b	23-b	24-b	25-a	26-d	27-b	28-d	29-b	30-a
31-a	32-b	33-d	34-c	35-b	36-a	37-a	38-b	39-a	40-a
41-b	42-a	43-a	44-b	45-d	46-b	47-c	48-a	49-a	50-a
51-b	52-c	53-c	54-d	55-c	56-a	57-a	58-c	59-d	60-d
61-b	62-b	63-a	64-a	65-b	66-d	67-b	68-d	69-b	70-c
71-a	72-b	73-c	74-c	75-b	76-c	77-c	78-a	79-c	80-b
81-c	82-d	83-b	84-d	85-b	86-a	87-c	88-c	89-d	90-c
91-c	92-c								

6

ANATOMY OF FLOWERING PLANT

1. Out of diffuse porous and ring porous woods, which is correct? **[1989]**
(a) Ring porous wood, carries more water for short period
(b) Diffuse porous wood carries more water
(c) Ring porous wood carries more water when need is higher
(d) Diffuse porous wood is less specialized but conducts water rapidly through out

2. Organization of stem apex into corpus and tunica is determined mainly by **[1989]**
(a) planes of cell division
(b) regions of meristematic activity
(c) rate of cell growth
(d) rate of shoot tip growth

3. For union between stock and scion in grafting which one is the first to occur? **[1990]**
(a) Formation of callus
(b) Production of plasmodesmata
(c) Differentiation of new vascular tissues
(d) Regeneration of cortex and epidermis

4. Collenchyma occurs in the stem and petioles of **[1990]**
(a) xerophytes (b) monocots
(c) dicot herbs (d) hydrophytes

5. What is true about a monocot leaf? **[1990]**
(a) Reticulate venation
(b) Absence of bulliform cells from epidermis
(c) Mesophyll not differentiated into palisade and spongy tissues
(d) Well diffferentiated mesophyll

6. Pericycle of roots produces **[1990]**
(a) mechanical support
(b) lateral roots
(c) vascular bundles
(d) adventitious buds

7. Cork cambium and vascular cambium are **[1990]**
(a) parts of secondary xylem and phloem
(b) parts of pericycle
(c) lateral meristems
(d) apical meristems

8. Monocot leaves possess **[1990]**
(a) intercalary meristem
(b) lateral meristem
(c) apical meristem
(d) mass meristem

9. Vascular cambium produces **[1990,92]**
(a) primary xylem and primary phloem
(b) secondary xylem and secondary phloem
(c) primary xylem and secondary phloem
(d) secondary xylem and primary phloem

10. Where do the Casparian bands occur? **[1990,94,99]**
(a) Epidermis (b) Endodermis
(c) Pericycle (d) Phloem

11. Angular collenchyma occurs in **[1991]**
(a) *Cucurbita* (b) *Tagetes*
(c) *Althaea* (d) *Salvia*

12. An organized and differentiated cellular structure having cytoplasm but no nucleus is **[1991]**
(a) vessels (b) xylem parenchyma
(c) sieve tubes (d) tracheids

13. Commercial cork is obtained from **[1991]**
(a) Berberis/Barberry
(b) Salix/Willow
(c) Quercus/Oak
(d) *Betula/Birch*

14. A bicollateral vascular bundle is characterised by **[1992]**
(a) phloem being sandwitched between xylem
(b) transverse splitting of vascular bundle
(c) longitudinal splitting of vascular bundle
(d) xylem being sandwitched between phloem

15. Which exposed wood will decay faster? **[1993]**
(a) Sapwood
(b) Softwood
(c) Wood with lot of fibres
(d) Heartwood

16. Bordered pits are found in **[1993]**
(a) sieve cells (b) vessel wall
(c) companion cells (d) sieve tube wall

17. A narrow layer of thin walled cells found between phloem/bark and wood of a dicot is **[1993]**
(a) cork cambium
(b) vascular cambium
(c) endodermis
(d) pericycle

18. Abnormal/anomalous secondary growth occurs in **[1993]**
(a) *Dracaena* (b) ginger
(c) wheat (d) sunflower

19. Periderm is produced by **[1993]**
(a) vascular cambium
(b) fascicular cambium
(c) phellogen
(d) intrafascicular cambium

20. As the secondary growth takes place (proceeds) in a tree, thickness of **[1994]**
(a) heartwood increases
(b) sapwood increases
(c) both increase
(d) both remain the same

21. Procambium forms **[1994]**
(a) only primary vascular bundles
(b) only vascular cambium
(c) only cork cambium
(d) primary vascular bundles and vascular cambium

22. What is not true about sclereids? **[1996]**
(a) These are parenchyma cells with thickened lignified walls
(b) These are elongated and flexible with tapered ends
(c) These are commonly found in the shells of nuts and in the pulp of guava, pear etc
(d) These are also called the stone cells

23. At maturity which of the following is enucleate? **[1997]**
(a) Sieve cell (b) Companion cell
(c) Palisade cell
(d) Cortical cell

24. A leaf primordium grows into the adult leaf lamina by means of **[1998]**
(a) apical meristem
(b) lateral meristem
(c) marginal meristem
(d) at first by apical meristem and later largely by marginal meristem

25. Which of the following meristems is responsible for extrastelar secondary growth in dicotyledonous stem? **[1998]**
(a) Intrafascicular cambium
(b) Interfascicular cambium
(c) Intercalary meristem
(d) Phellogen

26. What happens during vascularization in plants? **[2000]**
(a) Differentiation of procambium is immediately followed by the development of secondary xylem and phloem
(b) Differentiation of procambium followed by the development of xylem and phloem
(c) Differentiation of procambium, xylem and phloem is simultaneous
(d) Differentiation of procambium followed by the development of primary phloem and then by primary xylem

27. Loading of phloem is related to **[2001]**
(a) increase of sugar in phloem
(b) elongation of phloem cell
(c) separation of phloem parenchyma
(d) strengthening of phloem fibre

28. Which of the following statements is true? **[2002]**
(a) Vessels are multicellular with narrow lumen
(b) Tracheids are multicellular with narrow lumen
(c) Vessels are unicellular with wide lumen
(d) Tracheids are unicellular with wide lumen

29. Axillary bud and terminal bud are derived from the activity of **[2002]**
(a) lateral meristem
(b) intercalary meristem
(c) apical meristem
(d) parenchyma

30. Vessels are found in **[2002]**
(a) all angiosperms and some gymnosperms
(b) most of angiosperms and few gymnosperms
(c) all angiosperms and few gymnosperms and some pteridophytes
(d) all pteridophytes

31. Four radial vascular bundles are found in **[2002]**
(a) dicot root (b) monocot root
(c) dicot stem (d) monocot stem

32. The apical meristem of the root is present **[2003]**
(a) in all the roots (b) only in radicals
(c) only in tap roots
(d) only in adventitious roots

33. The cells of the quiescent centre are characterised by **[2003]**
(a) dividing regularly to add to tunica
(b) having dense cytoplasm and prominent nuclei
(c) having light cytoplasm and small nuclei
(d) dividing regularly to add to the corpus

34. Chlorenchyma is known to develop in the **[2003]**
(a) pollen tube of *Pinus*
(b) cytoplasm of *Chlorella*
(c) mycelium of a green mould such as *Aspergillus*
(d) spore capsule of a moss

35. In a longitudinal section of root, starting from the tip upward, the four zones occur in the 3 following order **[2004]**
(a) root cap, cell division, cell enlargement, cell maturation
(b) root cap, cell division, cell maturation, cell enlargement
(c) cell division, cell enlargement, cell maturation, root cap
(d) cell division, cell maturation, cell enlargement, root cap

36. In a woody dicotyledonous tree, which of the following parts will mainly consist of primary tissues? **[2005]**
(a) All parts
(b) Stem and root

(c) Flowers, fruits and leaves
(d) Shoot tips and root tips

37. A common structural feature of vessel elements and sieve tube elements are **[2006]**
(a) pores on lateral walls
(b) presence of p-protein
(c) enucleate condition
(d) thick secondary walls

38. For a critical study of secondary growth in plants, which one of the following pairs is suitable? **[2007]**
(a) Sugarcane and sunflower
(b) Teak and pine
(c) Deodar and fern
(d) Wheat and maiden hair fern

39. Passage cells are thin walled cells found in **[2007]**
(a) endodermis of roots facilitating rapid transport of water from cortex to pericycle
(b) phloem elements that serve as entry points for substances for transport to other plant parts
(c) testa of seeds to enable emergence of growing embryonic axis during seed germination
(d) central region of style through which the pollen tube grows towards the ovary

40. Vascular tissues in flowering plants develop from **[2008]**
(a) phellogen
(b) plerome
(c) periblem
(d) dermatogen

41. The length of different internodes in a culm of sugarcane is variable because of **[2008]**
(a) shoot apical meristem
(b) position of axillary buds
(c) size of leaf lamina at the node below each internode
(d) intercalary meristem

42. Anatomically fairly old dicotyledonous root is distinguished from the dicotyledonous stem by: **[2009]**
(a) Presence of cortex
(b) Position of protoxylem
(c) Absence of secondary xylem
(d) Absence of secondary phloem

43. The annular and spirally thickened conducting elements generally develop in the protoxylem when the root or stem is: **[2009]**
(a) widening
(b) differentiating
(c) maturing
(d) elongating

44. Reduction in vascular tissue, mechanical tissue and cuticle is characteristic of: **[2009]**
(a) Epiphytes
(b) Hydrophytes
(c) Xerophytes
(d) Mesophytes

45. The chief water conducting elements of xylem in gymnosperms are **[Pre. 2010]**
(a) Vessels
(b) Fibres
(c) Transfusion tissue
(d) Tracheids

46. Which one of the following is not a lateral meristem? **[Pre. 2010]**
(a) Intrafascicular cambium
(b) Interfascicular cambium
(c) Phellogen
(d) Intercalary meristem

47. Heartwood differs from sapwood in **[2010]**
(a) Presence of rays and fibres
(a) Absence of vessels and parenchyma
(c) Having dead and non-conducting elements
(d) Being susceptible to pests and pathogens

48. Function of companion cells is **[Mains 2011]**
(a) Loading of sucrose into sieve elements.
(b) Providing energy to sieve elements for active transport.
(c) Providing water to phloem
(d) Loading of sucrose into sieve elements by passive transport.

49. Some vascular bundles are described as open because these **[2011]**
(a) Are not surrounded by pericycle
(b) Are surrounded by pericycle but no endodermis
(c) Are capable of producing secondary xylem and phloem.
(d) Possess conjunctive tissue between xylem and phloem.

50. The cork cambium, cork and secondary cortex are collectively called – **[Pre. 2011]**
(a) Phelloderm
(b) Phellogen
(c) Periderm
(d) Phellem

51. Ground tissue includes **[Pre. 2011]**
(a) All tissues external to endodermis
(b) All tissues except epidermis and vascular bundles
(c) Epidermis and cortex
(d) All tissues internal to endodermis

52. Gymnosperms are also called soft wood spermatophytes because they lack **[Pre. 2012]**
(a) Thick-walled tracheids
(b) Xylem fibres
(c) Cambium
(d) Phloem fibres

53. An organic substance that can withstand environmental extremes and cannot be degraded by any enzyme is **[Pre. 2012]**
(a) Lignin
(b) Cellulose
(c) Cuticle
(d) Sporopollenin

54. Closed vascular bundles lack **[Pre. 2012]**
(a) Cambium
(b) Pith
(c) Ground tissue
(d) Conjuctive tissues

55. Companion-cells are closely associated with **[Pre. 2012]**
(a) Trichomes
(b) Guard cells
(c) Sieve elements
(d) Vessel elements

56. The common bottle cork is a product of :- **[Pre. 2012]**
(a) Xylem
(b) Vascular Cambium
(c) Dermatogen
(d) Phellogen

57. As compared to a dicot root, a monocot root has **[Mains 2012]**
(a) Many xylem bundles
(b) Inconspicuous annual rings
(c) Relatively thicker periderm
(d) More abundant secondary xylem

58. Age of a tree can be estimated by **[2013]**
(a) Its height and girth
(b) Biomass
(c) Number of annual rings
(d) Diameter of its heartwood

59. Interfascicular cambium develops from the cells of **[2013]**
(a) Medullary rays
(b) Xylem parenchyma
(c) Endodermis
(d) Pericycle

60. You are given a fairly old piece of dicot stem and a dicot root. Which of the following anatomical structures will you use to distinguish between the two? **[AIPMT 2014]**
(a) Secondary xylem
(b) Secondary phloem

(c) Protoxylem
(d) Cortical cells

61. Tracheids differ from other tracheary elements in : **[AIPMT 2014]**
(a) Having casparian strips
(b) Being imperforated
(c) Lacking nucleus
(d) Being lignified

62. A major characteristic of the monocot root is the presence of : **[AIPMT 2015]**
(a) Scattered vascular bundles
(b) Vasculature without cambium
(c) Cambium sandwiched between phloem and xylem along the radius
(d) Open vascular bundles

63. Vascular bundles in monocotyledons are considered closed because: **[AIPMT 2015]**
(a) Cambium is absent
(b) There are no vessels with perforations
(c) Xylem is surrounded all around by phloem
(d) A bundle sheath surrounds each bundle

64. Read the different components from (a) to (d) in the list given below and tell the correct order of the components with reference to their arrangement from outer side to inner side in a woody dicot stem:
(a) Secondary cortex
(b) Wood
(c) Secondary phloem
(d) Phellem.
The correct order is : **[RE-AIPMT 2015]**
(a) (d), (c), (a), (b)
(b) (c), (d), (b), (a)
(c) (a), (b), (d), (c)
(d) (d), (a), (c), (b)

Answers

1-c	2-a	3-a	4-c	5-c	6-b	7-c	8-a	9-b	10-b
11-b	12-c	13-c	14-d	15-a	16-b	17-b	18-a	19-c	20-c
21-d	22-a	23-a	24-d	25-d	26-b	27-a	28-a	29-c	30-b
31-a	32-a	33-c	34-d	35-a	36-d	37-c	38-b	39-a	40-b
41-d	42-b	43-c	44-b	45-d	46-d	47-c	48-a	49-c	50-c
51-b	52-b	53-d	54-a	55-c	56-d	57-a	58-c	59-a	60-c
61-b	62-b	63-a	64-d						

7

Structural Organisation in Animals

1. Mineral found in red pigment of vertebrate blood is **[1989]**
(a) magnesium (b) iron
(c) calcium (d) copper

2. Lymph differ from blood in possessing **[1989]**
(a) only WBC
(b) more RBC and WBC
(c) more RBC and few WBC
(d) more WBC and few RBC

3. Histamine secreting cells are found in **[1989]**
(a) connective tissue
(b) lungs
(c) muscular tissue
(d) nervous tissue

4. Haversian canal occurs in **[1989]**
(a) humerus (b) pubis
(c) scapula (d) clavicle

5. Removal of calcium from freshly collected blood would **[1989]**
(a) cause delayed clotting
(b) prevent clotting
(c) cause immediate clotting
(d) prevent destruction of haemoglobin

6. Haemophilia is **[1989]**
(a) royal disease
(b) faulty blood clotting
(c) Both (a) and (b)
(d) mosquito having haemocoel

7. A person with blood group A requires blood. The blood group which can be given is **[1989]**
(a) A and B (b) A and AB
(c) A and O (d) A, B, AB and O

8. Which one engulfs pathogens rapidly? **[1989]**
(a) Acidophils (b) Monocytes
(c) Basophils (d) Neutrophils

9. Characteristics of smooth muscle fibres are **[1990]**
(a) spindle-shaped, unbranched, unstriated, uninucleate and involuntary
(b) spindle-shaped, unbranched, unstriped, multinucleate and involuntary
(c) cylindrical, unbranched, unstriped, multinucleate and involuntary
(d) cylindrical, unbranched, unstriated, multinucleate and voluntary

10. Brush border is characteristic of **[1990]**
(a) Neck of nephron
(b) collecting tube
(c) proximal convoluted tubule
(d) All of the above

11. Blood group AB has **[1991]**
(a) no antigen
(b) no antibody
(c) neither antigen nor antibody
(d) Both (a) and (b)

12. Component of blood responsible for producing antibodies is **[1992]**
(a) thrombocytes
(b) monocytes
(c) erythrocytes
(d) lymphocytes

13. The genotype of B group father of an O group child is **[l 992]**
(a) $I^{\circ}I^{\circ}$ (b) $I^{B}I^{B}$
(c) $I^{A}I^{B}$ (d) $I^{\circ}I^{B}$

14. A man with blood group A, marries AB blood group woman. Which type of progeny indicate that the man is not homozygous? **[1993]**
(a) AB (b) B
(c) A (d) O

15. Vitamin-K is required for **[1993]**
(a) formation of thromboplastin
(b) conversion of fibrinogen to fibrin
(c) conversion of prothrombin to thrombin
(d) synthesis of prothrombin

16. Formation of cartilage bones involves **[1993]**
(a) deposition of bony matter by osteoblasts and resorption by chondroclasts
(b) deposition of bony matter by osteoclasts and resorption by chondroblasts
(c) deposition of bony matter by osteoclasts only
(d) deposition of bony matter by osteoblasts only

17. Epithelial tissue with thin flat cells appearing like packed tiles occurs on **[1994]**
(a) inner lining of cheek
(b) inner lining of stomach
(c) inner lining of fallopian tubes
(d) inner lining of ovary

18. A child of blood group O cannot have parents of blood groups **[1994]**
(a) AB and AB/O
(b) A and B
(c) B and B
(d) O and O

19. Antigens are present **[1995]**
(a) inside the nucleus
(b) on cell surface
(c) inside the cytoplasm
(d) on nuclear membrane

20. At high altitude, the RBCs in the human blood will **[1995]**
(a) increase in size
(b) decrease in size
(c) increase in number
(d) decrease in number

21. Stratum germinativum is an example of which kind of epithelium? **[1997]**
(a) Cuboidal
(b) Ciliated
(c) Columnar
(d) Squamous

22. Protein present in the matrix of cartilage is known as **[1997]**
(a) chondrin
(b) casein
(c) cartilagin
(d) ossein

23. Basement membrane is made up of **[1997]**
(a) epidermal cells only
(b) endodermal cells only
(c) Both (a) and (b)
(d) no cell at all, but is a product of epithelial cells

24. The Nissl's granules of nerve cell are made up of **[1997]**
(a) ribosomes
(b) protein
(c) DNA
(d) RNA

25. Which of the following is agranulocyte? **[1997]**
(a) Lymphocyte
(b) Eosinophil
(c) Basophil
(d) Neutrophil

26. The life span of human WBC is approximately **[1997]**
(a) less than 10 days
(b) between 20 to 30 days
(c) between 2 to 3 months
(d) more than 4 months

27. In mammals, histamine is secreted by **[1998]**
(a) fibroblasts
(b) histocytes
(c) lymphocytes
(d) mast cells

28. Which of the following is not exclusively supplied with involuntary muscles? **[1998]**
(a) Muscular coats of blood vessels
(b) Muscles of the ducts of glands
(c) Muscles of iris
(d) Muscles of urethra

29. The functional unit of contractile system in striated muscle is **[1998]**
(a) myofibril
(b) sarcomere
(c) Z-lines
(d) cross bridges

30. Haemoglobin is a type of **[1999]**
(a) carbohydrate
(b) vitamin
(c) skin pigment
(d) respiratory pigment

31. Which is the principal cation in the plasma of the blood ? **[1999]**
(a) Magnesium
(b) Sodium
(c) Potassium
(d) Calcium

32. The blood group with antibody-a and b is **[1999]**
(a) B (b) A
(c) O (d) AB

33. Ligament is a **[1999]**
(a) modified yellow elastic fibrous tissue
(b) inelastic white fibrous tissue
(c) modified white fibrous tissue
(d) None of the above

34. Tendon is made up of **[1999]**
(a) adipose tissue
(b) modified white fibrous tissue
(c) areolar tissue
(d) yellow fibrous connective tissue

35. What is correct regarding leucocytes ? **[2000]**
(a) These can squeeze out through (can cross) the capillary walls
(b) These are enucleated
(c) Sudden fall in their number indicates cancer
(d) These are produced in thymus

36. Child death may occur in the marriage of **[2000]**
(a) Rh^+ man and Rh^+ woman
(b) Rh^+ man and Rh^- woman
(c) Rh^- man and Rh^- woman
(d) Rh^- man and Rh^+ woman

37. The polysaccharide present in the matrix of cartilage is known as **[2000]**
(a) cartilagin (b) ossein
(c) chondroitin (d) casein

38. Simple epithelium is a tissue in which the cells are **[2000]**
(a) hardened and provide support to the organ
(b) cemented directly to one another to form a single layer
(c) continuously dividing to provide form to an organ
(d) loosely connected to one another to form an irregular organ

39. An action potential in the nerve fibre is produced when positive and negative charges on the outside and the inside of the axon membrane are reversed, because **[2000]**
(a) more potassium ions enter the axon as compared to sodium ions leaving it
(b) more sodium ions enter the axon as compared to potassium ions leaving it
(c) all potassium ions leave the axon
(d) all sodium ions enter the axon

40. A piece of bone such as femur of frog if kept in dilute HC1 for about a week will **[2000]**
(a) assume black colour
(b) shrink in size
(c) turn flexible
(d) crack into pieces

41. During an injury nasal septum gets damaged and for its recovery which cartilage is preferred? **[2001]**
(a) Hyaline cartilage
(b) Elastic cartilage
(c) Calcified cartilage
(d) Fibrous cartilage

42. Which cells do not form layer and remain structurally separate? **[2001]**
(a) Epithelial cells
(b) Muscle cells
(c) Nerve cells
(d) Gland cells

43. Sickle cell anaemia is due to **[2001]**
(a) change of amino acid in a-chain of haemoglobin
(b) change of amino acid in b-chain of haemoglobin
(c) change of amino acid in both a and b chains of haemoglobin
(d) change of amino acid in either a or b-chain of haemoglobin

44. What is correct for blood group 'O'? **[2001]**
(a) No antigens but both a and b antibodies are present
(b) A antigen and b antibody
(c) Antigen and antibody both absent
(d) A, B antigens and a, b antibodies

45. Which cartilage is present at the end of long bones? **[2002]**
(a) Calcified cartilage
(b) Hyaline cartilage
(c) Elastic cartilage
(d) Fibrous cartilage

46. Which of the following statements is correct about node of Ranvier ? **[2002]**
(a) Axolemma is discontinuous
(b) Myelin sheath is discontinuous
(c) Both neurilemma and myelin sheath are discontinuous
(d) Covered by myelin sheath

47. Collagen is **[2002]**
(a) fibrous protein
(b) globular protein
(c) lipid
(d) carbohydrate

48. Which one of the following contains the largest quantity of extracellular material? **[2003]**
(a) Myelinated nerve fibres
(b) Striated muscle
(c) Areolar tissue
(d) Stratified epithelium

49. What used to be described as Nissl's granules in a nerve cell are now identified as **[2003]**
(a) ribosomes
(b) mitochondria
(c) cell metabolites
(d) fat granules

50. Mast cells of connective tissue contain **[2004]**
(a) vasopressin and relaxin
(b) heparin and histamine
(c) heparin and calcitonin
(d) serotonin and melanin

51. In the ABO system of blood groups, if both antigens are present but no antibody, the blood group of the individual would be **[2004]**

(a) B (b) O
(c) AB (d) A

52. You are required to draw blood from a patient and to keep it in a test tube for analysis of blood corpuscles and plasma. You are also provided with the following four types of test tubes. Which of them will you not use for the purpose? **[2004]**

(a) Test-tube containing calcium bicarbonate
(b) Chilled test-tube
(c) Test-tube containing heparin
(d) Test-tube containing sodium oxalate

53. In the resting state of the neural membrane, diffusion due to concentration gradients, if allowed, would drive **[2004]**

(a) K^+ into the cell
(b) K^+ and Na^+ out of the cell
(c) Na^+ into the cell
(d) Na^+ out of the cell

54. ATPase enzyme needed for muscle contraction is located in **[2004]**

(a) actinin
(b) troponin
(c) myosin
(d) actin

55. Which of the following substances, if introduced into the blood stream, would cause coagulation of blood at the site of its introduction? **[2005]**

(a) Prothrombin
(b) Fibrinogen
(c) Thromboplastin
(d) Heparin

56. Areolar connective tissue joins **[2006]**

(a) integument with muscles
(b) bones with muscles
(c) bones with bones
(d) fat body with muscles

57. During the transmission of nerve impulse through a nerve fibre, the potential on the inner side of the plasma membrane has which type of electric charge ? **[2006]**

(a) First negative, then positive and again back to negative
(b) First positive, then negative and continue to be negative
(c) First negative, then positive and continue to be positive
(d) First positive, then negative and again back to positive

58. People living at sea level have around 5 million RBCs per cubic millimeter of their blood whereas those living at an altitude of 5400 metres have around 8 million. This is because at high altitude **[2006]**

(a) people get pollution-free air to breathe and more oxygen is available
(b) atmospheric O_2 level is less and hence, more RBCs are needed to absorb the required amount of O_2 to survive
(c) there is more UV radiation which enhances RBC production
(d) people eat more nutritive food, therefore, more RBCs are formed

59. A drop of each of the following, is placed separately on four slides. Which of them will not coagulate ? **[2007]**

(a) Blood plasma
(b) Blood serum
(c) Sample from the thoracic duct of lymphatic system
(d) Whole blood from pulmonary vein

60. Which one of the following mammalian cells is not capable of metabolizing glucose to carbon-dioxide aerobically ? **[2007]**

(a) White blood cells
(b) Unstriated muscle cells
(c) liver cells
(d) Red blood cells

61. In which one of the following preparations are you likely to come across cell junctions most frequently? **[2007]**

(a) Ciliated epithelium
(b) Thrombocytes
(c) Tendon
(d) Hyaline cartilage

62. Which one of the following pairs of structures distinguishes a nerve cell from other types of cell? **[2007]**
(a) Perikaryon and dendrites
(b) Vacuoles and fibres
(c) Flagellum and medullary sheath
(d) Nucleus and mitochondria

63. The most active phagocytic white blood cells are **[2008]**
(a) neutrophils and eosinophils
(b) lymphocytes and macrophages
(c) eosinophils and lymphocytes
(d) neutrophils and monocytes

64. Which one of the following items gives its correct total number? **[2008]**
(a) Floating ribs in humans—4
(b) Amino acids found in proteins—16
(c) Types of diabetes—3
(d) Cervical vertebrae in humans—8

65. Which type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin? **[2008]**
(a) Neutrophils
(b) Basophils
(c) Eosinophils
(d) Monocytes

66. During the propagation of a nerve impulse, the action potential results from the movement of **[2008]**
(a) K^+ ions from extracellular fluid to intracellular fluid
(b) Na^+ ions from intracellular fluid to extracellular fluid
(c) K^+ ions from intracellular fluid to extracellular fluid
(d) Na^+ ions from extracellular fluid to intracellular fluid

67. The cell junctions called tight, adhering and gap junctions are found in: **[2009]**
(a) Epithelial tissue
(b) Neural tissue
(c) Muscular tissue
(d) Connective tissue

68. The epithelial tissue present on the inner surface of bronchioles and fallopian tubes is **[2009]**
(a) Ciliated (b) Squamous
(c) Cuboidal (d) Glandular

69. Palisade parenchyma is absent in leaves of **[2009]**
(a) Soybean (b) Gram
(c) Sorghum (d) Mustard

70. Globulins contained in human blood plasma are primarily involved in: **[2009]**
(a) oxygen transport in the blood
(b) clotting of blood
(c) defence mechanisms of body
(d) osmotic balance of body fluids

71. The most popularly known blood grouping is the ABO grouping. It is named ABO and not ABC, because "O" in it refers to having: **[2009]**
(a) one antibody only - either anti-A or anti-B on the RBCs
(b) no antigens A and B on RBCs
(c) other antigens besides A and B on RBCs
(d) overdominance of this type on the genes for A and B types

72. The kind of tissue that forms the supportive structure in our pinna (external ears) is also found in: **[2009]**
(a) ear ossicles
(b) tip of the nose
(c) vertebrae
(d) nails

73. Which one of the following is the *correct* matching of three items and their grouping category? **[2009]**

Items	Group
(a) actin, myosin, rhodopsin	*muscle proteins*
(b) cytosine, uracil, thiamine	*pyrimidines*
(c) malleus, incus, cochlea	*ear ossicles*
(d) ilium, ischium, pubis	*coxal bones of pelvic girdle*

74. In barley stem vascular bundles are: **[2009]**
(a) open and in a ring
(b) closed and radial
(c) open and scattered
(d) closed and scattered

75. Compared to blood our lymph has: **[2009]**
(a) more WBCs and no RBCs
(b) more RBCs and less WBCs
(c) no plasma
(d) plasma without proteins

76. The kind of epithelium which forms the inner walls of blood vessels is **[Pre. 2010]**
(a) cuboidal epithelium
(b) columnar epithelium
(c) ciliated columnar epithelium
(d) squamous epithelium

77. ABO blood groups in humans are controlled by the gene *I* It has three alleles-I^A, I^B and i. Since there are three different alleles, six different genotypes are possible. How many phenotypes can occur? **[Pre. 2010]**
(a) Three (b) One
(c) Four (d) Two

78. What is true about RBCs in humans?**[2010]**
(a) They carry about 20-35 per cent of CO_2
(b) They transport 99.5 per cent of O_2
(c) They transport about 80 per cent oxygen only and the rest 20 per cent of it is transported in dissolved state in blood plasma
(d) They do not carry CO_2 at all

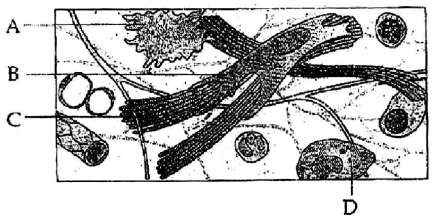
79. The cells lining the blood vessels belong to category of **[Mains 2011]**
(a) Connective tissue
(b) Smooth muscle tissue
(c) Squamous epithelium
(d) Columnar epithelium

80. Which one of the following plasma proteins is involved in the coagulation of blood ? **[Pre. 2011]**
(a) An albumin (b) Serum amylase
(c) A globulin (d) Fibrinogen

81. The ciliated columnar epithelial cells in humans are known to occur in **[Pre. 2011]**
(a) Eustachian tube and stomach lining
(b) Bronchioles and Fallopian tubes
(c) Bile duct and oesophagus
(d) Fallopian tubes and urethra

82. The supportive skeletal structures in the human external ears and in the nose tip are examples of **[Mains 2012]**
(a) Areolar tissue (b) Bone
(c) Cartilage (d) Ligament

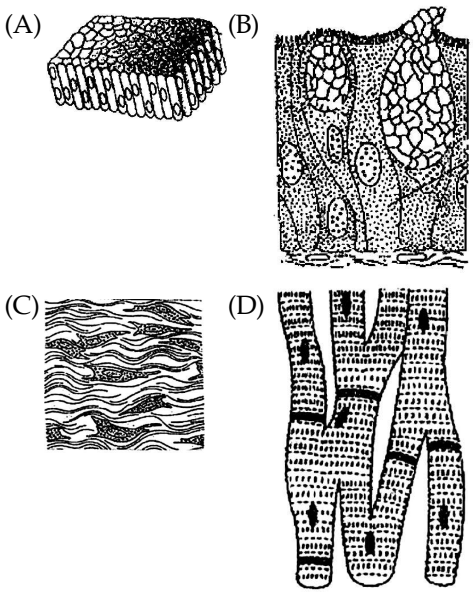
83. Given below is the diagrammatic sketch of a certain type of connective tissue. identify the parts labeled A, B, C and D and select the right option about them **[Mains 2012]**



Option

Part-A	Part-B	Part-C	Part-D
(a) Mast cell	Marco-phage	Fibroblast	Collagen fibres
(b) Macro-phage	Collegen fibres	Fibroblast	Mast cell
(c) Mast cell	Collagen fibres	Fibroblast	Macrophage
(d) Macro-phage	Fibroblast	Collagen fibres	Mast cell

84. The four sketches (A, B, C and D) given below, represent four different types of animal tissues. Which one of these is correctly identified in the options given, along with its correct location and function ? **[Mains 2012]**



	Tissue	Location	Function
(a)	(C) Collagen fibres	Cartilage	Attach skeletal muscles to bones
(b)	(D) Smooth muscle tissue	Heart	Heart contraction
(c)	(A) Columnar epithelium	Nephron	Secretion and absorption
(d)	(B) Glandular epithelium	Intestine	Secretion

85. Choose the correctly matched pair : **[AIPMT 2014]**

(a) Tendon - Specialized connective tissue
(b) Adipose tissue - Dense connective tissue
(c) Areolar tissue - Loose connective tissue
(d) Cartilage - Loose connective tissue

86. Choose the correctly matched pair: **[AIPMT 2014]**

(a) Inner lining of salivary ducts - Ciliated epithelium
(b) Moist surface of buccal cavity-Glandular epithelium
(c) Tubular parts of nephrons-Cuboidal epithelium
(d) Inner surface of bronchioles-Squamous epithelium

87. The terga, sterna and pleura of cockroach body are joined by : **[AIPMT 2015]**

(a) Muscular tissue
(b) Arthrodial membrane
(c) Cartilage (d) Cementing glue

88. The function of the gap junction is to : **[RE-AIPMT 2015]**

(a) Stop substance from leaking across a tissue
(b) Performing cementing to keep neighbouring cells together
(c) Facilitate communication between adjoining cells by connecting the cytoplasm for rapid transfer of ions, small molecules and some large molecules
(d) Separate two cells from each other.

89. The body cells in cockroach discharge their nitrogenous waste in the haemolymph mainly in the form of : **[RE-AIPMT 2015]**

(a) Calcium carbonate (b) Ammonia
(c) Potassium urate (d) Urea

Answers

1-b	**2-a**	**3-a**	**4-a**	**5-b**	**6-c**	**7-c**	**8-d**	**9-a**	**10-c**
11-b	**12-d**	**13-d**	**14-b**	**15-d**	**16-d**	**17-a**	**18-a**	**19-b**	**20-c**
21-c	**22-a**	**23-d**	**24-a**	**25-a**	**26-a**	**27-d**	**28-b**	**29-b**	**30-d**
31-b	**32-c**	**33-b**	**34-b**	**35-a**	**36-b**	**37-c**	**38-b**	**39-b**	**40-c**
41-a	**42-c**	**43-b**	**44-a**	**45-b**	**46-b**	**47-a**	**48-c**	**49-a**	**50-b**
51-c	**52-a**	**53-c**	**54-c**	**55-c**	**56-a**	**57-a**	**58-b**	**59-b**	**60-d**
61-a	**62-a**	**63-d**	**64-a**	**65-b**	**66-d**	**67-a**	**68-a**	**69-c**	**70-c**
71-b	**72-b**	**73-d**	**74-d**	**75-a**	**76-d**	**77-c**	**78-a**	**79-c**	**80-d**
81-b	**82-c**	**83-d**	**84-d**	**85-c**	**86-c**	**87-b**	**88-c**	**89-c**	

8A

Cell : The Unit of Life – Tools and Techniques

1. Organelles can be separated from cell homogenate through **[1989]**
(a) chromatography
(b) X-rays diffraction
(c) differential centrifugation
(d) auto-radiography

2. Electron microscope has a high resolution power. This is due to **[1990,92]**
(a) electromagnetic lenses
(b) very low wavelength of electron beam
(c) low wavelength of light source used
(d) high numerical aperture of glass lenses used

3. Magnification of compound microscope is not connected with **[1990]**
(a) numerical aperture
(b) focal length of objective
(c) focal length of eye piece
(d) tube length

4. Resolution power is the ability to **[1991]**
(a) distinguish two trees
(b) distinguish two close objects
(c) distinguish amongst organelles
(d) magnify image

5. Angstrom (Å) is equal to **[1992]**
(a) 0.01 µm (b) 0.001µm
(c) 0.0001µm (d) 0.00001 µm

6. Binding of specific protein on regulatory DNA sequence can be studied by means of **[1993]**
(a) ultra centrifugation
(b) electron microscope
(c) light microscope
(d) X-rays crystallography

7. A student wishes to study the cell structure under a light microscope having 10X eyepiece and 45X objective. He should illuminate the object by which one of the following colours of light so as to get the best possible resolution? **[2004]**
(a) Blue (b) Green
(c) Yellow (d) Red

8. A major break through in the studies of cells came with the development of electron microscope. This is because **[2006]**
(a) the resolving power of the electron microscope is 200-350 nm as compared to 0.1- 0.2 for the light microscope
(b) electron beam can pass through thick materials, whereas light microscopy required thin sections
(c) the electron microscope is more powerful than the light microscope as it uses a beam of electrons which has wavelength much longer than that of photons

(d) the resolution power of the electron microscope is much higher than that of the light microscope

9. Gel electrophoresis is used for **[2008]**

(a) cutting of DNA into fragments

(b) separation of DNA fragments according to their size

(c) construction of recombinant DNA by joining with cloning vectors

(d) isolation of DNA molecule

Answers

1-c **2-b** **3-a** **4-b** **5-c** **6-d** **7-a** **8-d** **9-b**

8B

Cell : The Unit of Life – Cell Structure

1. Polyribosomes are aggregates of **[1989]**
(a) ribosomes and rRNA
(b) only rRNA
(c) peroxisomes
(d) several ribosomes held together by string of mRNA

2. Plasma membrane is made up of **[1989]**
(a) proteins and carbohydrates
(b) proteins and lipids
(c) proteins, lipids and carbohydrates
(d) proteins, some nucleic acid and lipids

3. Fluid mosaic model of cell membrane was put forward by **[1991]**
(a) Danielli and Davson
(b) Singer and Nicolson
(c) Garner and Allard
(d) Watson and Crick

4. Addition of new cell wall particles amongst the existing ones is **[1991]**
(a) deposition (b) apposition
(c) intussusception
(d) aggregation

5. Cell wall shows **[1991]**
(a) complete permeability
(b) semi-permeability
(c) differential permeability
(d) impermeability

6. Ribosomes were discovered by **[1991]**
(a) Golgi (b) Porter
(c) de Robertis (d) Palade

7. Ribosomes are the centre for **[1992]**
(a) respiration
(b) photosynthesis
(c) protein synthesis
(d) fat synthesis

8. An outer covering membrane is absent over **[1992]**
(a) nucleolus
(b) lysosome
(c) mitochondrion
(d) plastids

9. All plastids have similar structure because they can **[1992]**
(a) store starch, lipids and proteins
(b) get transformed from one type to another
(c) perform same function
(d) be present together

10. Oxysomes or F_0-F_1 particles occur on **[1992]**
(a) thylakoids
(b) mitochondrial surface
(c) inner mitochondrial membrane
(d) chloroplast surface

11. Which one is apparato reticulare interno? **[1992]**
(a) Golgi apparatus
(b) Endoplasmic reticulum
(c) Microfilaments
(d) Microtubules

12. Which is correct about cell theory in view of current status of our knowledge about cell structure? **[1993]**
(a) It needs modification due to discovery of subcellular structures like chloroplasts and mitochondria
(b) Modified cell theory means that all living beings are composed of cells capable of reproducing
(c) Cell theory does not hold good because all living beings do not have cellular organisation (eg, viruses)
(d) Cell theory means that all living objects consist of cells whether or not capable of reproducing

13. In plant cells, peroxisomes are associated with **[1993]**
(a) photorespiration (b) phototropism
(c) photoperiodism (d) photosynthesis

14. Name of Schleiden and Schwann are associated with **[1993]**
(a) protoplasm as the physical basis of life
(b) cell theory
(c) theory of cell lineage
(d) nucleus functions as control centre of cell

15. Membranous bag with hydrolytic enzymes which is used for controlling intracellular digestion of macromolecules is **[1993]**
(a) endoplasmic reticulum
(b) nucleosome
(c) lysosome
(d) phagosome

16. Golgi apparatus is absent in **[1993]**
(a) higher plants (b) yeast
(c) bacteria and blue-green algae
(d) None of the above

17. Inner membrane convolutions of a mitochondrion are known as **[1994]**
(a) lamellae (b) thylakoids
(c) grana (d) cristae

18. Cell organelles having hydrolases/digestive enzymes are **[1994]**
(a) peroxisomes (b) lysosomes
(c) ribosomes (d) mesosomes

19. Organelle/organoid involved in genetic engineering is **[1994]**
(a) plasmid
(b) mitochondrion
(c) Golgi apparatus
(d) lomasome

20. Mitochondrial cristae are sites of **[1994]**
(a) breakdown of macromolecules
(b) protein synthesis
(c) phosphorylation of flavoproteins
(d) oxidation-reduction reactions

21. Organelle having flattened membrane bound cisternae and lying near the nucleus is **[1994]**
(a) Golgi apparatus
(b) mitochondrion
(c) centriole
(d) nucleolus

22. Series of reactions which can convert fatty acids to sugars in plants but not in animals is **[1994]**
(a) Krebs cycle (b) glyoxylate cycle
(c) Ornithine cycle (d) glycolysis

23. The prokaryotic flagella possess **[1995]**
(a) unit membrane enclosed fibre
(b) protein membrane enclosed fibre
(c) '9+2' membrane enclosed structure
(d) helically arranged protein molecule

24. The desmosomes are concerned with **[1995]**
(a) cytolysis (b) cell division
(c) cell adherence (d) cellular excretion

25. The function of rough endoplasmic reticulum is **[1995]**
(a) fat synthesis
(b) lipid synthesis
(c) protein synthesis
(d) steroid synthesis

26. Lysosomes have a high content of **[1996]**
(a) hydrolytic enzymes
(b) lipoproteins
(c) polyribosomes
(d) DNAligases

27. Protein synthesis in an animal cell takes place **[1997]**
(a) only in cytoplasm
(b) in the nucleolus as well as in the cytoplasm
(c) in the cytoplasm as well as in mitochondria
(d) only on ribosomes attached to nucleus

28. The mechanism of ATP formation both in chloroplast and mitochondria is explained by **[1997]**
(a) Relay pump theory of Godlewski
(b) Cholodny-Went's model
(c) Chemiosmotic theory
(d) Munch's mass flow hypothesis

29. The proteins are synthesized at **[1998]**
(a) ribosomes (b) mitochondria
(c) centrosomes (d) Golgi bodies

30. Microtubule is involved in the **[1998]**
(a) cell division
(b) membrane architecture
(c) muscle contraction
(d) DNA recognition

31. Some of the enzymes which are associated in converting fats into carbohydrates, are present in **[1999]**
(a) liposomes
(b) Golgi bodies
(c) microsomes
(d) glyoxysomes

32. Photosynthetic bacteria have pigments in **[1999]**
(a) chromoplasts
(b) leucoplasts
(c) chloroplasts
(d) chromatophore

33. Which of the following organ has single membrane? **[1999]**
(a) Nucleus (b) Cell wall
(c) Mitochondria (d) Spherosomes

34. Lysosomes are reservoirs of **[2000]**
(a) RNA and protein
(b) fats
(c) secretory glycoproteins
(d) hydrolytic enzymes

35. In an animal cell, protein synthesis takes place **[2000]**
(a) only on the ribosomes present in cytosol
(b) only on ribosomes attached to nuclear envelope and ER
(c) on ribosomes present in the nucleolus as well as in cytoplasm
(d) on ribosomes present in the cytosol as well as in the mitochondria

36. The cell organelle involved in glycosylation of protein is **[2000]**
(a) ribosome
(b) peroxisome
(c) endoplasmic reticulum
(d) mitochondria

37. Microtubules absent in **[2001]**
(a) mitochondria (b) centriole
(c) flagella (d) spindle fibres

38. In fluid mosaic model of plasma membrane **[2002]**
(a) upper layer is non-polar and hydrophilic
(b) upper layer is polar and hydrophobic
(c) phospholipids form a bimolecular layer in middle part
(d) proteins form a middle layer

39. In which one of the following is nitrogen not a constituent? **[2003]**
(a) Pepsin
(b) Idioblast
(c) Bacteriochlorophyll
(d) Invertase

40. Flagella of prokaryotic and eukaryotic cells differ in **[2004]**
(a) type of movement and placement in cell
(b) location in cell and mode of functioning
(c) microtubular organization and type of movement
(d) microtubular organization and function

41. Extra nuclear inheritance is a consequence of presence of genes in **[2004]**
(a) mitochondria and chloroplasts
(b) endoplasmic reticulum and mitochondria
(c) ribosomes and chloroplast
(d) lysosomes and ribosomes

42. In chloroplasts, chlorophyll is present in the **[2004]**
(a) outer membrane
(b) inner membrane
(c) thylakoids
(d) stroma

43. The main organelle involved in modification and routing of newly synthesized proteins to their destinations is **[2005]**
(a) chloroplast
(b) mitochondria
(c) lysosome
(d) endoplasmic reticulum

44. Genes for cytoplasmic male sterility in plants are generally located in **[2005]**
(a) mitochondrial genome
(b) cytosol
(c) chloroplast genome
(d) nuclear genome

45. Chlorophyll in chloroplast is located in **[2005]**
(a) grana (b) pyrenoid
(c) stroma (d) Both (a) and (c)

46. Protein synthesis in an animal cell occurs **[2005]**
(a) only on the ribosomes present in cytosol
(b) only on ribosomes attached to the nuclear envelope and endoplasmic reticulum
(c) on ribosomes present in the nucleolus as well as in cytoplasm
(d) on ribosomes present in cytoplasm as well as in mitochondria

47. According to widely accepted "fluid mosaic model" cell membranes are semi-fluid, where lipids and integral proteins can diffuse randomly. In recent years, this model has been modified in several respects. In this regard, which of the following statements is incorrect? **[2005]**
(a) Proteins in cell membranes can travel within the lipid bilayer
(b) Proteins can also undergo flip-flop movements in the lipid bilayer
(c) Proteins can remain confined within certain domains of the membrane
(d) Many proteins remain completely embedded within the lipid bilayer

48. Which of the following statements regarding mitochondrial membrane is not correct? **[2006]**
(a) The enzymes of the electron transfer chain are embedded in the outer membrane
(b) The inner membrane is highly convoluted forming a series of infoldings
(c) The outer membrane resembles a sieve
(d) The outer membrane is permeable to all kinds of molecules

49. During photorespiration, the oxygen consuming reaction occurs in **[2006]**
(a) stroma of chloroplasts and mitochondria
(b) stroma of chloroplasts and peroxisomes
(c) grana of chloroplasts and peroxisomes
(d) stroma of chloroplasts

50. Select the wrong statement from the following **[2007]**
(a) both chloroplasts and mitochondria contain an inner and an outer membrane
(b) both chloroplasts and mitochondria have an internal compartment, the thylakoid space bounded by the thylakoid membrane
(c) both chloroplasts and mitochondria contain DNA
(d) the chloroplasts are generally much larger than mitochondria

51. Vacuole in a plant cell **[2008]**
(a) is membrane-bound and contains storage proteins and lipids
(b) is membrane-bound and contains water and excretory substances
(c) lacks membrane and contains air
(d) lacks membrane and contains water and excretory substances

52. Keeping in view the 'fluid mosaic model' for the structure of cell membrane, which one of the following statements is correct with respect to the movement of lipids and proteins from one lipid monolayer to the other (described as flip-flop movement)? **[2008]**
(a) Both lipids and proteins can flip-flop
(b) While lipids can rarely flip-flop, proteins cannot
(c) While proteins can flip-flop, lipids cannot
(d) Neither lipids, nor proteins can flip-flop

53. In germinating seeds fatty acids are degraded exclusively in the **[2008]**
(a) proplastids (b) glyoxysomes
(c) peroxisomes (d) mitochondria

54. The two subunits of ribosome remain united at a critical ion level of **[2008]**
(a) copper (b) manganese
(c) magnesium (d) calcium

55. Plasmodesmata are : **[2009]**
(a) Membranes connecting the nucleus with plasmalemma
(b) Connections between adjacent cells
(c) Lignified cemented layers between cells
(d) Locomotary structures

56. Middle lamella is composed mainly of **[2009]**
(a) Calcium pectate(b) Phosphoglycerides
(c) Hemicellulose (d) Muramic acid

57. Which one of the following structures between two adjacent cells is an effective transport pathway? **[Pre. 2010]**
(a) Plasmodesmata
(b) Plastoquinones
(c) Endoplasmic reticulum
(d) Plasmalemma

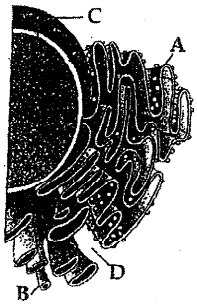
58. Which one of the following has its own DNA? **[Pre. 2010]**
(a) Mitochondria (b) Dictyosome
(c) Lysosome (d) Peroxisome

59. The main arena of various types of activities of a cell is **[Pre. 2010]**
(a) Plasma membrane
(b) Mitochondria
(c) Cytoplasm (d) Nucleus

60. The plasma membrane consists mainly of **[Pre. 2010]**
(a) phospholipids embedded in a protein bilayer
(b) proteins embedded in a phospholipid bilayer
(c) proteins embedded in a polymer of glucose molecules
(d) proteins embedded in a carbohydrate bilayer

61. An elaborate network of filamentous proteinaceous structures present in the cytoplasm which helps in the maintenance of cell shape is called **[Mains 2010]**
(a) Endosplasmic Reticulum
(b) Plasmalemma
(c) Cytoskeleton
(d) Thylakoid

62. Identify the components labelled A, B,C and D in the diagram below from the list (i) to (viii) given with **[Mains 2010]**



Components:

(i) Cristae of mitochondria
(ii) Inner membrane of mitochondria
(iii) Cytoplasm
(iv) Smooth endoplasmic reticulum
(v) Rough endoplasmic reticulum
(vi) Mitochondrial matrix
(vii) Cell vacuole (viii) Nucleus

The correct component are :

	A	B	C	D
(a)	(i)	(iv)	(viii)	(vi)
(b)	(vi)	(v)	(iv)	(vii)
(c)	(v)	(i)	(iii)	(ii)
(d)	(v)	(iv)	(viii)	(iii)

63. Important site for formation of glycoproteins and glycolipids is **[Pre. 2011]**

(a) Vacuole (b) Golgi apparatus
(c) Plastid (d) Lysosome

64. Peptide synthesis inside a cell takes place in **[Pre. 2011]**

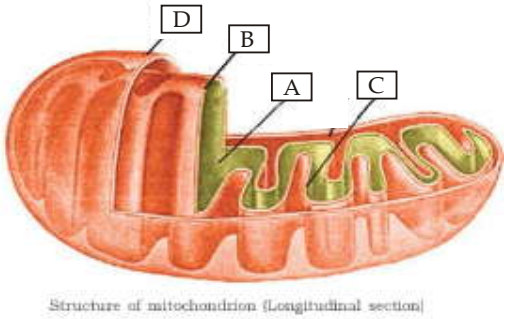
(a) Chloroplast (b) Mitochondria
(c) Chromoplast (d) Ribosomes

65. Which one of the following is not considered as a part of the endomembrane system ? **[Mains 2011]**

(a) Lysosome (b) Golgi complex
(c) Peroxisome (d) Vacuole

66. The figure below shows the structure of a mitochondrion with its four parts labelled (A), (B), (C) and (D).

Select the part correctly matched with its function. **[Mains 2011]**



Structure of mitochondrion (Longitudinal section)

(a) Part (A): Matrix - major site for respiratory chain enzymes
(b) Part (D) : Outer membrane - gives use to inner membrane by splitting
(c) Part (B) : Inner membrane - forms infoldings called cristae
(d) Part (C) : Cristae - possess single circular DNA molecule and ribosomes

67. Which one of the following cellular parts is correctly described ? **[Mains 2012]**

(a) Centrioles - sites for active RNA synthesis
(b) Ribosomes - those on chloroplasts are larger (80s) while those in the cytoplasm are smaller (70s)
(c) Lysosomes - optimally active at a pH of about 8.5
(d) Thylakoids - flattened membranous sacs forming the grana of chloroplasts

68. Which one of the following structures is an organelle within an organelle ?

(a) Peroxisome (b) ER **[Mains 2012]**
(c) Mesosome (d) Ribosome

69. Select the correct statement from the following regarding cell membrane **[Pre. 2012]**

(a) Lipids are arranged in a bilayer with polar heads towards the inner part
(b) Fluid mosaic model of cell membrane was proposed by Singer and Nicolson
(c) Na^+ and K^+ ions move across cell membrane by passive transport
(d) Proteins make up 60 to 70% of the cell membrane

70. What is true about ribosomes ? **[Pre. 2012]**
(a) These are found only in eukaryotic cells
(b) These are self-splicing introns of some RNAs
(c) The prokaryotic ribosomes are 80s where"S" stands for sedimentation coefficient
(d) These are composed of ribonucleic acid and proteins

71. Ribosomal RNA is actively synthesized in **[Pre. 2012]**
(a) Nucleoplasm (b) Ribosomes
(c) Lysosomes (d) Nucleolus

72. A major site for synthesis of lipids is
(a) RER (b) SER **[Pre. 2013]**
(c) Symplast (d) Nucleoplasm

73. Which of the following criteria does not pertain to facilitated transport ? **[2013]**
(a) Requirement of special membrane proteins
(b) High selectivity
(c) Transport saturation
(d) Uphill transport

74. The Golgi complex plays a major role**[2013]**
(a) in trapping the light and transforming it into chemical energy
(b) in digensting proteins and carbohydrates
(c) as energy transferring organelles
(d) in post translational modification of proteins and glycosidation of lipids

75. Which one of the following organelle in the figure correctly matches with its function ? **[2013]**

(a) Rough endopolasmic reticulum, formation of glycoproteins
(b) Golgi apparatus, protein synthesis
(c) Golgi apparatus, formation of glycolipids
(d) Rough endoplasmic reticulum, protein synthesis

76. Which structures perform the function of mitochondria in bacteria? **[AIPMT 2014]**
(a) Nucleoid (b) Ribosomes
(c) Cell wall (d) Mesosomes

77. The solid linear cytoskeletal elements having a diameter of 6 nm and made up of a single type of monomer are known as **[AIPMT 2014]**
(a) Microtubules (b) Microfilaments
(c) Intermediate filaments
(d) Lamins

78. The osmotic expansion of a cell kept in water is chiefly regulated by - **[AIPMT 2014]**
(a) Mitochondria (b) Vacuoles
(c) Plastids (d) Ribosomes

79. Match the following and select the correct answer **[AIPMT 2014]**

Column I	**Column II**
A. Centriole	(i) Infoldings in mitochondria
B. Chlorophyll	(ii) Thylakoids
C. Cristae	(iii) Nucleic acids
D. Ribozymes	(iv) Basal body cilia or flagella

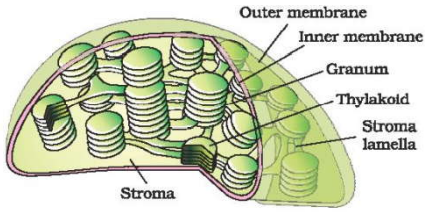
(a) A → (iv); B → (ii); C → (i); D → (iii)
(b) A → (i); B → (ii); C → (iv); D → (iii)
(c) A → (i); B → (iii); C → (ii); D → (iv)
(d) A → (iv); B → (iii); C → (i); D → (ii)

80. Cytochromes are found in :- **[AIPMT 2015]**
(a) Outer wall of mitochondria
(b) Cristae of mitochondria
(c) Lysosomes
(d) Matrix of mitochondria

81. DNA is not present in : **[AIPMT 2015]**
(a) Ribosomes (b) Nucleus
(c) Mitochondria (d) Chloroplast

82. Nuclear envelope is a derivative of :- **[AIPMT 2015]**
(a) Membrane of Golgi complex
(b) Microtubules
(c) Rough endoplasmic reticulum
(d) Smooth endoplasmic reticulum

83. The structures that are formed by stacking of organized flattened membranous sacs in the chloroplasts are: **[AIPMT 2015]**



Sectional view of chloroplast

(a) Grana (b) Stroma lamellae
(c) Stroma (d) Cristae

84. Which one of the following is not an inclusion body found in prokaryotes ?
(a) Cyanophycean granule **[AIPMT 2015]**
(b) Glycogen granule
(c) Polysome (d) Phosphate granule

85. Select the correct matching in the following pairs : **[AIPMT 2015]**
(a) Smooth ER – Synthesis of lipids
(b) Rough ER– Synthesis of glycogen
(c) Rough ER – Oxidation of fatty acids
(d) Smooth ER – Oxidation of phospholipids

86. Which of the following structures is not found in prokaryotic cells?
(a) Plasma membrane **[RE-AIPMT 2015]**
(b) Nuclear envelope
(c) Ribosome (d) Mesosome

87. Which of the following are not membrane-bound? **[RE-AIPMT 2015]**
(a) Mesosomes (b) Vacuoles
(c) Ribosomes (d) Lysosomes

88. Cellular organelles with membranes are : **[RE-AIPMT 2015]**
(a) Lysosomes, Golgi apparatus and mitochondria
(b) Nuclei, ribosomes and mitochondria
(c) Chromosomes, ribosomes and endoplasmic reticulum
(d) Endoplasmic reticulum, ribosomes and nuclei

89. Match the columns and identify the correct option: **[RE-AIPMT 2015]**

Column-I	Column-II
(a) Thylakoids	(i) Disc-shaped sacs in Golgi apparatus
(b) Cristae	(ii) Condensed structure of DNA
(c) Cisternae	(iii) Flat membranous sacs in stroma
(d) Chromatin	(iv) Infoldings in mitochondria

(a) (a) → (iii), (b) → (iv), (c) → (ii), (d) → (i)
(b) (a) → (iv), (b) → (iii), (c) → (i), (d) → (ii)
(c) (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)
(d) (a) → (iii), (b) → (i), (c) → (iv), (d) → (ii)

Answers

1-d	2-c	3-b	4-b	5-a	6-d	7-c	8-a	9-b	10-c
11-a	12-c	13-a	14-b	15-c	16-c	17-d	18-b	19-a	20-d
21-a	22-b	23-d	24-c	25-c	26-a	27-c	28-c	29-a	30-a
31-d	32-d	33-d	34-d	35-d	36-c	37-a	38-c	39-b	40-c
41-a	42-c	43-d	44-a	45-a	46-d	47-b	48-a	49-b	50-b
51-b	52-b	53-b	54-c	55-b	56-a	57-a	58-a	59-c	60-b
61-c	62-d	63-b	64-d	65-c	66-c	67-d	68-d	69-b	70-d
71-d	72-b	73-d	74-d	75-d	76-d	77-b	78-b	79-a	80-b
81-a	82-c	83-a	84-c	85-a	86-b	87-c	88-a	89-c	

9

BIOMOLECULES

1. Which of the following is not a part of enzyme but it activates the enzyme? **[1989]**
(a) K (b) C
(c) N (d) Si

2. Which is not consistent with double helical structure of DNA? **[1990]**
(a) A=T == C = G
(b) Density of DNA decreases on heating
(c) A + T/C + G is not constant
(d) Both (a) and (b)

3. DNA is composed of repeating units of **[1991]**
(a) ribonucleosides
(b) deoxyribonucleosides
(c) ribonucleotides
(d) deoxyribonucleotides

4. A segment of DNA has 120 adenine and 120 cytosine bases. The total number of nucleotides present in the segment is **[1991]**
(a) 120 (b) 240
(c) 60 (d) 480

5. A nucleotide is formed of **[1991]**
(a) purine, pyrimidine and phosphate
(b) purine, sugar and phosphate
(c) nitrogen base, sugar and phosphate
(d) pyrimidine, sugar and phosphate

6. Enzymes having slightly different molecular structure but performing identical activity are **[1991]**
(a) homoenzymes
(b) isoenzymes
(c) apoenzymes
(d) coenzymes

7. The basic unit of nucleic acid is **[1991]**
(a) pentose sugar
(b) nucleoid
(c) nucleoside
(d) nucleotide.

8. A nucleotide is formed of **[1991]**
(a) purine, pyrimidine and phosphate
(b) purine, sugar and phosphate
(c) nitrogen base, sugar and phosphate
(d) pyrimidine, sugar and phosphate

9. In RNA, thymine is replaced by **[1991]**
(a) adenine (b) guanine
(c) cytosine (d) uracil

10. Glycogen is a polymer of **[1992]**
(a) galactose (b) glucose
(c) fructose (d) sucrose

11. In RNA, thymine is replaced by **[1992]**
(a) adenine (b) guanine
(c) cytosine (d) uracil

12. Living cell contains 60-75% water. Water present in human body is **[1992]**
(a) 60-65% (b) 50-55%
(c) 75-80% (d) 65-70%

13. Adenine is **[1992]**
(a) purine (b) pyrimidine
(c) nucleoside (d) nucleotide

14. Which is distributed more widely in a cell?
(a) DNA (b) RNA
(c) Chloroplasts (d) Spherosomes

15. An enzyme brings about **[1993]**
(a) decrease in reaction time
(b) increase in reaction time
(c) increase in activation energy
(d) reduction in activation energy

16. Which is wrong about nucleic acids? **[1993]**
(a) DNA is single stranded in some viruses
(b) RNA is double stranded occasionally
(c) Length of one helix is 45 Å in B-DNA
(d) One turn of Z-DNA has 12 bases

17. Which one contains four pyrimidine bases? **[1994]**
(a) GATCAATGC
(b) GCUAGACAA
(c) UAGCGGUAA
(d) TGCCTAACG

18. The four elements making 99% of living system are **[1994]**
(a) CHOS (b) CHOP
(c) CHON (d) CNOP

19. A polysaccharide, which is synthesized and stored in liver cells, is **[1995]**
(a) lactose (b) galactose
(c) arabinose (d) glycogen

20. The pyrenoids are made up of **[1995]**
(a) proteinaceous centre and starchy sheath
(b) core of protein surrounded by fatty sheath
(c) core of starch surrounded by sheath of protein
(d) core of nucleic acid surrounded by protein sheath

21. Two free ribonucleotide units are interlinked with **[1995]**
(a) peptidebond
(b) covalent bond
(c) hydrogen bond
(d) phosphodiester bond

22. Most diverse macromolecules, found in the cell both physically and chemically are **[1996]**
(a) proteins (b) carbohydrates
(c) nucleic acids (d) lipids

23. The nitrogenous organic base purine occurring in RNA is **[1996]**
(a) cytosine (b) thymine
(c) guanine (d) uracil

24. In which one of the following groups, all the three are examples of polysaccharides? **[1996]**
(a) Starch, glycogen, cellulose
(b) Sucrose, maltose, glucose
(c) Glucose, fructose, lactose
(d) Galactose, starch, sucrose

25. What is common among amylase, rennin and trypsin? **[1997]**
(a) These are all proteins
(b) These are proteolytic enzymes
(c) These are produced in stomach
(d) These act at a pH lower than 7

26. Cofactor (coenzyme) is a part of holoenzyme it is **[1997]**
(a) loosely attached inorganic part
(b) accessory non-protein substance attached firmly
(c) loosely attached organic part
(d) None of the above

27. Genes are packaged into a bacterial chromosome by **[1997]**
(a) histones (b) basic proteins
(c) acidic proteins (d) actin

28. The RNA that picks up specific amino acids from the amino acid pool in the cytoplasm to ribosome during protein synthesis is called
(a) mRNA (b) tRNA
(c) rRNA (d) carrier RNA

29. Protein synthesis in an animal cell takes place **[1997]**
(a) only in the cytoplasm
(b) in the nucleolus as well as in cytoplasm
(c) in cytoplasm as well as in mitochondria
(d) only on ribosomes attached to the nuclear envelope

30. DNA synthesis can be specifically measured by estimating the incorporation of radio labelled **[1997]**
(a) uracil (b) adenine
(c) thymidine (d) deoxyribose sugar

31. Lactose is composed of **[1998]**
(a) glucose + glucose
(b) glucose + fructose
(c) fructose + galactose
(d) glucose + galactose

32. Radioactive thymidine when added to the medium surrounding living mammalian cells gets incorporated into the newly synthesized DNA. Which of the following types of chromatin is expected to become radioactive if cells are exposed radioactive thymidine as soon as they enter the S-phase? **[1998]**
(a) Heterochromatin
(b) Euchromatin
(c) Both (a) and (b)
(d) Neither heterochromatin nor euchromatin but only the nucleolus

33. Cellulose, the most important constituent of plant cell wall is made of **[1998]**
(a) unbranched chain of glucose molecules linked by α 1, 4 glycosidic bond
(b) branched chain of glucose molecules linked by β 1, 4 glycosidic bond in straight chain and α 1,6 glycosidic bond at the site of branching
(c) unbranched chain of glucose molecules linked by β 1, 4 glycosidic bond
(d) branched chain of glucose molecules linked by α 1, 6 glycosidic bond at the site of branching

34. Which one of the following statements about cytochrome 450 is wrong? **[1999]**
(a) It contains iron
(b) It is a coloured cell
(c) It has an important role in metabolism
(d) It is an enzyme involved in oxidation reactions

35. Which is an essential amino acid? **[2000]**
(a) Serine (b) Aspartic acid
(c) Glycine (d) Phenylalanine

36. ATP is a **[2000]**
(a) nucleotide (b) nucleosome
(c) nucleoside (d) purine

37. Conjugated proteins containing carbohydrates as prosthetic group are known as **[2000]**
(a) chromoproteins
(b) glycoproteins
(c) lipoproteins
(d) nucleoproteins

38. Enzymes are absent in **[2000]**
(a) algae (b) fungi
(c) cyanobacteria (d) viruses

39. Enzymes enhance the rate of reaction by **[2000]**
(a) forming a reactant-product complex
(b) changing the equilibrium point of the reaction
(c) combining with the product as soon as it is formed
(d) lowering the activation energy of the reaction

40. Feedback inhibition of an enzymatic reaction is caused by **[2000]**
(a) end product (b) substrate
(c) enzyme (d) rise in temperature

41. Length of one turn of the helix in a B-form DNA is approximately **[2000]**
(a) 3.4 nm (b) 2nm
(c) 0.34 nm (d) 20 nm

42. The transfer RNA molecule in 3D appears **[2000]**
(a) L-shaped (b) E-shaped
(c) Y-shaped (d) S-shaped

43. One of the similarities between DNA and RNA is that both **[2000]**
(a) are polymers of nucleotides
(b) are capable of replicating
(c) have similar sugars
(d) have similar pyrimidine bases

44. Due to discovery of which of the following in 1980 the evolution was termed as RNA world? **[2001]**
(a) mRNA, tRNA, rRNA synthesize proteins
(b) In some virus RNA is genetic material
(c) RNA have enzymatic property
(d) RNA is not found in all cells

45. Cytochrome is **[2001]**
(a) metallo flavoprotein
(b) Fe containing porphyrin pigment
(c) glycoprotein
(d) lipid

46. Types of RNA polymerase required in nucleus for RNA synthesis **[2001]**
(a) 1 (b) 2
(c) 3 (d) 4

47. Spoilage of oil can be detected by which fatty acid? **[2001]**
(a) Oleic acid (b) Linolenic acid
(c) Linoleic acid (d) Erucic acid

48. In plants, inulin and pectin are **[2001]**
(a) reserve materials
(b) wastes
(c) excretory material
(d) insect-attracting material

49. Enzyme first used for nitrogen fixation is **[2001]**
(a) nitrogenase
(b) nitroreductase
(c) transferase
(d) transaminase

50. Most abundant organic compound on earth is **[2001, 04]**
(a) protein (b) cellulose
(c) lipids (d) steroids

51. Hydrolytic enzymes which act at low pH are called as **[2002]**
(a) proteases (b) a-amylases
(c) hydrolases (d) peroxidases

52. Which of the following enzymes are used to join bits of DNA? **[2002]**
(a) Ligase
(b) Primase
(c) DNA polymerase
(d) Endonudease

53. Collagen is **[2002]**
(a) fibrous protein
(b) globular protein
(c) lipid
(d) carbohydrate

54. Which steroid is used for transformation? **[2002]**
(a) Cortisol (b) Cholesterol
(c) Testosterone (d) Progesterone

55. Lipids are insoluble in water because lipid molecules are **[2002]**
(a) hydrophilic (b) hydrophobic
(c) neutral (d) Zwitter ions

56. Which of the following is a reducing sugar? **[2002]**
(a) Galactose
(b) Gluconic acid
(c) p-methyl galactoside
(d) Sucrose

57. If DNA percentage of thymine is 20. What is the percentage of guanine? **[2002]**
(a) 20% (b) 40%
(c) 30% (d) 60%

58. Sequence of which of the following is used to know the phylogeny? **[2002]**
(a) mtDNA (b) rRNA
(c) tRNA (d) DNA

59. Mitotic spindle is mainly composed of which proteins? **[2002]**
(a) Actin (b) Myosin
(c) Actomyosin (d) Myoglobin

60. Which is a reducing sugar ? **[2002]**
(a) Galactose
(b) Gluconic acid
(c) β-methyl galactoside
(d) Sucrose

61. During anaerobic digestion of organic waste, such as in producing biogas, which one of the following is left undergraded? **[2003]**
(a) Hemicellulose (b) Lipids
(c) Cellulose (d) Lignin

62. The major portion of the dry weight of plants comprises of **[2003]**
(a) carbon, nitrogen and hydrogen
(b) carbon, hydrogen and oxygen
(c) nitrogen, phosphorus and potassium
(d) calcium, magnesium and sulphur

63. The most abundant element present in plants is **[2004]**
(a) carbon (b) nitrogen
(c) manganese (d) iron

64. Which form of RNA has a structure resembling clover leaf? **[2004]**
(a) rRNA (b) taRNA
(c) mRNA (d) tRNA

65. Which of the following is the simplest amino acid? **[2005]**
(a) Alanine (b) Asparagine
(c) Glycine (d) Tyrosine

66. Nucleotides are building blocks of nucleic acids. Each nucleotide is a composite molecule formed by **[2005]**
(a) base-sugar-phosphate
(b) base-sugar-OH
(c) (base-sugar-phosphate)
(d) sugar-phosphate

67. Which one of the following hydrolyses internal phosphodiester bonds in a polynucleotide chain? **[2005]**
(a) Lipase (b) Protease
(c) Endonuclease (d) Exonuclease

68. Which of the following statements regarding enzyme inhibition is correct? **[2005]**
(a) Competitive inhibition is seen when a substrate competes with an enzyme for binding to an inhibitor protein
(b) Competitive inhibition is seen when the substrate and the inhibitor compete for the active site on the enzyme
(c) Non-competitive inhibition of an enzyme can be overcome by adding large amount of substrate
(d) Non-competitive inhibitors often bind to the enzyme irreversibly

69. Enzymes, vitamins and hormones can be classified into a single category of biological chemicals, because all of these **[2005]**
(a) help in regulating metabolism
(b) are exclusively synthesized in the body of a living organism as at present
(c) are conjugated proteins
(d) enhance oxidative metabolism

70. The catalytic efficiency of two different enzymes can be compared by the **[2005]**
(a) formation of the product
(b) pH optimum value
(c) Km value
(d) molecular size of the enzyme

71. Telomerase is an enzyme which is a **[2005]**
(a) repetitive DNA (b) RNA
(c) simple protein (d) ribonucleoprotein

72. An organic substance bound to an enzyme and essential for its activity is called **[2006]**
(a) holoenzyme (b) apoenzyme
(c) isoenzyme (d) coenzyme

73. An enzyme that can stimulate germination of barley seeds is **[2006]**
(a) a-amylase (b) lipase
(c) protease (d) invertase

74. Antiparallel strands of a DNA molecule means that **[2006]**
(a) the phosphate groups of two DNA strands, at their ends, share the same position
(b) the phosphate groups at the start of two DNA strands are in opposite position (pole)
(c) one strand turns clockwise
(d) one strands turns anti-clockwise

75. Antibodies in our body are complex **[2006]**
(a) steroids
(b) prostaglandins
(c) glycoproteins
(d) lipoproteins

76. One turn of the helix in a B-form DNA is approximately **[2006]**
(a) 0.34 nm (b) 3.4 nm
(c) 2nm (d) 20 nm

77. The two polynucleotide chains in DNA are **[2007]**
(a) parallel
(b) discontinuous
(c) antiparallel
(d) semiconservative

78. About 98 percent of the mass of every living organism is composed of just six elements including carbn, hydrogen, nitrogen, oxygen and **[2007]**
(a) phosphorus and sulphur
(b) sulphur and magnesium
(c) magnesium and sodium
(d) calcium and phosphorus

79. Which one of the following is not a constituent of cell membrane? **[2007]**
(a) Cholesterol
(b) Glycolipids
(c) Proline
(d) Phospholipids

80. Which one of the following pairs of nitrogenous bases of nucleic acids, is wrongly matched with the category mentioned against it? **[2008]**
(a) Thymine, Uracil – Pyrimidines
(b) Uracil, Cytosine – Pyrimidines
(c) Adenine, Thymine – Purines
(d) Guanine, Adenine – Purines

81. In the DNA molecule **[2008]**
(a) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal
(b) there are two strands which run parallel in the 5'$\longrightarrow$ 3' direction
(c) the proportion of adenine in relation to thymine varies with the organism
(d) there are two strands which run antiparallel-one in 5'$\longrightarrow$3' direction and other in 3'$\longrightarrow$5'

82. Modern detergents contain enzyme preparation of **[2008]**
(a) acidophiles
(b) alkaliphiles
(c) thermoacidophiles
(d) thermophiles

83. A competitive inhibitor of succinic dehydrogenase is **[2008]**
(a) malonate
(b) oxaloacetate
(c) α-ketoglutarate
(d) malate

84. The uniting of antibiotic resistance gene with the plasmid vector became possible with **[2008]**
(a) DNAligase (b) endonucleases
(c) DNA polymerase (d) exonucleases

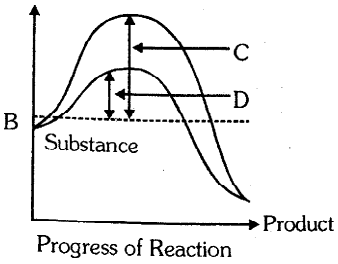
85. There is no DNA in **[2009]**

(a) A mature spermatozoan
(b) Hair root
(c) An enucleated ovum
(d) Mature RBCs

86. Three of the following statements about enzymes are correct and one is wrong. Which one is wrong? **[Mains 2010]**

(a) Enzymes are denatured at high temperature but in certain exceptional organisms they are effective even at temperatures 80°–90°C
(b) Enzymes are highly specific
(c) Most enzymes are proteins but some are lipids
(d) Enzymes require optimum pH for maximal activity

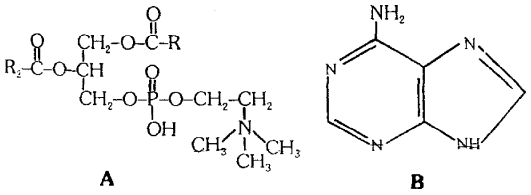
87. The figure given below shows the conversion of a substrate into product by an enzyme. In which one of the four options (1-4) the components of reaction labelled as A, B, C and D are identified correctly? **[Mains 2010]**



Options:

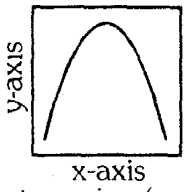
	A	B	C	D
(1)	Transition state	Potential energy	Activation energy without enzyme	Activation energy with enzyme
(2)	Potential energy	Transition state	Activation energy without enzyme	Activation energy with enzyme
(3)	Activation energy with enzyme	Transition stage	Activation energy wihtout enzyme	Potential energy
(4)	Potential energy	Transition state	Activation energy with enzyme	Activation energy without enzyme

88. Which one of the following structural formulae of two organic compounds is correctly identified along with its related function ? **[Pre. 2011]**



(a) B : adenine - a nucleotide that makes up nucleic acids
(b) A : Triglyceride-major source of energy
(c) B : Uracil - a component of DNA
(d) A : Lecithin - a component of cell membrane

89. The curve given below shows enzymatic activity with relation to three conditions (pH, temperature and substrate concentration) **[Pre. 2011]**



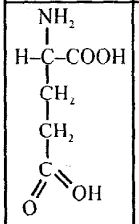
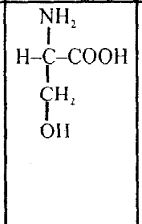
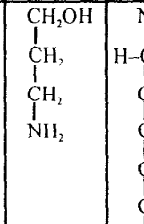
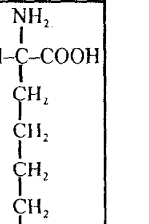
What do the two axises (x and y) represent ?

	x-axis	**y-axis**
(a)	Enzymatic activity	pH
(b)	Temperature	Enzyme activity
(c)	Substrate concentration	Enzymatic activity
(d)	Enzymatic activity	Temperature

90. Which one of the following biomolecules is correctly characterised ? **[Mains 2012]**

(a) Palmitic acid - an unsaturated fatty acid with 18 carbon atoms
(b) Adenylic acid - adenosine with a glucose phosphate molecule
(c) Alanine amino acid - Contains an amino group and an acidic group anywhere in the molecule
(d) Lecithin - a phosphorylated glyceride found in cell membrane

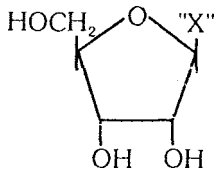
91. Which one out of A-D given below correctly represents the structural formula of the basic amino acid ? **[Pre. 2012]**

A	B	C	D
			

Options

(a) A (b) B (c) C (d) D

92. Given below is the diagrammatic representation of *one* of the categories of small molecular weight organic compounds in the living tissues. Identify the category shown and the one blank component "X" in it **[Pre. 2012]**



Category	Component
(a) Nucleotide	Adenine
(b) Nucleoside	Uracil
(c) Cholesterol	Guanin
(d) Amino acid	NH_2

93. Which one is the most abundant protein in the animal world ? **[Pre. 2012]**

(a) Collagen
(b) Insulin
(c) Trypsin
(d) Haemoglobin

94. Which one of the following is wrong statement ? **[Pre. 2012]**

(a) Phosphorus is a constituent of cell membranes, certain nucleic acids and all proteins
(b) Nitrosomonas and Nitrobacter are chemoautotrophs
(c) *Anabaena* and *Nostoc* are capable of fixing nitrogen in free-living state also
(d) Root nodule forming nitrogen fixers live as aerobes under free-living conditions

95. Transition state structure of the substrate formed during an enzymatic reaction is **[2013]**

(a) Transient but stable
(b) Permanent but unstable
(c) Transient and unstable
(d) Permanent and stable

96. A phosphoglyceride is always made up of **[2013]**

(a) Only a saturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached
(b) Only an unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached
(c) A saturated or unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached
(d) A saturated or unsaturated fatty acid esterified to a phosphate group which is also attached to a glycerol molecule

97. Macro molecule chitin is **[2013]**

(a) nitrogen containing polysaccharide
(b) phosphorus containing polysaccharide
(c) sulphur containing polysaccharide
(d) simple polysaccharide

98. Select the option which is not correct with respect to enzyme action **[AIPMT 2014]**

(a) Substrate binds with enzyme at its active site
(b) Addition of lot of succinate does not reverse the inhibition of succinic dehydrogenase by malonate
(c) A non-competitive inhibitor binds the enzyme at a site distinct from that which binds the substrate
(d) Malonate is a competitive inhibitor of succinic dehydrogenase

99. Which one of the following is a non-reducing carbohydrate ? **[AIPMT 2014]**

(a) Maltose
(b) Sucrose
(c) Lactose
(d) Ribose 5-phosphate

100. Which one of the following statements in incorrect ? **[AIPMT 2015]**

(a) In competitive inhibition, the inhibitor molecule is not chemically changed by the enzyme.
(b) The competitive inhibitor does not affect the rate of breakdown of the enzyme-substrate complex.
(c) The presence of the competitive inhibitor decreases the Km of the enzyme for the substrate.
(d) A competitive inhibitor reacts reversibly withthe enzyme to form an enzyme-inhibitor complex.

101. Which of the following biomolecules does have a phosphodiester bond ? **[RE-AIPMT 2015]**

(a) Nucleic acids in a nucleotide
(b) Fatty acids in a diglyceride
(c) Monosaccharides in a polysaccharide
(d) Amino acids in a polypeptide

102. The chitinous exoskeleton of arthropods is formed by the polymerisation of : **[RE-AIPMT 2015]**

(a) lipoglycans
(b) keratin sulphate and chondroitin sulphate
(c) D-glucosamine
(d) N-acetyl glucosamine

Answers

1-a	2-c	3-d	4-d	5-c	6-b	7-d	8-c	9-d	10-b
11-d	12-a	13-a	14-b	15-d	16-c	17-a	18-c	19-d	20-a
21-d	22-a	23-c	24-a	25-a	26-c	27-b	28-b	29-c	30-c
31-d	32-b	33-c	34-b	35-d	36-a	37-b	38-d	39-d	40-a
41-a	42-a	43-a	44-c	45-b	46-c	47-d	48-a	49-a	50-b
51-c	52-a	53-a	54-b	55-b	56-a	57-c	58-a	59-a	60-a
61-d	62-b	63-a	64-d	65-c	66-a	67-c	68-b	69-a	70-c
71-d	72-d	73-a	74-b	75-c	76-b	77-c	78-a	79-c	80-d
81-d	82-b	83-a	84-a	85-d	86-c	87-a	88-d	89-b	90-d
91-d	92-b	93-a	94-a	95-c	96-c	97-a	98-b	99-b	100-c
101-a	102-d								

10

Cell Cycle and Cell Division

1. A bivalent consists of **[1989]**
(a) two chromatids and one centromere
(b) two chromatids and two centromeres
(c) four chromatids and two centromeres
(d) four chromatids and four centromeres

2. Nucleoproteins are synthesized in **[1989]**
(a) nucleoplasm (b) nuclear envelope
(c) nucleolus (d) cytoplasm.

3. Segregation of Mendelian factor (Aa) occurs during **[1990]**
(a) diplotene
(b) anaphase-I
(c) zygotene/pachytene
(d) anaphase-II

4. Hammerling's experiments of Acetabularia involved exchanging **[1990]**
(a) cytoplasm (b) nucleus
(c) rhizoid and stalk
(d) gametes

5. In meiosis, the daughter cells differ from parent cell as well as amongst themselves due to **[1991]**
(a) segregation, independent assortment and crossing over
(b) segregation and crossing over
(c) independent assortment and crossing over
(d) segregation and independent assortment

6. Mitotic anaphase differs from metaphase in possessing **[1991]**
(a) same number of chromosomes and same number of chromatids
(b) half number of chromosomes and half number of chromatids
(c) half number of chromosomes and same number of chromatids
(d) same number of chromosomes and half number of chromatids

7. Number of chromatids at metaphase is **[1992]**
(a) two each in mitosis and meiosis
(b) two in mitosis and one in meiosis
(c) two in mitosis and four in meiosis
(d) one in mitosis and two in meiosis

8. Experiments on Acetabularia by Hammerling proved the role of **[1992]**
(a) cytoplasm in controlling differentiation
(b) nucleus in heredity
(c) chromosomes in heredity
(d) nucleo-cytoplasmie ratio

9. Genophore/bacterial genome or nucleoid is made of **[1993]**
(a) histones and non-histones
(b) RNA and histones
(c) a single double stranded DNA
(d) a single stranded DNA

10. Balbiani rings (puffs) are sites of **[1993]**
(a) DNA replication
(b) RNA and protein synthesis
(c) synthesis of polysaccharides
(d) synthesis of lipids

11. In salivary gland chromosomes/polytene chromosomes pairing is **[1993]**
(a) absent
(b) occasional
(c) formed between non-homologous chromosome
(d) formed between homologous chromosomes

12. Meiosis-II performs **[1993]**
(a) separation of sex chromosomes
(b) synthesis of DNA and centromeres
(c) separation of homologous chromosomes
(d) separation of chromatids

13. Best stage to observe shape, size and number of chromosomes is **[1994]**
(a) interphase (b) metaphase
(c) prophase (d) telophase

14. Meiosis has evolutionary significance because it results in **[1994]**
(a) genetically similar daughters
(b) four daughter cells
(c) eggs and sperms
(d) recombinations

15. The point, at which polytene chromosomes appear to be attached together, is called **[1995]**
(a) centriole
(b) centromere
(c) chromomere
(d) chromocentre

16. Lampbrush chromosomes occur during **[1996]**
(a) prophase of mitosis
(b) diplotene of meiosis
(c) metaphase of meiosis
(d) interphase

17. In cell cycle, DNA replication takes place in **[1996]**
(a) G_1 – phase
(b) G_2–phase
(c) mitotic metaphase
(d) S-phase

18. The exchange of genetic material between chromatids of paired homologous chromosomes during first meiotic division is called **[1996]**
(a) transformation
(b) chiasmata
(c) crossing over
(d) synapsis

19. During cell division in apical meristem the nuclear membrane appears in **[1997]**
(a) metaphase (b) anaphase
(c) telophase (d) cytokinesis

20. Which one of the following structures will not be common to mitotic cells of higher plants? **[1997]**
(a) Cell plate (b) Centriole
(c) Centromere (d) Spindle fibres

21. Genes located on mitochondrial DNA **[1997]**
(a) generally show maternal inheritance
(b) are always inherited from the male parent
(c) show biparental inheritance like the nuclear genes
(d) are not inherited

22. Centromere is a part of **[1997]**
(a) ribosomes
(b) chromosome
(c) mitochondria
(d) endoplasmic reticulum

23. How many mitotic divisions are needed for a single cell to make 128 cells? **[1997]**
(a) 7 (b) 14
(c) 28 (d) 64

24. Bacterium divides every 35 minutes. If a culture containing 105 cells per mL is grown for 175 minutes, what will be the cell concentration per mL after 175 minutes? **[1998]**
(a) 5×10^5 cells (b) 35×10^5 cells
(c) 32×10^5 cells (d) 175×10^5 cells

25. Crossing over in diploid organism is responsible for **[1998]**
(a) dominance of genes
(b) linkage between genes
(c) segregation of alleles
(d) recombination of linked alleles

26. DNA is mainly found in **[1999]**
(a) nucleus only (b) cytoplasm only
(c) Both (a) and (b) (d) nucleolus

27. The eukaryotic genome differs from the prokaryotic genome because **[1999]**
(a) DNA is complexed with histones in prokaryotes
(b) repetitive sequences are present in eukaryotes
(c) genes in the former cases are organised into operons
(d) DNA is circular and single stranded in prokaryotes

28. During cell cycle, the DNA replication occurs in
(a) M-phase (b) S-phase
(c) G_1-phase (d) G_2-phase

29. During cell division, the spindle fibres attach to the chromosome at a region called **[2000]**
(a) chromocentre (b) kinetochore
(c) centriole (d) chromomere

30. Extra nuclear DNA (genes) are located in **[2000]**
(a) lysosomes and chloroplasts
(b) Golgi complex and ribosomes
(c) chloroplasts and mitochondria
(d) ribosomes and mitochondria

31. Extra nuclear chromosomes occur in **[2001]**
(a) peroxisome, ribosome
(b) chloroplast, mitochondria
(c) mitochondria, ribosome
(d) chloroplast, lysosome

32. Mitotic spindle is mainly composed of which protein? **[2002]**
(a) Actin (b) Myosin
(c) Actomyosin (d) Myoglobin

33. Which of the following occurs more than one and less than five in a chromosome? **[2002]**
(a) Chromatid (b) Chromosome
(c) Centromere (d) Telomere

34. Ribosomes are produced in **[2002]**
(a) nucleolus (b) cytoplasm
(c) mitochondria (d) Golgibody

35. Best material for the study of mitosis in laboratory is **[2002]**
(a) anther (b) root tip
(c) leaf tip (d) ovary

36. If a diploid cell is treated with colchicine then it becomes **[2002]**
(a) triploid (b) tetraploid
(c) diploid (d) monoploid

37. In the somatic cell cycle **[2004]**
(a) in G_1-phase DNA content is double the amount of DNA present in the original cell
(b) DNA replication takes place in S-phase
(c) a short interphase is followed by a long mitotic phase
(d) G_2-phase follows mitotic phase

38. If you are provided with root tips of onion in your class and are asked to count the chromosomes, which of the following stages can you most conveniently look into? **[2004]**
(a) Metaphase (b) Telophase
(c) Anaphase (d) Prophase

39. Which one of the following precedes reformation of the nuclear envelope during M-phase of the cell cycle? **[2004]**
(a) Decondensation from chromosomes and reassembly of the nuclear lamina

(b) Transcription from chromosomes and reassembly of the nuclear lamina
(c) Formation of the contractile ring and formation of the phragmoplast
(d) Formation of the contractile ring and transcription from chromosomes

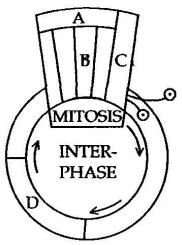
40. Crossing over that results in genetic recombination in higher organisms occur between **[2004]**
(a) sister chromatids of bivalent
(b) non-sister chromatids of a bivalent
(c) two daughter nuclei
(d) two different bivalents

41. At what stage of the cell cycle are histone proteins synthesized in a eukaryotic cell? **[2005]**
(a) During G_2-stage of prophase
(b) During S-phase
(c) During entire prophase
(d) During telophase

42. The salivary gland chromosomes in the dipteran larvae are useful in gene mapping because **[2005]**
(a) these are much longer in size
(b) these are easy to stain
(c) these are fused
(d) they have endoreduplicated chromosomes

43. Centromere is required for **[2005]**
(a) movement of chromosomes towards poles
(b) cytoplasmic cleavage
(c) crossing over (d) transcription

44. Given below is a schematic break-up of the phases / stages of cell cycle: **[2009]**



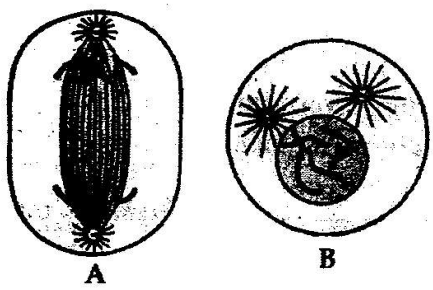
Which one of the following is the correct indication of the stage/phase in the cell cycle?
(a) D - Synthetic phase
(b) A – Cytokinesis
(c) B - Metaphase
(d) C – Karyokinesis

45. Cytoskeleton is made up of: **[2009]**
(a) Cellulosic microfibrils
(b) Proteinaceous filaments
(c) Calcium carbonate granules
(d) Callose deposits

46. Synapsis occurs between: **[2009]**
(a) spindle fibres and centromere
(b) two homologous chromosomes
(c) a male and a female gamete
(d) mRNA and ribosomes

47. During mitosis ER and nucleolus begin to disappear at **[Pre. 2010]**
(a) Late prophase
(b) Early metaphase
(c) Late metaphase
(d) Early prophase

48. Which stages of cell division do the following figures A and B represent respectively? **[Pre. 2010]**



(a) Metaphase – Telophase
(b) Telophase – Metaphase
(c) Late Anaphase – Prophase
(d) Prophase – Anaphase

49. Which one of the following statements about the particular entity is **true ?** **[Mains 2010]**
(a) The *gene for producing insulin* is present in every body cell

(b) *Nucleosome* is formed of nucleotides
(c) *DNA* consists of a core of eight histones
(d) *Centromere* is found in animal cells, which produces aster during cell division.

50. The 3'-5' phosphodiester linkages inside a polynucleotide chain serve to join **[Mains 2010]**
(a) One nucleoside with another nucleoside
(b) One nucleotide with another nucleotide
(c) One nitrogenous base with pentose sugar
(d) One DNA strand with the other DNA strand.

51. What are those structures that appear as 'beads-on-string' in the chromosomes, when viewed under electron microscope ? **[Pre. 2011]**
(a) Genes
(b) Nucleotides
(c) Nucleosomes
(d) Base pairs

52. What would be the number of chromosomes of the aleurone cells of a plant with 42 chromosomes in its root tip cells ? **[Pre. 2011]**
(a) 42 (b) 63
(c) 84 (d) 21

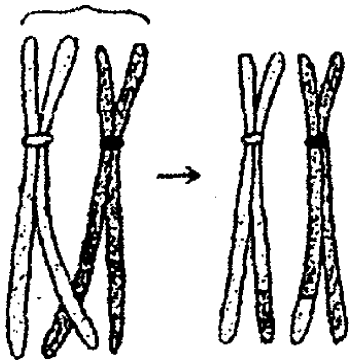
53. Select the correct option with respect to mitosis **[Pre. 2011]**
(a) Chromatids separate but remain in the centre of the cell in anaphase.
(b) Chromatids start moving towards opposite poles in telophase.
(c) Golgi complex and endoplasmic reticulum are still visible at the end of prophase.
(d) Chromosomes move to the spindle equator and get aligned along equatorial plate in metaphase

54. At metaphase, chromosomes are attached to the spindle fibres by their **[Mains 2011]**
(a) Centromere
(b) Satellites
(c) Secondary constrictions
(d) Kinetochores

55. Identify the meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at their centromeres **[2012]**
(a) Metaphase-II
(b) Anaphase-I
(c) Anaphase-II
(d) Metaphase-I

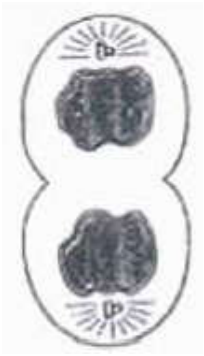
56. During gamete formation, the enzyme recombinase participates during **[2012]**
(a) Prophase-I
(b) Prophase-II
(c) Metaphase-I
(d) Anaphase-II

57. Given below is the representation of a certain event at a particular stage of a type of cell division. Which is this stage ? **[2012]**



(a) Prophase of Mitosis
(b) Both prophase and metaphase of mitosis
(c) Prophase I during meiosis
(d) Prophase II during meiosis

58. A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its characteristics. **[2013]**



(a) Telophase — nuclear envelop reforms, golgi complex reforms

(b) Late anaphase — chromosomes move away from equatorial plate, golgi complex not present

(c) Cytokinesis — cell plate formed, mitochondria distributed between two daughter cells

(d) Telophase — endoplasmic reticulum and nucleolus not reformed yet

59. The complex formed by a pair of synapsed homologous chromosomes is called **[2013]**

(a) Equatorial plate
(b) Kinetochore
(c) Bivalent
(d) Axoneme

60. During which phase(s) of cell cycle, amount of DNA in a cell remains at 4C level if the initial amount is denoted as 2C? **[AIPMT 2014]**

(a) G_0 and G_1
(b) G_1 and S
(c) Only G_2
(d) G_2 and M

61. In 'S' phase of the cell cycle **[AIPMT 2014]**

(a) Amount of DNA doubles in each cell
(b) Amount of DNA remains same in each cell
(c) Chromosome number is increased
(d) Amount of DNA is reduced to half in each cell

62. The enzyme recombinase is required at which stage of meiosis? **[AIPMT 2014]**

(a) Pachytene
(b) Zygotene
(c) Diplotene
(d) Diakinesis

63. Select the correct option :- **[AIPMT 2015]**

Column-I	Column-II
A. Synapsis aligns homologous chromosomes	(i) Anaphase-II
B. Synthesis of RNA and protein	(ii) Zygotene
C. Action of enzyme recombinase	(iii) G_2 –phase
D. Centromeres do not separate but chromatids move towards opposite poles	(iv) Anaphase-I
	(v) Pachytene

(a) A → (ii), B → (iii), C → (v), D → (iv)
(b) A → (i), B → (ii), C → (v), D → (iv)
(c) A → (ii), B → (iii), C → (iv), D → (v)
(d) A → (ii), B → (i), C → (iii), D → (iv)

64. Which is the most common mechanism of genetic variation in the population of sexually reproducing organism? **[AIPMT 2015]**

(a) Chromosomal aberrations
(b) Genetic drift
(c) Recombination
(d) Transduction

65. A somatic cell that has just completed the S phase of its cell cycle, as compared to gamete of the same species, has : **[AIPMT 2015]**

(a) same number of chromosomes but twice the amount of DNA
(b) twice the number of chromosomes and four times the amount of DNA

(c) four times the number of chromosomes and twice the amount of DNA
(d) twice the number of chromosomes and twice the amount of DNA

66. Arrange the following events of meiosis in correct sequence : **[RE-AIPMT 2015]**
(a) Crossing over
(b) Synapsis
(c) Terminalisation of chaismata
(d) Disappearance of nucleolus
(a) (b), (c), (d), (a)
(b) (b), (a), (d), (c)
(c) (b), (a), (c), (d)
(d) (a), (b), (c), (d)

Answers

1-c	**2-d**	**3-b**	**4-b**	**5-b**	**6-d**	**7-a**	**8-b**	**9-c**	**10-b**
11-d	**12-d**	**13-b**	**14-d**	**15-d**	**16-b**	**17-d**	**18-c**	**19-c**	**20-b**
21-a	**22-b**	**23-a**	**24-c**	**25-d**	**26-a**	**27-b**	**28-b**	**29-b**	**30-c**
31-b	**32-a**	**33-d**	**34-a**	**35-b**	**36-b**	**37-b**	**38-a**	**39-a**	**40-b**
41-b	**42-d**	**43-a**	**44-a**	**45-b**	**46-b**	**47-a**	**48-c**	**49-a**	**50-b**
51-c	**52-b**	**53-d**	**54-d**	**55-b**	**56-a**	**57-c**	**58-a**	**59-c**	**60-c**
61-a	**62-a**	**63-a**	**64-c**	**65-b**	**66-c**				

11

TRANSPORT IN PLANTS

1. In a terrestrial habitat which of the following is affected by temperature and rainfall condition? **[1989]**
(a) Translocation
(b) Transpiration
(c) Transformation
(d) Thermodenaturation

2. Death of protoplasm is a pre-requisite for a vital function like **[1989]**
(a) transport of sap
(b) transport of food
(c) absorption of water
(d) gaseous exchange

3. Sieve tubes are suited for translocation of food because they possess **[1989]**
(a) bordered pits
(b) no ends walls
(c) broader lumen and perforated cross walls
(d) no protoplasm

4. Mainly conduction of water in an angiosperm occurs through **[1990]**
(a) tracheids (b) xylem vessels
(c) sieve tubes (d) All of these

5. Root system in a plant is well developed **[1990]**
(a) due to deficiency of auxins
(b) due to deficiency of cytokinins
(c) due to deficiency of minerals
(d) for increased absorption of water

6. An innovative professor who wanted to give a live demonstration of a physiological process, filled a glass bottle with previously moistened mustard seeds and water. He screwcapped the bottle and kept it away in a corner and resumed his lecture. Towards the end of his lecture there was a sudden explosion with glass pieces of bottle thrown around. Which of the following phenomena did the professor want to demonstrate? **[1990]**
(a) Diffusion
(b) Osmosis
(c) Anaerobic respiration
(d) Imbibition

7. Water potential can be obtained by **[1991]**
(a) OP + TP (b) OP = WP
(c) $\psi_s + \psi_P$ (d) OP–DPD

8. Which is correct about transport or conduction of substances? **[1991, 97]**
(a) Organic food moves up through phloem
(b) Organic food moves up through xylem
(c) Inorganic food moves upwardly and downwardly through xylem
(d) Organic food moves upwardly and downwardly through phloem

9. In soil, water available for roots (to plants) is **[1991,99]**
(a) capillary water
(b) hygroscopic water
(c) gravitational water
(d) chemically bound water

10. In guard cells when sugar is converted into starch the stomatal pore **[1992]**
(a) opens fully
(b) opens partially
(c) closes completely
(d) remains unchanged

11. Conversion of starch to organic acid is essential for **[1992]**
(a) stomatal closure
(b) stomatal opening
(c) stomatal initiation
(d) stomatal growth

12. Guttation is caused by **[1992]**
(a) transpiration (b) osmosis/DPD
(c) root pressure (d) osmotic pressure

13. Meaningful girdling (ringing) experiment can not be performed within sugarcane because **[1992]**
(a) its phloem is situated interior to xylem
(b) its stem surface is covered with waxy coating
(c) its vascular bundles are not present in a ring
(d) its stem is thin

14. The direction and rate of water movement from cell to cell is based on **[1992]**
(a) WP
(b) TP
(c) DPD
(d) incipient plasmolysis

15. Translocation of carbohydrate nutrients usually occurs in the form of **[1992]**
(a) glucose (b) maltose
(c) starch (d) sucrose

16. Which of the following is an effective adaptation for better gas exchange in plants? **[1993]**
(a) Presence of multiple epidermis
(b) Presence of hair on the lower epidermis
(c) Presence of waxy cuticle covering the epidermis of the leaves
(d) The location of the stomata primarily on the lower surface of the leaf, the side turned away from the direct sun rays

17. Some of the growth regulators affect stomatal opening. Closure of stomata is brought about by **[1994]**
(a) indole butyric acid
(b) abscisic acid
(c) kinetin
(d) gibberellic acid

18. Which of the following is used to determine the rate of transpiration in plants? **[1994]**
(a) Porometer
(b) Potometer
(c) Auxanometer
(d) Tensiometer

19. The movement of water from one cell of the cortex to the adjacent one in roots is due to **[1995]**
(a) accumulation of inorganic salts in the cells
(b) accumulation of organic compounds in the cells
(c) chemical potential gradient
(d) water potential gradient

20. Water entering root due to diffusion is part of **[1996]**
(a) endosmosis
(b) osmosis
(c) passive absorption
(d) active absorption

21. Bidirectional translocation of minerals takes place in **[1997]**
(a) xylem (b) phloem
(c) parenchyma (d) cambium

22. Osmotic pressure in the leaf cells is positive during **[1997]**
(a) excessive transpiration
(b) low transpiration
(c) excessive absorption
(d) guttation

23. If turgidity of a cell surrounded by water increases, the wall pressure will **[1997]**
(a) increase
(b) decrease
(c) fluctuate
(d) remain unchanged

24. The water potential and osmotic potential of pure water are **[1998]**
(a) 100 and zero (b) zero and zero
(c) 100 and 200 (d) zero and 100

25. Water enters a cell due to **[2001]**
(a) OP (b) SP
(c) TP (d) WP

26. Passive absorption of minerals depend on **[2001]**
(a) temperature
(b) temperature and metabolic inhibitor
(c) metabolic inhibitor
(d) humidity

27. Glycolate induces opening of stomata in **[2001]**
(a) presence of oxygen
(b) low CO_2 concentration
(c) high CO_2 concentration
(d) absence of CO_2

28. In which of the following plant sunken stomata are found? **[2001]**
(a) Nerium (b) Hydrilla
(c) Mango (d) Guava

29. Main function of lenticel is **[2002]**
(a) transpiration
(b) guttation
(c) gaseous exchange
(d) bleeding

30. Opening and closing of stomata is due to **[2002]**
(a) hormonal change in guard cells
(b) change in turgor pressure of guard cells
(c) gaseous exchange
(d) respiration

31. Stomata of CAM plants **[2003]**
(a) open during the night and close during the day
(b) never open
(c) are always open
(d) open during the day and close at night

32. Stomata of a plant open due to **[2003]**
(a) influx of calcium ions
(b) influx of potassium ions
(c) efflux of potassium ions
(d) influx of hydrogen ions

33. The translocation of organic solutes in sieve tube members is supported by **[2006]**
(a) P-proteins
(b) mass flow involving a carrier and ATP
(c) cytoplasmic streaming
(d) root pressure and transpiration pull

34. Two cells A and B are contiguous. Cell A has osmotic pressure 10 atm, turgor pressure 7 atm and diffusion pressure deficit 3 atm. Cell B has osmotic pressure 8 atm, turgor pressure 3 atm and diffusion pressure deficit 5 atm. The result will be **[2007]**
(a) movement of water from cell B to A
(b) no movement of water
(c) equilibrium between the two
(d) movement of water from cell A to B

35. Carbohydrates are commonly found as starch in plant storage organs, which of the following five properties of starch (A-E) make it useful as a storage material? **[2008]**
(A) Easily translocated
(B) chemically non-reactive
(C) easily digested by animals
(D) osmotically inactive

(E) synthesized during photosynthesis The useful properties are

(a) (B) and (C) (b) (B) and (D)
(c) (A), (C) and (E) (d) (A) and (E)

36. The rupture and fractionation do not usually occur in the water column in vessel/ tracheids during the ascent of sap because of **[2008]**

(a) lignified thick walls
(b) cohesion and adhesion
(c) weak gravitational pull
(d) transpiration pull

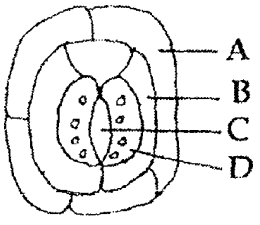
37. Guard cells help in **[2009]**

(a) Guttation
(b) Fighting against infection
(c) Protection against grazing
(d) Transpiration

38. Transport of food material in higher plants takes place through **[Mains 2010]**

(a) Transfusion tissue
(b) Tracheids
(c) Sieve elements
(d) Companion cells

39. Given below is the diagram of a stomatal apparatus. **[Mains 2010]**
In which of the following all the four parts labelled as A, B, C and D are correctly identified?



	A	B	C	D
(a)	Guard cell	Stomatal aperture	Subsidiary cell	Epidermal cell
(b)	Epidermal cell	Guard cell	Stomatal aperture	Subsidiary cell
(c)	Epidermal cell	Subsidiary cell	Stomatal aperture	Guard cell
(d)	Subsidiary cell	Epidermal cell	Guard cell	Stomatal aperture

40. Guttation is the result of **[Mains 2011]**

(a) Root pressure (b) Diffusion
(c) Transpiration (d) Osmosis

41. In land plants, the guard cells differ from other epidermal cells in having **[Pre. 2011]**

(a) Cytoskeleton (b) Mitochondria
(c) Endoplasmic reticulum
(d) Chloroplasts

42. Lenticels are involved in **[2013]**

(a) Transpiration (b) Gaseous exchange
(c) Food transport (d) Photosynthesis

43. Which one gives the most valid and recent explanation for stomatal movements ? **[AIPMT 2015]**

(a) Potassium influx and efflux
(b) Starch hydrolysis
(c) Guard cell photosynthesis
(d) Transpiration

44. In a ring girdled plant: **[AIPMT 2015]**

(a) The root dies first
(b) The shoot and root die together
(c) Neither root nor shoot will die
(d) The shoot dies first

45. Transpiration and root pressure cause water to rise in plants by : **[AIPMT 2015]**

(a) Pulling and pushing it, respectively
(b) Pushing it upward
(c) Pushing and pulling it, respectively
(d) Pushing it upward

46. Root pressure develops due to : **[RE-AIPMT 2015]**

(a) Increase in transpiration
(b) Active absorption
(c) Low osmotic potential in soil
(d) Passive absorption

47. A column of water within xylem vessels of tall trees does not break under its weight because of : **[RE-AIPMT 2015]**

(a) Positive root pressure
(b) Dissolved sugars in water
(c) Tensile strength of water
(d) Lignification of xylem vessels

Answers

1-b	2-a	3-c	4-b	5-d	6-d	7-c	8-d	9-a	10 -c
11-b	12-c	13-c	14-c	15-d	16-d	17-b	18-b	19-d	20 -c
21-a	22-a	23-a	24-b	25-b	26-a	27-b	28-a	29-c	30 -b
31-a	32-b	33-b	34-d	35-b	36-b	37-d	38-c	39-c	40 -a
41-d	42-b	43-a	44-a	45-a	46-b	47-c			

12

MINERAL NUTRITION

1. Mineral associated with cytochrome is
(a) Cu (b) Mg **[1991]**
(c) Fe and Mg (d) Fe and Cu

2. The association between blue-green algae and fungi occurs in **[1995]**
(a) lichens (b) symbiosis
(c) cannibalism (d) mycorrhiza

3. Which one of the following is a micronutrient for plants? **[1996]**
(a) Calcium (b) Magnesium
(c) Manganese (d) Nitrogen

4. Which one of the following is not an essential element for plants? **[1996]**
(a) Potassium (b) Iron
(c) Iodine (d) Zinc

5. The core metal of chlorophyll is **[1997]**
(a) iron (b) magnesium
(c) nickel (d) copper

6. Which of the following is not caused by deficiency of mineral nutrition? **[1997]**
(a) Necrosis (b) Chlorosis
(c) Etiolation
(d) Shortening of internodes

7. Which of the following is a free living aerobic non-photosynthetic nitrogen-fixer? **[1997]**
(a) Rhizobium (b) Azotobacter
(c) Azospirillum (d) Nostoc

8. Zinc as a nutrient is used by the plants in the form of **[2000]**
(a) Zn (b) Zn^{2+}
(c) ZnO (d) $ZnSO_4$

9. The plants grown in magnesium deficient but urea sprayed soil would show **[2000]**
(a) deep green foliage
(b) early flowering
(c) yellowing of leaves
(d) loss of pigments in petals

10. Which aquatic fern performs nitrogen fixation? **[2001]**
(a) Azolla (b) Nostoc
(c) Salvia (d) Salvinia

11. Enzyme involved in nitrogen assimilation **[2001]**
(a) nitrogenase (b) nitrate reductase
(c) transferase (d) transaminase

12. Element necessary for the middle lamella
(a) Ca (b) Zn **[2001]**
(c) K (d) Cu

13. Choose the correct match Bladderwort, sundew, venusfly trap **[2002]**
(a) Nepenthes, Dionea, Drosera
(b) Nepenthes, Utricularia, Vanda
(c) Utricularia, Drosera, Dionea
(d) Dionea, Trapa, Vanda

14. Boron in green plants assists in **[2003]**
(a) sugar transport
(b) activation of enzymes
(c) acting as enzyme cofactor
(d) photosynthesis

15. Grey spots of oat are caused by deficiency of
(a) Fe (b) Cu **[2003]**
(c) Zn (d) Mn

16. The major role of minor elements inside living organisms is to act as **[2003]**
(a) binder of cell structure
(b) co-factors of enzymes
(c) building blocks of important amino acids
(d) constituent of hormones

17. Which one of the following mineral elements plays an important role in biological nitrogen fixation? **[2003]**
(a) Molybdenum (b) Copper
(c) Manganese (d) Zinc

18. The major portion of the dry weight of plants comprises of **[2003]**
(a) carbon, hydrogen and oxygen
(b) nitrogen, phosphorus and potassium
(c) calcium, magnesium and sulphur
(d) carbon, nitrogen and hydrogen

19. A free living, nitrogen-fixing cyanobacterium which can also form symbiotic association with the water fern Azolla is **[2004]**
(a) Tolypothrix (b) Chlorella
(c) Nostoc (d) Anabaena

20. The deficiencies of micronutrients, not only affects growth of plants but also vital functions such as photosynthetic and mitochondrial electron flow. Among the list given below, which group of three elements shall affect most, both photosynthetic and mitochondrial electron transport? **[2005]**
(a) Co, Ni, Mo (b) Ca, K, Na
(c) Mn, Co, Ca (d) Cu, Mn, Fe

21. Farmers in a particular region were concerned that pre-mature yellowing of leaves of a pulse crop might cause decrease in the yield. Which treatment could be most beneficial to obtain maximum seed yield? **[2006]**
(a) Frequent irrigation of the crop
(b) Treatment of the plants with cytokinins alongwith a small dose of nitrogenous fertilizer
(c) Removal of all yellow leaves and spraying the remaining green leaves with 2,4, 5-trichlorophenoxy acetic acid
(d) Application of iron and magnesium to promote synthesis of chlorophyll

22. A plant requires magnesium for **[2007]**
(a) holding cells together
(b) protein synthesis
(c) chlorophyll synthesis
(d) cell wall development

23. Which one of the following elements is not an essential micronutrient for plant growth?
(a) Mn (b) Zn **[2007]**
(c) Cu (d) Ca

24. Which of the following is a flowering plant with nodules containing filamentous nitrogen-fixing microorganism ? **[2007]**
(a) Casuarina equisetifolia
(b) Crotalaria juncea
(c) Cycas revoluta
(d) Cicer arietinum

25. Nitrogen-fixation in root nodules of Alnus is brought about by **[2008]**
(a) Bradyrhizobium
(b) Clostridium
(c) Frankia
(d) Azorhizobium

26. Which of the following is a symbiotic nitrogen fixer ? **[2009]**
(a) Frankia (b) Azolla
(c) Glomus (d) Azotobacter

27. Manganese is required in **[2009]**
(a) Photolysis of water during photosynthesis

(b) Chlorophyll synthesis
(c) Nucleic acid synthesis
(d) Plant cell wall formation

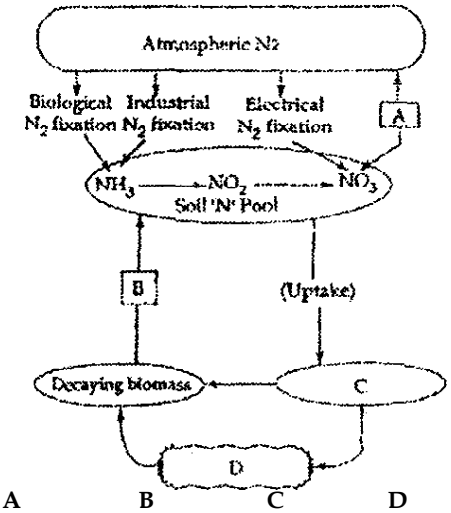
28. An element playing important role in nitrogen fixation is: **[Pre. 2010]**
(a) Molybdenum (b) Copper
(c) Manganese (d) Zinc

29. Which one of the following is not a micronutrient? **[Pre. 2010]**
(a) Molybdenum (b) Magnesium
(c) Zinc (d) Boron

30. One of the free-living, anaerobic nitrogen-fixer is **[Pre. 2010]**
(a) Beijernickia (b) Rhodospirillum
(c) Rhizobium (d) Azotobacter

31. The common nitrogen-fixer in paddy fields is **[Pre. 2010]**
(a) Rhizobium (b) Azospirillum
(c) Oscillatoria (d) Frankia

32. Study the cycle shown below and select the option which gives correct words for all the four blanks A, B, C and D. **[Mains 2010]**



	A	B	C	D
(a)	Denitrification	Ammonification	Plants	Animals
(b)	Nitrification	Dentrification	Animals	Plants
(c)	Denitrification	Nitrification	Plants	Animals
(d)	Nitrification	Ammonification	Animals	Plants

33. Legumious plants are able to fix atmosphere nitrogen through the process of symbiotic nitrogen fixation. Which one of the following statement is not correct during this process of nitrogen fixation. **[Mains 2010]**
(a) Nodules act as sites for nitrogen fixation
(b) The enzyme nitrogense catalyses the conversion of atmospheric N_2 to NH_3
(c) Nitrogenase is insensitive to oxygen
(d) Leghaemoglobin scavenges oxygen and in colour

34. Which one of the following is not an essential mineral element for plants while the remaining three are ? **[Mains 2011]**
(a) Phosphorus (b) Iron
(c) Manganese (d) Cadmium

35. Which one of the following elements in plants is not remobilised ? **[Pre. 2011]**
(a) Phosphorus (b) Calcium
(c) Potassium (d) Sulphur

36. Nitrifying bacteria **[Pre. 2011]**
(a) Oxidize ammonia to nitrates
(b) Convert free nitrogen to nitrogen compounds
(c) Convert proteins into ammonia
(d) Reduce nitrates to free nitrogen

37. The function of leghaemoglobin in the root nodules of legumes is **[Pre. 2011]**
(a) Inhibition of nitrogenase activity
(b) Oxygen removal
(c) Nodule differentiation
(d) Expression of nif gene

38. Which one of the following helps in absorption of phosphorus from soil by plants ? **[Pre. 2011]**
(a) *Glomus* (b) *Rhizobium*
(c) *Frankia* (d) *Anabaena*

39. For its action, nitrogenase requires **[Mains 2012]**
(a) Light (b) Mn^{2+}

(c) Super oxygen radicals
(d) High input of energy

40. For its activity, carboxypeptidase requires : **[Mains 2012]**
(a) Iron (b) Niacin
(c) Copper (d) Zinc

41. Best defined function of Manganese in green plants is **[Pre. 2012]**
(a) Nitrogen fixation
(b) Water absorption
(c) Photolysis of water
(d) Calvin cycle

42. A nitrogen fixing microbe associated with *Azolla* in rice-fields is **[Pre. 2012]**
(a) *Frankia* (b) *Tolypothrix*
(c) *Spirulina* (d) *Anabaena*

43. The first stable product of fixation of atmospheric nitrogen in leguminous plants is **[2013]**
(a) NO_2^- (b) Ammonia
(c) NO_3^- (d) Glutamate

44. Deficiency symptoms of nitrogen and potassium are visible first in - **[AIPMT 2014]**
(a) Senescent leaves (b) Young leaves
(c) Roots (d) Buds

45. Minerals known to be required in large amounts for plant growth include:- **[AIPMT 2015]**
(a) calcium, magnesium, manganese, copper
(b) potassium, phosphorus, selenium, boron
(c) magnesium, sulphur, iron, zinc
(d) phosphorus, potassium, sulphur, calcium

46. The oxygen evolved during photosynthesis comes from water molecules. Which one of the following pairs of elements is involved in this reaction? **[RE-AIPMT 2015]**
(a) Magnesium and Chlorine
(b) Manganese and Chlorine
(c) Manganese and Potassium
(d) Magnesium and Molybdenum

47. During biological nitrogen fixation, inactivation of nitrogenase by oxygen poisoning prevented by : **[RE-AIPMT 2015]**
(a) Cytochrome (b) Leghaemoglobin
(c) Xanthophyll (d) Carotene

Answers

1-d	**2-a**	**3-c**	**4-c**	**5-b**	**6-c**	**7-b**	**8-b**	**9-c**	**10-a**
11-a	**12-a**	**13-c**	**14-a**	**15-d**	**16-b**	**17-a**	**18-a**	**19-d**	**20-d**
21-d	**22-c**	**23-d**	**24-a**	**25-c**	**26-a**	**27-a**	**28-d**	**29-b**	**30-b**
31-d	**32-a**	**33-c**	**34-d**	**35-b**	**36-a**	**37-b**	**38-a**	**39-d**	**40-d**
41-c	**42-d**	**43-b**	**44-a**	**45-d**	**46-b**	**47-b**			

13

PHOTOSYNTHESIS IN HIGHER PLANTS

1. A very efficient converter of solar energy with net productivity of 2-4 kg/m2 or more is the crop of **[1989]**
(a) wheat (b) sugarcane
(c) rice (d) bajra

2. In C4-plants, Calvin cycle operates in **[1989]**
(a) stroma of bundle sheath chloroplasts
(b) grana of bundle sheath chloroplasts
(c) grana of mesophyll chloroplasts
(d) stroma of mesophyll chloroplasts

3. The substrate for photorespiration is **[1989]**
(a) ribulose bis-phosphate
(b) glycolate
(c) serine
(d) glycine

4. Greatest producers of organic matter are **[1989,94]**
(a) crop plants (b) forests
(c) plants of the land area
(d) phytoplankton of oceans

5. The first carbon dioxide acceptor in C 4-plants is **[1990,92]**
(a) phosphoenol-pyruvate
(b) ribulose 1,5-diphosphate
(c) oxalo acetic acid
(d) phosphoglyceric acid

6. Kranz anatomy is typical of **[1990, 95]**
(a) C_4-plants (b) C_3-plants
(c) C_2-plants (d) CAM plants

7. Ferredoxin is a constituent of **[1991]**
(a) PS-I (b) PS-II
(c) Hill reaction (d) P_{680}

8. During monsoon, the rice crop of Eastern states of India shows lesser yield due to limiting factor of **[1991]**
(a) CO_2 (b) light
(c) temperature (d) water

9. Dark reactions of photosynthesis occur in **[1991]**
(a) granal thylakoid membranes
(b) stromal lamella membranes
(c) stroma outside photosynthetic lamellae
(d) periplastidial space

10. Photosynthetic pigments found in the chloroplasts occur in **[1991]**
(a) thylakoid membranes
(b) plastoglobules
(c) matrix
(d) chloroplast envelope

11. Which technique has helped in investigation of Calvin cycle? **[1991]**
(a) X-ray crystallography
(b) X-ray technique

(c) Radioactive isotope technique
(d) Intermittent light

12. Which one is a C_4 plant? **[1992]**
(a) Papaya (b) Pea
(c) Potato (d) Maize/corn

13. The enzyme that catalyses initial carbon dioxide fixation in C_4 plants is **[1992, 2002]**
(a) RuBP carboxylase
(b) PEP carboxylase
(c) carbonic anhydrase
(d) carboxydismutase

14. Photosystem-II occurs in **[1992]**
(a) stroma
(b) cytochrome
(c) grana
(d) mitochondrial surface

15. Chlorophyll-a occurs in **[1992]**
(a) all photosynthetic autotrophs
(b) in all higher plants
(c) all oxygen liberating autotrophs
(d) all plants except fungi

16. Formation of ATP in photosynthesis and respiration is an oxidation process which utilises the energy from **[1992]**
(a) cytochromes
(b) ferredoxin
(c) electrons
(d) carbon dioxide

17. A photosynthesizing plant is releasing ^{18}O more than the normal. The plant must have been supplied with **[1993]**
(a) O_3 (b) H_2O with ^{18}O
(c) CO_2 with ^{18}O (d) $C_6H_{12}O_6$ with ^{18}O

18. Maximum solar energy is trapped by **[1993]**
(a) planting trees
(b) cultivating crops
(c) growing algae in tanks
(d) growing grasses

19. The carbon dioxide acceptor in Calvin cycle/C_3 plants is **[1993, 95, 96, 99]**
(a) Phosphoenol pyruvate (PEP)
(b) Ribulose 1,5-diphosphate (RuDP)
(c) Phosphoglyceric Acid (PGA)
(d) Ribulose Monophosphate (RMP)

20. C_4-cycle was discovered by **[1994]**
(a) Hatch and Slack
(b) Calvin
(c) Hill
(d) Arnon

21. Which one occurs both during cyclic and non-cyclic modes of photophosphorylation? **[1994]**
(a) Involvement of both PS-I and PS-II
(b) Formation of ATP
(c) Release of O_2
(d) Formation of NADPH

22. Pigment acting as a reaction centre during photosynthesis is **[1994]**
(a) carotene (b) phytochrome
(c) P_{700} (d) cytochrome

23. Nine-tenth of all photosynthesis of world (85-90%) is carried out by **[1994]**
(a) large trees with millions of branches and leaves
(b) algae of the ocean
(c) chlorophyll containing ferns of the forest
(d) scientists in the laboratories

24. Chlorophyll-a molecule at its carbon atom 3 of the pyrrole ring-II has one of the following **[1996]**
(a) aldehyde group (b) methyl group
(c) carboxyl group (d) magnesium

25. Which one of the following is represented by Calvin cycle? **[1996]**
(a) Reductive carboxylation
(b) Oxidative carboxylation
(c) Photophosphorylation
(d) Oxidative phosphorylation

26. Photosynthetically active radiation is represented by the range of wavelength **[1996, 2004, 05]**

(a) 340-450 nm (b) 400-700 nm
(c) 500-600 nm (d) 400-950 nm

27. The principle of limiting factors was proposed by **[1996]**
(a) Blackmann (b) Hill
(c) Arnon (d) Liebig

28. Photorespiration is favoured by **[1996]**
(a) high O_2 and low CO_2
(b) low light and high O_2
(c) low temperature and high O_2
(d) low O_2 and high CO_2

29. NADPH is generated through **[1997]**
(a) photosystem-I
(b) photosystem-II
(c) anaerobic respiration
(d) glycolysis

30. Protochlorophyll differs from chlorophyll in lacking **[1998]**
(a) 2 hydrogen atoms in one of its pyrrole rings
(b) 2 hydrogen atoms in two of its pyrrole rings
(c) 4 hydrogen atoms in one of its pyrrole rings
(d) 4 hydrogen atoms in two of its pyrrole rings

31. Which one of the following statements about cytochrome P_{450} is wrong? **[1998]**
(a) It contains iron
(b) It is an enzyme involved in oxidation reactions
(c) It is a coloured cell
(d) It has an important role in metabolism

32. Which enzyme is most abundantly found on earth? **[1999]**
(a) Catalase (b) Rubisco
(c) Nitrogenase (d) Invertase

33. Fixation of one CO_2 molecule through Calvin cycle requires **[2000]**
(a) 1 ATP and $2NADPH_2$
(b) 2 ATP and $2NADPH_2$
(c) 3 ATP and $2NADPH_2$
(d) 2ATP and $1NADPH_2$

34. How many turns of Calvin cycle yield one molecule of glucose? **[2000]**
(a) 8 (b) 2
(c) 6 (d) 4

35. The first step of photosynthesis is **[2000]**
(a) excitation of electron of chlorophyll by a photon of light
(b) formation of ATP
(c) attachment of CO_2 to 5 carbon sugar
(d) ionisation of water

36. Photochemical reactions in the chloroplast are directly involved in **[2000]**
(a) formation of phosphoglyceric acid
(b) fixation of carbon dioxide
(c) synthesis of glucose and starch
(d) photolysis of water and phosphorylation of ADP to ATP

37. Which pigment system is inactivated in red drop? **[2001]**
(a) PS-Iand PS-II
(b) PS-I
(c) PS-II
(d) None of these

38. Cytochrome is **[2001]**
(a) metallo flavo protein
(b) Fe-containing porphyrin pigment
(c) glycoprotein
(d) lipid

39. Which pair is wrong? **[2001]**
(a) C_3—Maize
(b) C_4—Kranz anatomy
(c) Calvin cycle—PGA
(d) Hatch and Slack Pathway—Oxalo acetic acid

40. In photosynthesis energy from light reaction to dark reaction is transferred in the form of **[2002]**

(a) ADP (b) ATP
(c) RuDP (d) chlorophyll

41. Which of the following absorb light energy for photosynthesis? **[2002]**
(a) Chlorophyll
(b) Water molecule
(c) O_2
(d) RuBP

42. Which element is located at the centre of the porphyrin ring in chlorophyll? **[2003]**
(a) Manganese
(b) Calcium
(c) Magnesium
(d) Potassium

43. In sugarcane plant $^{14}CO_2$ is fixed in malic acid, in which the enzyme that fixes CO_2 is **[2003]**
(a) fructose phosphatase
(b) ribulose bisphosphate carboxylase
(c) phosphoenol pyruvic acid carboxylase
(d) ribulose phosphate kinase

44. Stomata of CAM plants **[2003]**
(a) never open
(b) are always open
(c) open during the day and close at night
(d) open during the night and close during the day

45. Which fractions of the visible spectrum of solar radiations are primarily absorbed by carotenoids of the higher plants? **[2003]**
(a) Violet and blue
(b) Blue and green
(c) Green and red
(d) Red and violet

46. Which one of the following is wrong in relation to photorespiration? **[2003]**
(a) It is a characteristic of C_3 -plants
(b) It occurs'in chloroplasts
(c) It occurs in day time only
(d) It is a characteristic of C_4-plants

47. In C_3-plants, the first stable product of photosynthesis during the dark reaction is **[2004]**
(a) malic acid
(b) oxaloacetic acid
(c) 3-phosphoglyceric acid
(d) phosphoglyceraldehyde

48. Chlorophyll in chloroplasts is located in **[2004]**
(a) outer membrane
(b) inner membrane
(c) thylakoids
(d) stroma

49. As compared to a C_3-plant, how many additional molecules of ATP are needed for net production of one molecule of hexose sugar by C_4-plants **[2005]**
(a) 2 (b) 6
(c) 12 (d) zero

50. Photosynthesis in C_4-plants is relatively less limited by atmospheric CO_2 levels because **[2005]**
(a) effective pumping of CO_2 into bundle sheath cells
(b) rubisco in C_4-plants has higher affinity for CO_2
(c) four carbon acids are the primary initial CO_2 fixation products
(d) the primary fixation of CO_2 is mediated via PEP carboxylase

51. In photosystem-I the first electron acceptor is **[2006]**
(a) cytochrome
(b) plastocyanin
(c) an iron-sulphur protein
(d) ferredoxin

52. During photorespiration, the oxygen consuming reaction(s) occur in **[2006]**
(a) stroma of chloroplasts and peroxisomes
(b) grana of chloroplasts and peroxisomes
(c) stroma of chloroplasts
(d) stroma of chloroplasts and mitochondria

53. In the leaves of C_4-plants, malic acid formation during CO_2 fixation occurs in the cells of **[2007,08]**

(a) mesophyll (b) bundle sheath
(c) phloem (d) epidermis

54. The first acceptor of electrons from an excited chlorophyll molecule of photosystem-II is **[2007, 08]**

(a) cytochrome (b) iron-sulphur protein
(c) ferredoxin (d) quinone

55. The C_4-plants are photosynthetically more efficient than C_3-plants because **[2008]**

(a) the CO_2 compensation point is more
(b) CO_2 generated during photorespiration is trapped and recycled through PEP carboxylase
(c) the CO_2 efflux is not prevented
(d) they have more chloroplasts

56. Stroma in the chloroplasts of higher plant contains **[2009]**

(a) Ribosomes
(b) Chlorophyll
(c) Light-independent reaction enzymes
(d) Light-dependent reaction enzymes

57. Oxygenic photosynthesis occurs in **[2009]**

(a) Rhodospirillum (b) Chlorobium
(c) Chromatium (d) Oscillatoria

58. PGA as the first CO_2 fixation product was discovered in photosynthesis of **[Pre. 2010]**

(a) Bryophyte
(b) Gymnosperm
(c) Angiosperm alga
(d) Alga

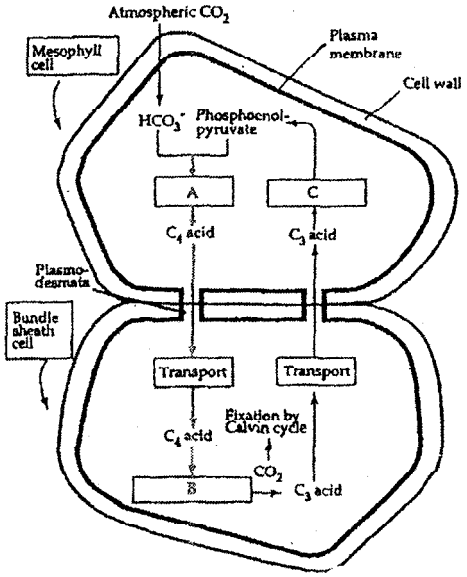
59. C_4 plants are more efficient in photosynthesis than C_3 plants due to **[Pre. 2010]**

(a) Higher leaf area
(b) Presence of larger number of chloroplasts in the leaf cells
(c) Presence of thin cuticle
(d) Lower rate of photorespiration

60. Kranz anatomy is one of the characteristics of the leaves of **[Mains 2010]**

(a) Wheat (b) Sugarcane
(c) Mustard (d) Potato

61. Study the pathway given below **[Mains 2010]**



In which of the following options correct words for all the three blanks A, B and C are indicated ?

	A	B	C
(a)	Fixation	Transamination	Regeneration
(b)	Fixation	Decarboxylation	Regeneration
(c)	Carboxylation	Decarboxylation	Reduction
(d)	Decarboxylation	Reduction	Regeneration

62. Read the following four statements A, B, C and D and select the right option having both correct statements **[Mains 2010]**

STATEMENTS :

(1) Z scheme of light reaction takes place in presence of PSI only
(2) Only PSI is functional in cyclic photophosphorylation

(3) Cyclic photophosphorylation results into synthesis of ATP and $NADPH_2$

(4) Stroma lamellae lack PSII as well as NADP.

(a) 1 and 2 (b) 2 and 3

(c) 3 and 4 (d) 2 and 4

63. Which one of the following is essential for photolysis of water ? **[Mains 2011]**

(a) Boron (b) Manganese

(c) Zinc (d) Copper

64. In Kranz anatomy, the bundle sheath cells have **[Mains 2011]**

(a) Thick walls, many intercellular spaces and few chloroplasts

(b) Thin walls, many intercellular spaces and no chloroplasts.

(c) Thick walls, no intercellular spaces and large number of chloroplasts.

(d) Thin walls, no intercellular spaces and several chlorplasts.

65. Of the total incident solar radiation the proportion of PAR is **[Pre. 2011]**

(a) About 70% (b) About 60%

(c) Less than 50% (d) More than 80%

66. CAM helps the plants in **[Pre. 2011]**

(a) Conserving water

(b) Secondary growth

(c) Disease resistance (d) Reproduction

67. A process that makes important difference between C_3 and C_4 plants is **[Pre. 2012]**

(a) Photosynthesis (b) Photorespiration

(c) Transpiration (d) Glycolysis

68. The correct sequence of cell organelles during photorespiration is **[Pre. 2012]**

(a) Chloroplast-mitochondria-peroxisome

(b) Chloroplast-vacuole-peroxisome

(c) Chloroplast-Golgibodies-mitochondria

(d) Chloroplast-rough endoplasmic reticulum-dictyosomes

69. Anoxygenic photosynthesis is characteristic of **[AIPMT 2014]**

(a) Rhodospirillum (b) Spirogyra

(c) Chlamydomonas (d) Ulva

70. A few normal seedlings of tomato were kept in a dark room. After a few days they were found to have become white-coloured like albinos. Which of the following terms will you use to describe them? **[AIPMT 2014]**

(a) Mutated (b) Embolised

(c) Etiolated (d) Defoliated

71. Chromatophores take part in : **[RE-AIPMT 2015]**

(a) Respiration (b) Photosynthesis

(c) Growth (d) Movement

72. In photosynthesis, the light-independent reactions take place at : **[RE-AIPMT 2015]**

(a) Stromal matrix

(b) Thylakoid lumen

(c) Photosystem – I

(d) Photosystem-II

Answers

1-b	2-a	3-b	4-d	5-a	6-a	7-a	8-b	9-c	10-a
11-c	12-d	13-b	14-c	15-c	16-c	17-b	18-d	19-b	20-a
21-b	22-c	23-b	24-b	25-a	26-b	27-a	28-a	29-b	30-a
31-c	32-b	33-c	34-c	35-a	36-d	37-c	38-b	39-a	40-b
41-a	42-c	43-c	44-d	45-a	46-d	47-c	48-c	49-c	50-d
51-c	52-a	53-a	54-d	55-d	56-c	57-d	58-d	59-d	60-b
61-b	62-d	63-a	64-c	65-c	66-a	67-b	68-a	69-a	70-c
71-b	72-a								

14

Respiration in Plants

1. End product of glycolysis is **[1990]**
(a) acetyl Co-A (b) pyruvic acid
(c) glucose 1-phosphate
(d) fructose 1-phosphate

2. EMP can produce a total of **[1990]**
(a) 6 ATP (b) 8 ATP
(c) 24 ATP (d) 38 ATP

3. Connecting link between glycolysis and Krebs cycle is (before entering Krebs cycle pyruvate changed to) **[1990]**
(a) oxaloacetate (b) PEP
(c) pyruvate (d) acetyl Co-A

4. Out of 36 ATP molecules produced per glucose molecule during respiration **[1991]**
(a) 2 are produced outside glycolysis and 34 during respiratory chain
(b) 2 are produced outside mitochondria and 34 inside mitochondria
(c) 2 during glycolysis and 34 during Krebs cycle
(d) all are formed inside mitochondria

5. End products of aerobic respiration are **[1992]**
(a) sugar and oxygen
(b) water and energy
(c) carbon dioxide, water and energy
(d) carbon dioxide and energy

6. Amino acids are mostly synthesized from **[1992]**
(a) mineral salts (b) fatty acids
(c) volatile acids (d) α-ketoglutaric acid

7. Apparatus to measure rate of respiration and RQ is **[1992]**
(a) auxanometer (b) potometer
(c) respirometer (d) manometer

8. When one glucose molecule is completely oxidised, it changes **[1992]**
(a) 36 ADP molecules into 36 ATP molecules
(b) 38 ADP molecules into 38 ATP molecules
(c) 30 ADP molecules into 30 ATP molecules
(d) 32 ADP molecules into 32 ATP molecules

9. Link between glycolysis, Krebs cycle and p-oxidation of fatty acid or carbohydrate and fat metabolism is **[1992]**
(a) oxaloacetic acid
(b) succinic acid
(c) citric acid
(d) acetyl Co-A

10. Oxidative phosphorylation is production of **[1992]**
(a) ATP in photosynthesis
(b) NADPH in photosynthesis
(c) ATP in respiration
(d) NADH in respiration

11. Terminal cytochrome of respiratory chain which donates electrons to oxygen is **[1992]**

(a) cyt. b (b) cyt. c
(c) cyt. a_1 (d) cyt.-a_3

12. At a temperature above 35°C **[1992]**

(a) rate of photosynthesis will decline earlier than that of respiration
(b) rate of respiration will decline earlier than that of photosynthesis
(c) there is no fixed pattern
(d) both decline simultaneously

13. Life without air would be **[1993]**

(a) reductional
(b) free from oxidative damage
(c) impossible
(d) anaerobic

14. Out of 38 ATP molecules produced per glucose, 32 ATP molecules are formed from $NADH/FADH_2$in **[1993]**

(a) respiratory chain
(b) Krebs cycle
(c) oxidative decarboxylation
(d) EMP

15. End product of citric acid/Krebs cycle is **[1993]**

(a) citric acid (b) lactic acid
(c) pyruvic acid (d) $CO_2 + H_2O$

16. In animal cells, the first stage of glucose break down is **[1994]**

(a) Krebs cycle
(b) glycolysis
(c) oxidative phosphorylation
(d) ETC

17. Respiratory substrate yielding maximum number of ATP molecule is **[1994]**

(a) ketogenic amino acids
(b) glucose
(c) amylose
(d) glycogen

18. ATP is injected in cyanide poisoning because it is **[1994]**

(a) necessary for cellular functions
(b) necessary for $Na^+ – K^+$ pump
(c) $Na^+ – K^+$ pump operates at the cell membranes
(d) ATP breaks down cyanide

19. Fermentation products of yeast are **[1994]**

(a) $H_2O + CO_2$
(b) methyl alcohol + CO_2
(c) methyl alcohol + H_2O
(d) ethyl alcohol + CO_2

20. Which of the following is essential for conversion of pyruvic acid into acetyl Co-A? **[1995]**

(a) LAA (b) NAD^+
(c) TPP (d) All of these

21. Respiratory quotient (RQ) for fatty acid is **[1995]**

(a) > 1 (b) < 1
(c) 1 (d) 0

22. Krebs cycle occurs in **[1996]**

(a) mitochondria (b) cytoplasm
(c) chloroplast (d) ribosomes

23. Oxidative phosphorylation involves simultaneous oxidation and phosphorylation to finally form **[1996]**

(a) pyruvate (b) NADP
(c) DPN (d) ATP

24. Fermentation is anaerobic production of **[1996]**

(a) protein and acetic acid
(b) alcohol, lactic acid or similar compounds
(c) ethers and acetones
(d) alcohol and lipoproteins

25. The mechanism of ATP formation both in chloroplast and mitochondria is explained by **[1997]**

(a) relay pump theory of Godlewski
(b) Munch's pressure/mass flow model

(c) chemiosmotic theory of Mitchell
(d) Cholondy-Went's model

26. In Krebs cycle FAD participates as electron acceptor during the conversion of **[1997]**
(a) succinyl Co-A to succinic acid
(b) α-ketoglutarate to succinyl Co-A
(c) succinic acid to fumaric acid
(d) fumaric acid to malic acid

27. Net gain of ATP molecules during aerobic respiration is **[1999]**
(a) 36 molecules (b) 38 molecules
(c) 40 molecules (d) 48 molecules

28. How many ATP molecules are produced by aerobic oxidation of one molecule of glucose? **[2002]**
(a) 2 (b) 4
(c) 38 (d) 34

29. Which one of the following concerns photophosphorylation? **[2003]**
(a) AMP + inorganic $PO_4 \xrightarrow{\text{Light energy}}$ ATP
(b) ADP + AMP $\xrightarrow{\text{Light energy}}$ ATP
(c) ADP + inorganic $PO_4 \xrightarrow{\text{Light energy}}$ ATP
(d) ADP + inorganic $PO_4 \longrightarrow$ ATP

30. In which one of the following do the two names refer to one and the same thing? **[2003]**
(a) Tricarboxylic acid cycle and urea cycle
(b) Krebs cycle and Calvin cycle
(c) Tricarboxylic acid cycle and citric acid cycle
(d) Citric acid cycle and Calvin cycle

31. In alcoholic fermentation **[2003]**
(a) oxygen is the electron acceptor
(b) triose phosphate is the electron donor while acetaldehyde is the electron acceptor
(c) triose phosphate is the electron donor while pyruvic acid is the electron acceptor
(d) there is no electron donor

32. In glycolysis, during oxidation electrons are removed by **[2004]**
(a) ATP
(b) glyceraldehyde-3-phosphate
(c) NAD^+
(d) molecular oxygen

33. During which stage, in the complete oxidation of glucose are the greatest number of ATP molecules formed from ADP **[2005]**
(a) glycolysis
(b) Krebs cycle
(c) conversion of pyruvic acid to acetyl Co-A
(d) electron transport chain

34. Chemiosmotic theory of ATP synthesis in the chloroplast and mitochondria is based on **[2005]**
(a) membrane potential
(b) accumulation of Na^+ions
(c) accumulation of K^+ ions
(d) proton gradient

35. How many ATP molecules could maximally be generated from one molecule of glucose, if the complete oxidation of one mole of glucose to CO_2 and H_2O yields 686 kcal and the useful chemical energy available in the high energy phosphate bond of one mole of ATP is 12 kcal? **[2006]**
(a) 30 (b) 57
(c) 1 (d) 2

36. The overall goal of glycolysis, Krebs cycle and the electron transport system is the formation of **[2007]**
(a) ATP in small stepwise units
(b) ATP in one large oxidation reaction
(c) sugars
(d) nucleic acids

37. All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial membranes in eukaryotes and in cytosol in prokaryotes. This enzyme is **[2007]**

(a) lactate dehydrogenase
(b) isocitrate dehydrogenase
(c) malate dehydrogenase
(d) succinate dehydrogenase

38. The chemiosmotic coupling hypothesis of oxidative phosphorylation proposes that Adenosine Triphosphate (ATP) is formed because **[2008]**
(a) high energy bonds are formed in mitochondrial proteins
(b) ADP is pumped out of the matrix into the intermembrane space
(c) a proton gradient forms across the inner membrane
(d) there is a change in the permeability of the inner mitochondrial membrane toward Adenosine Diphosphate (ADP)

39. The energy-releasing process in which the substrate is oxidized without an external electron acceptor is called **[2008]**
(a) fermentation
(b) photorespiration
(c) aerobic respiration
(d) glycolysis

40. Aerobic respiratory pathway is appropriately termed **[2009]**
(a) Amphibolic (b) Anabolic
(c) Catabolic (d) Parabolic

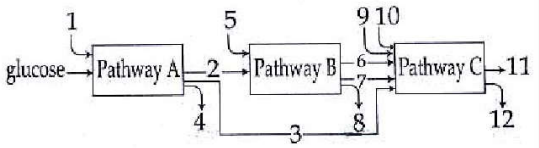
41. Cyclic photophosphorylation results in the formation of: **[2009]**
(a) ATP, NADPH and O_2
(b) ATP
(c) NADPH
(d) ATP and NADPH

42. The energy-releasing metabolic process in which substrate is oxidised without an external electron acceptor is called **[Pre. 2010]**
(a) Glycolysis (b) Fermentation
(c) Aerobic respiration
(d) Photorespiration

43. In mitochondria, protons accumulate in the **[Mains 2011]**
(a) Matrix (b) Outer membrane
(c) Inner membrane
(d) Inter-membrane space

44. Which of the metabolites is common to respiration mediated breakdown of fats, carbohydrates and proteins ? **[2013]**
(a) Glucose-6-phosphate
(b) Fructose1, 6-bisphosphate
(c) Pyruvic acid
(d) Acetyl CoA

45. The three boxes in this diagram represent the three major biosynthetic pathways in aerobic respiration. Arrows represent net reactants or products **[2013]**



Arrows numbered 4, 8, and 12 can all be
(a) NADH (b) ATP
(c) H_2O (d) FAD^+ or FADH

46. In which one of the following processes, CO_2 is not released? **[AIPMT 2014]**
(a) Aerobic respiration in plants
(b) Aerobic respiration in animals
(c) Alcoholic fermentation
(d) Lactate fermentation

Answers

1-b	2-b	3-d	4-b	5-c	6-d	7-c	8-b	9-d	10-c
11-d	12-a	13-d	14-a	15-d	16-b	17-b	18-a	19-d	20-d
21-b	22-a	23-d	24-b	25-c	26-c	27-b	28-c	29-c	30-c
31-b	32-b	33-d	34-d	35-a	36-a	37-d	38-c	39-d	40-a
41-b	42-d	43-d	44-d	45-b	46-d				

15A

Plant Growth and Development – Plant Hormones

1. Leaf fall can be prevented with the help of **[1989]**
(a) abscisic acid
(b) auxins
(c) florigen
(d) cytokinins

2. Which of the following hormones can replace vernalization? **[1989]**
(a) Auxin
(b) Cytokinin
(c) Gibberellins
(d) Ethylene

3. Mowing grass lawn facilitates better maintenance because **[1989]**
(a) wounding stimulates regeneration
(b) removal of apical dominance and stimulation of intercalary meristem
(c) removal of apical dominance
(d) removal of apical dominance and promotion of lateral meristem

4. Highest auxin concentration occurs **[1990]**
(a) in growing tips
(b) in leaves
(c) at base of plant organs
(d) in xylem and phloem

5. Phytohormones are **[1990]**
(a) chemicals regulating flowering
(b) chemicals regulating secondary growth
(c) hormones regulating growth from seed to adulthood
(d) regulators synthesized by plants and influencing physiological processes

6. Abscisic acid controls **[1990,99,2000]**
(a) cell division
(b) leaf fall and dormancy
(c) shoot elongation
(d) Cell elongation and wall formation

7. Hormone primarily connected with cell division is **[1991]**
(a) IAA
(b) NAA
(c) cytokinin/zeatin
(d) gibberellic acid

8. Abscisic acid causes **[1991]**
(a) stomatal closure
(b) stem elongation
(c) leaf expansion
(d) root elongation

9. The hormone responsible for apical dominance is **[1991,92]**

(a) IAA (b) GA
(c) ABA (d) florigen

10. A chemical believed to be involved in flowering is **[1991,95]**
(a) gibberellin (b) kinetin
(c) florigen (d) IBA

11. Which is employed for artificial ripening of banana fruits? **[1992]**
(a) Auxin
(b) Cumarin
(c) Ethylene
(d) Cytokinin

12. In short-day plants, flowering is induced by **[1992]**
(a) photoperiod less than 12 hr
(b) photoperiod below a critical length and uninterrupted long night
(c) long night
(d) short photoperiod and interrupted long night

13. Bananas can be prevented from over-ripening by **[1992]**
(a) maintaining them at room temperature
(b) refrigeration
(c) dipping in ascorbic acid solution
(d) storing in a freezer

14. Cytokinins **[1992]**
(a) promote abscission
(b) influence water movement
(c) help retain chlorophyll
(d) inhibit protoplasmic streaming

15. Flowering dependent on cold treatment is **[1992]**
(a) cryotherapy
(b) cryogenics
(c) cryoscopy
(d) vernalization

16. Dwarfness can be controlled by treating the plant with **[1992,2002]**
(a) cytokinin
(b) gibberellic acid
(c) auxin
(d) antigibberellin

17. Which is a stress hormone? or the hormone produced during adverse environmental conditions is **[1993]**
(a) benzyl aminopurine
(b) dichlorophenoxy acetic acid
(c) ethylene
(d) abscisic acid

18. Removal of apical bud results in **[1993, 2000]**
(a) formation of new apical bud
(b) elongation of main stem
(c) death of plant
(d) formation of lateral branching

19. Movement of auxin is **[1994]**
(a) centripetal
(b) basipetal
(c) acropetal
(d) both (b) and (c)

20. Ethylene gas is used for **[1995]**
(a) growth of plants
(b) delaying fruit's abscission
(c) ripening of fruits
(d) stopping the leaf abscission

21. The pigment, that absorbs red and far-red light in plants, is **[1995, 2002]**
(a) xanthophyll
(b) cytochrome
(c) phytochrome
(d) carotene

22. What will be the effect on phytochrome in a plant subjected to continuous red light? **[1997]**
(a) Level of phytochrome decreases
(b) Phytochrome is destroyed
(c) Phytochrome synthesis increases
(d) Destruction and synthesis of phytochrome remain in equilibrium

23. If a tree, flowers thrice in a year (Oct., Jan. and July) in Northern India, it is said to be **[1997]**
(a) photosensitive but thermoinsensitive
(b) thermosensitive but photoinsensitive
(c) photo and thermosensitive
(d) photo and thermoinsensitive

24. Gibberellins induce **[1997]**
(a) flowering
(b) production of hydrolyzing enzymes in germinating seeds
(c) cell division
(d) hasten leaf senescence

25. What is agent orange? **[1998]**
(a) A biodegradable insecticide
(b) A weedicide containing dioxin
(c) Colour used in fluorescent lamp
(d) A hazardous chemical used in luminous paints

26. Which combination of gases is suitable for fruit ripening? **[1998]**
(a) 80% CO_2 and 20%CH_2
(b) 80% CH_4 and 20%CO_2
(c) 80% CO_2 and 20% O_2
(d) 80% C_2H_4 and 20% CO_2

27. The response of different organisms to environmental rhythms of light and darkness is called **[1998]**
(a) phototaxis (b) photoperiodism
(c) phototropism (d) vernalization

28. A plant hormone used for inducing morphogenesis in plant tissue culture is **[1998]**
(a) gibberellins (b) cytokinins
(c) ethylene (d) abscisic acid

29. The method that renders the seed coat permeable to water so that embryo expansion is not physically retarded, is **[2000]**
(a) vernalization (b) stratification
(c) denudation (d) scarification

30. What reason will you assign for coconut milk used in tissue culture? **[2000, 03]**
(a) Gibberellins (b) Cytokinins
(c) Auxins (d) Ethylene

31. Which of the following prevents fall of fruits?
(a) GA3 (b) NAA **[2001]**
(c) Ethylene (d) Zeatin

32. Hormone responsible for senescence is
(a) ABA (b) auxin **[2001]**
(c) GA (d) cytokinin

33. Glycolate induces opening of stomata in **[2001]**
(a) presence of oxygen
(b) low CO_2 concentration
(c) high CO_2 concentration
(d) absence of CO_2

34. Proteinaceous pigment which control activities concerned with light **[2001]**
(a) phytochrome (b) chlorophyll
(c) anthocyanin (d) carotenoids

35. Which breaks bud dormancy of potato tuber? **[2001]**
(a) Gibberellin (b) IAA
(c) ABA (d) Zeatin

36. Which one is a long-day plant? **[2001]**
(a) *Tobacco* (b) *Glycine max*
(c) *Mirabilis jalapa* (d) Spinach

37. Plants deficient of element zinc, show its effect on the biosynthesis of plant growth hormone **[2003]**
(a) abscisic acid (b) auxin
(c) cytokinin (d) ethylene

38. Differentiation of shoot is controlled by **[2003]**
(a) high gibberellin—cytokinin ratio
(b) high auxin—cytokinin ratio
(c) high cytokinin—auxin ratio
(d) high gibberellin—auxin ratio

39. One set of a plant was grown at 12 hr day and 12 hr night period cycles and it flowered while in the other set night phase was interrupted by flash of light and it did not

produce flower. Under which one of the following categories will you place this plant? **[2004]**

(a) Long-day (b) Darkness neutral
(c) Day neutral (d) Short-day

40. Cell elongation in internodal regions of the green plants takes place due to **[2004]**

(a) indole acetic acid (b) cytokinins
(c) gibberellins (d) ethylene

41. Treatment of seed at low temperature under moist conditions to break its dormancy is called **[2006]**

(a) vernalization (b) chelation
(c) stratification (d) scarification

42. An enzyme that can stimulate germination of barley seeds is **[2006]**

(a) lipase (b) protease
(c) invertase (d) α-amylase

43. How does pruning help in making the hedge dense? **[2006]**

(a) It frees axillary buds from apical dominance
(b) The apical shoot grows faster after pruning
(c) It releases wound hormones
(d) It induces the differentiation of new shoots from the rootstock

44. Which one of the following pairs, is not correctly matched ? **[2007]**

(a) Abscisic acid – Stomatal closure
(b) Gibberellic acid – Leaf fall
(c) Cytokinin – Cell division
(d) IAA – Cell wall elongation

45. "Foolish seedling" disease of rice led to the discovery of **[2007]**

(a) GA (b) ABA
(c) 2, 4D (d) IAA

46. The wavelength of light absorbed by Pr form of phytochrome is **[2007]**

(a) 640 nm (b) 680 nm
(c) 720 nm (d) 620 nm

47. Importance of day length in flowering of plants was first shown in **[2008]**

(a) *Lemna* (b) tobacco
(c) cotton (d) *Petunia*

48. Senescence as an active developmental cellular process in the growth and functioning of a flowering plant, is indicated in **[2008]**

(a) vessels and tracheid differentiation
(b) leaf abscission
(c) annual plants (d) floral parts

49. One of the synthetic auxin is **[2009]**

(a) GA (b) IBA
(c) NAA (d) IAA

50. Which one of the following acids is a derivative of carotenoids? **[2009]**

(a) Gibberellic acid (b) Abscisic acid
(c) Indole butyric acid
(d) Indole-3-acetic acid

51. Photoperiodism was first characterised in

(a) Tobacco (b) Potato **[Pre. 2010]**
(c) Tomato (d) Cotton

52. One of the commonly used plant growth hormone in tea plantation is **[Mains 2010]**

(a) Abscisic acid (b) Zeatin
(c) Indole-3-acetic acid
(d) Ethylene

53. Root development is promoted by **[Mains 2010]**

(a) Auxin (b) Gibberellin
(c) Ethylene (d) Abscisic acid

54. Through their effect on plant growth regulators, what do the temperature and light control in the plants ? **[Mains 2012]**

(a) Flowering (b) Closure of stomata
(c) Fruit elongation
(d) Apical dominance

55. Vernalisation stimulates flowering in – **[Mains 2012]**

(a) Turmeric (b) Carrot
(c) Ginger (d) Zamikand

56. Which one of the following generally acts as an antagonist to gibberellins? **[Mains 2012]**

(a) Ethylene (b) ABA
(c) IAA (d) Zeatin

57. Which one of the following is correctly matched ? **[Pre. 2012]**

(a) Potassium-Readily immobilization
(b) Bakane of rice seedlings-F. Skoog
(c) Passive transport of nutrients-ATP
(d) Apoplast-Plasmodesmata

58. During seed germination its stored food is mobilized by **[2013]**

(a) Ethylene (b) Cytokinin
(c) ABA (d) Gibberellin

59. Dr. F. Went noted that if coleoptile tips were removed and placed on agar for one hour, the agar would produce a bending when placed on one side of freshly cut coleoptile stumps. Of what significance is this experiment? **[AIPMT 2014]**

(a) It made possible the isolation and exact identification of auxin
(b) It is the basis for quantitative determination of small amounts of growth-promoting substances
(c) It supports the hypothesis that IAA is auxin
(d) It demonstrated polar movement of auxins

60. Which one of the following growth regulators is known as 'stress hormone'? **[AIPMT 2014]**

(a) Abscisic acid (b) Ethylene
(c) GA3 (d) Indole acetic acid

61. Typical growth curve in plants is :- **[AIPMT 2015]**

(a) Linear (b) Stair-steps shaped
(c) Parabolic (d) Sigmoid

62. What causes a green plant exposed to the light on only one side, to bend toward the source of light as it grows ? **[AIPMT 2015]**

(a) Green plants seek light because they are phototropic
(b) Light stimulates plant cells on the lighted side to grow faster
(c) Auxin accumulates on the shaded side, stimulating greater cell elongation there.
(d) Green plants need light to perform photosynthesis

63. Auxin can be bioassayed by : **[RE-AIPMT 2015]**

(a) Lettuce hypocotyl elongation
(b) Avena coleoptile curvature
(c) Hydroponics
(d) Potometer

Answers

1-d	**2-c**	**3-d**	**4-a**	**5-d**	**6-b**	**7-c**	**8-a**	**9-a**	**10-c**
11-c	**12-b**	**13-c**	**14-c**	**15-d**	**16-b**	**17-d**	**18-d**	**19-d**	**20-c**
21-c	**22-b**	**23-d**	**24-b**	**25-b**	**26-d**	**27-b**	**28-b**	**29-d**	**30-b**
31-b	**32-a**	**33-b**	**34-a**	**35-a**	**36-d**	**37-b**	**38-c**	**39-d**	**40-c**
41-c	**42-d**	**43-a**	**44-b**	**45-a**	**46-b**	**47-b**	**48-b**	**49-b**	**50-b**
51-a	**52-c**	**53-a**	**54-a**	**55-b**	**56-b**	**57-b**	**58-d**	**59-a**	**60-a**
61-d	**62-c**	**63-b**							

15B

Plant Growth and Development – Plant Movements

1. Leaves of many grasses are capable of folding and unfolding because they **[1989]**
(a) are very thin
(b) are isobilateral
(c) have specialized bulliform cells
(d) have parallel vascular bundles

2. Which one increases in the absence of light? **[1989]**
(a) Uptake of minerals
(b) Uptake of water
(c) Elongation of internodes
(d) Ascent of sap

3. Phototropic and geotropic movements are linked to **[1990]**
(a) gibberellins (b) enzymes
(c) auxins (d) cytokinins

4. Which of the following movement is not related to auxin level? **[1990]**
(a) Bending of shoot towards light
(b) Movement of root towards soil
(c) Nyctinastic leaf movements
(d) Movement of sunflower head tracking the sun

5. Tendrils exhibit/twining of tendrils is due to **[1991,95]**
(a) thigmotropism (b) seismonasty
(c) heliotropism (d) diageotropism

6. Klinostat is employed in the study of **[1993]**
(a) osmosis
(b) growth movements
(c) photosynthesis
(d) respiration

7. The closing and opening of the leaves of *Mimosa pudica* is due to **[1999]**
(a) thermonastic movement
(b) hydrotropic movement
(c) seismonastic movement
(d) chemonastic movement

8. Geocarpic fruits are produced by **[2000,02]**
(a) onion (b) watermelon
(c) ground nut (d) carrot

9. Anthesis is a phenomenon which refers to **[2004]**
(a) reception of pollen by stigma
(b) formation of pollen
(c) development of anther
(d) opening of flower bud

10. Opening of floral buds into flowers, is a type of **[2007]**
(a) autonomic movement of locomotion
(b) autonomic movement of variation
(c) paratonic movement of growth
(d) autonomic movement of growth

11. Phototropic curvature is the result of uneven distribution of : **[Pre. 2010]**

(a) Gibberellin (b) Phytochrome
(c) Cytokinins (d) Auxin

12. Coiling of garden pea tendrils around any support is an example of **[Pre. 2010]**

(a) Thigmotaxis (b) Thigmonasty
(c) Thigmotropism (d) Thermotaxis

Answers

1-c	**2-c**	**3-c**	**4-c**	**5-a**	**6-b**	**7-c**	**8-c**	**9-d**	**10-d**
11-d	**12-c**								

16A

Digestion and Absorption – Animal Nutrition

1. Release of pancreatic juice is stimulated by **[1989, 90]**
(a) enterokinase (b) cholecystokinin
(c) trypsinogen (d) secretin

2. In man the zymogen or chief cells are mainly found in **[1990]**
(a) cardiac part of stomach
(b) pyloric part of stomach
(c) duodenum
(d) fundic part of stomach

3. Emulsification of fat will not occur in the absence of **[1990]**
(a) lipase (b) bile pigments
(c) bile salts (d) pancreatic juice

4. Pancreatic juice and hormones of pancreas are produced by **[1990]**
(a) same cells
(b) same cells at different times
(c) statement is wrong
(d) different cells

5. Pancreas produces **[1991]**
(a) three digestive enzymes and one hormone
(b) three digestive enzymes and two hormones
(c) two digestive enzymes and one hormone
(d) three digestive enzymes and no hormone

6. Where is protein digestion accomplished? **[1991]**
(a) Stomach (b) Ileum
(c) Rectum (d) Duodenum

7. Brunner's glands occur in **[1992]**
(a) sub-mucosa of duodenum
(b) sub-mucosa of stomach
(c) mucosa of oesophagus
(d) mucosa of ileum

8. Most of the fat digestion occurs in **[1993]**
(a) rectum (b) stomach
(c) duodenum (d) small intestine

9. Kupffer's cells occur in **[1993]**
(a) spleen (b) kidney
(c) brain (d) liver

10. Secretion of gastric juice is stopped by **[1993]**
(a) gastrin (b) pancreozymin
(c) cholecystokinin (d) enterogasterone

11. Rennin acts on **[1994,2000]**
(a) milk changing casein into calcium paracaseinate at 7.2-8.2 pH
(b) protein in stomach
(c) fat in intestine
(d) milk changing casein into calcium paracaseinate at 1-3 pH

12. Inhibition of gastric and stimulation of gastric, pancreatic and bile secretions are controlled by hormones **[1994]**
(a) gastrin, secretin, enterokinin and cholecystokinin
(b) enterogasterone, gastrin, pancreozymin and cholecystokinin
(c) gastrin, enterogasterone, cholecystokinin and pancreozymin
(d) secretin, enterogasterone, gastrin and enterokinin

13. The enzyme enterokinase helps in the conversion of **[1995]**
(a) pepsinogen into pepsin
(b) trypsinogen into trypsin
(c) caseinogen into casein
(d) proteins into polypeptides

14. Which one of the following is a matching pair of a substrate and its particular digestive enzyme? **[1996]**
(a) Maltose — Maltase
(b) Lactose — Rennin
(c) Starch — Steapsin
(d) Casein — Chymotrypsin

15. In frog, the surface of attachment of tongue is **[1997]**
(a) sphenoid
(b) palatine
(c) pterygoid
(d) hyoid apparatus

16. What is common among amylase, renin and trypsin? **[1997]**
(a) These all are proteins
(b) These all are proteolytic enzymes
(c) These are produced in stomach
(d) These act at a pH lower than 7

17. If pancreas is removed, the compound which remain undigested is **[1997]**
(a) carbohydrates
(b) fats
(c) proteins
(d) All of these

18. The hormone that stimulates the stomach to secrete gastric juice is **[1998]**
(a) gastrin
(b) renin
(c) enterokinase
(d) enterogasterone

19. The layer of cells that secrete enamel of tooth is **[1998]**
(a) dentoblast
(b) amiloblast
(c) osteoblast
(d) odontoblast

20. The contraction of gall bladder is due to **[1998]**
(a) gastrin
(b) secretin
(c) cholecystokinin
(d) enterogasterone

21. Lactose is composed of **[1998]**
(a) glucose + fructose
(b) glucose+ glucose
(c) glucose + galactose
(d) fructose + galactose

22. In vertebrates lacteals are found in **[1998]**
(a) ileum
(b) ischium
(c) oesophagous
(d) ear

23. Which one of the following is a protein deficiency disease ? **[1998]**
(a) Eczema
(b) Cirrhosis
(c) Kwashiorkor
(d) Night blindness

24. Cholecystokinin and duocrinin are secreted by **[1999]**
(a) adrenal cortex
(b) thyroid gland
(c) pancreas
(d) intestine

25. Which part of body secretes the hormone secretin ? **[1999]**
(a) Oesophagus
(b) Duodenum
(c) Stomach
(d) Ileum

26. A certain person eats boiled potato; one of the food component in it is **[2000]**
(a) lactose which is indigestible
(b) starch which does not get digested
(c) cellulose which is digested by intestinal cellulase
(d) DNA which gets digested by pancreatic DNAase

27. In a person of advanced age, the hair become thinner gradually. It happens because of decrease in **[2000]**
(a) synthesis of glucose
(b) synthesis of proteins
(c) energy availability
(d) blood supply

28. Stool of a person contains whitish grey colour due to malfunction of which type of organ? **[2003]**
(a) Pancreas
(b) Spleen
(c) Kidney
(d) Liver

29. During prolonged fasting, in what sequence are the following organic compounds used up by the body ? **[2003]**
(a) First carbohydrates, next proteins and lastly lipids
(b) First proteins, next lipids and lastly carbohydrates
(c) First carbohydrates, next fats and lastly proteins
(d) First fats, next carbohydrates and lastly proteins

30. Duodenum has characteristic Brunner's glands which secrete two hormones called **[2004]**
(a) kinase, estrogen
(b) secretin, cholecystokinin
(c) prolactin, parathormone
(d) estradiol, progesterone

31. Epithelial cells of the intestine involved in food absorption have on their surface **[2005]**
(a) pinocytic vesicles
(b) phagocytic vesicles
(c) zymogen granules
(d) microvilli

32. Secretin and cholecystokinin are digestive hormones. They are secreted in **[2005]**
(a) oesophagus
(b) ileum
(c) duodenum
(d) pyloric stomach

33. Which one of the following is the correct matching of the site of action on the given substrate, the enzyme acting upon it and the end product? **[2008]**
(a) Duodenum : Triglycerides, trypsin monoglycerides
(b) Small intestine : Starch, α amylase disaccharide (maltose)
(c) Small intestine : Proteins pepsin amino acids
(d) Stomach : Fats, Lipase micelles

34. What will happen if the secretion of parietal cells of gastric glands is blocked with an inhibitor? **[2008]**
(a) Gastric juice will be deficient in chymosin
(b) Gastric juice will be deficient in pepsinogen
(c) In the absence of HC1 secretion, inactive pepsinogen is not converted into the active enzyme pepsin
(d) Enterokinase will not be released from the duodenal mucosa and so trypsinogen is not converted to trypsin

35. Which one of the following statements is true regarding digestion and absorption of food in humans ? **[2009]**

(a) Chylomicrons are small lipoprotein particles that are transported from intestine into blood capillaries.
(b) About 60% of starch is hydrolysed by salivary amylase in our mouth.
(c) Oxyntic cells in our stomach secrete the proenzyme pepsinogen.
(d) Fructose and amino acids are absorbed through intestinal mucosa with the help of carrier ions like Na +.

36. A young infant may be feeding entirely on / mother's milk which is white in colour but the stools which the infant passes out is quite yellowish. What is this yellow colour due to? **[2009]**
(a) Undigested milk protein casein
(b) Pancreatic juice poured into duodenum
(c) Intestinal juice
(d) Bile pigments passed through bile juice

37. Which one of the following pairs of food components in humans reaches the stomach totally undigested **[2009]**
(a) Fat and cellulose
(b) Starch and cellulose
(c) Protein and starch
(d) Starch and fat

38. Carrier ions like Na^+ facilitate the absorption of substances like **[Pre. 2010]**
(a) amino acids and glucose
(b) glucose and fatty acids
(c) fatty acids and glycerol
(d) fructose and some amino acids

39. If for some reason our goblet cells are non-functional, this will adversely affect: **[Pre. 2010]**
(a) production of somatostatin
(b) secretion of sebum from the sebaceous glands
(c) maturation of sperms
(d) smooth movement of food down the intestine

40. If for some reason the parietal cells of the gut epithelium become partially non-functional, what is likely to happen ? **[Mains 2010]**
(a) The pH of stomach will fall abruptly
(b) Steapsin will be more effective
(c) Proteins will not be adequately hydrolysed by pepsin into proteoses and peptones
(d) The pancreatic enzymes and specially the trypsin and lipase will not work efficiently

41. Which one of the following correctly represents the normal adult human dental formula? **[Mains 2011]**
(a) $\frac{3}{2},\frac{1}{1},\frac{3}{3},\frac{3}{3}$
(b) $\frac{3}{3},\frac{1}{1},\frac{3}{2},\frac{1}{1}$
(c) $\frac{2}{2},\frac{1}{1},\frac{3}{2},\frac{3}{3}$
(d) $\frac{2}{2},\frac{1}{1},\frac{2}{2},\frac{3}{3}$

42. One of the constituents of the pancreatic juice while poured into the duodenum in humans is **[Mains 2011]**
(a) Enterokinase
(b) Trypsinogen
(c) Chymotrypsin
(d) Trypsin

43. Which one of the following enzymes carries out initial step in the digestion of milk in humans **[Pre. 2011]**
(a) Pepsin
(b) Rennin
(c) Lipase
(d) Trypsin

44. Where do certain symbiotic microorganisms normally occur in human body ? **[Mains 2012]**
(a) Oral lining and tongue surface

(b) Vermiform appendix and rectum
(c) Duodenum
(d) Caecum

45. Anxiety and eating spicy food together in an otherwise normal human may lead to **[Pre. 2012]**
(a) Diarrhoea
(b) Vomiting
(c) indigestion
(d) jaundice

46. Select the correct match of the digested products in humans given in column I with their absorption site and mechanism in column II. **[2013]**

Column I	Column II
(a) Glycine, glucose	small intestine, active
(b) Fructose, Na^+	small intestine, passive absorption
(c) Glycerol, fatty acids	duodenum, move as chilomicrons
(d) Cholesterol, maltose	large intestine, active absorption

47. The initial step in the digestion of milk in humans is carried out by? **[AIPMT 2014]**
(a) Lipase (b) Trypsin
(c) Rennin (d) Pepsin

48. Fructose is absorbed into the blood through mucosa cells of intestine by the process called **[AIPMT 2014]**
(a) Active transport
(b) Facilitated transport
(c) Simple diffusion
(d) Co-transport mechanism

49. Gastric juice of infants contains : **[AIPMT 2015]**
(a) nuclease, pepsinogen, lipase
(b) pepsinogen, lipase, rennin
(c) amylase, rennin, pepsinogen
(d) maltase, pepsinogen, rennin

50. Which of the following statements is not correct ? **[AIPMT 2015]**
(a) Goblet cells are present in the mucosa of intestine and secrete mucus
(b) Oxyntic cells are present in the mucosa of stomach and secrete HCl.
(c) Acini are present in the pancreas and secrete carboxypeptidase
(d) Brunner's glands are present in the submucosa of stomach and secrete pepsinogen

51. The primary dentition in human differs from permanent dentition in not having one of the following type of teeth : **[RE-AIPMT 2015]**
(a) Incisors (b) Canine
(c) Premolars (d) Molars

52. The enzymes that is not present in succus entericus is : **[RE-AIPMT 2015]**
(a) lipase (b) maltase
(c) nucleases (d) nucleosidase

Answers

1-d	2-d	3-c	4-d	5-b	6-b	7-a	8-d	9-d	10-d
11-d	12-b	13-b	14-a	15-d	16-a	17-d	18-a	19-d	20-c
21-c	22-a	23-c	24-d	25-b	26-d	27-b	28-d	29-c	30-b
31-d	32-c	33-b	34-c	35-d	36-d	37-a	38-a	39-d	40-c
41-d	42-b	43-b	44-d	45-c	46-a	47-c	48-b	49-b	50-d
51-c	52-c								

16B

Digestion and Absorption – Vitamins and Minerals

1. Which of the following pair is characterised by swollen lips, thick pigmented skin of hands and legs and irritability? **[1993, 94, 96]**

(a) Thiamine — Beri-beri
(b) Protein — Kwashiorkor
(c) Nicotinamide — Pellagra
(d) Iodine — Goitre

2. Vitamin-K is required for **[1993]**

(a) change of prothrombin to thrombin
(b) synthesis of prothrombin
(c) change of fibrinogen to fibrin
(d) formation of thromboplastin

3. Calcium deficiency occurs in the absence of vitamin **[1994]**

(a) D (b) C
(c) E (d) B

4. Maximum amount of energy/ATP is liberated on oxidation of **[1994]**

(a) fats (b) proteins
(c) starch (d) vitamins

5. The vitamin-C or ascorbic acid prevents **[1995]**

(a) rickets (b) pellagra
(c) scurvy (d) antibody synthesis

6. A dental disease characterised by moltting of teeth is due to the presence of a certain chemical element in drinking water. Which of the following is that element? **[1995]**

(a) Mercury (b) Chlorine
(c) Fluorine (d) Boron

7. The haemorrhagic disease of new born is caused due to the deficiency of **[1995]**

(a) vitamin-A (b) vitamin-B_1
(c) vitamin-B_{12} (d) vitamin-K

8. For person suffering from high blood cholesterol, the physicians recommend **[1996]**

(a) pure 'deshi ghee' or butter
(b) vegetable oil such as groundnut oil
(c) red meat with layers of fats
(d) vanaspati margarine

9. Which one of the following vitamin can be synthesized by bacteria inside the gut ? **[1997]**

(a) B_1 (b) C
(c) D (d) K

10. One of the factors required for the maturation of erythrocytes is **[1998]**

(a) vitamin-D (b) vitamin-A
(c) vitamin-B_{12} (d) vitamin-C

11. Which of the following is mismatched ? **[1999]**

(a) Vitamin-K — Beri-beri
(b) Vitamin-D — Rickets

(c) Vitamin-C — Scurvy
(d) Vitamin-A — Xerophthalmia

12. To which of the following family do folic acid and pantothenic acid belong ? **[1999]**
(a) Vitamin-C (b) Vitamin-K
(c) Vitamin-A (d) Vitamin-B complex

13. Which one of the following amino acids is an essential part of human diet ? **[2000]**
(a) Glycine (b) Phenylalanine
(c) Serine (d) Aspartic acid

14. A person suffering from the deficiency of the visual pigment rhodopsin is advised to take more **[2000]**
(a) radish and potato
(b) apple and grapes
(c) carrot and ripe papaya
(d) guava and ripe banana

15. Which one is correctly matched ? **[2001]**
(a) Vit-E-Tocopherol
(b) Vit.-D-Riboflavin
(c) Vit.-B-Calciferol
(d) Vit.-A-Thiamine

16. Continuous bleeding from an injured part of body is due to deficiency of **[2002]**
(a) vitamin-A (b) vitamin-B
(c) vitamin-K (d) vitamin-E

17. Which one of the following pairs is not correctly matched? **[2003, 04]**
(a) Vitamin-B_{12} — Pernicious anaemia
(b) Vitamin-B_1 — Beri-beri
(c) Vitamin-C — Scurvy
(d) Vitamin-B_2 — Pellagra

18. Which one of the following is the correct matching of a vitamin, its nature and its deficiency disease ? **[2004]**
(a) Vitamin-A—Fat soluble—Night blindness
(b) Vitamin-K—Fat soluble—Beri-beri
(c) Vitamin-A—Fat soluble—Beri-beri
(d) Vitamin-K—Water soluble—Pellagra

19. The richest sources of vitamin-B12 are **[2004]**
(a) goat's liver and Spirulina
(b) chocolate and green gram
(c) rice and hen's egg
(d) carrot and chicken's breast

20. A patient is generally advised to specially, consume more meat, lentils, milk and eggs in diet only when he suffers from **[2005]**
(a) kwashiorkor (b) rickets
(c) anaemia (d) scurvy

21. Which group of three of the following five statements (A-E) contains all three correct statements regarding beri-beri ? **[2005]**
A. A crippling disease prevalent among the native population of sub-Sahara Africa.
B. A deficiency disease caused by lack of thiamine (vitamin-B1)
C. A nutritional disorder in infants and young children when the diet is persistently deficient in essential protein.
D. Occurs in those countries where the staple diet is polished rice.
E. The symptoms are pain from neuritis, paralysis, muscle wasting, progressive oedema, mental deterioration and finally heart failure.
(a) A, Band D (b) B, C and E
(c) A, C and E (d) B, D and E

22. Which one of the following is a fat-soluble vitamin and it's related deficiency disease ? **[2007]**
(a) Ascorbic acid — Scurvy
(b) Retinol — Xerophthalmia
(c) Cobalamine — Beri-beri
(d) Calciferol — Pellagra

23. Low Ca^{++} in the body fluid may be the cause of **[Pre 2010]**
(a) Tetany
(b) Anaemia
(c) Angina pectoris
(d) Gout

24. The purple red pigment rhodopsin contained the rods type of photoreceptor cells of the human eye, is a derivative of **[Pre. 2011]**

(a) Vitamin B_1 (b) Vitamin C
(c) Vitamin D (d) Vitamin A

25. The essential chemical components of many coenzymes are **[2013]**

(a) Proteins (b) Nucleic acids
(c) Carbohydrates (d) Vitamins

Answers

1-b	**2-b**	**3-a**	**4-a**	**5-c**	**6-c**	**7-d**	**8-b**	**9-d**	**10-c**
11-a	**12-d**	**13-b**	**14-c**	**15-a**	**16-c**	**17-d**	**18-a**	**19-a**	**20-a**
21-d	**22-b**	**23-a**	**24-d**	**25-d**					

17

Breathing and Exchange of Gases

1. The alveolar epithelium in the lung is **[1990]**
(a) non-ciliated columnar
(b) non-ciliated squamous
(c) ciliated columnar
(d) ciliated squamous

2. Skin is an accessory organ of respiration in
(a) human (b) frog **[1990]**
(c) rabbit (d) lizard

3. Carbon dioxide is transported from tissues to respiratory surface by only **[1993]**
(a) plasma and erythrocytes
(b) plasma
(c) erythrocytes
(d) erythrocytes and leucocytes

4. Air is breathed through **[1994]**
(a) trachea—lungs—larynx—pharynx—alveoli
(b) nose—larynx—pharynx—bronchus—alveoli—bronchioles
(c) nostrils—pharynx—larynx—trachea—bronchi—bronchioles—alveoli
(d) nose — mouth — lungs

5. Oxygen dissociation curve of haemoglobin is **[1994]**
(a) sigmoid (b) hyperbolic
(c) linear (d) hypobolic

6. Although much CO_2 is carried in blood, yet blood does not become acidic, because **[1995]**
(a) it is absorbed by the leucocytes
(b) blood buffers play an important role in CO_2 transport
(c) it combines with water to form H_2CO_3 which is neutralized by Na_2CO_3
(d) it is continuously diffused through tissues and is not allowed to accumulate

7. The carbon dioxide is transported via blood to lungs as **[1995]**
(a) dissolved in blood plasma
(b) in the form of carbonic acid only
(c) in combination with haemoglobin only
(d) carbaminohaemoglobin and as carbonic acid

8. The quantity 1500 mL in the respiratory volumes of a normal human adult refers to **[1996]**
(a) maximum air that can be breathed in and breathed out
(b) residual volume
(c) expiratory reserve volume
(d) total lung capacity

9. In alveoli of the lungs, the air at the site of gas exchange, is separated from the blood by **[1997]**
(a) alveolar epithelium only

(b) alveolar epithelium and capillary endothelium
(c) alveolar epithelium, capillary endothelium and tunica adventitia
(d) alveolar epithelium, capillary endothelium, a thin layer of tunica media and tunica adventitia

10. The exchange of gases in the alveoli of the lungs takes place by **[1998]**
(a) simple diffusion (b) osmosis
(c) active transport (d) passive transport

11. Which one of the following organs in the human body is most affected due to shortage of oxygen? **[1999]**
(a) Intestine (b) Skin
(c) Kidney (d) Brain

12. The process of migration of chloride ions from plasma to RBC and of carbonate ions from RBC to plasma is **[1999]**
(a) chloride shift (b) ionic shift
(c) atomic shift (d) Na^+ pump

13. When CO_2 concentration in blood increases, breathing becomes **[2004]**
(a) shallower and slow
(b) there is no effect on breathing
(c) slow and deep
(d) faster and deeper

14. Blood analysis of a patient reveals an unusually high quantity of carboxyhaemoglobin content. Which of the following conclusions is most likely to be correct? **[2004]**
(a) The patient has been inhaling polluted air containing unusually high content of carbon disulphide
(b) The patient has been inhaling polluted air containing unusually high content of chloroform
(c) The patient has been inhaling polluted air containing unusually high content of carbon dioxide
(d) The patient has been inhaling polluted air containing unusually high content of carbon monoxide

15. People living at sea level have around 5 million RBC per cubic millimeter of their blood whereas those living at an altitude of 5400 metre have around 8 million. This is because at high altitude **[2006]**
(a) atmospheric O_2 level is less and hence, more RBCs are needed to absorb the required amount of O_2 to survive
(b) there is more UV radiation which enhances RBC production
(c) people eat more nutritive food, therefore, more RBCs are formed
(d) people get pollution-free air to breathe and more oxygen is available

16. What is the vital capacity of our lungs? **[2008]**
(a) Inspiratory reserve volume plus tidal volume
(b) Total lung capacity minus expiratory reserve volume
(c) Inspiratory reserve volume plus expiratory reserve volume
(d) Total lung capacity minus residual volume

17. The haemoglobin of a human foetus **[2008]**
(a) has a lower affinity for oxygen than that of the adult
(b) its affinity for oxygen is the same as that of an adult
(c) has only 2 protein subunits instead of 4
(d) has a higher affinity for oxygen than that of an adult

18. Listed below are four respiratory capacities (a-d) and four jumbled respiratory volumes of a normal human adult **[Pre. 2010]**

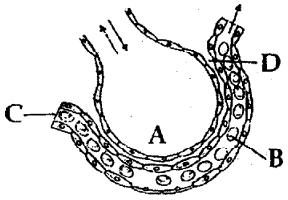
Respiratory capacities	*Respiratory volumes*
(*i*) Residual volume	2500 mL
(*ii*) Vital capacity	3500 mL
(*iii*) Inspiratory reserve volume	1200 mL
(*iv*) Inspiratory capacity	4500 mL

(a) (*ii*) 2500 mL, (*iii*) 4500 mL
(b) (*iii*) 1200 mL, (*iv*) 2500 mL

(c) (*iv*) 3500 mL, (*i*) 1200 mL
(d) (*i*) 4500 mL, (*ii*) 3500 mL

19. Which one of the following is a possibility for most of us in regard to breathing, by making a conscious effort ? **[Mains 2011]**
(a) The lungs can be made fully empty by forcefully breathing out all air from them
(b) One can breathe out air totally without oxygen.
(c) One can breathe out air through eustachian tubes by closing both the nose and the mouth
(d) One can consciously breath in and breath out by moving the diaphragm alone, without moving the ribs at all.

20. The figure given below shows a small part of human lung where exchange of gases takes place. In which one of the options given below, the one part, A, B, C or D is correctly identified along with its function **[Pre. 2011]**



Options:
(a) C : arterial capillary-passes oxygen to tissue
(b) A : alveolar cavity-main site of exchange of respiratory gases
(c) D : Capillary wall-exchange of O_2 and CO_2 takes place here
(d) B : red blood cell-transport of CO_2 mainly

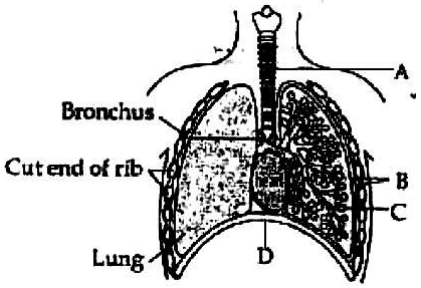
21. A large proportion of oxygen is left unused in the human blood even after its uptake by the body tissues. This O_2 **[Pre. 2011]**
(a) Acts as a reserve during muscular exercise
(b) Raises the pCO_2 of blood to 75 mm of Hg.
(c) Is enough to keep oxyhaemoglobin sturation at 96%
(d) Helps in releasing more O_2 to the epithelial tissues

22. Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This coughing would have been due to improper movement of **[Pre. 2011]**
(a) Epiglottis (b) Diaphragm
(c) Neck (d) Tongue

23. Bulk of carbon dioxide (CO_2) released from body tissues into the blood is present as **[Pre. 2011]**
(a) Carbamino-haemoglobin in RBCs
(b) Bicarbonate in blood plasma and RBCs
(c) Free CO_2 in blood plasma
(d) 70% carbamino-haemoglobin and 30% as bicarbonate

24. Which one of the following is the correct statement for respiration in humans **[Pre. 2012]**
(a) Workers in grinding and stone-breaking industries may suffer from lung fibrosis
(b) About 90% of carbon dioxide is carried by haemoglobin as carbamino-haemoglobin
(c) Cigarette smoking may lead to inflammation of bronchi
(d) Neural signals from pneumotaxic centre in pons region of brain can increase the duration of inspiration

25. The figure shows a diagrammatic view of human respiratory system with labels A, B, C and D. Select the option which gives correct identification and main function and / or characteristic. **[2013]**



(a) A-trachea – long tube supported by complete cartilaginous rings for conducting inspired air

(b) B-pleural membrane – surround ribs on both sides to provide cushion against rubbing.
(c) C-Alveoli – thin walled vascular bag like structures for exchange of gases.
(d) D-Lower end of lungs – diaphragm pulls it down during inspiration.

26. Approximately seventy percent of carbon-dioxide absorbed by the blood will be transported to the lungs **[AIPMT 2014]**
(a) As bicarbonate ions
(b) In the form of dissolved gas molecules
(c) By binding to R.B.C.
(d) As carbamino-haemoglobin

27. When you hold your breath, which of the following gas changes in blood would first lead to the urge to breathe? **[AIPMT 2015]**
(a) rising CO_2 concentration
(b) falling CO_2 concentration
(c) rising CO_2 and falling O_2 concentration
(d) falling O_2 concentration

28. Name the pulmonary disease in which alveolar surface area involved in gas exchange is drastically reduced due to damage in the alveolar walls : **[RE-AIPMT 2015]**
(a) Asthma
(b) Pleurisy
(c) Emphysema
(d) Pneumonia

Answers

1-b	**2-b**	**3-a**	**4-c**	**5-a**	**6-b**	**7-d**	**8-b**	**9-b**	**10-a**
11-d	**12-a**	**13-d**	**14-d**	**15-a**	**16-d**	**17-d**	**18-c**	**19-d**	**20-b**
21-a	**22-a**	**23-b**	**24-a**	**25-c**	**26-a**	**27-a**	**28-c**		

18

Body Fluids and Circulation

1. Arteries carry oxygenated blood except **[1989]**
(a) pulmonary (b) cardiac
(c) hepatic (d) systemic

2. Tricuspid valve is found in between **[1989]**
(a) sinus venosus and right auricle
(b) right auricle and right ventricle
(c) left ventricle and left auricle
(d) ventricle and aorta

3. Splenic artery arises from **[1990]**
(a) anterior mesenteric artery
(b) coeliac artery
(c) posterior mesenteric artery
(d) intestinal artery

4. A vein possesses a large lumen because **[1990]**
(a) tunica media and tunica externa form a single coat
(b) tunica interna and tunica media form a single coat
(c) tunica interna, tunica media and tunica externa are thin
(d) tunica media is a thin coat

5. Carbonic anhydrase occurs in **[1991]**
(a) lymphocytes (b) blood plasma
(c) RBC (d) leucocytes

6. Wall of blood capillary is formed of **[1991,93]**
(a) haemocytes
(b) parietal cells
(c) endothelial cells
(d) oxyntic cells

7. Cells formed in bone marrow include **[1993]**
(a) RBC (b) RBC and leucocytes
(c) leucocytes (d) lymphocytes

8. Pacemaker of heart is **[1994, 99, 2002, 04]**
(a) AVnode (b) bundle of His
(c) SA node (d) Purkinje fibres

9. 'Dup' sound is produced during closure of **[1994]**
(a) semilunar valves
(b) bicuspid valve
(c) tricuspid valve
(d) Both (b) and (c)

10. The lymph serves to **[1995]**
(a) transport oxygen to the brain
(b) transport carbon dioxide to the lungs
(c) return the interstitial fluid to the blood
(d) return the WBCs and RBCs to the lymph nodes

11. The blood cancer is known as **[1995]**
(a) leukemia (b) thrombosis
(c) haemolysis (d) haemophilia

12. The correct route through which pulse-making impulse travels in the heart is **[1995]**
(a) AV node⟶Bundle of His⟶SA node ⟶Purkinje fibres⟶Heart muscles
(b) AV node ⟶ SA node ⟶ Purkinje fibres ⟶ Bundle of His ⟶ Heart muscles
(c) SA node⟶Purkinje fibres⟶Bundle of His⟶AV node⟶Heart muscles
(d) SA node⟶AV node⟶Bundle of His ⟶Purkinje fibres⟶Heart muscles

13. Which one of the following statements about blood constituents and transport of respiratory gases is most accurate? **[1995]**
(a) RBCs transport oxygen whereas WBCs transport CO_2
(b) RBCs transport oxygen whereas plasma transports only CO_2
(c) RBCs as well as WBCs transport both oxygen and CO_2
(d) RBCs as well as plasma transport both oxygen and CO_2

14. Which one of the following vertebrate organs receives the oxygenated blood only? **[1996]**
(a) Gill (b) Lung
(c) Liver (d) Spleen

15. An adult human with average health has systolic and diastolic pressures as **[1998]**
(a) 80 mm Hg and 80 mm Hg
(b) 70 mm Hg and 120 mm Hg
(c) 120 mm Hg and 80 mm Hg
(d) 50 mm Hg and 80 mm Hg

16. Which of the following is not main function of lymph glands ? **[1998]**
(a) Forming WBC
(b) Forming antibodies
(c) Forming RBC
(d) Destroying bacteria

17. Glucose is carried from digestive tract to liver by **[1999]**
(a) pulmonary vein
(b) hepatic portal vein
(c) hepatic artery
(d) None of the above

18. The antibodies are **[1999]**
(a) germs (b) carbohydrates
(c) proteins (d) lipids

19. The thickening of walls of arteries is called **[1999]**
(a) arthritis (b) atherosclerosis
(c) aneurysm (d) Both (a) and (c)

20. Pulmonary artery is different from pulmonary vein because it has **[2000]**
(a) larger lumen
(b) thick muscular walls
(c) no endothelum
(d) valves

21. Which of the following statements is true for lymph? **[2002]**
(a) WBC and serum
(b) All components of blood except RBCs and some proteins
(c) RBCs, WBCs and plasma
(d) RBCs, proteins and platelets

22. What is true about T-lymphocytes in mammals ? **[2003]**
(a) They scavenge damaged cells and cellular debris
(b) These are produced in thyroid
(c) There are of three main types—cytotoxic T-cells, helper T-cells and suppressor T-cells
(d) These originate in lymphoid tissues

23. Systemic heart refers to **[2003]**
(a) enteric heart in lower vertebrates
(b) the two ventricles together in humans
(c) the heart that contracts under stimulation from nervous system

(d) left auricle and left ventricle in higher vertebrates

24. Bundle of His is a network of **[2003]**
(a) nerve fibres distributed in ventricles
(b) nerve fibres found throughout the heart
(c) muscle fibres distributed throughout the heart walls
(d) muscle fibres found only in the ventricle wall

25. Short-lived immunity acquired from mother to foetus across placenta or through mother's milk to the infant is categorised as **[2003]**
(a) cellular immunity
(b) innate non-specific immunity
(c) active immunity
(d) passive immunity

26. Damage to thymus in a child may lead to **[2005]**
(a) a reduction in haemoglobin content of blood
(b) a reduction in stem cell production
(c) loss of antibody mediated immunity
(d) loss of cell mediated immunity

27. Which of the following substances, if introduce in the blood stream, would cause coagulation, at the site of its introduction ? **[2005]**
(a) Fibrinogen (b) Prothrombin
(c) Heparin (d) Thromboplastin

28. AIDS is caused by HIV that principally infects **[2005]**
(a) all lymphocytes
(b) activator B-cells
(c) T4 lymphocytes
(d) cytotoxic T-cells

29. Examination of blood of a person suspected of having anaemia, shows large, immature, nucleated erythrocytes without haemoglobin. Supplementing his diet with which of the following, is likely to alleviate his symptoms ? **[2006]**
(a) Thiamine
(b) Folic acid and cobalamin
(c) Riboflavin
(d) Iron compounds

30. Antibodies in our body are complex **[2006]**
(a) lipoproteins
(b) steroids
(c) prostaglandins
(d) glycoproteins

31. If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence ? **[2007]**
(a) Serum albumins
(b) Serum globulins
(c) Fibrinogen in the plasma
(d) Haemocytes

32. In humans, blood passes from the post caval to the diastolic right atrium of heart due to **[2008]**
(a) pushing open of the venous valves
(b) suction pull
(c) stimulation of the sino auricular node
(d) pressure difference between the post caval and atrium

33. In a standard ECG which one of the following alphabets is the correct representation of the respective activity of the human heart? **[2009]**
(a) T-end of diastole
(b) P-depolarisation of the atria
(c) R-repolarisation of ventricles
(d) S-start of systole

34. If due to some injury the chordae tendinae of the tricuspid valve of the human heart is partially non-functional, what will be the immediate effect? **[Pre. 2010]**
(a) The flow of the blood into the aorta will be slowed down
(b) The 'pacemaker' will stop working
(c) The blood will tend to flow back into the left atrium
(d) The flow of blood into the pulmonary artery will be reduced

35. Fastest distribution of some injectible material/ medicine and with no risk of any kind can be achieved by injecting it into the **[Mains 2010]**

(a) Arteries (b) Veins
(c) Lymph vessesls (d) Muscles

36. Given below are four statements (a-d) regarding human blood circulatory system **[Mains 2010]**

(1) Arteries are thick-walled and have narrow lumen as compared to veins.
(2) Angina is acute chest pain when the blood circulation to the brain is reduced
(3) Persons with blood group AB can donate blood to any person with any blood group under ABO system.
(4) Calcium ions play a very important role in blood clotting.

Which two of the above statements are **correct** ?

(a) (1) and (2) (b) (2) and (3)
(c) (3) and (4) (d) (1) and (4)

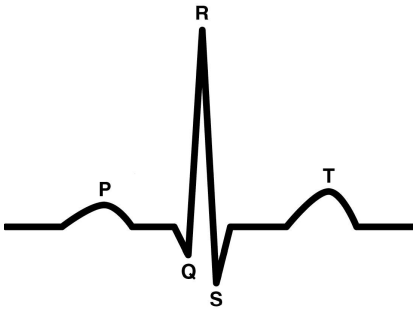
37. Jaundice is a disorder of **[Mains 2010]**

(a) Skin and eyes
(b) Digestive system
(c) Circulatory system
(d) Excretory system

38. The haemoglobin content per 100 ml of blood o a normal healthy human adult is :- **[Mains 2010]**

(a) 25-30 g (b) 17-20 g
(c) 12-16 g (d) 5-11 g

39. Given below is the ECG of a normal human. Which one of its components is correctly interpreted below **[Mains 2011]**



(a) Peak P - Initiation of left atrial contraction only
(b) Complex QRS - One complete pulse
(c) Peak T-Initiation of total cardiac contraction
(d) Peak P and Peak R together - systolic and diastolic blood pressures.

40. Bundle of His' is a part of which one of the following organs in humans ? **[Pre. 2011]**

(a) Brain (b) Heart
(c) Kidney (d) Pancreas

41. Arteries are best defined as the vessels which **[Pre. 2011]**

(a) Supply oxygenated blood to the different organs
(b) Carry blood away from the heart to different organs
(c) Break up into capillaries which reunite to from a vein
(d) Carry blood from one visceral organ to another visceral organ

42. Which one of the following statements is correct regarding blood pressure ? **[Pre. 2011]**

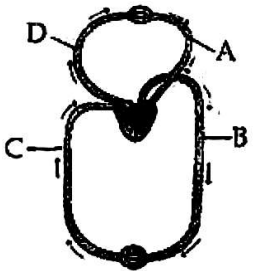
(a) 130/90 mmHg is considered high and requires treatment
(b) 100/55 mmHg is considered an ideal blood pressure
(c) 105/50 mmHg makes one very active
(d) 190/110 mmHg may harm vital organs like brain and kidney

43. Which one of the following human organs is often called the "graveyard" of RBCs? **[Mains 2012]**

(a) Kidney
(b) Spleen
(c) Liver
(d) Gall bladder

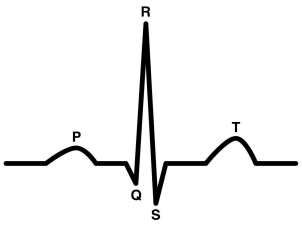
44. Figure shows schematic plant of blood circulation in humans with labels A to D. Identify the label and give its function/s.

[2013]



(a) A -Pulmonary vein - takes impure blood from body parts, PO_2 = 60 mm Hg
(b) B -Pulmonary artery - takes blood from heart to lungs, PO_2 = 90 mm Hg
(c) C-Vena Cava - takes blood from body parts to right auricle, PCO_2 = 45 mm Hg
(d) D-Dorsal aorta - takes blood from heart to body parts, PO_2 = 95 mm Hg

45. The diagram given here is the standard ECG of a normal person. The P-wave represents the **[2013]**



(a) Contraction of both the atria
(b) Initiation of the ventricular contraction
(c) Beginning of the systole
(d) End of systole

46. Person with blood group AB is considered as universal recipient because he has **[AIPMT 2014]**

(a) Both A and B antigens on RBC but no antibodies in the plasma
(b) Both A and B antibodies in the plasma
(c) No antigen on RBC and no antibody in the plasma
(d) Both A and B antigens in the plasma but no antibodies

47. How do parasympathetic neural signals affect the working of the heart? **[AIPMT 2014]**

(a) Reduce both heart rate and cardiac output
(b) Heart rate is increased without affecting the cardiac output
(c) Both heart rate and cardiac output increase
(d) Heart rate decreases but cardiac output increases

48. Which one of the following is correct ? **[AIPMT 2015]**

(a) Serum = Blood + Fibrinogen
(b) Lymph = Plasma + RBC + WBC
(c) Blood = Plasma + RBC + WBC
(d) Plasma = Blood – Lymphocytes

49. Blood pressure in the mammalian aorta is maximum during : **[AIPMT 2015]**

(a) Diastole of the right ventricle
(b) Systole of the left ventricle
(c) Diastole of the right atrium
(d) Systole of the left atrium

50. Doctors use stethoscope to hear the sound; produced during each cardiac cycle. The second sound is heard when **[RE-AIPMT 2015]**

(a) AV node receives signal from SA node
(b) AV valves open up
(c) Ventricular walls vibrate due to gushing of blood from atria
(d) Semilunar valves close down after the blood flows into vessels from ventricles.

Answers

1-a	2-b	3-b	4-d	5-c	6-c	7-b	8-c	9-a	10-c
11-a	12-d	13-d	14-d	15-c	16-c	17-b	18-c	19-b	20-b
21-b	22-c	23-a	24-d	25-d	26-d	27-d	28-c	29-b	30-d
31-b	32-d	33-b	34-d	35-b	36-d	37-c	38-c	39-b	40-b
41-b	42-d	43-b	44-c	45-a	46-a	47-a	48-c	49-b	50-d

19

EXCRETORY PRODUCTS AND THEIR ELIMINATION

1. Reabsorption of useful substances from glomerular filtrate occurs in **[1989]**
(a) collecting tube
(b) loop of Henle
(c) proximal convoluted tubule
(d) distal convoluted tubule

2. Proximal and distal convoluted tubules are parts of **[1990]**
(a) seminiferous tubules
(b) nephron
(c) oviduct
(d) vas deferens

3. Under normal conditions which one is completely reabsorbed in the renal tubule? **[1991]**
(a) Urea (b) Uric acid
(c) Salts (d) Glucose

4. Nitrogenous waste products are eliminated mainly as **[1991]**
(a) urea in tadpole and ammonia in adult frog
(b) ammonia in tadpole and urea in adult frog
(c) urea in both tadpole and adult frog
(d) urea in tadpole and uric acid in adult frog

5. Glucose is taken back from glomerular filtrate through **[1993]**
(a) active transport (b) passive transport
(c) osmosis (d) diffusion

6. Uric acid is nitrogenous waste in **[1994]**
(a) mammals and molluscs
(b) birds and lizards
(c) frog and cartilaginous fishes
(d) insects and bony fishes

7. If kidneys fail to reabsorb water, the effect on tissue would **[1994]**
(a) remain unaffected
(b) shrink and shrivel
(c) absorb water from blood plasma
(d) take more O2 from blood

8. Part not belonging to uriniferous tubule is **[1994]**
(a) glomerulus
(b) Henle'sloop
(c) distal convoluted tubule
(d) connecting tubule

9. In ornithine cycle, which one pair of the following wastes are removed from the blood? **[1994]**
(a) CO_2 and urea (b) CO_2 and ammonia
(c) Ammonia and urea
(d) Urea and sodium salts

10. A patient suffering from cholera is given saline drip because **[1996, 2000]**
(a) Cl^- ions are important component of blood plasma
(b) Na^+ ions help to retain water in the body
(c) Na^+ ions are important in transport of substances across membrane
(d) Cl^- ions help in the formation of HCl in stomach for digestion

11. The kidney of an adult frog is **[1997]**
(a) pronephros (b) mesonephros
(c) metanephros (d) opisthonephros

12. The basic functional unit of human kidney is **[1997]**
(a) nephron (b) pyramid
(c) nephridia (d) Henle's loop

13. In ureotelic animals, urea is formed by **[1997]**
(a) ornithine cycle (b) Cori cycle
(c) Krebs cycle (d) EMP pathway

14. A condition of failure of kidney to form urine is called **[1998]**
(a) deamination (b) entropy
(c) anuria (d) None of these

15. Aquatic reptiles are **[1999]**
(a) ammonotelic (b) ureotelic
(c) ureotelic in water
(d) ureotelic over land

16. In living beings, ammonia is converted into urea through **[2000]**
(a) ornithine cycle (b) citrulline cycle
(c) fumarine cycle (d) arginine cycle

17. The ability of the vertebrates to produce concentrated (hyperosmotic) urine usually depends upon the **[2000]**
(a) area of Bowman's capsule epithelium
(b) length of Henle's loop
(c) length of the proximal convoluted tubule
(d) capillary network forming glomerulus

18. If Henle's loop were absent from mammalian nephron, which of the following is to be expected ? **[2002]**
(a) The urine will be more concentrated
(b) The urine will be more dilute
(c) There will be no urine formation
(d) There will be hardly any change in the quality and quantity of urine formed

19. Uricotelism is found in **[2004]**
(a) mammals and birds
(b) fishes and fresh water protozoans
(c) birds, reptiles and insects
(d) frogs and toads

20. The net pressure gradient that causes the fluid to filter out of the glomeruli into the capsule is **[2005]**
(a) 20mmHg (b) 75mmHg
(c) 30mmHg (d) 50mmHg

21. A person is undergoing prolonged fasting. His urine will be found to contain abnormal quantities of **[2005]**
(a) fats (b) ketones
(c) amino acids (d) glucose

22. Angiotensinogen is a protein produced and secreted by **[2006]**
(a) macula densa cells
(b) endothelial cells (cells lining the blood vessels)
(c) liver cells
(d) Juxtaglomerular (JG) cells

23. A person who is on a long hunger strike and is surviving only on water, will have **[2007]**
(a) more sodium in his urine
(b) less amino acids in his urine
(c) more glucose in his blood
(d) less urea in his urine

24. Consider the following four statements (A-D) about certain desert animals such as kangaroo rat **[2008]**
(A) They have dark colour and high rate of reproduction and excrete solid urine.
(B) They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs.

(C) They feed on dry seeds and do not require drinking water.

(D) They excrete very concentrated urine and do not use water to regulate body temperature.

Which two of the above statements for such animals are true?

(a) C and D (b) B and C

(c) C and A (d) A and D

25. What will happen if the stretch receptors of the urinary bladder wall are totally removed? **[2009]**

(a) Urine will continue to collect normally in the bladder

(b) There will be no micturition

(c) Urine will not collect in the bladder

(d) Micturition will continue

26. Uric acid is the chief nitrogenous component of the excretory products of **[2009]**

(a) Cockroach (b) Frog

(c) Man (d) Earthworm

27. Which one of the following statements in regard to the excretion by the human kidneys is correct? **[Pre. 2010]**

(a) Descending limb of Loop of Henle is impermeable to water

(b) Distal convoluted tubule is incapable of reabsorbing HCO_3^-

(c) Nearly 99 per cent of the glomercular filtrate is reabsorbed by the renal tubules

(d) Ascending limb of Loop of Henle is impermeable to electrolytes

28. The principal nitrogenous excretory compound in humans is synthesized**[Pre. 2010]**

(a) in kidneys but eliminated mostly through liver

(b) in kidneys as well as eliminated by kidneys

(c) in liver and also eliminated by the same through bile

(d) in the liver, but eliminated mostly through kidneys

29. Which one of the following is not a part of a renal pyramid ? **[Pre. 2011]**

(a) Peritubular capillaries

(b) Convoluted tubules

(c) Collecting ducts

(d) Loops of Henle

30. Which one of the following correctly explains the function of a specific part of a human nephron? **[Pre. 2011]**

(a) *Podocytes* : Create minute spaces (slit pores) for the filtration of blood into the Bowman's capsule

(b) *Henle's loop :* most reabsorption of the major substances from the glomerular filtrate

(c) *Distal convoluted tubule:* reabsorption of K^+ ions into the surrounding blood capillaries

(d) *Afferent arteriole* : carries the blood away from the glomerulus towards renal vein.

31. Which one of the following statements is correct with respect to kidney function regulation ? **[Pre. 2011]**

(a) When someone drinks lot of water, ADH release is suppressed.

(b) Exposure to cold temperature stimulates ADH release.

(c) An increase in glomerular blood flow stimulates formation of Angiotensin II.

(d) During summer when body loses lot of water by evaporation, the release of ADH is suppressed.

32. Uricotelic mode of passing out nitrogenous wastes is found in **[Pre. 2011]**

(a) Reptiles and Birds

(b) Birds and Annelids

(c) Amphibians and Reptiles

(d) Insects and Amphibians

33. A fall in glomerular filtration rate (GFR) activates – **[Mains 2012]**

(a) Adrenal cortex to release aldosterone

(b) Adrenal medulla to release adrenaline

(c) Posterior pituitary to release vasopressin

(d) Juxta glomerular cells to release renin

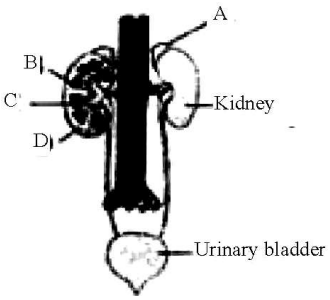
34. Which one of the following option gives the correct categorization of six animals according to the type of nitrogenous wastes (A, B, C,), they give out ? **[Mains 2012]**

	A AMMONOTELIC	B UREOTELIC	CURICOTELIC
(a)	Frog, Lizards	Aquatic Amphibia, Humans	Cockroach, Pigeon
(b)	Aquatic Amphibia	Frog, Humans	Pigeon, Lizards, Cockroach
(c)	Aquatic Amphibia	Cockroach, Humans	Frog, Pigeon, Lizards
(d)	Pigeon, Humans	AquaticAmphibia, Lizards	Cockroach, Forg

35. The maximam amount of electrolytes and water (70-80 percent) from the glomerular filtrate is reabsorbed in which part of the nephron? **[Pre. 2012]**

(a) Proximal convoluted tubule
(b) Descending limb of loop of Henle
(c) Ascending limb of loop of Henle
(d) Distal convoluted tubule

36. Figure shows human urinary system with structures labeled A to D. Select option which correctly identifies them and gives their characteristics and/or functions. **[2013]**



(a) A - Adrenal gland-located at the anterior part of Kidney. Secrete catecholamines which stimulate glycogen breakdown
(b) B - Pelvis-broad funnel shaped space inner to hilum, directly connected to loops of Henle.
(c) C - Medulla-inner zone of kidney and contains complete nephrons.
(d) D - Cortex-outer part of kidney and do not contain any part of nephrons.

37. The shared terminal duct of the reproductive and urinary system in the human male is **[AIPMT 2014]**

(a) Urethra (b) Ureter
(c) Vas deferens (d) Vasa efferentia

38. Removal of proximal convoluted tubule from the nephron will result in: **[AIPMT 2015]**

(a) More concentrated urine
(b) No change in quality and quantity of urine
(c) No urine formation
(d) More diluted urine

39. Human urine is usually acidic because : **[RE-AIPMT 2015]**

(a) hydrogen ions are actively secreted into the filtrate.
(b) the sodium transporter exchanges one hydrogen ion for each sodium ion, in peritubular capillaries.
(c) excreted plasma proteins are acidic
(d) potassium and sodium exchange generates acidity

Answers

1-c	2-b	3-d	4-b	5-a	6-b	7-b	8-a	9-b	10-b
11-b	12-a	13-a	14-c	15-b	16-a	17-b	18-b	19-c	20-a
21-b	22-c	23-a	24-a	25-b	26-a	27-c	28-d	29-b	30-a
31-a	32-a	33-d	34-b	35-a	36-a	37-a	38-d	39-a	

20

LOCOMOTION AND MOVEMENT

1. Extremities of long bones possess cartilage
(a) calcified (b) fibrous **[1989]**
(c) elastic (d) hyaline

2. Number of cervical vertebrae in camel is
(a) more than that of rabbit **[1990]**
(b) less than that of rabbit
(c) same as that of whale
(d) more than that of horse

3. A deltoid ridge occurs in **[1990]**
(a) radius (b) ulna
(c) femur (d) humerus

4. The cervical vertebrae in humans is **[1993]**
(a) same as in whale
(b) more than that in rabbit
(c) double than that of horse
(d) less than that in giraffe

5. Long bones function in **[1993]**
(a) support
(b) support, erythrocyte and leucocyte synthesis
(c) support and erythrocyte synthesis
(d) erythrocyte formation

6. Which ion is essential for muscle contraction? **[1994]**
(a) Na (b) K
(c) Ca (d) Cl

7. Which is a part of pectoral girdle? **[1994]**
(a) Glenoid cavity (b) Sternum
(c) Ilium (d) Acetabulum

8. The number of floating ribs, in the human body, is **[1995]**
(a) 6 pairs (b) 5 pairs
(c) 3 pairs (d) 2 pairs

9. The roof of the cranium of frog is formed by **[1997]**
(a) parasphenoid (b) alisphenoid
(c) frontoparietal (d) orbitosphenoid

10. The lower jaw in mammals is made up of
(a) mandible (b) dentary **[1998]**
(c) maxilla (d) angulars

11. Total number of bones in the hind limb of man is **[1998]**
(a) 14 (b) 30
(c) 24 (d) 21

12. Which of the following is the contractile protein of a muscle? **[1998]**
(a) Myosin (b) Tropomyosin
(c) Actin (d) Tubulin

13. Which one of the following is a skull bone? **[2000]**
(a) Atlas (b) Coracoid
(c) Arytenoid (d) Pterygoid

14. The joint found between sternum and the ribs in humans is **[2000]**
(a) angular joint
(b) fibrous joint
(c) cartilaginous joint
(d) gliding joint

15. Which statement is correct for muscle contraction? **[2001]**
(a) Length of H-zone decrease
(b) Length of A-band remains constant
(c) Length of I-band increases
(d) Length of two Z-line increases

16. What is sarcomere? **[2001]**
(a) Part between two H-lines
(b) Part between two A-lines
(c) Part between two I-bands
(d) Part between two Z-lines

17. What will happen if ligaments are cut or broken? **[2002]**
(a) Bones will move freely at joints
(b) No movement at joint
(c) Bone will become unfix
(d) Bone will become fixed

18. ATPase enzyme needed for muscle contraction is located in **[2004]**
(a) actinin (b) troponin
(c) myosin (d) actin

19. Which of the following pairs, is correctly matched? **[2005]**
(a) Hinge joint—between vertebrae
(b) Gliding joint—between zygapophyses of the successive vertebrae
(c) Cartilaginous joint—skull bones
(d) Fibrous joint—between phalanges

20. An acromian process is characteristically found in the **[2005]**
(a) pelvic girdle of mammals
(b) pectoral girdle of mammals
(c) skull of frog
(d) sperm of mammals

21. The contractile protein of skeletal muscle involving ATPase activity is **[2006]**
(a) myosin
(b) α-actinin
(c) tropomyosin
(d) troponin

22. Which one of the following is correct pairing of a body part and the kind of muscle tissue that moves it ? **[2009]**
(a) Abdominal wall — Smooth muscle
(b) Iris — Involuntary smooth muscle
(c) Heart wall — Involuntary unstriated muscle
(d) Biceps of upper arm — Smooth muscle fibres

23. Elbow joint is an example of **[2009]**
(a) gliding joint
(b) ball and socket joint
(c) pivot joint
(d) hinge joint

24. Which one of the following is the *correct description* of a certain part of a normal human skeleton ? **[Mains 2010]**
(a) First vertebra is axis which articulates with the occipital condyles.
(b) The 9^{th} and 10^{th} pairs of ribs are called the floating ribs.
(c) Glenoid cavity is a depression to which the thigh bone articulates.
(d) Parietal bone and the temporal bone of the skull are joined by fibrous joint.

25. Which one of the following pairs of structures is correctly matched with their correct description? **[Mains 2010]**

Structures		Description
(a) Cartilage and cornea	–	No blood supply but do require oxygen for respiratory need
(b) Shoulder joint and elbow joint	–	Ball and socket type of joint

(c) Premolars and molars – 20 in all and 3-rooted
(d) Tibia & fibula – Both form parts of knee joint

26. The type of muscles present in our **[Mains 2011]**
(a) upper arm are smooth muscle fibres fusiform in shape.
(b) heart are involuntary and unstriated smooth muscles.
(c) intestine are striated and involuntary.
(d) thigh are striated and voluntary.

27. Three of the following pairs of the human skeleton parts are correctly matched with their respective skeletal category and one pair is matched. Identify the non-matching pair **[Mains 2011]**

Pairs of skeletal parts	Category
(a) Malleus and stapes	Ear ossicles
(b) Sternum and Ribs	Axial skeleton
(c) Clavicle and Glenoid Cavity	Pelvic girdle
(d) Humerus and ulna	Appendicular skeleton

28. Which one of the following pairs of chemical substances, is correctly categorized ? **[Mains 2012]**
(a) Pepsin and prolactin - Two digestive enzymes secreted in stomach
(b) Troponin and myosin - Complex proteins in striated muscles
(c) Secretin and rhodopsin - Polypeptide hormones
(d) Calcitonin and thymosin - Thyroid hormones

29. Select the correct statement with respect to locomotion in humans **[2013]**
(a) A decreased level of progesterone causes osteoporosis in old people.
(b) Accumulation of uric acid crystals in joints causes their inflammation.
(c) The vertebral column has 10 thoracic vertebrae.
(d) The joint between adjacent vertebrae is a fibrous joint.

30. The characteristics and an example of a synovial joint in humans is **[2013]**

Characteristics	Examples
(a) Fluid cartilage between two bones, limited movements	Knee joint
(b) Fluid filled between two joints, provides cushion	Skull bones
(c) Fluid filled synovial cavity between two bones	Joint between atlas and axis
(d) Lymph filled between two bones, limited movement	Gliding joint between carpals

31. The H-zone in the skeletal muscle fibre is due to – **[2013]**
(a) the absence of myofibrils in the central portion of A-band
(b) the central gap between myosin filaments in the A-band
(c) the central gap between actin filaments extending through myosin filaments in the A-band
(d) extension of myosin filaments in the central portion of the A-band.

32. Select the correct matching of the type of the joint with the example in human skeletal system : Type of joint - Example. **[AIPMT 2014]**
(a) Cartilaginous joint - between frontal and parietal
(b) Pivot joint - between third and fourth cervical vertebrae
(c) Hinge joint - between humerus and pectoral girdle
(d) Gliding joint - between carpals

33. Stimulation of a muscle fiber by a motor neuron occurs at **[AIPMT 2014]**
(a) The neuromuscular junction
(b) The transverse tubules
(c) The myofibril
(d) The sacroplasmic reticulum

34. Sliding filament theory can be best explained as :- **[AIPMT 2015]**
(a) Actin and Myosin filaments shorten and slide pass each other
(b) Actin and Myosin filaments do not shorten but rather slide and pass each other
(c) When myofilaments slide pass each other Myosin filaments shorten while Actin filaments do not shorten.
(d) When myofilaments slide pass each other Actin filaments shorten while Myosin filaments do not shorten.

35. Glenoid cavity articulates : **[AIPMT 2015]**
(a) Scapula with acromion
(b) Clavicle with scapula
(c) Humerus with scapula
(d) Clavicle with acromion

36. Erythropoiesis starts in : **[AIPMT 2015]**
(a) Liver
(b) Spleen
(c) Red bone marrow
(d) Kidney

37. Which of the following is not a function of the skeletal system? **[RE-AIPMT 2015]**
(a) Locomotion
(b) Production of erythrocytes
(c) Storage of minerals
(d) Production of body heat

38. Which of the following joints would allow no movement ? **[RE-AIPMT 2015]**
(a) Ball and Socket joint
(b) Fibrous joint
(c) Cartilaginous joint
(d) Synovial joint

Answers

1-d	2-c	3-d	4-a	5-b	6-c	7-a	8-d	9-c	10-b
11-b	12-a	13-d	14-c	15-b	16-d	17-c	18-c	19-b	20-b
21-a	22-b	23-d	24-d	25-a	26-d	27-c	28-b	29-b	30-c
31-c	32-d	33-a	34-b	35-c	36-a	37-d	38-b		

21

Neural Control and Coordination

1. Which of the following cranial nerves can regulate heart beat? **[1989]**
(a) X (b) IX
(c) VIII (d) VII

2. Sensitive pigmented layer of eye is **[1989]**
(a) cornea (b) retina
(c) sclerotic (d) iris

3. Third ventricle of brain is also known as
(a) metacoel (b) rhinocoel **[1990]**
(c) paracoel (d) diacoel

4. One function of parasympathetic nervous system is **[1990]**
(a) contraction of hair muscles
(b) stimulation of sweat glands
(c) acceleration of heart beat
(d) constriction of pupil

5. Ecdysis is shedding of **[1990]**
(a) stratum corneum
(b) epidermis
(c) dermis
(d) stratum Malpighi

6. Vagus nerve is **[1992, 97]**
(a) X (b) IX
(c) VII (d) V

7. Afferent nerve fibres carry impulses from
(a) effector organs to CNS **[1992]**
(b) receptors to CNS
(c) CNS to receptors
(d) CNS to muscles

8. Iris is part of **[1992]**
(a) sclerotic
(b) choroid/uvula
(c) choroid and retina
(d) sclerotic and choroid

9. Retina is most sensitive at **[1993]**
(a) optic disc (b) periphery
(c) macula lutea (d) fovea centralis

10. Light rays entering the eye are controlled by
(a) pupil (b) iris **[1993]**
(c) comea (d) lens

11. Ivan Pavlov performed experiments on **[1993]**
(a) simple reflexes (b) conditioned reflexes
(c) cardiac reflexes (d) origin of life

12. Function of iris is to **[1993]**
(a) move lens forward and backward
(b) refract light rays
(c) bring about movements of eye lids
(d) alter the size of pupil

13. CNS is mostly made of **[1993]**
(a) motor neurons and sensory neurons
(b) sensory neurons and association neurons

(c) association neurons
(d) motor neurons and association neurons

14. The layer of actively dividing cells of skin is termed as **[1993]**
(a) stratum compactum
(b) stratum corneum
(c) stratum Malpighi/stratum germinativum
(d) stratum lucidum

15. Hair present in the skin are **[1993]**
(a) epidermal in origin and made of dead cells
(b) epidermal in origin and made of living cells
(c) dermal in origin and made of living cells
(d) dermal in origin and made of dead cells

16. Respiratory centre is situated in **[1994, 99]**
(a) cerebellum (b) medulla oblongata
(c) hypothalamus (d) cerebrum

17. The sympathetic nerves, in mammals arise from **[1995]**
(a) sacral nerves
(b) cervical nerves
(c) thoraco-lumbar nerves
(d) III, VII, IX and X cranial nerves

18. In humans, visceral organs are innervated by **[1996]**
(a) sympathetic nerves and are under conscious control
(b) parasympathetic nerves and are under conscious control
(c) Both (a) and (b)
(d) both sympathetic and parasympathetic nerves but are not under conscious control

19. Cornea transplantation is outstandingly successful because **[1996]**
(a) cornea is easy to preserve
(b) cornea is not linked up with blood vascular and immune systems
(c) the technique involved is very simple
(d) cornea is easily available

20. In the chemistry of vision in mammals, the photosensitive substance is called **[1997]**
(a) sclerotin (b) retinal
(c) rhodopsin (d) melanin

21. In frog, "fenestra ovalis" is **[1997]**
(a) the opening in the auditory capsule which separates the middle ear from internal ear
(b) the air-filled cavity of the middle ear
(c) the communication between the pharynx and the tympanic cavity
(d) the external opening of the tympanic cavity which is covered by the tympanic membrane

22. Sympathetic nervous system induces **[1997]**
(a) heart beat
(b) secretion of digestive juices
(c) secretion of saliva
(d) All of the above

23. Which cranial nerve has the highest number of branches? **[1999]**
(a) Facial nerve (b) Trigeminal
(c) Vagus nerve (d) None of these

24. Which of the following is regarded as a unit of nervous tissue ? **[1999]**
(a) Myelin sheath (b) Axons
(c) Dendrites (d) Neurons

25. The junction between the axon of one neuron and the dendrite of the next is called
(a) junction point (b) a synapse **[1999]**
(c) a joint (d) constant bridge

26. Which one of the following is correctly matched pair of the given secretion and its primary role in human physiology ? **[2000]**
(a) Sebum — Sexual attraction
(b) Sweat — Thermoregulation
(c) Saliva — Tasting food
(d) Tears — Excretion of salts

27. What is the intensity of sound in normal conversation? **[2001]**
(a) 10-20 dB
(b) 35-60 dB
(c) 70-90 dB
(d) 120-150 dB

28. Characteristic feature of human cornea is that **[2001]**
(a) it is secreted by conjunctiva and glandular tissue
(b) it is lacrimal gland which secretes tears
(c) blood circulation is absent in cornea
(d) in old age it become hard and white layer deposits on it which causes the cataract

29. When we migrate from dark to light, we fail to see for some time but after a time visibility becomes normal. It is an example of **[2001]**
(a) accommodation
(b) adaptation
(c) mutation
(d) photoperiodism

30. Injury to vagus nerve in human is not likely to affect **[2004]**
(a) tongue movements
(b) gastrointestinal movements
(c) pancreatic secretion
(d) cardiac movements

31. Parkinson's disease (characterized by tremors and progressive rigidity of limbs) is caused by degeneration of brain neurons that are involved in movement control and make use of neurotransmitter **[2005]**
(a) acetylcholine
(b) norepinephrine
(c) dopamine
(d) GABA

32. In a man, abducens nerve is injured. Which one of the following functions will be affected? **[2005]**
(a) Movement of the eye ball
(b) Swallowing
(c) Movement of the tongue
(d) Movement of the neck

33. One of the examples of the action of the autonomous nervous system is **[2005]**
(a) knee-jerk response
(b) pupillary reflex
(c) swallowing of food
(d) peristalsis of the intestine

34. Four healthy people in their twenties got involved in injuries resulting in damage and death of a few cells of the following. Which of the cells are least likely to be replaced by new cells ? **[2005]**
(a) Osteocytes
(b) Malpighian layer of the skin
(c) Liver cells
(d) Neurons

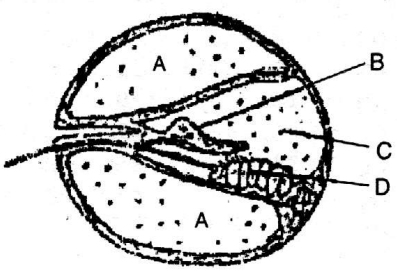
35. Which one of the following statements is correct ? **[2006]**
(a) Neurons regulate endocrine activity, but not vice versa
(b) Endocrine glands regulate neural activity and nervous system regulates endocrine glands
(c) Neither hormones control neural activity nor the neurons control endocrine activity
(d) Endocrine glands regulate neural activity, but not vice versa

36. Bowman's glands are found in **[2006]**
(a) olfactory epithelium
(b) external auditory canal
(c) cortical nephrons only
(d) juxtamedullary nephrons

37. Which one of the following not act as a neurotransmitter ? **[2006]**
(a) Acetylcholine
(b) Epinephrine
(c) Norepinephrine
(d) Cortisone

38. Bowman's glands are located in the **[2007]**
(a) proximal end of uriniferous tubules
(b) anterior pituitary
(c) female reproductive system of cockroach
(d) olfactory epithelium of our nose

39. Given below is a diagrammatic cross section of a single loop of human cochlea. **[2008]**



Which one of the following options correctly represents the names of three different parts?
(a) B : Tectorial membrane C : Perilymph D : Secretory cells
(b) C : Endolymph D : Sensory hair cells A : Serum
(c) D : Sensory hair cells A : Endolymph B : Tectorial membrane
(d) A : Perilymph B : Tectorial membrane C : Endolymph

40. Which one of the following is the correct difference between rod cells and cone cells of our retina? **[2008]**

	Features	Rod Cell	Cone Cell
(a)	Visual acuity	High	Low
(b)	Visual pigment contained	Iodopsin	Rhodopsin
(c)	Overall function	Vision in poor light	Colour vision and detailed vision in bright light
(d)	Distribution	More concentrated in centre of retina	Evenly distributed all over retina

41. Cornea transplant in human is almost never rejected. This is because **[2008]**
(a) its cells are least penetrable by bacteria
(b) it has no blood supply
(c) it is composed of enucleated cells
(d) it is a non-living layer

42. Which part of human brain is concerned with the regulation of body temperature? **[2009]**
(a) Cerebrum
(b) Hypothalamus
(c) Medulla Oblongata
(d) Cerebellum

43. The nerve centres which control the body temperature and the urge for eating are contained in **[Pre. 2010]**
(a) Hypothalamus
(b) Pons
(c) Cerebellum
(d) Thalamus

44. Select the answer with *correct matching* of the structure, its location and function. **[Mains 2010]**

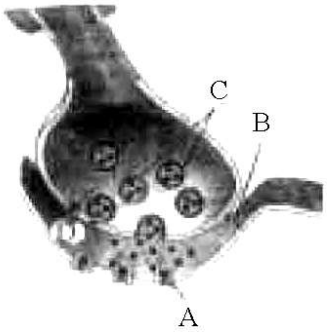
	Structure	Location	Function
(a)	Cerebellum	Mid brain	Controls respiration and gastric secretions
(b)	Hypothalamus	Fore brain	Controls body temperature, urge for eating and drinking
(c)	Blind spot where optic nerve leaves the eye	Near the place are present but inactive here	Rods and cones
(d)	Eustachian tube	Anterior part of internal ear	Equalizes air pressure on either side of tympanic membrane

45. When a neuron is in resting state *i.e.* not conducting any impulse, the axonal membrane is **[Pre. 2011]**
(a) Comparatively more permeable to Na+ ions and nearly impermeable to K^+ ions
(b) Equally permeable to both Na^+ and K^+ ions
(c) Impermeable to both Na^+ and K^+ ions
(d) Comparatively more permeable to K^+ ions and nearly impermeable to Na^+ ions

46. The human hind brain comprises three parts, one of which is **[Pre. 2012]**
(a) Cerebellum
(b) Hypothalamus
(c) Spinal cord
(d) Corpus callosum

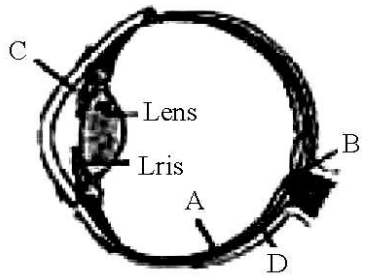
47. Which part of the human ear plays no role in hearing as such but is otherwise very much required ? **[Pre. 2012]**
(a) Vestibular Apparatus
(b) Ear ossicles
(c) Eustachian tube
(d) Organ of Corti

48. A diagram showing axon terminal and synapse is given. Identify correctly at least two of A-D. **[2013]**



(a) A-Receptor ; C-Synaptic vesicles
(b) B-Synaptic connection ; D-K^+
(c) A-Neurotransmitter ; B- Synaptic cleft
(d) C-Neurotransmitter ; D-Ca^{++}

49. Parts A, B, C and D of the human eye are shown in the diagram. Select the option which gives correct identification along with its functions / characteristics **[2013]**



(a) A – Retina - Contains photo receptors-rods and cones.
(b) B - Blind spot - Has only a few rods and cones
(c) C - Aqueous chamber - Reflects the light which does not pass through the lens
(d) D - Choroid – Its anterior part forms ciliary body

50. The most abundant intracellular cation is
(a) Na^+ (b) Ca^{++} **[2013]**
(c) H^+ (d) K^+

51. Injury localized to the hypothalamus would most likely disrupt **[AIPMT 2014]**
(a) Short term memory
(b) Co-ordination during locomotion
(c) Executive function, such as decision making
(d) Regulation of body temperature

52. Which one of the following statements is not correct? **[AIPMT 2014]**
(a) Retinal is the light absorbing portion of visual photo pigments
(b) In retina the rods have the photopigment rhodopsin while cones have three different photopigments
(c) Retinal is a derivative of vitamin C
(d) Rhodopsin is the purplish red protein present in rods only

53. A gymnast is able to balance his body upside down even in the total darkness because of **[AIPMT 2015]**
(a) Vestibular apparatus
(b) Tectorial membrane
(c) Organ of corti
(d) Cochlea

54. Which of the following regions of the brain is incorrectly paired with its function? **[AIPMT 2015]**
(a) Cerebellum- language comprehension
(b) Corpus callosum-communication between the left and right cerebral cortices

(c) Cerebrum- calculation and contemplation
(d) Medulla oblongata - homeostatic control

55. In mammalian eye, the 'fovea' is the center of the visual field, where **[RE-AIPMT 2015]**
(a) more rods than cones are found.
(b) high density of cones occur, but has no rods
(c) the optic nerve leaves the eye
(d) only rods are present

56. Destruction of the anterior horn cells of the spinal cord would result in loss of : **[RE-AIPMT 2015]**
(a) Integrating impulses
(b) Sensory impulses
(c) Voluntary motor impulses
(d) Commissural impulses

Answers

1 -a	2 -b	3 -d	4 -d	5 -a	6 -a	7 -b	8 -c	9 -d	10 -a
11 -b	12 -d	13 -c	14 -c	15 -a	16 -b	17 -c	18 -c	19 -b	20 -c
21 -a	22 -a	23 -c	24 -d	25 -b	26 -b	27 -b	28 -c	29 -b	30 -a
31 -c	32 -a	33 -d	34 -d	35 -a	36 -a	37 -d	38 -d	39 -d	40 -c
41 -b	42 -b	43 -a	44 -b	45 -d	46 -a	47 -a	48 -a	49 -a	50 -d
51 -d	52 -c	53 -a	54 -a	55 -b	56 -c				

22

Chemical Coordination and Integration

1. Insulin is **[1990]**
(a) vitamin (b) lipid
(c) hormone (d) enzyme

2. Addition of a trace of thyroxine or iodine in water containing tadpoles will **[1990]**
(a) keep them in larval stage
(b) hasten their metamorphosis
(c) slow down their metamorphosis
(d) kill the tadpoles

3. ADH or vasopressin is **[1991]**
(a) enzyme that hydrolyses peptides
(b) hormone secreted by pituitary that promotes reabsorption of water from glomerular filtrate
(c) hormone that promotes glycogenolysis
(d) energy rich compound connected with muscle contraction

4. Gastric secretion is stopped by hormone **[1993,94]**
(a) enterogesterone (b) gastrin
(c) pancryeozymin (d) cholecystokinin

5. According to the accepted concept of hormone action, if receptor molecules are removed from target organs, then the target organ will **[1995]**
(a) not respond to the hormone
(b) continue to respond to hormone without any difference
(c) continue to respond to the hormone but in the opposite way
(d) continue to respond to the hormone but will require higher concentration

6. Which of the following endocrine gland stores its secretion in the extracellular space before discharging into the blood? **[1995]**
(a) Pancreas (b) Adrenal
(c) Testis (d) Thyroid

7. Nicotine acts as a stimulant, because it mimics the effect of **[1995]**
(a) thyroxine (b)acetylcholine
(c) testosterone (d) dopamine

8. Which of the following radioactive isotope is used in the detection of thyroid cancer? **[1995,2002]**
(a) Iodine-131 (b) Carbon-14
(c) Uranium-238 (d) Phosphorus-32

9. Which one of the following hormones stimulates the "let down" (release) of milk from the mother's breasts when the baby is sucking? **[1995]**
(a) Progesterone (b) Oxytocin
(c) Prolactin (d) Relaxin

10. Hormones thyroxine, adrenalin and the pigment melanin are formed from **[1997]**
(a) tryptophan (b) glycine
(c) tyrosine (d) proline

11. The hormone which regulates the basal metabolism in our body is secreted from **[1998]**
(a) pituitary (b) thyroid
(c) adrenal cortex (d) pancreas

12. Diabetes is due to **[1999]**
(a) iodine deficiency
(b) hormonal deficiency
(c) Na+ deficiency
(d) enzyme deficiency

13. The gonadotropic hormones are produced in **[1999]**
(a) interstitial cells of testes
(b) adrenal cortex
(c) adenohypophysis of pituitary
(d) posterior part of thyroid

14. The function of oxytocin is to help in **[1999]**
(a) growth (b) lactation
(c) child birth (d) gametogenesis

15. Melatonin is secreted by **[2000]**
(a) skin (b) thymus
(c) pituitary (d) pineal gland

16. Melanocyte Stimulating Hormone (MSH) is produced by **[2000]**
(a) anterior pituitary
(b) posterior pituitary
(c) pars intermedia of pituitary
(d) parathyroid

17. A common scent-producing gland among mammals is **[2000]**
(a) anal gland (b) prostate gland
(c) adrenal gland (d) Bartholin's gland

18. Acromegaly is caused by **[2002]**
(a) excess of STH
(b) excess of thyroxin
(c) deficiency of thyroxin
(d) excess of adrenalin

19. Melanin protects from **[2002]**
(a) UV rays (b) visible rays
(c) infra-red rays (d) X-rays

20. Adrenaline directly affects **[2002]**
(a) SA node
(b) β-cells of Langerhans
(c) dorsal root of spinal cord
(d) epithelial cells of stomach

21. Which steroid is used for transformation ?
(a) Cortisol (b) Cholesterol **[2002]**
(c) Testosterone (d) Progesterone

22. Chemically hormones are **[2004]**
(a) biogenic amines only
(b) proteins, steroids and biogenic amines
(c) proteins only
(d) steroids only

23. Which one of the following pairs correctly matches a hormone with a disease resulting from its deficiency ? **[2004]**
(a) Luteinizing hormone — Failure of ovulation
(b) Insulin — Diabetes insipidus
(c) Thyroxine — Tetany
(d) Parathyroid hormone — Diabetes mellitus

24. Which of the following hormones is not a secretion product of human placenta ? **[2004]**
(a) Human chorionic gonadotropin
(b) Prolactin
(c) Estrogen
(d) Progesterone

25. Which one of the following hormones is a modified amino acid ? **[2004]**
(a) Epinephrine (b) Progesterone
(c) Prostaglandin (d) Estrogen

26. A steroid hormone which regulates glucose metabolism is **[2006]**
(a) cortisol
(b) corticosterone
(c) 11-deoxycorticosterone
(d) cortisone

27. Which of the following is an accumulation and release centre of neurohormones ?

(a) Posterior pituitary lobe **[2006]**
(b) Intermediate lobe of the pituitary
(c) Hypothalamus
(d) Anterior pituitary lobe

28. Which hormone causes dilation of blood vessels, increased oxygen consumption and glucogenesis ? **[2006]**
(a) ACTH
(b) Insulin
(c) Adrenalin
(d) Glucagon

29. Feeling the tremors of an earthquake a scared resident of seventh floor of a multistoryed building starts climbing down the stairs rapidly. Which hormone initiated this action ?
(a) Thyroxin **[2007]**
(b) Adrenalin
(c) Glucagon
(d) Gastrin

30. A person is having problems with calcium and phosphorus metabolism in his body. Which one of the following glands may not be functioning properly ? **[2007]**
(a) Parathyroid
(b) Parotid
(c) Pancreas
(d) Thyroid

31. Compared to a bull a bullock is docile because of **[2007]**
(a) higher levels of thyroxin
(b) higher levels of cortisone
(c) lower levels of blood testosterone
(d) lower levels of adrenalin/ noradrenalin in its blood

32. Which one of the following pairs of organs includes only the endocrine glands? **[2008]**
(a) Parathyroid and adrenal
(b) Pancreas and parathyroid
(c) Thymus and testes
(d) Adrenal and ovary

33. The blood calcium level is lowered by the deficiency of **[2008]**
(a) parathormone
(b) thyroxine
(c) calcitonin
(d) Both (a) and (c)

34. In human adult females, oxytocin **[2008]**
(a) is secreted by anterior pituitary
(b) stimulates growth of mammary glands
(c) stimulates pituitary to secrete vasopressin
(d) causes strong uterine contractions during parturition

35. Injury to adrenal cortex is not likely to affect the secretion of which one of the following?
(a) Aldosterone **[Pre. 2010]**
(b) Both Androstenedione and Dehydroepiandrosterone
(c) Adrenaline
(d) Cortisol

36. Which one of the following pairs is *incorrectly* matched ? **[Pre. 2010]**
(a) Glucagon - Beta cells (source)
(b) Somatostatin - Delta cells (source)
(c) Corpus luteum - Relaxin (secretion)
(d) Insulin - Diabetes mellitus (disease)

37. Toxic agents present in food which interfere with thyroxine synthesis lead to the development of **[Pre. 2010]**
(a) toxic goitre
(b) cretinism
(c) simple goitre
(d) thyrotoxicosis

38. The 24 hour (diurnal) rhythm of our body such the sleep awake cycle is regulated by the hormone **[Mains 2011]**
(a) Melatonin
(b) Calcitonin
(c) Prolactin
(d) Adrenaline

39. Select the *correct* matching of a hormone, its source and function. **[Mains 2010]**

Hormone	Source	Function
(a) Norepinephrine	Adrenal medulla	Increases heart beat, rate of respiration and alertness
(b) Glucagon	Beta-cells of Islets of langerhans	Stimulates glycogenolysis
(c) Prolactin	Posterior pituitary	Regulates growth of mammary glands and milk formation in female
(d) Vasopressin	Posterior pituitary	Increases loss of water through urine

40. Match the source gland with its respective hormone as well as the functions **[Pre. 2011]**

Source gland	Hormone	Function
(a) Anterior pituitary	Oxytocin	Contraction of uterus muscles during child birth
(b) Posterior pituitary	Vasopressin	Stimulates resorption of water in the distal tubules in nephron
(c) Corpus luteum	Estrogen	Supports pregnancy
(d) Thyroid	Thyroxine	Regulates blood calcium level

41. Given below is an incomplete table about certain hormones, their source glands and one major effect of each on the body in humans. Identify the correct option for the three blanks A, B and C **[Pre. 2011]**

Gland	Secretion	Effect on Body
A	Oestrogen	Maintenance of secondary sexual characters
Alpha cells of Islets of Langerhans	B	Raises blood sugar level
Anterior pituitary	C	Over secretion leads to gigantism

Options:

A	B	C
(a) Ovary	Glucagon	Growth hormone
(b) Placenta	Insulin	Vasopressin
(c) Ovary	Insulin	Calcitonin
(d) Placenta	Glucagon	Calcitonin

42. Which one of the following pairs of hormones are the examples of those that can easily pass through the cell membrane of the target cell and bind to a receptor inside it (mostly in the nucleus) **[Pre. 2012]**

(a) Somatostain, oxytocin
(b) Cortisol, testosterone
(c) Insulin, glucagon
(d) Thyroxin, insulin

43. A person entering an empty room suddenly finds a snake right in front on opening the door. Which one of the following is likely to happen in his neurohormonal control system **[Pre. 2012]**

(a) Hypothalamus actives the parasympathetic divison of brain
(b) Sympathetic nervous system is activated releasing epinephrine and norepinephrine from adrenal cortex
(c) Sympathetic nervous system is activated releasing epinephrine and norepinephrine from adrenal cortex
(d) Nurotransmitters diffuse rapidly across the cleft and transmit a nerve impulse.

44. A pregnant female delivers a baby who suffers from stunted growth, mental retardation, low intelligence quotient and abnormal skin.

This is the result of : **[2013]**

(a) Deficiency of iodine in diet
(b) Low secretion of growth hormone
(c) Cancer of the thyroid gland
(d) Over secretion of pars distalis

45. Which of the following statements is correct in relation to the endocrine system ? **[2013]**

(a) Adenohypophysis is under direct neural regulation of the hypothalamus
(b) Organs in the body like gastrointestinal tract, heart, kidney and liver do not produce any hormones
(c) Non-nutrient chemicals produced by the body in trace amount that act as intercellular messenger are known as hormones
(d) Releasing and inhibitory hormones are produced by the pituitary gland

46. Select the answer which correctly matches the endocrine gland with the hormone it secretes and its function/deficiency symptom **[2013]**

	Endocrine gland	Hormone	Function/deficiency symptoms
(a)	Anterior pituitary	Oxytocin	Stimulates uterus contraction during child birth
(b)	Posterior pituitary	Growth Hormone (GH)	Oversecretion stimulates abnormal growth
(c)	Thyroid gland	Thyroxine	Lack of iodine in diet results in goiter
(d)	Corpus luteum	Testosterone	Stimulates spermatogenesis

47. Which of the following causes an increase in sodium reabsorption in the distal convoluted tubule? **[AIPMT 2014]**

(a) Increase in aldosterone levels
(b) Increase in antidiuretic hormone levels
(c) Decrease in aldosterone levels
(d) Decrease in antidiuretic hormone levels

48. Identify the hormone with its correct matching of source and function **[AIPMT 2014]**

(a) Oxytocin - posterior pituitary, growth and maintenance of mammary glands
(b) Melatonin - pineal gland, regulates the normal rhythm of sleepwake cycle
(c) Progesterone - corpus-luteum, stimulation of growth and activities of female secondary sex organs
(d) Atrial natriuretic factor - ventricular wall, increases the blood pressure

49. Fight-or-flight reactions cause activation of **[AIPMT 2014]**

(a) The parathyroid glands, leading to increased metabolic rate
(b) The kidney, leading to suppression of rennin angiotensin-aldosterone pathway
(c) The adrenal medulla, leading to increased secretion of epinephrine and norepinephrene
(d) The pancreas leading to a reduction in the blood sugar levels

50. A chemical signal that has both endocrine and neural roles is ? **[AIPMT 2015]**

(a) Calcitonin
(b) Epinephrine
(c) Cortisol
(d) Melatonin

51. Which one of the following hormones is not involved in sugar metabolism ?
[RE-AIPMT 2015]

(a) Glucagon
(b) Cortisone
(c) Aldosterone
(d) Insulin

52. Which one of the following hormones though synthesized elsewhere, is stored and released by the master gland ?
[RE-AIPMT 2015]

(a) Melanocyte stimulating hormone
(b) Antidiuretic hormone
(c) Luteinizing hormone
(d) Prolactin

Answers

1 -c	2 -b	3 -b	4 -a	5 -a	6 -d	7 -b	8 -a	9 -b	10 -c
11 -b	12 -b	13 -c	14 -c	15 -d	16 -c	17 -a	18 -a	19 -a	20 -a
21 -b	22 -b	23 -a	24 -b	25 -a	26 -a	27 -c	28 -c	29 -b	30 -a
31 -c	32 -a	33 -a	34 -d	35 -c	36 -a	37 -c	38 -a	39 -a	40 -b
41 -a	42 -b	43 -c	44 -a	45 -c	46 -c	47 -a	48 -b	49 -c	50 -b
51 -c	52 -b								

23

Reproduction in Organisms

1. Which is correct? **[1989]**
(a) Gametes are invariably haploid
(b) Spores are invariably haploid
(c) Gametes are generally haploid
(d) Both (a) and (b)

2. Cellular totipotency was demonstrated by
(a) Theodore Schwann **[1991]**
(b) A v Leeuwenhoek
(c) F C Steward
(d) Robert Hooke

3. Syngamy means **[1991]**
(a) fusion of gametes
(b) fusion of cytoplasms
(c) fusion of two similar spores
(d) fusion of two dissimilar spores

4. Meiosis is best observed in dividing **[1992]**
(a) cells of apical meristem
(b) cells of lateral meristem
(c) microspores and anther wall
(d) microsporocytes

5. Which of the following plant cells will show totipotency? **[1993]**
(a) Sieve tubes (b) Xylem vessels
(c) Meristems (d) Cork cells

6. A population of genetically identical individuals, obtained from asexual reproduction is **[1993]**
(a) callus (b) clone
(c) deme (d) aggregate

7. Which plant will lose its economic value if its fruits are produced by induced parthenocarpy? **[1997]**
(a) Grape (b) Pomegranate
(c) Banana (d) Orange

8. In oogamy, fertilization involves **[2004]**
(a) a small non-motile female gamete and a large motile male gamete
(b) a large non-motile female gamete and a small motile male gamete
(c) a large non-motile female gamete and a small non motile male gamete
(d) a large motile female gamete and a small non-motile gamete

9. In which one pair both the plants can be vegetatively propagated by leaf pieces? **[2005]**
(a) Agave and Kalanchoe
(b) Bryophyllum and Kalanchoe
(c) Asparagus and Bryophyllum
(d) Chrysanthemum and Agave

10. Why is vivipary an undesirable character for annual crop plants? **[2005]**
(a) It reduces the vigour of the plant
(b) It adversely affects the fertility of the plant
(c) The seeds exhibit long dormancy

(d) The seeds cannot be stored under normal conditions for the next season

11. Vegetative propagation in mint occurs **[2009]**

(a) Rhizome (b) Sucker
(c) Runner (d) Offset

12. What is common between vegetative reproduction and apomixis ? **[Mains 2011]**

(a) Both produces progeny identical to the parent.
(b) Both are applicable to only dicot plants.
(c) Both bypass the flowering phase.
(d) Both occur round the year.

13. In ginger vegetative propagation occurs through: **[AIPMT 2015]**

(a) Offsets (b) Bulbils
(c) Runners (d) Rhizome

Answers

1 -a	**2 -c**	**3 -a**	**4 -d**	**5 -c**	**6 -b**	**7 -b**	**8 -b**	**9 -b**	**10 -d**
11 -b	**12 -a**	**13 -d**							

24

Sexual Reproduction in Flowering Plants

1. A diploid female plant and a tetraploid male plant are crossed. The ploidy of endosperm shall be **[1989, 2004]**
(a) tetraploid (b) triploid
(c) diploid (d) pentaploid

2. Generative cell was destroyed by laser but a normal pollen tube was still formed because **[1989]**
(a) vegetative cell is not damaged
(b) contents of killed generative cell stimulate pollen growth
(c) laser beam stimulates growth of pollen tube
(d) the region of emergence of pollen tube is not harmed

3. Development of an organism from female gamete/egg without involving fertilization is **[1989]**
(a) adventitive embryony
(b) polyembryony
(c) parthenocarpy
(d) parthenogenesis

4. Nucellus embryo is **[1989]**
(a) amphimictic haploid
(b) amphimictic diploid
(c) apomictic haploid
(d) apomictic diploid

5. Entry of pollen tube through micropyle is **[1990]**
(a) chalazogamy (b) mesogamy
(c) porogamy (d) pseudogamy

6. Male gametophyte of angiosperms/monocots is **[1990]**
(a) microsporangium
(b) nucellus
(c) microspore
(d) stamen

7. Sperm and egg nuclei fuse due to **[1990]**
(a) base pairing of their DNA and RNA
(b) formation of hydrogen bonds
(c) mutual attraction due to differences in electrical charges
(d) attraction of their protoplasts

8. Female gametophyte of angiosperms is represented by **[1990,91]**
(a) ovule
(b) megaspore mother cell
(c) embryo sac
(d) nucellus

9. Which one produce androgenic haploids in anther cultures? **[1990, 94]**
(a) Anther wall
(b) Tapetal layer of anther wall
(c) Connective tissue
(d) Young pollen grains

10. Pollination occurs in **[1991]**
(a) bryophytes and angiosperms

(b) pteridophytes and angiosperms
(c) angiosperms and gymnosperms
(d) angiosperms and fungi

11. Point out the odd one **[1991]**
(a) nucellus (b) embryo sac
(c) micropyle (d) pollen grain

12. Which of the following pair has haploid structures? **[1991]**
(a) Nucellus and antipodal cells
(b) Antipodal cells and egg cell
(c) Antipodal cells and megaspore mother cell
(d) Nucellus and primary endosperm nucleus

13. Double fertilization is fusion of **[1991]**
(a) two eggs
(b) two eggs and polar nuclei with pollen nuclei
(c) one male gamete with egg and other with synergid
(d) one male gamete with egg and other with secondary nucleus

14. Embryo sac occurs in **[1991]**
(a) embryo (b) axis part of embryo
(c) ovule (d) endosperm

15. Study of formation, growth and development of new individual from an egg is **[1993]**
(a) apomixis (b) embryology
(c) embryogeny (d) cytology

16. Number of meiotic divisions required to produce 200/400 seeds of pea would be **[1993]**
(a) 200/400 (b) 400/800
(c) 300/600 (d) 250/500

17. Double fertilization and triple fusion were discovered by **[1993]**
(a) Hofmeister
(b) Nawaschin and Guignard
(c) Leeuwenhoek (d) Strasburger

18. Ovule is straight with funiculus, embryo sac, chalaza and micropyle lying on one straight line. It is **[1993]**
(a) orthotropous (b) anatropous
(c) campylotropous (d) amphitropous

19. Double fertilization is characteristic of **[1993]**
(a) angiosperms (b) pteridophytes
(c) gymnosperms (d) bryophytes

20. Chief pollinators of agricultural crops are
(a) butterflies (b) bees **[1994]**
(c) moths (d) beetles

21. Haploid plant cultures are got from **[1994]**
(a) leaves (b) root tip
(c) pollen grain (d) buds

22. Transfer of pollen to the stigma of another flower of the same plant is **[1994]**
(a) autogamy (b) allogamy
(c) xenogamy (d) geitonogamy

23. One of the most resistant biological material is **[1994]**
(a) lignin (b) hemicellulose
(c) lignocellulose (d) sporopollenin

24. Fertilization involving carrying of male gametes by pollen tube is **[1994]**
(a) porogamy (b) siphonogamy
(c) chalazogamy (d) syngonogamy

25. In an angiosperm, how many microspore mother cells are required to produce 100 pollen grains? **[1995]**
(a) 25 (b) 50
(c) 75 (d) 100

26. The polyembryony commonly occurs in
(a) Citrus (b) turmeric **[1995]**
(c) tomato (d) potato

27. In angiosperms, triple fusion is required for the formation of **[1996]**
(a) embryo (b) endosperm
(c) seed coat (d) fruit wall

28. How many pollen grains will be formed after meiotic division in 10 microspore mother cells? **[1996]**

(a) 10 (b) 20
(c) 40 (d) 80

29. If an angiospermic male plant is diploid and female plant tetraploid, the ploidy level of endosperm will be **[1997]**
(a) haploid (b) triploid
(c) tetraploid (d) pentaploid

30. The endosperm of gymnosperms is **[1999]**
(a) triploid (b) haploid
(c) diploid (d) polyploid

31. Flowers showing ornithophily show few characteristic like **[1999]**
(a) blue flower with nectaries at base of corolla
(b) red sweet scented flower with nectaries
(c) bright red flower into thick inflorescence
(d) white flowers with fragrance

32. In the young cob of maize, numerous filamentous hair like structures protruding from its tip are **[2000]**
(a) hair of seeds
(b) long styles of carpels
(c) anthers
(d) hairy projections from the bracts

33. Eight nucleate embryo sacs are **[2000]**
(a) always tetrasporic
(b) always monosporic
(c) always bisporic
(d) sometimes monosporic, sometimes bisporic and sometimes tetrasporic

34. Double fertilization leading to initiation of endosperm in angiosperms require **[2000]**
(a) fusion of one polar nucleus and the second male gamete only
(b) fusion of two polar nuclei and the second male gamete
(c) fusion of four or more polar nuclei and the second male gamete only
(d) all of the above kinds of fusion in different angiosperms

35. Adventive embryony in Citrus is due to
(a) nucellus (b) integuments **[2001]**
(c) zygotic embryo (d) fertilized egg

36. Anemophily type of pollination is found in
(a) Salvia (b) bottle brush **[2001]**
(c) Vallisneria (d) coconut

37. In angiosperms all the four microspores of tetrad are covered by a layer which is formed by **[2002]**
(a) pectocellulose (b) callose
(c) cellulose (d) sporopollenin

38. What is the direction of micropyle in anatropous ovule? **[2002]**
(a) Upward (b) Downward
(c) Right (d) Left

39. In angiosperms pollen tubes liberate their male gametes into the **[2002]**
(a) central cell (b) antipodal cell
(c) egg cell (d) synergid

40. In a flowering plant, archesporium gives rise to **[2003]**
(a) only tapetum and sporogenous cells
(b) only the wall of the sporangium
(c) both wall and the sporogenous cells
(d) wall and the tapetum

41. An ovule which becomes curved so that the nucellus and embryo sac lie at right angles to the funicle is **[2004]**
(a) hemitropous (b) campylotropous
(c) anatropous (d) orthotropous

42. Which one of the following represents an ovule, where the embryo sac becomes horseshoe shaped and the funiculus and micropyle are close to each other? **[2005]**
(a) Circinotropous (b) Atropous
(c) Anatropous (d) Amphitropous

43. Which one of the following represents an ovule, where the embryo sac. becomes horse shoe-shaped and the funiculus and micropyle are close to each other? **[2005]**

(a) Amphitropous (b) Circinotropous
(c) Atropous (d) Anatropous

44. Through which cell of the embryo sac, does the pollen tube enter the embryo sac? **[2005]**
(a) Egg cell
(b) Persistant synergid
(c) Degenerated synergid
(d) Central cell

45. Top-shaped multiciliate male gametes and the mature seed which bears only one embryo with two cotyledons, are characteristic features of **[2005]**
(a) cycads
(b) conifers
(c) polypetalous angiosperms
(d) gamopetalous angiosperms

46. In a type of apomixis known as adventive embryony, embryos develop directly from the
(a) nucellus or integuments **[2005]**
(b) zygote
(c) synergids or antipodals in an embryo sac
(d) accessory embryo sac in the ovule

47. Pine apple fruit develops from **[2006]**
(a) a unilocular polycarpellary flower
(b) a multipistillate syncarpous flower
(c) a cluster of compactly borne flowers on a common axis
(d) a multilocular monocarpellary flower

48. Parthenocarpic tomato fruits can be produced by **[2006]**
(a) removing androecium of flowers before pollen grains are released
(b) treating the plants with low concentrations of gibberellic acid and auxins
(c) raising the plants from vernalized seeds
(d) treating the plants with phenylmercuric acetate

49. The arrangement of the nuclei in a normal embryo sac in the dicot plants is **[2006]**
(a) 3 +2 + 3 (b) 2 + 3 + 3
(c) 3 + 3 + 2 (d) 2 + 4 + 2

50. What would be the number of chromosomes in the cells of the aleuronelayer in a plant species with 8 chromosomes in its synergids? **[2006]**
(a) 24 (b) 32
(c) 8 (d) 16

51. In a cereal grain the single cotyledon of embryo is represented by **[2006]**
(a) coleorhiza (b) scutellum
(c) prophyll (d) coleoptile

52. Which one of the following is surrounded by a callose wall ? **[2007]**
(a) Microspore mother cell
(b) Male gamete
(c) Egg
(d) Pollen grain

53. Male gametes in angiosperms are formed by the division of **[2007]**
(a) microspore
(b) generative cell
(c) vegetative cell
(d) microspore mother cell

54. Endosperm is consumed by developing embryo in the seed of **[2008]**
(a) coconut (b) castor
(c) pea (d) maize

55. What does the filiform apparatus do at the entrance into ovule? **[2008]**
(a) It helps in the entry of pollen tube into a synergid
(b) It prevents entry of more than one pollen tube into the embryo sac
(c) It brings about opening of the pollen tube
(d) It guides pollen tube from a synergid to egg

56. Which one of the following pairs of plant structures has haploid number of chromosomes? **[2008]**
(a) Megaspore mother cell and antipodal cells

(b) Egg cell and antipodal cells
(c) Nucellus and antipodal cells
(d) Egg nucleus and secondary nucleus

57. Which one of the following is resistant to enzyme action? **[2008]**
(a) Cork (b) Wood fibre
(c) Pollen exine (d) Leaf cuticle

58. Unisexuality of flowers prevents **[2008]**
(a) autogamy, but not geitonogamy
(b) both geitonogamy and xenogamy
(c) geitonogamy, but not xenogamy
(d) autogamy and geitonogamy

59. An example of a seed with endosperm, perisperm, and caruncle is: **[2009]**
(a) lily (b) castor
(c) cotton (d) coffee

60. Apomictic embryos in *citrus* arise form **[Pre. 2010]**
(a) Synergids
(b) Maternal sporophytic tissue in ovule
(c) Antipodal cells (d) Diploid egg

61. Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called **[Pre. 2010]**
(a) Xenogamy (b) Geitonogamy
(c) Karyogamy (d) Autogamy

62. The scutellum observe in a grain of wheat or maize is comparable to which part of the seed in other monocotyledons? **[Pre. 2010]**
(a) Cotyledon (b) Endosperm
(c) Aleurone layer (d) Plumule

63. Wind pollinated flower are : **[Pre. 2010]**
(a) small, brightly coloured, producing large number of pollen grains
(b) small, producing large number of dry pollen grains
(c) large producing abundant nectar and pollen
(d) small, producing nectar and dry pollen

64. In angiosperms, functional megaspore develops into : **[Mains 2011]**
(a) Pollen sac (b) Embryo sac
(c) Ovule (d) Endosperm

65. Filiform apparatus is a characteristic feature of :- **[Pre. 2011]**
(a) Suspensor (b) Egg
(c) Synergid (d) Zygote

66. Nucellar polyembryony is reported in species of **[Pre. 2011]**
(a) *Citrus* (b) *Gossypium*
(c) *Triticum* (d) *Brassica*

67. In which one of the following pollination is autogamous ? **[Pre. 2011]**
(a) Geitonogamy (b) Xenogamy
(c) Chasmogamy (d) Cleistogamy

68. Wind pollination is common in **[Pre. 2011]**
(a) Legumes (b) Lilies
(c) Grasses (d) Orchids

69. Plants with ovaries having only one or a few ovules, are generally pollinated by **[Mains 2012]**
(a) Butterflies (b) Birds
(c) Wind (d) Bees

70. What is the function of germ pore ? **[Mains 2012]**
(a) Absorption of water for seed germination
(b) Initiation of pollen tube
(c) Release of male gametes
(d) Emergence of radicle

71. Which one of the following statements is wrong ? **[Mains 2012]**
(a) Vegetative cell is larger than generative cell
(b) Pollen grains in some plants remain viable for months
(c) Intine is made up of cellulose and pectin
(d) When pollen is shed at two-celled stage, double fertilization does not take place

72. Both, autogamy and geitonogamy are prevented in **[Pre. 2012]**
(a) Castor (b) Maize
(c) Papaya (d) Cucumber

73. Even in absence of pollinating agents seed-setting is assured in - **[Pre. 2012]**
(a) Salvia (b) Fig
(c) Commellina (d) Zostera

74. Megasporangium is equivalent to **[2013]**
(a) Embryo sac (b) Fruit
(c) Nucellus (d) Ovule

75. Seed coat is not thin, membranous in **[2013]**
(a) Maize (2) Coconut
(c) Groundnut (d) Gram

76. Which one of the following statements is correct ? **[2013]**
(a) Hard outer layer of pollen is called intine
(b) Sporogenous tissue is haploid
(c) Endothecium produces the microspores
(d) Tapetum nourishes the developing pollen

77. Product of sexual reproduction generally generates : **[2013]**
(a) Longer viability of seeds
(b) Prolonged dormancy
(c) New genetic combination leading to variation
(d) Large biomass

78. Advantage of cleistogamy is **[2013]**
(a) Higher genetic variability
(b) More vigorous offspring
(c) No dependence on pollinators
(d) Vivipary

79. Perisperm differs from endosperm in **[2013]**
(a) Being a haploid tissue
(b) Having no reserve food
(c) Being a diploid tissue
(d) Its formation by fusion of secondary nucleus with several sperms

80. Geitonogamy involves - **[AIPMT 2014]**
(a) Fertilisation of a flower by the pollen from another flower of the same plant
(b) Fertilisation of a flower by the pollen from the same flower
(c) Fertilisation of a flower by the pollen from a flower of another plant in the same population
(d) Fertilisation of a flower by the pollen from a flower of another plant belonging to a distant population

81. Male gametophyte with least number of cells is present in : **[AIPMT 2014]**
(a) Pteris (b) Funaria
(c) Lilium (d) Pinus

82. Pollen tablets are available in the market for **[AIPMT 2014]**
(a) In vitro fertilization
(b) Breeding programmes
(c) Supplementing food
(d) Ex situ conservation

83. Function of filiform apparatus is to : **[AIPMT 2014]**
(a) Recognize the suitable pollen at stigma
(b) Stimulate division of generative cell
(c) Produce nectar
(d) Guide the entry of pollen tube

84. Non-albuminous seed is produced in - **[AIPMT 2014]**
(a) Maize (b) Castor
(c) Wheat (d) Pea

85. Transmission tissue is characteristic feature of : **[AIPMT 2015]**
(a) Solid style (b) Dry stigma
(c) Wet stigma (d) Hollow style

86. Which one of the following may require pollinators, but is genetically similar to autogamy ? **[AIPMT 2015]**
(a) Xenogamy (b) Apogamy
(c) Cleistogamy (d) Geitonogamy

87. Which one of the following statements is not true? **[AIPMT 2015]**
(a) Pollen grains of some plants cause severe allergies and bronchial afflictions in some people

(b) The flowers pollinated by flies and bats secrete foul odour to attract them
(c) Honey is made by bees by digesting - pollen collected from flowers
(d) Pollen grains are rich in nutrients, and they are used in the form of tablets and syrups

88. The hilum is a scar on the : **[AIPMT 2015]**
(a) Fruit, where it was attached to pedicel
(b) Fruit, where style was present
(c) Seed, where micropyle was present
(d) Seed, where funicle was attached

89. Which of the following are the important floral rewards to the animal pollinators? **[AIPMT 2015]**
(a) Nectar and pollen grains
(b) Floral fragrance and calcium crystals
(c) Protein pellicle and stigmatic exudates
(d) Colour and large size flower

90. Male gametophyte in angiosperms produces: **[RE-AIPMT 2015]**
(a) Three sperms
(b) Two sperms and a vegetative cell
(c) Single sperm and a vegetative cell
(d) Single sperm and two vegetative cells

91. Coconut water from a tender coconut is : **[RE-AIPMT 2015]**
(a) Degenerated nucellus
(b) Immature embryo
(c) Free nuclear endosperm
(d) Innermost layers of the seed coat

92. Filiform apparatus is characteristic feature of : **[RE-AIPMT 2015]**
(a) Synergids (b) Generative cell
(c) Nucellar embryo (d) Aleurone cell

93. Which one of the following fruits is parthenocarpic ? **[RE-AIPMT 2015]**
(a) Banana (b) Brinjal
(c) Apple (d) Jackfruit

94. In angiosperms, microsporogenesis and megasporogenesis : **[RE-AIPMT 2015]**
(a) occur in ovule
(b) occur in anther
(c) form gametes without furthers divisions
(d) involve meiosis

Answers

1 -a	2 -a	3 -d	4 -d	5 -c	6 -c	7 -d	8 -c	9 -d	10 -c
11 -d	12 -b	13 -d	14 -c	15 -b	16 -d	17 -b	18 -a	19 -a	20 -b
21 -c	22 -d	23 -d	24 -b	25 -a	26 -a	27 -b	28 -c	29 -d	30 -b
31 -b	32 -b	33 -d	34 -b	35 -a	36 -d	37-b	38 -b	39 -d	40 -c
41 -a	42 -d	43 -a	44 -c	45 -a	46 -a	47 -c	48 -b	49 -a	50 -a
51 -b	52 -a	53 -b	54 -c	55 -a	56 -b	57 -c	58 -a	59 -b	60 -b
61 -b	62 -a	63 -b	64 -b	65 -c	66 -a	67 -d	68 -c	69 -c	70 -b
71 -d	72 -c	73 -c	74 -d	75 -d	76 -d	77 -c	78 -c	79 -c	80 -a
81 -c	82 -c	83 -d	84 -d	85 -a	86 -d	87 -c	88 -d	89 -a	90 -b
91 -c	92 -a	93 -a	94 -d						

25A

Human Reproduction : Reproductive System

1. Egg is liberated from ovary in **[1989]**
(a) secondary oocyte stage
(b) primary oocyte stage
(c) oogonial stage
(d) mature ovum stage

2. Gonads develop from embryonic **[1990]**
(a) ectoderm (b) endoderm
(c) mesoderm (d) Both (b) and (c)

3. How many sperms are formed from a secondary spermatocyte? **[1990]**
(a) 4 (b) 8
(c) 2 (d) 1

4. Occurrence of Leydig's cells and their secretion is **[1991,98]**
(a) ovary and estrogen
(b) liver and cholesterol
(c) pancreas and glucagon
(d) testis and testosterone

5. Middle piece of mammalian sperm possesses **[1991,99]**
(a) mitochondria and centriole
(b) mitochondria only
(c) centriole only
(d) nucleus and mitochondria

6. Fertilizins are emitted by **[1991, 97]**
(a) immature eggs (b) mature eggs
(c) sperms (d) polar bodies

7. Freshly released human egg has **[1991]**
(a) one Y - chromosome
(b) one X - chromosome
(c) two X - chromosomes
(d) Both (a) and (b)

8. Location and secretion of Leydig's cells are
(a) liver — cholesterol **[1991]**
(b) ovary — estrogen
(c) testis — testosterone
(d) pancreas — glucagon

9. Extrusion of second polar body from egg nucleus occurs **[1993]**
(a) after entry of sperm but before completion of fertilization
(b) after completion of fertilization
(c) before entry of sperm
(d) without any relation of sperm entry

10. Male hormone is produced in the testis by cells of **[1993]**
(a) sertoli (b) epithelial
(c) spermatocytes (d) Leydig

11. Acrosome reaction in sperm is triggered by **[1993]**
(a) capacitation (b) release of lysin
(c) influx of Na+ (d) release of fertilizin

12. Ovulation occurs under the influence of
(a) LH (b) FSH **[1994]**
(c) estrogen (d) progesterone

13. In 28 days human ovarian cycle, ovulation occurs on **[1994, 97]**
(a) 1 day (b) 5 day
(c) 14 day (d) 28 day

14. At the end of first meiotic division, male germ differentiates into **[1994, 2008]**
(a) secondary spermatocyte
(b) primary spermatocyte
(c) spermatogonium
(d) spermatid

15. The mammalian corpus luteum produces
(a) estrogen **[1995]**
(b) progesterone
(c) luteotropic hormone
(d) luteinizing hormone

16. The estrus cycle is a characteristic of **[1995]**
(a) human males only
(b) human females only
(c) mammalian males other than primates
(d) mammalian females other than primates

17. Stratum germinativum is an example of which kind of epithelium ? **[1997]**
(a) Cuboidal (b) Ciliated
(c) Columnar (d) Squamous

18. After ovulation, Graafian follicle regresses into **[1999]**
(a) corpus luteum (b) corpus callosum
(c) corpus albicans (d) corpus atresia

19. Secretion of progesterone by corpus luteum is initiated by **[1999]**
(a) thyroxine (b) LH
(c) MSH (d) testosterone

20. Which set is similar ? **[2001]**
(a) Corpus luteum — Graafian follicle
(b) Sebum — Sweat
(c) Bundle of His — Pacemaker
(d) Vit-B7 — Niacin

21. Mainly which type of hormones control the menstrual cycle in human beings ? **[2002]**
(a) FSH (b) LH
(c) FSH, LH, estrogen (d) Progesterone

22. When both ovaries are removed from rat which hormone is decreased in blood ? **[2002]**
(a) Oxytocin (b) Prolactin
(c) Estrogen
(d) Gonadotropic releasing factor

23. Bartholin's glands are situated **[2003]**
(a) on either side of vagina in humans
(b) on either side of vas deference in humans
(c) on the sides of the head of some amphibians
(d) at the reduced tail end of birds

24. Ovulation in the human female normally takes place during the menstrual cycle
(a) at the mid secretory phase **[2004]**
(b) just before the end of the secretory phase
(c) at the beginning of the proliferative phase
(d) at the end of the proliferative phase

25. If mammalian ovum fails to get fertilized, which one of the following is unlikely ?
(a) Corpus luteum will disintegrate **[2005]**
(b) Estrogen secretion further decreases
(c) Primary follicle starts developing
(d) Progesterone secretion rapidly declines

26. Sertoli cells are regulated by the pituitary hormone known as **[Pre. 2006]**
(a) FSH (b) GH
(c) prolactin (d) LH

27. Withdrawal of which of the following hormones is the immediate cause of menstruation ? **[Pre. 2006]**
(a) Estrogen (b) FSH
(c) FSH-RH (d) Progesterone

28. Which part of ovary in mammals acts as an endocrine gland after ovulation ? **[2007]**
(a) Graafian follicle (b) Stroma
(c) Germinal epithelium
(d) Vitelline membrane

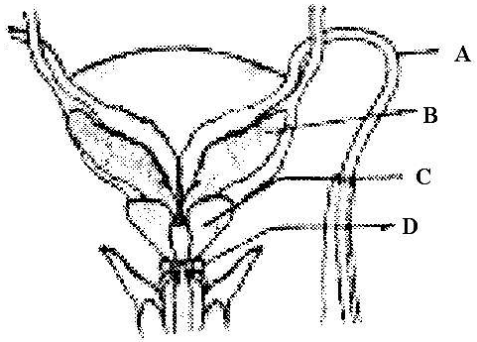
29. In the human female, menstruation can be deferred by the administration of **[2007]**
(a) LH only
(b) combination of FSH and LH
(c) combination of estrogen and progesterone
(d) FSH only

30. Which one of the following is the *correct* matching of the events occurring during menstrual cycle? **[2009]**
(a) *Development of* : Secretory phase and increased secretion of progesterone
(b) *Menstruation*: breakdown of myometrium and ovum not fertilized.
(c) *Ovulation* : LH and FSH attain peak level and sharp fall in the secretion of progesterone.
(d) *Proliferative phase*: Rapid regeneration of myometrium and maturation of Graafian follicle

31. The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is: **[2009]**
(a) spermatid – spermatocyte – spermatogonia – sperms
(b) spermatogonia-spermatid-spermatocyte-sperms
(c) spermatocyte-spermatogonia-spermatid – sperms
(d) spermatogonia – spermatocyte – spermatid – sperms

32. Which one of the following is the most likely root cause why menstruation is not taking place in regularly cycling human female ? **[2009]**
(a) maintenance of high concentration of sex-hormones in the blood stream
(b) retention of well-developed corpus luteum
(c) fertilisation of the ovum
(d) maintenance of the hypertrophical endometrial lining.

33. Given below is a diagrammatic sketch of a portion of human male reproductive system. Select the correct set of the names of the parts labelled A, B, C, D **[2009]**



(a) A. vas deferens, B. seminal vesicle, C. bulbourethral gland, D. prostate
(b) A. ureter, B. seminal vesicle, C. prostate, D. bulbourethral gland
(c) A. ureter, B. prostate, C. seminal vesicle, D. bulbourethral gland
(d) A. vas deferens, B. seminal vesicle, C. prostate, D. bulbourethral gland

34. Seminal plasma in humans is rich in **[2009]**
(a) glucose and certain enzymes but has no calcium
(b) fructose and certain enzymes but poor in calcium
(c) fructose, calcium and certain enzymes
(d) fructose and calcium but has no enzymes

35. Sertoli cells are found in **[2010]**
(a) ovaries and secrete progesterone
(b) adrenal cortex and secrete adrenaline
(c) seminiferous tubules and provide, nutrition to germ cells
(d) pancreas and secrete cholecystokinin

36. Vasa efferentia are the ductules leading from
(a) Testicular lobules to rete testis **[2010]**
(b) Rete testis to vas deferens
(c) Vas deferens to epididymis
(d) Epididymis to urethra

37. Seminal plasma in human males is rich in
(a) fructose and calcium **[Pre. 2010]**
(b) glucose and calcium

(c) DNA and testosterone
(d) ribose and potassium

38. The second maturation division of the mammalian ovum occurs **[Pre. 2010]**
(a) Shortly after ovulation before the ovum makes entry into the Fallopian tube
(b) Until after the ovum has been penetrated by a sperm
(c) Until the nucleus of the sperm has fused wilh that of the ovum
(d) in the Graafian follicle following the first maturation division

39. Which one of the following statements about human sperm is correct? **[Pre. 2010]**
(a) Acrosome has a conical pointed structure used for piercing and penetrating the egg, resulting in fertilisation
(b) The sperm lysins in the acrosome dissolve the egg envelope facilitating fertilisation
(c) Acrosome serves as a sensory structure leading the sperm towards the ovum
(d) Acrosome serves no particular function

40. The part of Fallopian tube closest to the ovary is **[Pre. 2010]**
(a) Isthmus
(b) Infundibulum
(c) Cervix
(d) Ampulla

41. Secretions from which one of the following are rich in fructose, calcium and some enzymes ? **[Mains 2010]**
(a) Liver
(b) Pancreas
(c) Salivary glands
(d) Male accessory glands

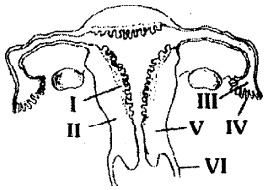
42. What happens during fertilization in humans after many sperms reach close to the ovum? **[Mains 2011]**
(a) Only two sperms nearest the ovum penetrate zona pellucida
(b) Secretion of acrosome helps one sperm enter cytoplasm of ovum through zona pellucid
(c) All sperms except the one nearest to the ovum lose their tails
(d) Cells of corona radiata trap all the sperm except one

43. About which day in normal human menstrual cycle does rapid secretion of LH (popularly called LH-surge) normally occurs? **[Mains 2011]**
(a) 11^{th} day (b) 14^{th} day
(c) 20^{th} day (d) 5^{th} day

44. If for some reason, the vasa efferentia in the humar reproductive system get blocked, the gametes will not be transported from **[Pre. 2011]**
(a) Testes to epididymis
(b) Epididymis to vas deferens
(c) Ovary to uterus
(d) Vagina to uterus

45. The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for **[Pre. 2011]**
(a) Maintaining the scrotal temperature lower than the internal body temperature
(b) Escaping any possible compression by the visceral organs.
(c) Providing more space for the growth of epididymis
(d) Providing a secondary sexual feature for exhibiting the male sex.

46. The figure given below depicts a diagrammatic sectional view of the female reproductive system of humans. Which one set of three parts out of I-VI have been correctly identified ? **[2011]**



(a) (II) Endometrium, (III) Infundibulum, (IV) Fimbriae
(b) (III) Infundibulum, (IV) Fimbriae, (V) Cervix
(c) (IV) Oviducal funnel, (V) Uterus, (VI) Cervix
(d) (I) Perimetrium, (II) Myometrium, (III) Fallopian tube

47. The secretory phase in the human menstrual cycle is also called : **[Mains 2012]**
(a) Follicular phase lasting for about 6 days
(b) Luteal phase and lasts for about 13 days
(c) Follicular phase and lasts for about 13 days
(d) Luteal phase and lasts for about 6 days

48. The Leydig cells as found in the human body are the secretory source of **[Pre. 2012]**
(a) glucagon
(b) androgens
(c) progesterone
(d) intestinal mucus

49. What is correct to say about the hormone action in humans? **[Pre. 2012]**
(a) In female, FSH first bind with specific receptor on ovarian cell membrane
(b) FSH stimulates the secretion of estrogen and progesterone
(c) Glucagon is secreted by B-cells of Islets of Langerhans and stimulates glycogenolysis
(d) Secretion of thymosins is stimulated with ageing

50. In normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was **[Pre. 2012]**
(a) High levels of FSH and LH in uterus to stimulate endometrial thickening
(b) High levels of circulating HCG to stimulate estrogen and progesterone synthesis
(c) High level of circulating FSH and LH in the uterus to stimulate implantation of the embryo
(d) High level of circulating HCG to stimulate endometrial thickening

51. Which one of the following statements is false in respect of viability mammalian sperm **[Pre. 2012]**
(a) Viability of sperm is determined by its motility
(b) Sperm must be concentrated in a thick suspension
(c) Sperm is viable for only up to 24 hours
(d) Survival of sperm depends on the pH of the medium and more active in alkaline medium

52. Meiosis takes place in **[2013]**
(a) Meiocyte
(b) Conidia
(c) Gemmule
(d) Megaspore

53. What is the correct sequence of sperm formation ? **[2013]**
(a) Spermatid, spermatocyte, spermatogonia, spermatozoa
(b) Spermatogonia, spermatocyte, spermatozoa, spermatid
(c) Spermatogonia, spermatozoa, spermatocyte, spermatid
(d) Spermatogonia, spermatocyte, spermatid, spermatozoa

54. Menstruel flow occurs due to lack of **[2013]**
(a) Pnogesterme
(b) FSH
(c) Oxytocin
(d) Vasopressin.

55. The main function of mammalian corpus luteum is to produce **[AIPMT 2014]**
(a) Estrogen only
(b) Progesterone
(c) Human chorionic gonadotropin
(d) Relaxin only

56. Capacitation refers to changes in the :- **[AIPMT 2015]**

(a) Ovum before fertilization
(b) Ovum after fertilization
(c) Sperm after fertilization
(d) Sperm before fertilization

57. Hysteresctomy is surgical removal of : **[AIPMT 2015]**
(a) Prostate gland
(b) Vas-deference
(c) Mammary glands
(d) Uterus

58. Which of the following cells during gametogenesis is normally diploid? **[AIPMT 2015]**
(a) Spermatid
(b) Spermatogonia
(c) Secondary polar body
(d) Primary polar body

59. Which of the following events is not associated with ovulation in human female? **[RE-AIPMT 2015]**
(a) LH surge
(b) Decrease in estradiol
(c) Full development of Graafian follicle
(d) Release of secondary oocyte

60. In human females, meiosis-II is not completed until? **[RE-AIPMT 2015]**
(a) birth
(b) puberty
(c) fertilization
(d) uterine implantation

61. Which of the following layers in an antral follicle is acellular ? **[RE-AIPMT 2015]**
(a) Zona pellucida
(b) Granulosa
(c) Theca interna
(d) Stroma

Answers

1 -a	**2 -c**	**3 -c**	**4 -d**	**5 -b**	**6 -b**	**7 -b**	**8 -c**	**9 -a**	**10 -d**
11 -d	**12 -a**	**13 -c**	**14 -a**	**15 -b**	**16 -d**	**17 -a**	**18 -a**	**19 -b**	**20 -a**
21 -c	**22 -c**	**23 -a**	**24 -d**	**25 -b**	**26 -a**	**27 -d**	**28 -a**	**29 -c**	**30 -a**
31 -d	**32 -c**	**33 -d**	**34 -b**	**35 -c**	**36 -b**	**37 -a**	**38 -b**	**39 -b**	**40 -b**
41 -d	**42 -b**	**43 -b**	**44 -a**	**45 -a**	**46 -b**	**47 -b**	**48 -b**	**49 -a**	**50 –b**
51 -c	**52 -a**	**53 -d**	**54-a**	**55 -b**	**56 -d**	**57 -d**	**58 -b**	**59 -b**	**60 –c**
61 -a									

25B

Human Reproduction : Human Embryology

1. Cells become variable in morphology and function in different regions of the embryo. The process is **[1989]**
(a) differentiation
(b) metamorphosis
(c) organization (d) rearrangement

2. Human eggs are **[1989, 97]**
(a) alecithal (b) microlecithal
(c) mesolecithal (d) macrolecithal

3. During cleavage, what is true about cells? **[1991]**
(a) Nucleocytoplasmic ratio remains unchanged
(b) Size does not increase
(c) There is less consumption of oxygen
(d) The division is like meiosis

4. Blastopore is **[1992, 2000]**
(a) opening of neural tube
(b) opening of gastrocoel
(c) future anterior end of embryo
(d) found in blastula

5. Meroblastic cleavage is division **[1992]**
(a) horizontal (b) partial/parietal
(c) total (d) spiral

6. Eye lens is formed from **[1992]**
(a) ectoderm (b) mesoderm
(c) endoderm (d) both (a) and (b)

7. Amount of yolk and its distribution are changed in the egg. Which one is affected?
(a) Pattern of cleavage **[1993,95]**
(b) Formation of zygote
(c) Number of blastomeres
(d) Fertilization

8. Termination of gastrulation is indicated by
(a) obliteration of blastocoel **[1993]**
(b) obliteration of archenteron
(c) closure of blastopore
(d) closure of neural tube

9. In telolecithal egg the yolk is found **[1993]**
(a) all over the egg (b) on one side
(c) both the sides (d) at centre

10. What is true about cleavage in fertilized egg of human? **[1994]**
(a) Meroblastic
(b) Starts when egg reaches uterus
(c) Starts in fallopian tube
(d) It is identical to normal mitosis

11. Extra-embryonic membranes of the mammalian embryo are derived from **[1994]**
(a) inner cell mass (b) trophoblast
(c) formative cells (d) follicle cells

12. Cleavage in mammalian egg is **[2000]**
(a) equal holoblastic
(b) unequal holoblastic

(c) superficial meroblastic
(d) discoidal meroblastic

13. At the time of organogenesis, genes regulate the process at different levels and at different time due to **[2001]**
(a) promoter (b) regulator
(c) intron (d) exon

14. What is true for cleavage ? **[2002]**
(a) Size of embryo increases
(b) Size of cells decreases
(c) Size of cells increases
(d) Size of embryo decreases

15. During embryonic development, the establishment of polarity along anterior/ posterior, dorsal/ventral or medial/lateral axis is called **[2003]**
(a) anamorphosis
(b) pattern formation
(c) organizer phenomena
(d) axis formation

16. Test-tube baby means a baby born when **[2003]**
(a) the ovum is fertilized externally and there after implanted in the uterus
(b) it develops from a non-fertilized egg
(c) it is developed in a test tube
(d) it is developed through tissue culture method

17. Gray crescent is the area **[2005]**
(a) at the point of entry of sperm into ovum
(b) just opposite to the site of entry of sperm into ovum
(c) at the animal pole
(d) at the vegetal pole

18. The living organisms can be unexceptionally distinguished from the non-living things on the basis of their ability for **[2007]**
(a) responsiveness to touch
(b) interaction with the environment and progressive evolution
(c) reproduction
(d) growth and movement

19. Which extra-embryonic membrane in humans prevents desiccation of the embryo inside the uterus?
(a) Chorion (b) Allantois
(c) Yolk sac (d) Amnion **[2008]**

20. Which one of the following statement is incorrect about menstruation? **[2008]**
(a) During normal menstruation about 40 mL blood is lost
(b) The menstrual fluid can easily clot
(c) At menopause in the female, there is especially abrupt increase in gonadotropic hormones
(d) The beginning of the cycle of menstruation is called menarche

21. Foetal ejection reflex in human female is induced by: **[2009]**
(a) fully developed foetus and placenta
(b) differentiation of mammary glands
(c) pressure exerted by amniotic fluid
(d) release of oxytocin from pituitary

22. A change in the amount of yolk and its distribution in the egg will affect **[2009]**
(a) Number of blastomeres produced
(b) Fertilization
(c) Formation of zygote
(d) Pattern of cleavage

23. The signals for parturition originate from
(a) placenta only **[Pre. 2010]**
(b) Placenta as well as fully developed foetus
(c) oxytocin released from maternal pituitary
(d) fully developed foetus only

24. The first movements of the foetus and appearance of hair on its head are usually observed during which month of pregnancy? **[Pre. 2010]**
(a) Fourth month (b) Fifth month
(c) Sixth month (d) Third month

25. In human female the blastocyst **[Mains 2010]**

(a) gets implanted into uterus 3 days after ovulation

(b) gets nutrition from uterine endometrial secretion only after implantation

(c) gets implanted in endometrium by the trophoblast cells.

(d) forms placenta even before implantation

26. Signals from fully developed foetus and placenta ultimately lead to parturition which requires the release of : **[Mains 2010]**

(a) Oxytocin from maternal pituitary

(b) Oxytocin from foetal pituitary

(c) Relaxin from placenta

(d) Estrogen from placenta

27. The technique called *gamete intrafallopian transfer* (GIFT) is recommended for those females : **[Mains 2011]**

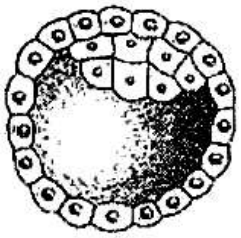
(a) who cannot provide suitable environment for fertilization

(b) who cannot produce an ovum

(c) who cannot retain the foetus inside uterus

(d) whose cervical canal is too narrow to allow passage for the sperms

28. Identify the human development stage shown below as well as the related right place of its occurrence in a normal pregnant women and select the right option for the two together – **[Mains 2012]**



	Developmental stage	**Site of occurrence**
(a)	Blastula	End part of Fallopian tube
(b)	Blastocyst	Uterine wall
(c)	8-celled morula	Starting point of Fallopian tube
(d)	Late morula	Middle part of Fallopian tube

29. The test –tube baby programme employs which one of the following techniques **[Pre. 2012]**

(a) Gamete intra fallopian transfer (GIFT)

(b) Zygote intra fallopian transfer (ZIFT)

(c) Intra cytoplasmic sperm injection (ICSI)

(d) Intra uterine insemination (IUI)

30. Signals for parturition originate from **[Pre. 2012]**

(a) Placenta only

(b) Fully developed foetus only

(c) Both placenta as well as fully developed foetus

(d) Oxytocin released from maternal pituitary

31. Which one of the following is not the function of placenta ? it : **[2013]**

(a) Facilitates supply of oxygen and nutrients to embryo

(b) Secretes estrogen

(c) Facilitates removal of carbon dioxide and waste material from embryo

(d) Secretes oxytocin during parturition

32. Artificial insemination means : **[2013]**

(a) transfer of sperms of a healthy donor to a test tube containing ova

(b) transfer of sperms of husband to a test tube containing ova

(c) artificial introduction of sperms of a healthy donor into the vagina

(d) introduction of sperms of a healthy donor directly into the ovary

33. Select the correct option describing gonadotropin activity in a normal pregnant female - **[AIPMT 2014]**

(a) High level of FSH and LH stimulates the thickening of endometrium

(b) High level of FSH and LH facilitate implantation of the embryo
(c) High level of hCG stimulates the synthesis of estrogen and progesterone
(d) High level of hCG stimulates the thickening of endometrium

34. Which of these is not an important component of initiation of parturition in humans ? **[AIPMT 2015]**
(a) Synthesis of prostaglandins
(b) Release of oxytocin
(c) Release of prolactin
(d) Increase in estrogen and progesterone ratio

35. Ectopic pregnancies are referred to as : **[RE-AIPMT 2015]**
(a) Pregnancies terminated due to hormonal imbalance
(b) Pregnancies with genetic abnormality.
(c) Implantation of embryo at site other than uterus.
(d) Implantation of defective embryo in the uterus

Answers

1 -a	**2 -a**	**3 -b**	**4 -b**	**5 -b**	**6 -a**	**7 -a**	**8 -a**	**9 -b**	**10 -c**
11 -b	**12 -b**	**13 -b**	**14 -b**	**15 -d**	**16 -a**	**17 -b**	**18 -c**	**19 -d**	**20 -b**
21 -a	**22 -d**	**23 -b**	**24 -a**	**25 -c**	**26 -a**	**27 -b**	**28 -b**	**29 -b**	**30 -c**
31 -d	**32 -c**	**33 -c**	**34 -c**	**35 -c**					

26

REPRODUCTIVE HEALTH

1. The concept that population tends to increase geometrically while food supply increases arithmetically was put forward by **[1995]**

(a) Stuart Mill (b) Adam Smith
(c) Charles Darwin
(d) Thomas Malthus

2. In India, human population is heavily weighed towards the younger age groups as a result of **[1995]**

(a) short life span of many individuals and low birth rate
(b) long life span of many individuals and low birth rate
(c) short life span of many individuals and high birth rate
(d) long life span of many individuals and high birth rate

3. Test-tube baby is one who **[1996]**

(a) is born out of artificial insemination
(b) has undergone development in a test tube
(c) is born out of the technique of fertilization in vitro
(d) has been developed without fertilization

4. Human population growth in India **[1996]**

(a) tends to follow a sigmoid curve as in case of many other animal species
(b) tends to reach zero population growth as in case of some animal species
(c) can be reduced by permitting natural calamities and enforcing birth control measures
(d) can be regulated by following the National programme of family planning

5. Amniocentesis is a process to **[1997]**

(a) determine any disease in heart
(b) determine any hereditary disease in the embryo
(c) know about the disease of brain
(d) All of the above

6. What is the most important factor for the success of animal population ? **[1997]**

(a) Natality (b) Unlimited food
(c) Adaptability (d) Inter-species activity

7. Two opposite forces operate in the growth and development of every population. One of them is related to the ability to reproduce at a given rate. The force opposing to it is called **[1998, 2003]**

(a) biotic control (b) mortality
(c) fecundity
(d) environmental resistance

8. Genetic drift operates only in **[1998, 2002]**

(a) island populations
(b) smaller populations

(c) larger populations
(d) Mendelian populations

9. Tablets to prevent contraception contain
(a) progesterone (b) FSH **[1999]**
(c) LH (d) Both (b) and (c)

10. The function of copper-T is to prevent **[2000]**
(a) fertilization (b) egg maturation
(c) ovulation
(d) implantation of blastocyst

11. Progesterone, which is the most important component of oral contraceptive pills, prevents pregnancy by **[2000]**
(a) preventing the formation of egg
(b) preventing the cleavage of the fertilized egg
(c) creating unfavourable chemical environment for the sperms to survive in the female reproductive tract
(d) blocking ovulation

12. Probability of four sons to a couple is **[2001]**
(a) 1/4 (b) 1/8
(c) 1/16 (d) 1/32

13. Frequency of an allele in an isolated population may change due to **[2001]**
(a) genetic drift (b) gene flow
(c) mutation (d) natural selection

14. In a population, unrestricted reproductive capacity is called **[2002]**
(a) biotic potential
(b) fertility
(c) carrying capacity
(d) birth rate

15. In a random mating population in equilibrium, which of the following brings about a change in gene frequency in non-directional manner ? **[2003]**
(a) Selection (b) Migration
(c) Mutation (d) Random drift

16. Random genetic drift in a population probably results from **[2003]**
(a) constant low mutation rate
(b) large population size
(c) highly genetically variable individuals
(d) interbreeding within this population

17. Certain characteristic demographic features of developing countries are **[2004]**
(a) high fertility, low or rapidly falling mortality rate, rapid population growth and a very young age distribution
(b) high fertility, high density, rapidly rising mortality rate and a very young age distribution
(c) high infant mortality, low fertility, uneven population growth and a very young age distribution
(d) high mortality, high density, uneven population growth and a very old age distribution

18. The formula for exponential population growth is **[2006]**
(a) $dt/dN = rN$ (b) $dN/rN = dt$
(c) $rN/dN = dt$ (d) $dN/dt = rN$

19. Geometric representation of age structure is a characteristic of **[2007]**
(a) biotic community
(b) population
(c) landscape
(d) ecosystem

20. If the mean and the median pertaining to a certain character of a population are of the same value, the following is most likely to occur **[2007]**
(a) normal distribution
(b) bi-modal distribution
(c) T-shaped curve
(d) skewed curve

21. The population of an insect species shows an explosive increase in numbers during rainy season followed by its disappearance at the end of the season. What does this show? **[2007]**
(a) S-shaped or sigmoid growth of this insect

(b) The food plants mature and die at the end of the rainy season
(c) Its population growth curve is of J-type
(d) The population of its predators increases enormously

22. Which one of the following is the correct statement regarding the particular psychotropic drug specified? **[2008]**
(a) Hashish causes alter thought perceptions and hallucinations
(b) Opium stimulates nervous system and causes hallucinations
(c) Morphine leads to delusions and disturbed emotions
(d) Barbiturates cause relaxation and temporary Euphoria

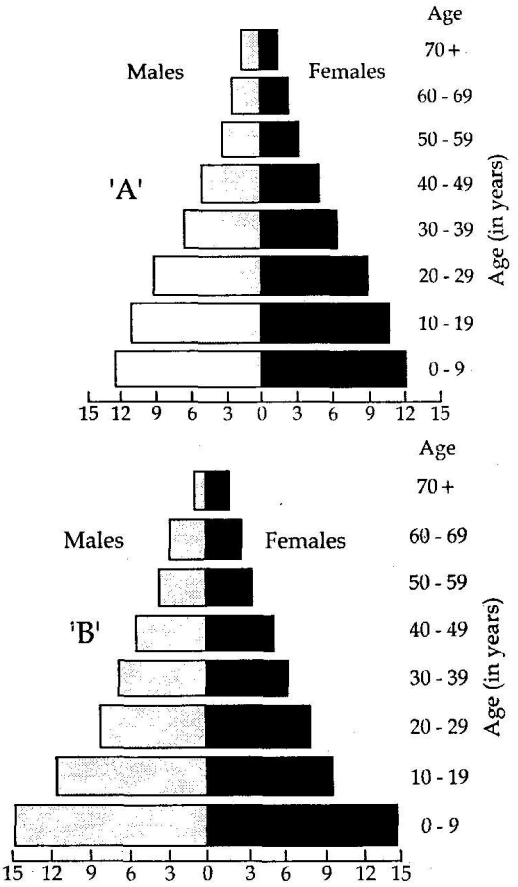
23. Consider the statements given below regarding contraception and answer as directed thereafter **[2008]**
(A) Medical Termination of Pregnancy (MTP) during first trimester is generally safe
(B) Generally chances of conception are nil until mother breast-feeds the infant upto two year
(C) Intrauterine devices like copper-T are effective contraceptives
(D) Contraception pills may be taken upto one week after coitus to prevent conception
Which two of the above statements are correct?
(a) B, C (b) C, D
(c) A, C (d) A, B

24. Given below are four methods (A-D) and their modes of action (1-4) in achieving contraception. Select their correct matching from the four options that follow **[2008]**

Method	Mode of Action
A. The pill	1. Prevents sperms Reactions cervix
B. Condom	2. Prevents implantation
C. Vasectomy	3. Prevents ovulation
D. Copper T	4. Semen contains no sperms

	A	B	C	D
(a)	3	1	4	2
(b)	4	1	2	3
(c)	3	4	1	2
(d)	2	3	1	4

25. A country with a high rate of population growth took measures to reduce it. The figure below shows age-sex pyramids of populations A and B twenty years apart. Select the correct interpretation about them **[2009]**



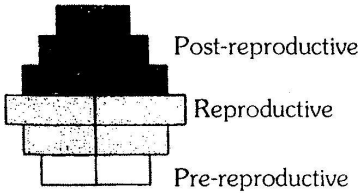
Interpretations:
(a) "B" is more recent showing that population is very young.
(b) "A" is the earlier pyramid and no change has occurred in the growth rate.

(c) "A" is more recent and shows slight reduction in the growth rate.
(d) "B" is earlier pyramid and shows stabilised growth rate.

26. Cu ions released from copper-releasing Intra Uterine Devices (IUDs) **[Pre. 2010]**
(a) make uterus unsuitable for implantation
(b) increase phagocytosis of sperms
(c) suppress sperm motility
(d) prevent ovulation

27. The logistic population growth is expressed by the equation : **[Mains 2011]**
(a) $dN/dt = rN\left(\frac{N-K}{N}\right)$
(b) $dt/dN = Nr\left(\frac{K-N}{K}\right)$
(c) $dN/dt = rN\left(\frac{K-N}{K}\right)$
(d) $dN/dt = rN$

28. What type of human population is represented by the following age pyramid ? **[Pre. 2011]**

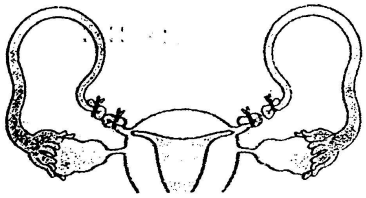


(a) Vanishing population
(b) Stable population
(c) Declining population
(d) Expanding population

29. Which one of the following is the most widely accepted method of contraception in India, as at present ? **[Pre. 2011]**
(a) Cervical caps
(b) Tubectomy
(c) Diaphragms
(d) IUDs' (Intra uterine devices)

30. Medical Termination of Pregnancy (MTP) is considered safe up to have many weeks of pregnancy? **[Pre. 2011]**
(a) Eight weeks
(b) Twelve weeks
(c) Eighteen weeks
(d) Six weeks

31. What is the figure given below showing the particular ? **[Pre. 2012]**



(a) Tubectomy (b) Vasectomy
(c) Ovarin cancer (d) Uterine cancer

32. One of the legal methods of birth control is **[2013]**
(a) abortion by taking an appropriate medicine
(b) by abstaining from coitus from day 10 to 17 of the menstrual cycle
(c) by having coitus at the time of day break
(d) by a premature ejaculation during coitus

33. A biologist studied the population of rats in a barn, He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is : **[2013]**
(a) 10 (b) 15
(c) 05 (d) zero

34. Tubectomy is a method of sterilization in which **[AIPMT 2014]**
(a) Small part of the fallopian tube is removed or tied up
(b) Ovaries are removed surgically
(c) Small part of vas deferens is removed or tied up
(d) Uterus is removed surgically

35. Which of the following is a hormone releasing Intra Uterine Device (IUD)? **[AIPMT 2014]**
(a) Multiload 375 (b) LNG-20
(c) Cervical cap (d) Vault

36. Assisted reproductive technology, IVF involves transfer of **[AIPMT 2014]**

(a) Ovum into the fallopian tube
(b) Zygote into the fallopian tube
(c) Zygote into the uterus
(d) Embryo with 16 blastomeres into the fallopian tube

37. A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is : **[RE-AIPMT 2015]**

(a) Germ cell internal fallopian transfer
(b) Gamete inseminated fallopian transfer
(c) Gamete intra fallopian transfer
(d) Gamete internal fertilization and transfer

Answers

1 -d	2 -c	3 -c	4 -d	5 -b	6 -c	7 -d	8 -b	9 -a	10 -d
11 -d	12 -c	13 -a	14 -a	15 -c	16 -c	17 -a	18 -d	19 -b	20 -a
21 -c	22 -a	23 -c	24 -a	25 -c	26 -c	27 -c	28 -c	29 -d	30 -b
31 -a	32 -a	33 -d	34 -a	35 -b	36 -b	37 -c			

27

MENDELIAN GENETICS

1. Two linked genes a and b show 20% recombination. The individuals of a dihybrid cross between ++ /++ × ab/ab shall show gametes **[1989]**

(a) + +80 : ab 20
(b) + + 50 : ab 50
(c) + + 40 : ab 40 : + a 10 : + b : 10
(d) + + 30 : ab 30 : + a 20 : + b : 20

2. A normal green male maize is crossed with albino female. The progeny is albino because

(a) trait for albinism is dominant **[1989]**
(b) the albinos have biochemical to destroy plastids derived from green male
(c) plastids are inherited from female parent
(d) green plastids of male must have mutated

3. Multiple alleles control inheritance of **[1991]**

(a) phenylketonuria
(b) colourblindness
(c) sickle cell anaemia
(d) blood groups

4. Blue eye colour is recessive to brown eye colour. A brown eyed man whose mother was blue eyed marries a blue eyed women. The children shall be **[1991]**

(a) both blue eyed and brown eyed 1 : 1
(b) all brown eyed
(c) all blue eyed
(d) blue eyed and brown eyed 3 :1

5. A dihybrid condition is **[1991]**

(a) ttRr (b) Tt rr
(c) tt rr (d) Tt Rr

6. Mendel's last law is **[1991]**

(a) segregation
(b) dominance
(c) independent assortment
(d) polygenic inheritance

7. First geneticist/father of genetics was **[1991]**

(a) de Vries (b) Mendel
(c) Darwin (d) Morgan

8. The contrasting pairs of factors in Mendelian crosses are called **[1991]**

(a) multiple alleles (b) allelomorphs
(c) alloloci (d) paramorphs

9. The allele which is unable to express its effect in the presence of another is called **[1991]**

(a) codominant (b) supplementary
(c) complementary (d) recessive

10. RR (red) Antirrhinum is crossed with WW (white) one. Offspring RW are pink. This is an example of **[1991]**

(a) dominant-recessive
(b) incomplete dominance
(c) hybrid
(d) supplementary genes

11. A gene pair hides the effect of another. The phenomenon is **[1992, 95, 99]**
(a) epistasis (b) dominance
(c) mutation (d) None of these

12. An allele is dominant if it is expressed in **[1992,2002]**
(a) both homozygous and heterozygous states
(b) second generation
(c) heterozygous combination
(d) homozygous combination

13. In a cross between AABB × aabb, the ratio of F2 genotypes between AABB, AaBB, Aabb and aabb would be **[1992]**
(a) 9 : 3 : 3 : 1 (b) 2 : 1 : 1 : 2
(c) 1 : 2 : 2 : 1 (d) 7 : 5 : 3 : 1

14. Segregation of Mendelian factors (no linkage, no crossing over) occurs during **[1992]**
(a) anaphase-I (b) anaphase-II
(c) diplotene (d) metaphase-I

15. An organism with two identical alleles is **[1992]**
(a) dominant (b) hybrid
(c) heterozygous (d) homozygous

16. When a certain character is inherited only through female parent, it probably represents
(a) multiple plastid inheritance **[1992]**
(b) cytoplasmic inheritance
(c) incomplete dominance
(d) Mendelian nuclear inheritance

17. A polygenic inheritance in human beings is
(a) skin colour **[1993, 99, 2006, 07]**
(b) phenylketonuria
(c) colourblindness
(d) sickle cell anaemia

18. Mendel studied interitance of seven pairs of traits in pea which can have 21 possible combinations. If you are told that in one of these combinations, independent assortment is not observed in later studies, your reaction will be **[1993]**
(a) independent assortment principle may be wrong
(b) Mendel might not have studied all the combinations
(c) it is impossible
(d) later studies may be wrong

19. Two dominant non-allelic genes are 50 map units apart. The linkage is **[1993]**
(a) cis type (b) trans type
(c) complete (d) absent/incomplete

20. Which of the following is suitable for experiment on linkage? **[1993]**
(a) aaBB × aaBB (b) AABB × aabb
(c) AaBb × AaBb (d) AAbb × AaBB

21. Haploid plants are preferred over diploids for mutation study because in haploids **[1993]**
(a) recessive mutation express immediately
(b) induction of mutations is easier
(c) culturing is easier
(d) dominant mutation express immediately

22. The process of mating between closely related individuals is **[1994]**
(a) self breeding (b) inbreeding
(c) hybridization (d) heterosis

23. A fruit fly exhibiting both male and female traits is **[1994]**
(a) heterozygous (b) gynandromorph
(c) hemizygous (d) gynander

24. A woman with albinic father marries an albinic man. The proportion of her progeny is **[1994]**
(a) 2 normal : 1 albinic
(b) all normal
(c) all albinic (d) 1 normal : 1 albinic

25. A cross between pure tall pea plant with green pods and dwarf pea plant with yellow pods will produce dwarf F2 plants out of 16 **[1994]**
(a) 9 (b) 3
(c) 4 (d) 1

26. In a dihybrid cross AABB x aabb, F2 progeny of AABB, AABb, AaBB and AaBb occurs in the ratio of **[1994]**

(a) 1 : 1 : 1 : 1 (b) 9 : 3 : 3 : 1
(c) 1 : 2 : 2 : 1 (d) 1 : 2 : 2 : 4

27. When two genetic loci produce identical phenotypes in cis and trans position, they are considered to be **[1995]**

(a) pseudoalleles
(b) different genes
(c) multiple alleles
(d) parts of same gene

28. Alleles that produce independent effects in their heterozygous condition are called **[1996]**

(a) codominant alleles
(b) epistatic alleles
(c) complementary alleles
(d) supplementary alleles

29. A fruit fly heterozygous for sex-linked genes, is mated with normal female fruit fly. Male specific chromosome will enter egg cell in the proportion **[1997]**

(a) 1 : 1 (b) 2 : 1
(c) 3 : 1 (d) 7 : 1

30. When a single gene influences more than one traits it is called **[1998]**

(a) pleiotropy
(b) epistasis
(c) pseudodominance
(d) None of these

31. If Mendel had studied the seven traits using a plant with 12 chromosomes instead of 14, in what way would his interpretation have been different? **[1998]**

(a) He would have mapped the chromosome
(b) He would have discovered blending or incomplete dominance
(c) He would not have discovered the law of independent assortment
(d) He would have discovered sex-linkage

32. How many types of genetically different gametes will be produced by a heterozygous plant having genotype AABbCc ? **[1998]**

(a) Two (b) Four
(c) Six (d) Nine

33. Crossing over in diploid organism is responsible for **[1998]**

(a) dominance of genes
(b) linkage between genes
(c) segregation of alleles
(d) recombination of linked alleles

34. Albinism is known to be due to an autosomal recessive mutation. The first child of a couple with normal skin pigmentation was an albino. What is the probability that their second child will also be an albino ? **[1998]**

(a) 100% (b) 25%
(c) 50% (d) 75%

35. Hybridization between Tt × tt gives rise to the progeny of ratio **[1999]**

(a) 1 : 1 (b) 1 : 2 : 1
(c) 1 : 2 (d) 4 : 1

36. Which one of the following characters studied by Mendel in garden pea was found to be dominant ? **[2000]**

(a) Green seed colour
(b) Terminal flower position
(c) Green pod colour
(d) Wrinkled seed

37. In a given plant, red colour (R) of fruit is dominant over white fruit (r); and tallness (T) is dominant over dwarfness (t). If a plant with genotype RRTt is crossed with a plant of genotype rrtt, what will be the percentage of tall plants with red fruits in the next generation? **[2000]**

(a) 100% (b) 25%
(c) 50% (d) 75%

38. During organ differentiation in Drosophila, an organ is modified to another organ (such as wings may be replaced by legs) Genes

responsible for such metamorphosis are called **[2000]**

(a) double dominant genes
(b) plastid genes
(c) complementary genes
(d) homeotic genes

39. Ratio of complementary genes is **[2001]**

(a) 9 : 3 : 4 (b) 12 : 3 : 1
(c) 9 : 3 : 3 : 4 (d) 9 : 7

40. A and B genes are linked. What shall be the genotype of progeny in a cross between AB/ab and ab/ab? **[2001]**

(a) AAbb and aabb
(b) AaBb and aabb
(c) AABB and aabb
(d) None of these

41. Two non-allelic genes produce the new phenotype when present together but fail to do so independently, it is called **[2001]**

(a) epistasis
(b) polygene
(c) non-complementary gene
(d) complementary gene

42. Extranuclear inheritance occurs in **[2001]**

(a) Killer Paramecium
(b) Killer Amoeba
(c) Euglena
(d) Hydra

43. Extra nuclear chromosomes occur in **[2001]**

(a) peroxisome, ribosome
(b) chloroplast and mitochondria
(c) mitochondria and ribosome
(d) chloroplast and lysosome

44. A plant of F1-generation has genotype "AABbCC". On selfing of this plant, the phenotypic ratio in F2-generation will be

(a) 3 : 1 (b) 1 : 1 **[2002]**
(c) 9 : 3 : 3 : 1
(d) 27 : 9 : 9 : 9 : 3 : 3 : 3 : 1

45. Which one of the following traits of garden pea studied by Mendel was a recessive feature? **[2003]**

(a) Green pod colour
(b) Round seed shape
(c) Axial flower position
(d) Green seed colour

46. The genes controlling the seven pea characters studied by Mendel are now known to be located on how many different chromosomes? **[2003]**

(a) Five (b) Four
(c) Seven (d) Six

47. Genes for cytoplasmic male sterility in plants are generally located in **[2003]**

(a) nuclear genome
(b) cytosol
(c) chloroplast genome
(d) mitochondrial genome

48. Two crosses between the same pair of genotypes or phenotypes in which the sources of the gametes are reversed in one cross, is known as **[2003]**

(a) dihybrid cross
(b) reverse cross
(c) test cross
(d) reciprocal cross

49. One of the parents of a cross has mutation in its mitochondria. In that cross, that parent is taken as a male. During segregation of F2 progenies that mutation is found in **[2004]**

(a) one-third of the progenies
(b) none of the progenies
(c) all of the progenies
(d) fifty per cent of the progenies

50. Extranuclear inheritance is a consequence of presence of genes in **[2004]**

(a) mitochondria and chloroplasts
(b) endoplasmic reticulum and mitochondria

(c) ribosomes and chloroplast
(d) lysosomes and ribosomes

51. A male human is heterozygous for autosomal genes A and B and is also hemizygous for haemophilic gene h. What proportion of his sperms will be abh ? **[2004]**
(a) 1/8 (b) 1/32
(c) 1/16 (d) 1/4

52. In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness (t). If a plant with RRTt genotype is crossed with a plant that is rrtt, **[2004]**
(a) 25% will be tall with red fruit
(b) 50% will be tall with red fruit
(c) 75% will be tall with red fruit
(d) all of the offspring will tall with red fruit

53. In order to find out the different types of gametes produced by a pea plant having the genotype AaBb, it should be crossed to a plant with the genotype **[2005]**
(a) aaBB (b) AaBb
(c) AABB (d) aabb

54. Phenotype of an organism is the result of **[2006]**
(a) mutations and linkages
(b) cytoplasmic effects and nutrition
(c) environmental changes and sexual dimorphism
(d) genotype and environmental interactions

55. How many different kinds of gametes will be produced by a plant having the genotype AABbCC? **[2006]**
(a) Three (b) Four
(c) Nine (d) Two

56. Test cross involves **[2006]**
(a) crossing between two genotypes with recessive trait
(b) crossing between two F1 hybrids
(c) crossing the F1 hybrid with a double recessive genotype
(d) crossing between two genotypes with dominant trait

57. In which mode of inheritance do you expect more maternal influence among the offspring? **[2006]**
(a) Autosomal
(b) Cytoplasmic
(c) Y-linked
(d) X-linked

58. In Mendel's experiments with garden pea, round seed shape (RR) was 'dominant over wrinkled seeds (rr), yellow cotyledon (YY) was dominant over green cotyledon (yy). What are the expected phenotypes in the F2 generation of the cross RRYY × rryy ? **[2006]**
(a) Only round seeds with green cotyledons
(b) Only wrinkled seeds with yellow cotyledons
(c) Only wrinkled seeds with green cotyledons
(d) Round seeds with yellow cotyledons and wrinkled seeds with yellow cotyledons

59. A human male produces sperms with the genotypes AB, Ab, aB and ab pertaining to two diallelic characters in equal proportions. What is the corresponding genotype of this person? **[2007]**
(a) AaBb (b) AaBB
(c) AABb (d) AABB

60. The genotype of a plant showing the dominant phenotype can be determined by **[Pre. 2010]**
(a) Test cross
(b) Dihybrid cross
(c) Pedigree analysis
(d) Back cross

61. Select the *correct* statement from the ones given below with respect to dihybrid cross. **[Pre. 2010]**
(a) Tightly linked genes on the same chromosome show higher recombinations

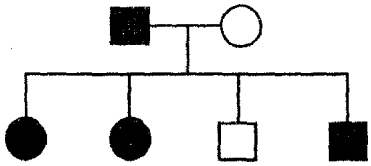
(b) Genes far apart on the same chromosome show very few recombinations
(c) Genes loosely linked on the same chromosome show similar recombinations as the tightly linked ones
(d) Tightly linked genes on the same chromosome show very few recombinations.

62. Test cross in plants or in *Drosophila* involves crossing: **[Pre. 2011]**
(a) Between two genotypes with dominant trait
(b) Between two genotypes with recessive trait
(c) Between two F_1 hybrids
(d) The F_1 hybrid with a double recessive genotype

63. In *Antirrhinum* two plants with pink flowers were hybridized. The F_1 plants produced red, pink and white flowers in the proportion of 1 red, 2 pink and 1 white. What could be the genotype of the two plants used for hybridization ? Red flower colour is determined by RR, and white by rr genes **[Mains 2010]**
(a) RR (b) Rr
(c) rr (d) rrrr

64. A cross in which an organism showing a dominant phenotype in crossed with the recessive parent in order to know its genotype in called **[Mains 2010]**
(a) Back cross
(b) Test cross
(c) Dihybrid cross
(d) Monohybrid cross

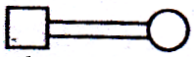
65. Study the pedigree chart of a certain family given below are select the correct conclusion which can be drawn for the character. **[Mains 2010]**



(a) The parents could not have had a normal daughter for this character
(b) The trait under study could not be colour-blindness
(c) The male parent is homozygous dominant
(d) The female parent is heterozygous

66. ABO blood grouping is controlled by gene 1 which has three alleles and show co-dominance. There are six genotypes. How many phenotypes in all are possible ? **[Mains 2010]**
(a) Three (b) Four
(c) Five (d) Six

67. The fruit fly *Drosophila melanogaster* was found to be very suitable for experimental verification of chromosomal theory of inheritance by Morgan and his colleagues because **[Mains 2010]**
(a) a single mating produces two young flies
(b) smaller female is easily recognisable from larger male
(c) it completes life cycle in about two weeks
(d) it reproduces parthenogenetically.

68. Which one of the following symbols and its representation, used in human pedigree analysis is correct? **[Pre. 2010]**
(a)  = mating between relatives
(b)  = unaffected male
(c)  = unaffected female
(d)  = male affected

69. When two unrelated individuals or lines are crossed, the performance of F_1 hybrid is often superior to both its parents. This phenomenon is called **[Pre. 2011]**
(a) Heterosis
(b) Transformation
(c) Splicing
(d) Metamorphosis

70. Mutations can be induced with **[Pre. 2011]**
(a) Infra Red radiations
(b) IAA
(c) Ethylene
(d) Gamma radiations

71. A person with unknown blood group under ABO system, has suffered much blood loss in an accident and needs immediate blood transfusion. His one friend who has a valid certificate of his own blood type, offers for blood donation without delay. What would have been the type of blood group of the donor friend ? **[Pre. 2011]**
(a) Type B
(b) Type AB
(c) Type O
(d) Type A

72. A test cross is carried out to **[Mains 2012]**
(a) Predict whether two traits are linked
(b) Assess the number of alleles of a gene
(c) Determine whether two species or varieties will breed successfully
(d) Determine the genotype of a plant at F_2

73. The idea of mutations was brought forth by **[Mains 2012]**
(a) Gregor Mendel, who worked on Pisum sativum
(b) Hardy Weinberg, who worked on allele frequencies in a population
(c) Charles Darwin, who observed a wide variety of organisms during sea voyage
(d) Hugo do Vries, who worked on evening primrose

74. F_2 generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1 : 2 : 1. It represents a case of **[Pre. 2012]**
(a) Monohybrid cross with complete dominance
(b) Monohybrid cross with incomplete dominance
(c) Co-dominance
(d) Dihybrid cross

75. A certain road accident patient with unknown blood group needs immediate blood transfusion his doctor friend at ones offers his blood what was the blood group of the donor? **[Pre. 2012]**
(a) Blood group O
(b) Blood group A
(c) Blood group B
(d) Blood group AB

76. Which of the following statements is not true of two genes that show 50% recombination frequency ? **[2013]**
(a) The genes may be on different chromosomes
(b) The genes are tightly linked
(c) The genes show independent assortment
(d) If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis

77. If two persons with 'AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group : 'AB' blood group : 'B' blood group in 1 : 2 : 1 ratio. Modern technique of protein electrophoresis reveals presence of both 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of **[2013]**
(a) Codominance
(b) Incomplete dominance
(c) Partial dominance
(d) Complete dominance

78. Which mendelian idea is depicted by a cross in which the F1 generation resembles both the parents ? **[2013]**
(a) incomplete dominance
(b) law of dominance
(c) inheritance of one gene
(d) co-dominance

79. Fruit colour in squash is an example of **[AIPMT 2014]**

(a) Recessive epistasis
(b) Dominant epistasis
(c) Complementary genes
(d) Inhibitory genes

80. A man whose father was colour blind marries a woman who had a colour blind mother and normal father. What percentage of male children of this couple will be colour blind? **[AIPMT 2014]**

(a) 25% (b) 0%
(c) 50% (d) 75%

81. In a population of 1000 individuals 360 belong to genotype AA, 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele A in the population is **[AIPMT 2014]**

(a) 0.4 (b) 0.5
(c) 0.6 (d) 0.7

82. A human female with Turner's syndrome **[AIPMT 2014]**

(a) Has 45 chromosomes with XO
(b) Has one additional X chromosome
(c) Exhibits male characters
(d) Is able to produce children with normal husband

83. The movement of a gene from one linkage group to another is called : **[AIPMT 2015]**

(a) Duplication (b) Translocation
(c) Crossing over (d) Inversion

84. How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments ? **[AIPMT 2015]**

(a) Six (b) Eight
(c) Seven (d) Five

86. Multiple alleles are present : **[AIPMT 2015]**

(a) At different loci on the same chromosome
(b) At the same locus of the chromosome
(c) On non-sister chromatids
(d) On different chromosomes

85. A man with blood group 'A' marries a woman with blood group 'B'. What are all the possible blood groups of their offsprings? **[AIPMT 2015]**

(a) A, B and AB only
(b) A, B, AB and O
(c) O only
(d) A and B only

87. Alleles are : **[AIPMT 2015]**

(a) true breeding homozygotes
(b) different molecular forms of a gene
(c) heterozygotes
(d) different phenotype

88. An abnormal human baby with 'XXX' sex chromosomes was born due to : **[AIPMT 2015]**

(a) formation of abnormal ova in the mother
(b) fusion of two ova and one sperm
(c) fusion of two sperms and one ovum
(d) formation of abnormal sperms in the father

89. A colour blind man marries a woman with normal sight who has no history of colourblindness in her family.

What is the probability of their grandson being colourblind ? **[RE-AIPMT 2015]**

(a) 0.25 (b) 0.5
(c) 1 (d) Nil

90. The term "linkage" was coined by : **[RE-AIPMT 2015]**

(a) W.Sutton
(b) T.H. Morgan
(c) T.Boveri
(d) G.Mendel

91. A pleiotropic gene : **[RE-AIPMT 2015]**

(a) controls multiple traits in an individual
(b) is expressed only in primitive plants
(c) is a gene evolved during Pliocene
(d) controls a trait only in combination with another gene

92. In his classic experiments on pea plants, Mendel did not use : **[RE-AIPMT 2015]**

(a) Flower position
(b) Seed colour
(c) Pod length
(d) Seed shape

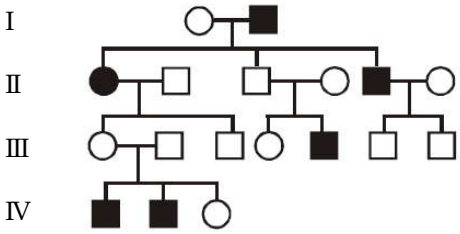
93. A gene showing codominance has : **[RE-AIPMT 2015]**

(a) both alleles independently expressed in the heterozygote
(b) one allele dominant on the other
(c) alleles tightly linked on the same chromosome
(d) alleles that are recessive to each other

94. Identify the correct order of organisation of genetic material from largest to smallest : **[RE-AIPMT 2015]**

(a) Chromosome, genome, nucleotide, gene
(b) Chromosome, gene, genome, nucleotide
(c) Genome, chromosomes, nucleotide, gene
(d) Genome, chromosome, gene, nucleotide

95. In the following human pedigree, the filled symbols represent the affected individuals. Identify the type of given pedigree. **[RE-AIPMT 2015]**



(a) X-linked dominant
(b) Autosomal dominant
(c) X-linked recessive
(d) Autosomal recessive

Answers

1 -c	2 -c	3 -d	4 -a	5 -d	6 -c	7 -b	8 -b	9 -d	10 -b
11 -a	12 -a	13 -c	14 -a	15 -d	16 -b	17 -a	18 -b	19 -d	20 -b
21 -a	22 -b	23 -b	24 -d	25 -c	26 -d	27 -a	28 -a	29 -a	30 -a
31 -c	32 -b	33 -d	34 -b	35 -a	36 -c	37 -c	38 -d	39 -d	40 -b
41 -d	42 -a	43 -b	44 -a	45 -d	46 -b	47 -d	48 -d	49 -b	50 -a
51 -a	52 -b	53 -d	54 -d	55 -d	56 -c	57 -b	58 -d	59 -a	60 -a
61 -d	62 -a	63 -b	64 -b	65 -d	66 -b	67 -c	68 -d	69 -a	70 -d
71 -c	72 -d	73 -d	74 -b	75 -a	76 -b	77 -a	78 -b	79 -b	80 -c
81 -c	82 -a	83 -b	84 -c	85 -b	86 -b	87 -b	88 -a	89 -d	90 -b
91 -a	92 -c	93 -a	94 -d	95 -d					

28

Molecular Basis of Inheritance

1. Diploid chromosome number in humans is
(a) 46 (b) 44 **[1989]**
(c) 48 (d) 42

2. DNA replication is **[1989]**
(a) conservative and discontinuous
(b) semi-conservative and semi-discontinuous
(c) semi-conservative and discontinuous
(d) conservative

3. Both husband and wife have normal vision though their fathers were colourblind. The probability of their daughter becoming colourblind is **[1990]**
(a) 0% (b) 25%
(c) 50% (d) 75%

4. Haemophilia is more common in males because it is a **[1990]**
(a) recessive character carried by Y-chromosome
(b) dominant character carried by Y-chromosome
(c) dominant trait carried by X-chromosome
(d) recessive trait carried by X-chromosome

5. Which one is a hereditary disease? **[1990]**
(a) Cataract (b) Leprosy
(c) Blindness (d) Phenylketonuria

6. A colourblind girl is rare because she will be born only when **[1991]**
(a) her mother and maternal grandfather were colourblind
(b) her father and maternal grandfather were colourblind
(c) her mother is colourblind and father has normal vision
(d) parents have normal vision but grand parents were colourblind

7. The process of transfer of genetic information from DNA to RNA/formation of RNA from DNA is **[1991]**
(a) trnsversion (b) transcription
(c) translation (d) translocation

8. Escherichia coli fully labelled with N15 is allowed to grow in N14 medium. The two strands of DNA molecule of the first generation bacteria have **[1992]**
(a) different density and do not resemble parent DNA
(b) different density but resemble parent DNA
(c) same density and resemble parent DNA
(d) same density but do not resemble parent DNA

9. Khorana first deciphered the triplet codons of **[1992]**
(a) serine and isoleucine
(b) threonine and histidine
(c) tyrosine and tryptophan
(d) phenylalanine and methionine

10. Experimental material in the study of DNA replication has been **[1992]**
(a) Escherichia coli
(b) Neurospora crassa
(c) Pneumococcus
(d) Drosophila melanogaster

11. Out of 8 ascospores formed in Neurospora the arrangement is 2a : 4a : 2a showing **[1992]**
(a) no crossing over
(b) some meiosis
(c) second generation division
(d) first generation division

12. Down's syndrome is due to **[1992, 2000, 02, 03]**
(a) crossing over
(b) linkage
(c) sex-linked inheritance
(d) non-disjunction of chromosomes

13. A colourblind mother and normal father would have **[1992,99,2006]**
(a) colourblind sons and normal/carrier daughters
(b) colourblind sons and daughters
(c) all colourblind
(d) all normal

14. In human beings 45 chromosomes/single X/XO abnormality causes **[1992]**
(a) Down's syndrome
(b) Klinefelter's syndrome
(c) Turner's syndrome
(d) Edward's syndrome

15. Of a normal couple, half the sons are haemophilic while half the daughters are carriers. The gene is located on **[1993]**
(a) X-chromosome of father
(b) Y-chromosome of father
(c) one X-chromosome of mother
(d) both the X-chromosomes of mother

16. Sex is determined in human beings **[1993]**
(a) by ovum
(b) at the time of fertilization
(c) 40 days after fertilization
(d) seventh to eight week when genitals differentiate in foetus

17. Mr. Kapoor has Bb autosomal gene pair and d allele sex-linked. What shall be proportion of Bd in sperms? **[1993]**
(a) 0 (b) 1/2
(c) 1/4 (d) 1/8

18. Of both normal parents, the chance of a male child becoming colourblind are **[1993]**
(a) no
(b) possible only when all the four grand parents had normal vision
(c) possible only when father's mother was colourblind
(d) possible only when mother's father was colourblind

19. The transforming principle of Pneumococcus as found out by Avery, MacLeod and McCarty was
(a) mRNA (b) DNA **[1993]**
(c) protein (d) polysaccharide

20. Because most of the amino acids are represented by more than one codon, the genetic code is **[1993, 2002]**
(a) overlapping (b) Wobbling
(c) degenerate (d) generate

21. Who proved that DNA is basic genetic material? **[1993]**
(a) Griffith
(b) Watson
(c) Boveri and Sutton
(d) Hershey and Chase

22. During DNA replication, the strands separate by **[1993]**
(a) DNA polymerase
(b) topoisomerase
(c) unwindase/helicase
(d) gyrase

23. The process of translation is **[1993]**
(a) ribosome synthesis

(b) protein synthesis
(c) DNA synthesis
(d) RNA synthesis

24. A DNA with unequal nitrogen bases would most probably be **[1993]**
(a) single stranded
(b) double stranded
(c) triple stranded
(d) four stranded

25. Nucleosome core is made of **[1993]**
(a) H1, H2A, H2B and H3
(b) H1, H2A, H2B, H4
(c) H1, H2A, H2B, H3 and H4
(d) H2A, H2B, H3 and H4

26. Initiation codon of protein synthesis (in eukaryotes) is **[1993, 94, 99, 2000]**
(a) GUA (b) GCA
(c) CCA (d) AUG

27. The number of base substitution possible in amino acid codons is **[1994]**
(a) 261 (b) 264
(c) 535 (d) 549

28. Reverse transcriptase is **[1994]**
(a) RNA dependent RNA polymerase
(b) DNA dependent RNA polymerase
(c) DNA dependent DNA polymerase
(d) RNA dependent DNA polymerase

29. In Escherichia coli lac Operon is induced by
(a) lactose **[1994]**
(b) promoter gene
(c) β-galactosidase
(d) I-gene

30. DNA template sequence of CTGATAGC is transcribed over mRNA as **[1994]**
(a) GUCTUTCG (b) GACUAUCG
(c) GAUTATUG (d) UACTATCU

31. Protein helping in opening of DNA double helix in front of replications fork is **[1994]**
(a) DNAgyrase (b) DNA polymerase-I
(c) DNAligase (d) topoisomerase

32. Which is not involved in protein synthesis? **[1994]**
(a) Transcription (b) Initiation
(c) Elongation (d) Termination

33. Genes located on Y-chromosome are **[1994]**
(a) mutant genes (b) sex-linked genes
(c) autosomal genes
(d) holandric genes

34. A colourblind woman marries a normal visioned male. In the offspring **[1994]**
(a) both son and daughter are colourblind
(b) all daughters are colourblind
(c) all sons are normal
(d) all sons are colourblind

35. Out of A=T, G ≡ C pairing, bases of DNA may exist in alternate valency state owing to arrangement called **[1994]**
(a) analogue substitution
(b) tautomerizational mutation
(c) frameshift mutation
(d) point mutation

36. The wild type E. coli cells are growing in normal medium with glucose. They are transferred to a medium containing only lactose as sugar. Which of the following changes takes place? **[1995]**
(a) The lac operon is repressed
(b) All operons are induced
(c) The lac operon is induced
(d) E. coli cells stop dividing

37. Anticodon is an unpaired triplet of bases in an exposed position of **[1995]**
(a) mRNA (b) rRNA
(c) tRNA (d) sRNA

38. If the sequence of bases in DNA is ATTCGATG, then the sequence of bases in its transcript will be **[1995]**
(a) CAUCGAAU
(b) UAAGCUAC
(c) GUAGCUUA
(d) AUUCGAUG

39. In split genes, the coding sequence are called **[1995]**
(a) introns (b) operons
(c) exons (d) cistrons

40. The change of the light coloured variety of peppered moth (Biston betularia) to its darker variety (Biston carbonarid) is due to **[1995]**
(a) mutation
(b) regeneration
(c) genetic isolation
(d) temporal isolation

41. The polytene chromosomes were discovered for the first time in **[1995]**
(a) Drosophila (b) Chironomus
(c) Musca nebulo (d) Musca domestica

42. The most striking example of point mutation is found in a disease called **[1995]**
(a) thalassemia
(b) night blindness
(c) Down's syndrome
(d) sickle cell anaemia

43. Barr body in mammals represents **[1995, 96]**
(a) all the heterochromatin in female cells
(b) Y-chromosomes in somatic cells of male
(c) all heterochromatin in male and female cells
(d) one of the two X-chromosomes in somatic cells of females

44. An individual exhibiting both male and female sexual characteristics in the body is known as **[1996]**
(a) hermaphrodite
(b) intersex
(c) gynandromorph
(d) bisexual

45. A person with 47 chromosomes due to an additional Y-chromosome suffers from a condition called **[1996, 97]**
(a) Down's syndrome
(b) Super female
(c) Turner's syndrome
(d) Klinefelter's syndrome

46. The translation termination triplet is **[1996]**
(a) UAU (b) UAA
(c) UAC (d) UGC

47. Okazaki fragments are seen during **[1996]**
(a) transcription (b) translation
(c) replication (d) transduction

48. An enzyme that joins the ends of two strands of nucleic acid is a **[1996, 2002]**
(a) polymerase (b) synthetase
(c) helicase (d) ligase

49. H. J. Muller was awarded Nobel Prize for his **[1996]**
(a) discovery that chemicals can induce gene mutations
(b) discovery that ionizing radiations can induce gene mutations
(c) work on gene mapping in Drosophila
(d) efforts to prevent the use of nuclear weapons

50. After crossing two plants, the progenies are found to be male sterile. This phenomenon is found to be maternally inherited and is due to some genes which are present in **[1997]**
(a) nucleus (b) chloroplast
(c) mitochondria (d) cytoplasm

51. Different mutations referrable to the same locus of chromosome give rise to **[1997]**
(a) pseudoalleles (b) polygenes
(c) oncogenes (d) multiple alleles

52. Genetic identity of a human male is determined by **[1997]**
(a) autosome (b) nucleolus
(c) sex chromosome
(d) cell organelles

53. The hereditary material present in the bacterium E. coli is **[1997]**
(a) single stranded RNA
(b) double stranded RNA

(c) single stranded DNA
(d) double stranded DNA

54. Genes are packaged into a bacterial chromosome by **[1997]**
(a) histones (b) basic protein
(c) acidic protein (d) actin

55. The codons causing chain termination are
(a) TAG, TAA, TGA **[1997]**
(b) GAT, AAT, AGT
(c) AGT, TAG, UGA
(d) UAA, UAG, UGA

56. The RNA that picks up specific amino acid from amino acid pool in the cytoplasm to ribosome during protein synthesis is called **[1997]**
(a) mRNA (b) tRNA
(c) rRNA (d) RNA

57. A mutation at one base of the first codon of a gene produces a non-functional protein. Such a mutation is referred as **[1997]**
(a) frameshift mutation
(b) mis-sense mutation
(c) nonsense mutation
(d) reverse mutation

58. Foetal sex can be determined by examining cells from the amniotic fluid by looking for **[1997]**
(a) Barr bodies (b) autosomes
(c) chiasmata (d) kinetochore

59. Protein synthesis in an animal cell takes place **[1997]**
(a) only in the cytoplasm
(b) in the nucleolus as well as in the cytoplasm
(c) in the cytoplasm as well as in mitochondria
(d) only on ribosomes attached to a nucleus

60. The mutations are mainly responsible for **[1997]**
(a) constancy in organisms
(b) variation in organisms
(c) increasing the population rate
(d) maintaining genetic continuity

61. The formation of multivalents at meiosis in diploid organism is due to **[1998]**
(a) monosomy (b) inversion
(c) deletion
(d) reciprocal translocation

62. Loss of an X-chromosome in a particular cell, during its development, results into **[1998]**
(a) diploid individual
(b) triploid individual
(c) gynandromorphs
(d) both (a) and (b)

63. Which base is responsible for hot spots for spontaneous point mutations ? **[1998]**
(a) Guanine (b) Adenine
(c) 5-bromouracil (d) 5-methylcytosine

64. Mental retardation in man, associated with sex chromosomal abnormality is usually due to **[1998]**
(a) reduction in X-complement
(b) increase in X-complement
(c) moderate increase in Y-complement
(d) large increase in Y-complement

65. Genes that are involved in turning on or off the transcription of a set of structural genes are called **[1998]**
(a) polymorphic genes
(b) operator genes
(c) reductant genes (d) regulatory genes

66. DNA elements, which can switch their position, are called **[1998]**
(a) exons (b) introns
(c) cistrons (d) transposons

67. A woman with two genes (one on each 'X'chromosome) for haemophilia and one gene for colourblindness on the 'X' chromosomes marries a normal man. How will the progeny be ? **[1998]**
(a) All sons and daughters haemophilic and colourblind

(b) Haemophilic and colourblind daughters
(c) 50% haemophilic colourblind sons and 50% haemophilic sons
(d) 50% haemophilic daughters and 50% colourblind daughters

68. Which of the following is the main category of mutation ? **[1999]**
(a) Somatic mutation
(b) Genetic mutation
(c) Zygotic mutation
(d) All of these

69. In DNA when AGCT occurs, their association is as per which of the following pair? **[1999]**
(a) AC-GT (b) AG-CT
(c) AT-GC (d) All of these

70. Haemophilic man marries a normal woman. Their offspring will be **[1999]**
(a) all boys haemophilic
(b) all normal
(c) all girls haemophilic
(d) all haemophilic

71. The Pneumococcus experiment proves that **[1999]**
(a) DNA is the genetic material
(b) RNA sometime controls the production of DNA and proteins
(c) bacteria undergo binary fission
(d) bacteria do not reproduce sexually

72. Mutation generally produces **[2000]**
(a) recessive genes (b) lethal genes
(c) polygenes (d) dominant genes

73. In an animal cell, protein synthesis takes place **[2000]**
(a) only on the ribosomes present in the cytosol
(b) only on the ribosomes attached to nuclear envelope and endoplasmic reticulum
(c) on ribosomes present in the nucleolus as well as in cytoplasm
(d) on ribosomes present in the cytosol as well as in the mitochondria

74. During replication of DNA, its two strands separate. Each of these serves as a template for the formation of new strands. Such type of replication is called **[2000]**
(a) non-conservative
(b) semi-conservative
(c) flexible
(d) conservative

75. Drosophila flies with XXY genotype are females, but human beings with such genotype are abnormal males. It shows that **[2000]**
(a) Y-chromosome is essential for sex determination in Drosophila
(b) Y-chromosome is female determinating in Drosophila
(c) Y-chromosome is male determining in human beings
(d) Y-chromosome has no role in sex determination either in Drosophila or in human beings

76. 'Signal hypothesis' for the biosynthesis of secretory type of proteins was proposed by **[2000]**
(a) Camillo Golgi (b) Blobel and Sabatini
(c) Baltimore (d) Sheeler and Bianchi

77. Due to discovery of which of the following in 1980's the evolution was termed as RNA world? **[2001]**
(a) mRNA, tRNA, rRNA synthesize proteins
(b) In some viruses, RNA is genetic material
(c) Some RNAs have enzymatic property
(d) RNA is not found in all cells

78. E. coli about to replicate was placed in a medium containing radioactive thymidine for five minutes. Then it was made to replicate in a normal medium.Which of the following observation shall be correct? **[2001]**
(a) Both the strands of DNA will be radioactive
(b) One strand radioactive
(c) Each strand half radioactive
(d) None is radioactive

79. Male XX and female XY sometime occur due to **[2001]**
(a) deletion
(b) transfer of segments in X and Y-chromosomes
(c) aneuploidy
(d) hormonal imbalance

80. Number of Barr bodies in XXXX female **[2001]**
(a) 1 (b) 2
(c) 3 (d) 4

81. Gene and cistron words are sometimes used synonymously because **[2001]**
(a) one cistron contains many genes
(b) one gene contains many cistrons
(c) one gene contains one cistron
(d) one gene contains no cistron

82. In which direction mRNA is synthesized on DNA template? **[2001]**
(a) 5'→3' (b) 3'→5'
(c) Both (a) and (b) (d) Any of these

83. Which of these do not follow independent assortment ? **[2001]**
(a) Genes on non-homologous chromosomes and absence of linkage
(b) Genes on homologous chromosomes
(c) Linked genes on same chromosome
(d) Unlinked genes on same chromosome

84. In his experiment, Mendel obtained wrinkled pea. The wrinkling was due to deposition of sugar instead of starch. This happened due to the enzyme **[2001]**
(a) amylase
(b) invertase
(c) diastase
(d) absence of starch-branching enzyme

85. In negative operon **[2001]**
(a) co-repressor binds with repressor
(b) co-repressor does not bind with repressor
(c) co-repressor binds with inducer
(d) cAMP has negative effect on lac operon

86. A mutant strain of T4-bacteriophage R-II, fails to lyse the E. coli but when two strains R - IIx and R - IIy are mixed then they lyse the E. coli. What may be the possible reason? **[2002]**
(a) Bacteriophage transforms in wild
(b) It is not mutated
(c) Both strains have similar cistrons
(d) Both strains have different cistrons

87. Change in the sequence of nucleotide in DNA is called as **[2002]**
(a) mutagen (b) mutation
(c) recombination (d) translation

88. Sequence of which of the following is used to know the phylogeny ? **[2002]**
(a) mRNA (b) rRNA
(c) tRNA (d) DNA

89. Pleiotropic gene is **[2002]**
(a) haemophilia
(b) thalassemia
(c) sickle cell anaemia
(d) colourblindness

90. In E. coli, during lactose metabolism repressor binds to **[2002]**
(a) regulator gene (b) operator gene
(c) structural gene (d) promoter gene

91. Jacob and Monod studied lactose metabolism in E. coli and proposed Operon concept. Operon concept applicable for **[2002]**
(a) all prokaryotes
(b) all prokaryotes and some eukaryotes
(c) all prokaryotes and all eukaryotes
(d) all prokaryotes and some protozoans

92. In a DNA percentage of thymine is 20. What is the percentage of guanine ? **[2002]**
(a) 20% (b) 40%
(c) 30% (d) 60%

93. Nucleus of a donor embryonal cell/somatic cell is transferred to an enucleated egg cell. Then after the formation of organism, what shall be true ? **[2002]**

(a) Organism will have extra-nuclear genes of the donor cell
(b) Organism will have extra-nuclear genes of recipient cell
(c) Organism will have extra-nuclear genes of both donor and recipient cell
(d) Organism will have nuclear genes of recipient cell

94. Which of the following is the example of sex-linked disease ? **[2002]**
(a) AIDS (b) Colourblindness
(c) Syphilis (d) Gonorrhoea

95. Which statements is correct for bacterial transduction ? **[2002]**
(a) Transfer of some genes from one bacteria to another bacteria through virus
(b) Transfer of genes from one bacteria to another bacteria by conjugation
(c) Bacteria obtained its DNA directly
(d) Bacteria obtained DNA from other external source

96. There are three,genes a, b, c, percentage of crossing over between a and b is 20%, b and c is 28% and a and c is 8%. What is the sequence of genes on chromosome? **[2002]**
(a) b, a, c (b) a, b, c
(c) a, c, b (d) None of these

97. Which of the following reunites the exon segments after RNA splicing? **[2002]**
(a) RNA polymerase
(b) RNAprimase
(c) RNAligase
(d) RNA protease

98. Exon part of mRNAs have code for **[2002]**
(a) protein (b) lipid
(c) carbohydrate (d) phospholipid

99. Genetic map is one that **[2003]**
(a) shows the stages during the cell division
(b) shows the distribution of various species in a region
(c) establishes sites of the genes on a chromosome
(d) establishes the various stages in gene evolution

100. Which one of the following triplet codes, is correctly matched with its specificity for an amino acid in protein synthesis or as 'start' or 'stop' codon ? **[2003]**
(a) UGU—Leucine (b) UAC—Tyrosine
(c) UCG—Start (d) UUU—Stop

101. During translation initiation in prokaryotes, a GTP molecule is needed in **[2003]**
(a) association of 30S, mRNA with formylmet rRNA
(b) association of 50S subunit of ribosome with initiation complex
(c) formation of formylmet tRNA
(d) binding of 30S subunit of ribosome with mRNA

102. In recent years, DNA sequences (nucleotide sequence) of mtDNA and Y-chromosomes were considered for the study of human evolution, because **[2003]**
(a) their structure is known in greater detail
(b) they can be studied from the samples of fossil remains
(c) they are small and therefore, easy to study
(d) they are uniparental in origin and do not take part in recombination

103. In Drosophila, the sex is determined by **[2003]**
(a) the ratio of pairs of X-chromosomes to the pairs of autosomes
(b) whether the egg is fertilized or develops parthenogenetically
(c) the ratio of number of X-chromosomes to the set of autosomes
(d) X and Y-chromosomes

104. When a cluster of genes show linkage behaviour they **[2003]**
(a) do not show independent assortment
(b) induce cell division
(c) do not show a chromosome map
(d) show recombination during meiosis

105. Degeneration of a genetic code is attributed to the **[2003]**
(a) entire codon
(b) third member of a codon
(c) first member of a codon
(d) second member of a codon

106. Which of the following discoveries resulted in a Nobel Prize ? **[2003]**
(a) Recombination of linked genes
(b) Genetic engineering
(c) X-rays induce sex-linked recessive lethal mutations
(d) Cytoplasmic inheritance

107. Down's syndrome is caused by an extra copy of chromosome number 21. What percentage of offspring produced by an affected mother and a normal father would be affected by this disorder? **[2003]**
(a) 50% (b) 25%
(c) 100% (d) 75%

108. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UAA ? **[2003]**
(a) A polypeptide of 49 amino acids will be formed
(b) A polypeptide of 25 amino acids will be formed
(c) A polypeptide of 24 amino acids will be formed
(d) Two polypeptides of 24 and 25 amino acids will be formed

109. In the genetic code dictionary, how many codons are used to code for all the 20 essential amino acids ? **[2003]**
(a) 61 (b) 60
(c) 20 (d) 64

110. The linkage map of X-chromosome of fruit fly has 66 units, with yellow body gene (y) at one end and bobbed hair (b) gene at the other end. The recombination frequency between these two genes (y and b) should be **[2003]**
(a) ≤ 50 % (b) 100%
(c) 66% (d) >50%

111. Chromosomes in a bacterial cell can be 1-3 in number and **[2003]**
(a) can be either circular or linear, but never both within the same cell
(b) can be circular as well as linear within the same cell
(c) are always circular
(d) are always linear

112. During transcription, the DNA site at which RNA polymerase binds is called **[2003]**
(a) receptor (b) enhancer
(c) promoter (d) regulator

113. What does "lac" refer to in what we call the lac operon ? **[2003]**
(a) Lac insect
(b) The number, 1,00,000
(c) Lactose
(d) Lactase

114. Pattern baldness, moustaches and beard in human males are examples of **[2003]**
(a) sex differentiating traits
(b) sex determining traits
(c) sex linked traits
(d) sex limited traits

115. In a mutational event, when adenine is replaced by guanine, it is the case of **[2004]**
(a) frameshift mutation
(b) transcription
(c) transition
(d) transversion

116. Lack of independent assortment of two genes A and B in fruit fly Drosophila is due to **[2004]**
(a) repulsion (b) recombination
(c) linkage (d) crossing over

117. During transcription, the nucleotide sequence of the DNA strand that is being coded is ATACG, then the nucleotide sequence in the mRNA would be **[2004]**
(a) TATGC (b) TCTGG
(c) UAUGC (d) UATGG

118. The recessive genes located on X-chromosome' in humans are always **[2004]**
(a) lethal
(b) sublethal
(c) expressed in males
(d) expressed in females

119. Crossing over that results in genetic recombination in higher organisms occurs between **[2004]**
(a) sister chromatids of bivalent
(b) non-sister chromatids of a bivalent
(c) two daughter nuclei
(d) two different bivalents

120. Which of the following statements is not true for retroviruses ? **[2004]**
(a) DNA is not present at any stage in the life cycle of retroviruses
(b) Retroviruses carry gene for RNA dependent DNA polymerase
(c) The genetic material in mature retroviruses is RNA
(d) Retroviruses are causative agents for certain kinds of cancer in man

121. A nutritionally wild type organism, which does not require any additional growth supplement is known as **[2004]**
(a) phenotype (b) holotype
(c) auxotroph (d) prototroph

122. The following ratio is generally constant for a given species **[2004]**
(a) A+G/C + T (b) T + C/G + A
(c) G + C/A + T (d) A+C/T + G

123. The telomeres of eukaryotic chromosomes consist of short sequences of **[2004]**
(a) thymine rich repeats
(b) cytosine rich repeats
(c) adenine rich repeats
(d) guanine rich repeats

124. After a mutation at genetic locus the character of an organism changes due to the change in **[2004]**
(a) protein structure
(b) DNA replication
(c) protein synthesis pattern
(d) RNA transcription pattern

125. During replication of a bacterial chromosome DNA synthesis starts from a replication origin site and **[2004]**
(a) RNA primers are involved
(b) is facilitated by telomerase
(c) moves in one direction of the site
(d) moves in bi-directional way

126. A normal woman whose father was colourblind is married to a normal man. The sons would be **[2004]**
(a) 75% colourblind
(b) 50% colourblind
(c) all normal
(d) all colourblind

127. A man and a woman, who do not show any apparent signs of a certain inherited disease, have seven children (2 daughters and 5 sons). Three of the sons suffer from the given disease but none of the daughters are affected. Which of the following mode of inheritance do you suggest for this disease ? **[2005]**
(a) Autosomal dominant
(b) Sex-linked dominant
(c) Sex-limited recessive
(d) Sex-linked recessive

128. Telomerase is an enzyme which is a **[2005]**
(a) repetitive DNA (b) RNA
(c) simple protein
(d) ribonucleoprotein

129. Protein synthesis in an animal cell occurs **[2005]**
(a) only on the ribosomes present in cytosol
(b) on ribosomes present in cytoplasm as well as in mitochondria
(c) only on ribosomes attached to the nuclear envelope and endoplasmic reticulum
(d) on ribosomes present in the nucleolus as well as in cytoplasm

130. During transcription holoenzyme RNA polymerase binds to a DNA sequence and the DNA assumes a saddle like structure at that point. What is that sequence called ? **[2005]**

(a) CAATbox, (b) GGTTbox
(c) AAAT box (d) TATA box

131. A woman with normal vision, but whose father was colourblind, marries a colourblind man. Suppose that the fourth child of this couple was a boy. This boy **[2005]**

(a) must have normal colour vision
(b) will be partially colourblind since he is heterozygous for the colourblind mutant allele
(c) must be colourblind
(d) may be colourblind or may be of normal vision

132. Which one of the following hydrolyses internal phosphodiester bonds in a polynucleotide chain? **[2005]**

(a) Lipase (b) Endonucleare
(c) Endonuclease (d) Protease

133. Haemophilia is more commonly seen in human males than in human females because **[2005]**

(a) this disease is due to an X-linked dominant mutation
(b) a greater proportion of girls die in infancy
(c) this disease is due to an X-linked recessive mutation
(d) this disease is due to a Y-linked recessive mutation

134. Amino acid sequence, in protein synthesis is decided by the sequence of **[2006]**

(a) tRNA (b) mRNA
(c) cDNA (d) rRNA

135. One gene-one enzyme hypothesis was postulated by **[2006]**

(a) R. Franklin (b) Hershey and Chase
(c) A Garrod (d) Beadle and Tatum

136. Telomere repetitive DNA sequences control the function of eukaryotic chromosomes because they **[2007]**

(a) act as replicons
(b) are RNA transcription initiator
(c) help chromosome pairing
(d) prevent chromosome loss

137. One gene-one enzyme relationship was established for the first time in **[2007]**

(a) *Neurospora crassa*
(b) *Salmonella typhimurium*
(c) *Escherichia coli*
(d) *Diplococcus pneumoniae*

138. The Okazaki fragments in DNA chain growth **[2007]**

(a) result in transcription
(b) polymerize in the 3' to 5' direction and forms replication fork
(c) prove semi-conservative nature of DNA replication
(d) polymerize in the 5' to 3' di rection and explain 3' to 5' DNA replication

139. Two genes R and Y are located very close on the chromosomal linkage map of maize plant. When RRYY and rryy genotypes are hybridized, then F2 segregation will show **[2007]**

(a) higher number of the recombinant types
(b) segregation in the expected 9:3:3:1 ratio
(c) segregation in 3 : 1 ratio
(d) higher number of the parental types

140. Molecular basis of organ differentiation depends on the modulation in transcription by **[2007]**

(a) RNA polymerase (b) ribosome
(c) transcription factor (d) anticodon

141. The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cells. How is this DNA accommodated ? **[2007]**

(a) Deletion of non-essential genes
(b) Super-coiling in nudeosomes

(c) DNAse digestion
(d) Through elimination of repetitive DNA

142. Differentiation of organs and tissues in a developing organism is associated with **[2007]**
(a) developmental mutations
(b) differential expression of genes
(c) lethal mutations
(d) deletion of genes

143. A sequential expression of a set of human genes occurs when a steroid molecule binds to the **[2007]**
(a) transfer RNA (b) messenger RNA
(c) DNA sequence (d) ribosome

144. A common test to find the genotype of a hybrid is by **[2007]**
(a) crossing of one F2 progeny with male parent
(b) crossing of one F2 progeny with female parent
(c) studying the sexual behaviour of F1 progenies
(d) crossing of one F_1 progeny with male parent

145. In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seeded plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in F_1 generation ?**[2007]**
(a) 50 : 50 (b) 9 :1
(c) 1 : 3 (d) 3 : 1

146. What is true about the isolated small tribal populations? **[2008]**
(a) There is a decline in population as boys marry girls only from their own tribe
(b) Hereditary diseases like colour blindness do not spread in the isolated population
(c) Wrestlers who develop strong body muscles in their life time pass this character on to their progeny
(d) There is no change in population size as they have a large gene pool

147. Which one of the following condition in humans is correctly matched with its chromosomal abnormality/linkage? **[2008]**
(a) Klinefelter's syndrome - 44 autosomes + XXY
(b) Colourblindness - Y - linked
(c) Erythroblastosis foetalis - X - linked
(d) Down syndrome - 44 autosomes + XO

148. Haploids are more suitable for mutation studies than the diploids. This is because **[2008]**
(a) haploids are reproductively more stable than diploids
(b) mutagens penetrate in haploids more effectively than is diploids
(c) haploids are more abundant in nature than diploids
(d) all mutations, whether dominant or recessive are expressed in haploids

149. Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acid? **[2008]**
(a) GUU, GCU — Alanine
(b) UAG, UGA—Stop
(c) AUG, ACG — Start/methionine
(d) UUA, UCA—Leucine

150. What is anti - sense technology? **[2008]**
(a) A cell displaying a foreign antigen used for synthesis of antigens
(b) Production of somaclonal variants in tissue cultures
(c) When a piece of RNA that is complementary in sequence is used to stop expression of a specific gene
(d) RNA polymerase producing DNA

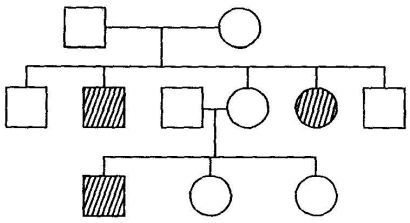
151. What is *not* true for genetic code? **[2009]**
(a) It is degenerate
(b) It is unambiguous
(c) A codon in mRNA is read in a non-contiguous fashion
(d) It is nearly universal

152. Point mutation involves: **[2009]**
(a) Duplication
(b) Deletion
(c) Insertion
(d) Change in single base pair

153. Semiconservative replication of DNA was first demonstrated in **[2009]**
(a) Streptococcus pneumoniae
(b) Salmonella typhimurium
(c) Drosophila melanogaster
(d) Escherichia coli

154. Removal of introns and joining the exons in a defined order in a transcription unit is called **[2009]**
(a) Transformation (b) Capping
(c) Splicing (d) Tailing

155. Study the pedigree chart given below **[2009]**



What does it show?
(a) The pedigree chart is wrong as this is not possible
(b) Inheritance of a recessive sex-linked disease like haemophilia
(c) Inheritance of a sex-linked inborn error of metabolism like phenylketonuria
(d) Inheritance of a condition like phenylketonuria as an autosomal recessive trait

156. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet" ? **[2009]**
(a) Morgan and Sturtevant
(b) Beadle and Tatum
(c) Nirenberg and Mathaei
(d) Hershey and Chase

157. *In vitro* fertilization is a technique that involves transfer of which one of the following into the fallopian tube? **[Pre. 2010]**
(a) Embryo only, upto 8 cell stage.
(b) Either zygote or early embryo upto 8 cell stage
(c) Embryo of 32 cell stage
(d) Zygote only

158. Select the two correct statements out of the four (1-4) given below about lac operon. **[Pre. 2010]**
1. Glucose or galactose may bind with the repressor and inactivate it
2. In the absence of lactose the repressor binds with the operator region
3. The z-gene codes for permease
4. This was elucidated by Francois Jacob and Jacque Monod

(a) 2 and 4
(b) 1 and 4
(c) 2 and 3
(d) 3 and 4

159. The one aspect which is not a salient feature of genetic code, is its being **[Pre. 2010]**
(a) Degenerate
(b) Ambiguous
(c) Universal
(d) Specific

160. Which one of the following palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme? **[Pre. 2010]**
(a) 5′ CGTTCG 3′, 3′ ATGGTA 5′.
(b) 5′ GATATG 3′, 3′ CTACTA 5′.
(c) 5′ GAATTC 3′, 3′ CTTAAG 5′.
(d) 5′ CACGTA 3′, 3′ CTCAGT 5′.

161. Which one of the following conditions of the zygotic cell would lead to the birth of a normal human female child? **[Mains 2011]**
(a) One X and one Y-chromosome
(b) Two X chromosome

(c) Only one Y chromosome
(d) Only one X chromosome

162. Given below is a sample of a portion of DNA strand giving the base sequence on the opposite strands. What is so special shown in it ? **[2011]**

5'_____GAATTC_____3'
3'_____CTTAAG_____5'

(a) Replication completed
(b) Deletion mutation
(c) Start codon at the 5' end
(d) Palindromic sequence of base pairs

163. Which one of the following conditions correctly describes the manner of determining the sex in the given example ? **[Pre. 2011]**

(a) Homozygous sex chromosomes (ZZ) determine female sex in Birds.
(b) XO type of sex chromosomes determine male sex in grasshopper
(c) XO condition in humans as found in Turner Syndrome, determines female sex.
(d) Homozygous sex chromosomes (XX) produce male in *Drosophila*

164. Read the following four statements (A-D) **[Mains 2012]**

(a) In transcription, adenosine pairs with uracil
(b) Regulation of lac operon by repressor is referred to as positive regulation
(c) The human genome has approximately 50,000 genes
(d) Haemophilia is a sex-linked recessive disease

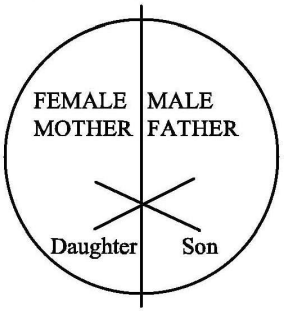
How many of the above statements are right?

(a) Three (b) Four
(c) One (d) Two

165. Tobacco plants resistant to a nematode have been developed by the introduction of DNA that produced (in the host cells) **[2012]**

(a) A particular hormone
(b) An antifeedant
(c) A toxic protein
(d) Both sense and anti-sense RNA

166. Represented below is the inheritance pattern of the certain type of traits in humans. Which one of the following conditions could be an example of this pattern ? **[Mains 2012]**



(a) Sickle cell anaemia
(b) Haemophilia
(c) Thalassemia
(d) Phenylketonuria

167. Which one of the following is a wrong statement regarding mutations ? **[Mains 2012]**

(a) Cancer cells commonly show chromosomal aberrations
(b) UV and Gamma rays are mutagens
(c) Change in a single base pair of DNA does not cause mutation
(d) Deletion and insertion of base pairs cause frame-shift mutations

168. Removal of RNA polymerase III from nucleoplasm will affect the synthesis of **[Pre. 2012]**

(a) m-RNA (b) r-RNA
(c) t-RNA (d) hn-RNA

169. Removal of introns and joining of exons in a defined order during transcription is called

(a) Slicing **[Pre. 2012]**
(b) Splicing
(c) Looping
(d) Inducing

170. Which one of the following is not a. part of a transcription unit in DNA ? **[Pre. 2012]**

(a) A promoter

(b) The structural gene
(c) The inducer
(d) A terminator

171. If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence ?
(a) AACTG (b) ATCGU **[Pre. 2012]**
(c) TTAGU (d) UAGAC

172. A normal visioned man whose father was colour-blind marries a woman whose father was also colour blind. They have their first child as a daughter. What are the chances that this child would be colour-blind **[Pre. 2012]**
(a) 25% (b) 50%
(c) 100% (d) 0%

173. The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C. **[2013]**

$$DNA \xrightarrow{A} mRNA \xrightarrow{A} protein \xrightarrow{\text{Proposed by}} C$$

(a) A-transcription B-replication C-James Watson
(b) A-translation B-transcription C-Erevin Chargaff
(c) A-transcription B-translation C-Francis Crick
(d) A-translation B-extension C-Rosalind Franklin

174. Which enzyme/s will be produced in a cell in which there is a non-sense mutation in the *lac* Y gene ? **[2013]**
(a) β-galactosidase
(b) Lactose permease
(c) Transacetylase
(d) Lactose permease and transacetylase

175. Which one of the following is wrongly matched? **[AIPMT 2014]**
(a) Transcription-Writing information from DNA to t-RNA
(b) Translation-Using information in m-RNA to make protein
(c) Repressor protein-Binds to operator to stop enzyme synthesis
(d) Operon-Structural genes, operator and promoter

176. Transformation was discovered by **[AIPMT 2014]**
(a) Meselson and Stahl
(b) Hershey and Chase
(c) Griffith
(d) Watson and Crick

177. Select the correct option - **[AIPMT 2014]**

	Direction of RNA synthesis	**Direction of reading of the template DNA strand**
(a)	5′ – 3′	3′ – 5′
(b)	3′ – 5′	5′ – 3′
(c)	5′ – 3′	5′ – 3′
(d)	3′ – 5′	3′ – 5′

178. In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bases expected to be present in this DNA are: **[AIPMT 2015]**
(a) G 17%, A 16.5%, T 32.5%
(b) G 17%, A 33%, T 33%
(c) G 8.5%, A 50%, T 24.5%
(d) G 34%, A 24.5%, T 24.5%

179. Gene regulation governing lactose operon of E.coli that involves the lac I gene product is : **[AIPMT 2015]**
(a) Negative and inducible because repressor protein prevents transcription
(b) Negative and repressible because repressor protein prevents transcription
(c) Feedback inhibition because excess of b-galactosidase can switch off transcription
(d) Positive and inducible because it can be induced by lactose

180. The chromosomes in which centromere is situated close to one end are: **[AIPMT 2015]**
(a) Acrocentric
(b) Telocentric

(c) Sub-metacentric
(d) Metacentric

181. Which one of the following is not applicable to RNA? **[RE-AIPMT 2015]**
(a) Chargaff's rule
(b) Complementary base pairing
(c) 5' phosphoryl and 3' hydroxyl ends
(d) Heterocyclic nitrogenous bases

182. Balbiani rings are sites of : **[RE-AIPMT 2015]**
(a) RNA and protein synthesis
(b) Lipid synthesis
(c) Nucleotide synthesis
(d) Polysaccharide synthesis

183. Satellite DNA is important because it : **[RE-AIPMT 2015]**
(a) Codes for enzymes needed for DNA replication
(b) Codes for proteins needed in cell cycle
(c) Shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children
(d) Does not code for proteins and is same in all members of the population

Answers

1 -a	2 -b	3 -a	4 -d	5 -d	6 -b	7 -b	8 -b	9 -b	10 -a
11 -c	12 -d	13 -a	14 -c	15 -c	16 -b	17 -c	18 -d	19 -b	20 -c
21-d	22 -c	23 -b	24 -a	25 -d	26 -d	27 -d	28 -d	29 -a	30 -b
31-a	32 -a	33 -d	34 -d	35 -b	36 -c	37 -c	38 -b	39 -c	40 -a
41-b	42 -d	43 -d	44 -c	45 -d	46 -b	47 -c	48 -d	49 -b	50 -b
51 -d	52 -c	53 -d	54 -b	55 -d	56 -b	57 -b	58 -a	59 -c	60 -b
61 -d	62 -c	63 -d	64 -b	65 -d	66 -d	67 -c	68 -b	69 -c	70 -b
71 -a	72 -a	73 -d	74 -b	75 -c	76 -b	77 -c	78 -b	79 -c	80 -c
81 -c	82 -a	83 -c	84 -d	85 -a	86 -d	87 -b	88 -b	89 -c	90 -b
91 -a	92 -c	93 -b	94 -b	95 -a	96 -a	97 -c	98 -a	99 -c	100 -b
101 -a	102-d	103 -c	104 -a	105 -b	106 -c	107 -a	108 -c	109 -a	110 -a
111 -c	112 -c	113 -c	114 -d	115 -c	116 -c	117 -c	118 -c	119 -b	120 -a
121 -d	122 -c	123 -d	124 -a	125 -d	126 -b	127 -d	128 -d	129 -b	130 -d
131 -d	132 -c	133 -c	134 -b	135 -d	136 -d	137 -a	138 -b	139 -d	140 -c
141 -b	142-b	143 -c	144 -d	145 -a	146 -a	147 -a	148 -d	149 -b	150 -c
151 -c	152 -d	153 -d	154 -c	155 -d	156 -c	157 -a	158 -a	159 -b	160 -c
161 -b	162 -d	163 -b	164 -d	165 -d	166 -b	167 -c	168 -c	169 -b	170 -c
171 -d	172 -d	173 -c	174 -a	175 -d	176 -c	177 -a	178 -b	179 -a	180 -a
181 -a	182 -a	183 -c							

29A

Evolution : Origin and Evolution of Life

1. "Continuity of germplasm" theory was given by **[1989]**
(a) deVries (b) Weismann
(c) Darwin (d) Lamarck

2. Evolution is **[1989]**
(a) progressive development of a race
(b) history and development of race alongwith ariations
(c) history of race
(d) development of race

3. Theory of inheritance of acquired characters was given by **[1989]**
(a) Wallace (b) Lamarck
(c) Darwin (d) deVries

4. 'Origin of species' was written by **[1989]**
(a) Oparin (b) Weismann
(c) Lamarck (d) Darwin

5. Parallelism is **[1990]**
(a) adaptive divergence
(b) adaptive divergence of widely separated species
(c) adaptive convergence of widely different species
(d) adaptive convergence of closely related groups

6. Which was absent in the atmosphere at the time of origin of life? **[1991]**
(a) NH_3 (b) H_2
(c) O_2 (d) CH_4

7. The first organisms were **[1992]**
(a) chemoautotrophs
(b) chemoheterotrophs
(c) autotrophs
(d) eukaryotes

8. Weismann cut off tails of mice generation after generation but tails neither disappeared nor shortened showing that **[1993]**
(a) Darwin was correct
(b) tail is an essential organ
(c) mutation theory is wrong
(d) Lamarckism was wrong in inheritance of acquired characters

9. Genetic drift is change of **[1993]**
(a) gene frequency in same generation
(b) appearance of recessive genes
(c) gene frequency from one generation to next
(d) None of the above

10. Theory of natural selection dwells on **[1993]**
(a) role of environment in evolution
(b) natural selection acting on favourable variations
(c) changes in gene complex resulting in heritable variations
(d) None of the above

11. Which one does not favour Lamarckian concept of inheritance of acquired characters? **[1994]**
(a) Lack of pigment in cave dwellers
(b) Absence of limbs in snakes
(c) Presence of webbed toes in aquatic birds
(d) Melanization of peppered moth in industrial areas

12. Frequency of a character increases when it is **[1994]**
(a) recessive (b) dominant
(c) inheritable (d) adaptable

13. Which one is irrelevant to evolution of man? **[1994, 96]**
(a) Perfection of hand for tool making
(b) Change of diet from hard nuts/roots to soft food
(c) Increased ability to communicate or develop community behaviour
(d) Loss of tail

14. Extremities, tail and ear are relatively shorter in animals living in cooler regions as compared to those inhabiting warmer zones. This is **[1996]**
(a) Bergman's rule (b) Jordan's rule
(c) Gloger's rule (d) Allen's rule

15. Identify the correct sequence in which the following substances have appeared during the course of evolution of life on earth **[1996]**
(a) glucose, amino acids, nucleic acids, proteins
(b) ammonia, amino adds, proteins, nucleic acids
(c) water, amino acids, nucleic acids, enzymes
(d) amino acids, ammonia, phosphates, nucleic acids

16. In general, in the developmental history of a mammalian heart, it is observed that it passes through a two-chambered fish-like heart, three-chambered frog-like heart and finally to four-chambered stage. To which hypothesis can this above cited statement be approximated? **[1998]**
(a) Hardy-Weinberg law
(b) Lamarck's principle
(c) Biogenetic law
(d) Mendelian principles

17. Genetic drift operates only in **[1998]**
(a) smaller populations
(b) larger populations
(c) Mendelian populations
(d) island populations

18. Darwin's theory of pangenesis shows similarity with theory of inheritance of acquired characters then what will be correct according to it? **[2001]**
(a) Useful organs become strong and developed while useless organs become extinct. These organs help in struggle for survival
(b) Size of organs increase with ageing
(c) Development of organs is due to will power
(d) There should become physical basis of inheritance

19. Similarities in organisms with different genotype indicates **[2001]**
(a) micro-evolution
(b) macro-evolution
(c) convergent evolution
(d) divergent evolution

20. In which condition the gene ratio remains constant for any species? **[2002]**
(a) Sexual selection
(b) Random mating
(c) Mutation
(d) Gene flow

21. Sequence of which of the following is used to know the phylogeny? **[2002]**
(a) mRNA (b) rRNA
(c) tRNA (d) DNA

22. Genetic drift operates in **[2002]**
(a) small isolated population
(b) large isolated population
(c) fast reproductive population
(d) slow reproductive population

23. In a random mating population in equilibrium, which of the following brings about a change in gene frequency in a non-directional manner? **[2003]**
(a) Migration (b) Mutation
(c) Random drift (d) Selection

24. Darwin in his 'Natural Selection Theory' did not believe in any role of which one of the following in organic evolution? **[2003]**
(a) Discontinuous variations
(b) Parasites and predators as natural enemies
(c) Survival of the fittest
(d) Struggle for existence

25. Random genetic drift in a population probably results from **[2003]**
(a) large population size
(b)highly genetically variable individuals
(c) interbreeding within this population
(d) constant low mutation rate

26. Industrial melanism is an example of **[2003]**
(a) defensive adaptation of skin against ultraviolet radiations
(b) drug resistance
(c) darkening of skin due to smoke from industries
(d) protective resemblance with the surroundings

27. Which one of the following sequences was proposed by Darwin and Wallace for organic evolution? **[2003]**
(a) Variations, natural selection, overproduction, constancy of population size
(b) Overproduction, variations, constancy of population size, natural selection
(c) Variations, constancy of population size, overproduction, natural selection
(d) Overproduction, constancy of population size, variations, natural selection

28. Which one of the following experiments suggests that simplest living organisms could not have originated spontaneously from non-living matter? **[2005]**
(a) Larvae could appear in decaying organic matter
(b) Microbes did not appear in stored meat
(c) Microbes appeared from unsterilized organic matter
(d) Meat was not spoiled, when heated and kept sealed in a vessel

29. Using imprints from a plate with complete medium and carrying bacterial colonies, you can select streptomycin resistant mutants and prove that such mutations do not originate as adaptation. These imprints need to be used **[2005]**
(a) on plates with and without streptomycin
(b) on plates with minimal medium
(c) only on plates with streptomycin
(d) only on plates without streptomycin

30. Which one of the following phenomena supports Darwin's concept of natural selection in organic evolution? **[2005]**
(a) Development of transgenic animals
(b) Production of 'Dolly', the sheep by cloning
(c) Prevalence of pesticide resistant insects
(d) Development of organs from 'stem cells' for organ transplantation

31. de Vries gave his mutation theory on organic evolution while working on **[2005]**
(a) Pisum sativum
(b) Drosophila melanogaster
(c) Oenothera lamarckiana
(d) Althea rosea

32. Which one of the following amino acid was not found to be synthesized in Miller's experiment? **[2006]**
(a) Aspartic acid (b) Glutamic acid
(c) Alanine (d) Glycine

33. Industrial melanism as observed in peppered moth proves that **[2007]**
(a) the true black melanic forms arise by a recurring random mutation
(b) the melanic form of the moth has no selective advantage over lighter form in industrial area
(c) the lighter form moth has no selective advantage either in polluted industrial area or non-polluted area
(d) melanism is a pollution generated feature

34. When two species of different geneology come to resemble each other as a result of adaptation, the phenomenon is termed
(a) divergent evolution **[2007]**
(b) micro-evolution
(c) co-evolution
(d) convergent evolution

35. The concept of chemical evolution is based on **[2007]**
(a) crystalization of chemicals
(b) interaction of water, air and clay under intense heat
(c) effect of solar radiation on chemicals
(d) possible origin of life by combination of chemicals under suitable environmental conditions

36. Select the correct statement from the following **[2007]**
(a) Darwinian variations are small and directionless
(b) fitness is the end result of the ability to adapt and gets selected by nature
(c) all mammals except whales and camels have seven cervical vertebrae
(d) mutations are random and directional

37. Adaptive radiation refers to **[2007]**
(a) adaptations due to geographical isolation
(b) evolution of different species from a common ancestor
(c) migration of members of a species to different geographical areas
(d) power of adaptation in an individual to a variety of environments

38. Which one of the following is incorrect about the characteristics of protobionts (coacervates and microspheres) as envisaged in the abiogenic origin of life? **[2008]**
(a) They were able to reproduce.
(b) They could separate combinations of molecules from the surroundings.
(c) They were partially isolated from the surroundings.
(d) They could maintain an internal environment.

39. In the case of peppered moth (*Biston betularia*) the black-coloured form became dominant over the light-coloured form in England during industrial revolution. This is an example of **[2009]**
(a) protective mimicry
(b) inheritance of darker colour character acquired due to the darker environment
(c) natural selection whereby the darker forms were selected
(d) appearance of the darker coloured individuals due to very poor sunlight

40. Darwin's finches are a good example of **[Pre. 2010]**
(a) Industrial melanism
(b) Connecting link
(c) Adaptive radiation
(d) Convergent evolution

41. Evolution of different species in a given area starting from a point and spreading to other geographical areas is known as **[Pre. 2012]**
(a) Migration (b) Divergent evolution
(c) Adaptive radiation
(d) Natural selection

42. Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as **[2013]**

(a) Genetic flow (b) Genetic drift
(c) Random mating (d) Genetic load

43. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge is called **[2013]**
(a) Natural selection
(b) Convergent evolution
(c) Non-random evolution
(d) Adaptive radiation

44. The tendency of population to remain in genetic equilibrium may be disturbed by **[2013]**
(a) random mating
(b) lack of migration
(c) lack of mutations
(d) lack of random mating

45. According to Darwin, the organic evolution is due to **[2013]**
(a) Intraspecific competition
(b) Interspecific competition
(c) Competition within closely related species
(d) Reduced feeding efficiency in one species due to the presence of interfering species.

46. A population will not exist in Hardy-Weinberg equilibrium if : **[AIPMT 2015]**
(a) There are no mutations
(b) There is no migration
(c) The population is large
(d) Individuals mate selectively.

Answers

1 -b	2 -b	3 -b	4 -d	5 -d	6 -c	7 -b	8 -d	9 -a	10 -b
11 -d	12 -d	13 -d	14 -d	15 -b	16 -c	17 -a	18 -d	19 -c	20 -b
21 -b	22 -a	23 -b	24 -a	25 -b	26 -d	27 -b	28 -d	29 -a	30 -c
31 -c	32 -b	33 -a	34 -d	35 -d	36 -b	37 -b	38 -d	39-c	40-c
41 -c	42 -b	43 -b	44 -d	45 -b	46 -d				

29B

Evolution : Evidences of Evolution

1. Basic principles of embryonic development were pronounced by **[1990]**
(a) von Baer (b) Weismann
(c) Haeckel (d) Morgan

2. Correct order is **[1991]**
(a) Palaeozoic → Archaeozoic → Coenozoic
(b) Archaeozoic → Palaeozoic → Proterozoic
(c) Palaeozoic → Mesozoic → Coenozoic
(d) Mesozoic → Archaeozoic → Proterozoic

3. Evolutionary convergence is development of **[1993, 96]**
(a) common set of characters in group of different ancestry
(b) dissimilar characters in closely related groups
(c) common set of characters in closely related groups
(d) random mating

4. Homologous organs are **[1994]**
(a) wings of insects and bat
(b) gills of fish and lungs of rabbit
(c) pectoral fins of fish and fore limbs of horse
(d) wings of grasshopper and crow

5. The earliest fossil form in the phylogeny of horse is **[1994]**
(a) Merychippus (b) Mesohippus
(c) Eohippus (d) Equus

6. Two geographical regions separated by high mountains are **[1994]**
(a) Oriental and Australian
(b) Palaearctic and Oriental
(c) Nearctic and Palaearctic
(d) Neotropical and Ethiopian

7. 'Golden age of dinosaurs'/Age of reptiles was **[1994]**
(a) Mesozoic (b) Coenozoicc
(c) Palaeozoic (d) Psychozoic

8. The presence of gill slits, in the embryos of all vertebrates, supports the theory of **[1995]**
(a) biogenesis (b) recapitulation
(c) metamorphosis (d) organic evolution

9. One of the following is a link between plants and animals **[1995]**
(a) Euglena (b) Bacteria
(c) Paramecium (d) Trichonympha

10. The homologous organs are those that show similarity in **[1995]**
(a) size (b) origin
(c) function (d) appearance

11. Which one of the following sets includes only the vestigial structures in man? **[1996]**
(a) Body hair, olecranon process, coccyx, patella
(b) Wisdom teeth, mammary glands, coccyx, patella

(c) Coccyx, nictitating membrane, vermiform appendix, ear muscles
(d) Coccyx, body hair, ear ossicles, vermiform appendix

12. Which one of the following pair has homologous organs? **[1999]**
(a) Pectoral fins of a fish and forelimbs of a horse
(b) Wings of a bat and wings of cockroach
(c) Air sac of fish and lungs of frog
(d) Wings of a bird and wings of a butterfly

13. Darwin's finches provide an excellent evidence in favour of evolution. This evidence comes from the field of **[2000]**
(a) Biogeography (b) Anatomy
(c) Embryology (d) Palaeontology

14. Which is not a vestigial part in humans?
(a) Segmental muscles of abdomen **[2000]**
(b) Fingernails
(c) Third molar (d) Coccyx

15. Occurrence of endemic species in South-America and Australia is due to **[2001]**
(a) these species have been extinct from other regions
(b) continental separation
(c) there is no terrestrial route to these places
(d) retrogressive evolution

16. Half-life period of C^{14} is about **[2001]**
(a) 500 yr (b) 5730 yr
(c) 50 yr (d) 5×104 yr

17. According to fossils discovered up to present time origin and evolution of man was started from **[2002]**
(a) France (b) Java
(c) Africa (d) China

18. Which of the following is homologous organ? **[2002]**
(a) Wings of birds and locust
(b) Wings of birds (sparrow) and pectoral fins of fish
(c) Wings of bat and butterfly
(d) Legs of frog and cockroach

19. In which era reptiles were dominant? **[2002]**
(a) Coenozoic era (b) Mesozoic era
(c) Palaeozoic era (d) Archaeozoic era

20. Convergent evolution is illustrated by
(a) dogfish and whale **[2003]**
(b) rat and dog
(c) bacterium and protozoan
(d) starfish and cuttle fish

21. In recent years, DNA sequences (nucleotide sequence) of mtDNA and Y-chromosomes were considered for the study of human evolution, because **[2003]**
(a) they can be studied from the samples of fossil remains
(b) they are small and, therefore, easy to study
(c) they are uniparental in origin and do not take part in recombination
(d) their structure is known in greater detail

22. Which one of the following describes correctly the homologous structures? **[2003]**
(a) Organs appearing only in embryonic stage and disappearing later in the adult
(b) Organs with anatomical similarities, but performing different functions
(c) Organs with anatomical dissimilarities, but performing same functions
(d) Organs that have no function now, but had an important function in ancestors

23. What kind of evidence suggested that man is more closely related with chimpanzee than with other hominoid apes? **[2004]**
(a) Evidence from DNA from sex chromosomes only
(b) Comparison of chromosomes morphology only
(c) Evidence from fossil remains and the fossil mitochondrial DNA alone
(d) Evidence from DNA extracted from sex chromosomes, autosomes and mitochondria

24. Age of fossils in the past was generally determined by radio-carbon method and other method involving radioactive elements

found in the rocks . More precise methods, which were used recently and led to the revision of the evolutionary periods for different groups of organisms, include **[2004]**

(a) study of carbohydrates/proteins in fossils
(b) study of the condition of fossilization
(c) Electron Spin Resonance (ESR) and fossil DNA
(d) study of carbohydrates/proteins in rocks

25. Presence of gills in the tadpole of frog indicates diat **[2004]**

(a) fishes were amphibious in the past
(b) fishes evolved from frog-like ancestors
(c) frogs will have gills in future
(d) frogs evolved from gilled ancestors

26. Which of the following is the relatively most accurate method for dating of fossils?

(a) Radio-carbon method **[2005]**
(b) Potassium-argon method
(c) Electron-spin resonance method
(d) Uranium-lead method

27. An important evidence in favour of organic evolution is the occurrence of **[2006]**

(a) analogous and vestigial organs
(b) homologous organs only
(c) homologous and analogous organs
(d) homologous and vestigial organs

28. Evolutionary history of an organism is known as **[2006]**

(a) Ancestry (b) Palaeontology
(c) Ontogeny (d) Phylogeny

29. One of the important consequences of geographical isolation is **[2007]**

(a) no change in the isolated fauna
(b) preventing speciation
(c) speciation through reproductive isolation
(d) random creation of new species

30. Which one of the following statements is correct ? **[2007]**

(a) Stem cells are specialized cells
(b) There is no evidence of the existence of gills during embryogenesis of mammals
(c) All plant and animal cells are totipotent
(d) Ontogeny repeats phylogeny

31. The finches of Galapagos islands provide an evidence in favour of **[2007]**

(a) special creation
(b) evolution due to mutation
(c) retrogressive evolution
(d) biogeographical evolution

32. Darwin's finches are an excellent example of **[2008]**

(a) adaptive radiation
(b) seasonal migration
(c) brood parasitism (d) connecting links

33. Thorn of Bougainvillea and tendril of Cucurbita are examples of **[2008]**

(a) analogous organs
(b) homologous organs
(c) vestigial organs
(d) retrogressive evolution

34. Select the incorrect statement from the following: **[2009]**

(a) Small population size results in random genetic drift in a population
(b) Baldness is a sex-limited trait
(c) Linkage is an exception to the principle of independent assortment in heredity
(d) Galactosemia is an inborn error of metabolism

35. Given below are four statements (A-D) each with one or two blanks. Select the option which correctly fills up the blanks in two statements **[Mains 2010]**

Statements :

(A) Wings of butterfly and birds look alike and are the results of___(i)_ evolution
(B) Miller showed that CH_4, H_2, NH_3 and___(i)_, when exposed to electric discharge in flask resulted in formation of___(ii)__
(C) Vermiform appendix is a__(i)___organ and an___(ii)___evidence of evolution.

(D) According to Darwin evolution took place due to _(i)_ and _(ii)_ of the fittest.

Options:

(a) (A) - (i) convergent
(B) - (i) oxygen, (ii) nucleosides

(b) (B) - (i) water vapour, (ii) amino acids,
(C) - (i) rudimentary (ii) anatomical

(c) (C) - (i) vestigial, (ii) anatomical,
(D) - (i) mutations, (ii) multiplication

(d) (D) - (i) small variations, (ii) survival,
(A) - (i) convergent

36. Which one of the following options gives one correct example each of convergent evolution and divergent evolution ? **[Pre. 2012]**

	Convergent evolution	**Divergent evolution**
(a)	Bones of forelimbs of vertebrates	Wings of butterfly and birds
(b)	Thorns of Bougainvillia and tendrils of Cucurbita	Eyes of Octopus and Mammals
(c)	Eyes of octopus and mammals	Bones of forelimbs of Vertebrates
(d)	Thorns of Bougainvillia and tendrils of Cucurbita	Wings of butterflies and birds

37. The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of **[2013]**

(a) Homologous organs that have evolved due to convergent evolution
(b) Homologous organs that have evolved due to divergent evolution
(c) Analogous organs that have evolved due to convergent evolution
(d) Analogous organs that have evolved due to divergent evolution

38. Forelimbs of cat, lizard used in walking; forelimbs of whale used in swimming and forelimbs of bats used in flying are an example of : **[AIPMT 2014]**

(a) Analogous organs
(b) Adaptive radiation
(c) Homologous organs
(d) Convergent evolution

39. Which one of the following are analogous structures ? **[AIPMT 2014]**

(a) Wings of bat and wings of pigeon
(b) Gills of prawn and lungs of man
(c) Thorns of Bougainvillea and tendrils of Cucurbita
(d) Flippers of dolphin and legs of horse

40. The wings of a bird and the wings of an insect are : **[RE-AIPMT 2015]**

(a) homologous structures and represent convergent evolution
(b) homologous structures and represent divergent evolution
(c) analogous structures and represent convergent evolution
(d) phylogenetic structures and represent divergent evolution

41. Industrial melanism is an example of : **[RE-AIPMT 2015]**

(a) Neo Lamarckism (b) Neo Darwinism
(c) Natural selection (d) Mutation

Answers

1 -a	**2 -c**	**3 -a**	**4 -c**	**5 -c**	**6 -b**	**7 -a**	**8 -b**	**9 -a**	**10 -b**
11 -c	**12 -a**	**13 -a**	**14 -b**	**15 -b**	**16 -b**	**17 -c**	**18 -b**	**19 -b**	**20 -a**
21 -c	**22 -b**	**23 -d**	**24 -c**	**25 -d**	**26 -c**	**27 -d**	**28 -d**	**29 -c**	**30 -d**
31 -d	**32 -a**	**33 -b**	**34-a**	**35 -d**	**36 -c**	**37 -c**	**38 -c**	**39 -b**	**40 -c**
41 -c									

29C

Evolution : Human Evolution

1. Which one of the following is regarded as the direct ancestor of modern man? **[1996]**
(a) Homo erectus (b) Ramapithecus
(c) Homo habilis (d) Cro-magnon man

2. Which one of the following statements about fossil human species is correct ? **[1997]**
(a) Fossils of Homo neanderthalensis have been found recently in South America
(b) Neanderthal man and Cro-magnon man did exist for sometime together
(c) Australopithecus fossils have been found in Australia
(d) Homo erectus was preceded by Homo habilis

3. Common origin of man and chimpanzee is best shown by **[1997]**
(a) banding pattern in chromosomes number 3 and 6
(b) cranial capacity
(c) binocular vision (d) dental formula

4. Which one of the following statements is correct? **[1998]**
(a) Cro-magnon man's fossil has been found in Ethiopia
(b) Homo erectus is the ancestor of man
(c) Neanderthal man is the direct ancestor of Homo sapiens
(d) Australopithecus is the real ancestor of modern man

5. The age of the fossil of Dryopithecus on the geological time scale is **[1998]**
(a) 5×10^6 yr back (b) 25×10^6 yr back
(c) 50×10^6 yr back (d) 75×10^6 yr back

6. Which of the following primate is the closest relative of humans? **[2000]**
(a) Rhesus monkey (b) Orangutan
(c) Gorilla (d) Gibbon

7. Homo sapiens evolved during **[2000]**
(a) Pleistocene (b) Oligocene
(c) Pliocene (d) Miocene

8. Which one of the following features is closely related with the evolution of humans? **[2000]**
(a) Loss of tail (b) Shortening of jaws
(c) Binocular vision (d) Flat nails

9. Which of the following is closest relative of man? **[2001]**
(a) Chimpanzee (b) Gorilla
(c) Orangutan (d) Gibbon

10. Which of the following is correct order of evolutionary history of man? **[2001]**
(a) Peking man, Homo sapiens, Neanderthal, Cro-magnon
(b) Peking man, Neanderthal, Homo sapiens, Cro-magnon
(c) Peking man, Heidelberg man, Neanderthal, Cro-magnon
(d) Peking man, Neanderthal, Homo sapiens, Heidelberg man

11. There are two opposing views about origin of modern man. According to one view Homo erectus in Asia were the ancestors of modern man. A study of variation of DNA however, suggested African origin of modern man. What kind of observation on DNA variation could suggest this? **[2005]**

(a) Greater variation in Asia than in Africa
(b) Greater variation in Africa than in Asia
(c) Similar variation in Africa and Asia
(d) Variation only in Asia and no variation in Africa

12. Jurassic period of the Mesozoic era is characterized by **[2006]**

(a) radiation of reptiles and origin of mammal-like reptiles
(b) dinosaurs become extinct and angiosperms appear
(c) flowering plants and first dinosaurs appear
(d) gymnosperms are dominant plants and first birds appear

13. Among the human ancestors the brain size was more than 1000 cc in **[2007]**

(a) Homo neanderthalensis
(b) Homo erectus
(c) Ramapithecus
(d) Homo habilis

14. The most apparent change during the evolutionary history of *Homo sapiens* is traced in

(a) Walking upright **[Mains 2010]**
(b) Shortening of jaws
(c) Remarkable increase in the brain size
(d) Loss of body hair

15. What was the most significant trend in the evolution of modern man (Homo sapiens) from his ancestors? **[Pre. 2011]**

(a) Upright posture
(b) Shortening of jaws
(c) Binocular vision
(d) Increasing brain capacity

16. The extinct human who lived 1,00,000 to 40,000 years ago, in Europe, Asia and parts of Africa, with short stature, heavy eye brows, retreating for heads, large jaws with heavy teeth, stocky bodies a lumbering gait and stooped posture was **[Pre. 2012]**

(a) Cro-magnon humans
(b) Rampithecus
(c) Homo habilis
(d) Neanderthal human

17. What was the most significant trend in the evolution of modern man (Homo sapiens) from his ancestors? **[Pre. 2012]**

(a) Increasing cranial capacity
(b) Upright posture
(c) Shortening of jaws
(d) Binocular vision

18. Which of the following had the smallest brain capacity ? **[AIPMT 2015]**

(a) Homo sapiens
(b) Homo neanderthalensis
(c) Homo habilis
(d) Homo erectus

Answers

1 -d	2 -d	3 -a	4 -b	5 -b	6 -c	7 -a	8 -b	9 -a	10 -c
11 -a	12 -d	13 -a	14 -c	15 -d	16 -d	17 -a	18 -c		

30

Human Health and Diseases

1. Cells involved in immune mechanism are **[1993]**
   (a) erythrocytes (b) lymphocytes
   (c) eosinophils (d) thrombocytes

2. Opiate narcotic is **[1993]**
   (a) bhang (b) charas
   (c) heroin (d) nicotine

3. Which of the following pair is not correctly matched? **[1995]**
   (a) Dengue fever — Arbovirus
   (b) Plague — Yersinia pestis
   (c) Syphilis — Trichuris trichiura
   (d) Malaria — Plasmodium vivax

4. Which of the following diseases is due to an allergic reaction? **[1995]**
   (a) Goitre (b) Skin cancer
   (c) Hay fever (d) Enteric fever

5. Hypersensitivity to an allergen is associated with **[1996]**
   (a) aberrant functioning of the immune mechanism
   (b) increase in ambient temperature
   (c) age of the individual
   (d) food habits

6. The long-term prospects for a truly human civilization depend in a large measure on **[1996]**
   (a) the ability of humanity to moderate its fecundity
   (b) increasing the food production
   (c) colonization of underpopulated areas
   (d) control of human diseases

7. Passive immunity was discovered by **[1996]**
   (a) Edward Jenner (b) Emil von Behring
   (c) Robert Koch (d) Louis Pasteur

8. Retroviruses are implicated as a cause for cancer in humans because they **[1996]**
   (a) carry gene for reverse transcriptase
   (b) may carry cellular protooncogenes in their genome
   (c) may carry v-oncogenes in their genome
   (d) carry single stranded RNA as their genetic material

9. Diphtheria is caused by **[1997]**
   (a) poisons released by living bacterial cells into the host tissue
   (b) poisons released from dead bacterial cells into the host tissue
   (c) poisons released by virus into the host tissues
   (d) excessive immune response by the host's body

10. Which of the following is an opiate narcotic?
    (a) Barbiturates (b) Morphine **[1997]**
    (c) Amphetamines (d) LSD

11. Which of the following will be achieved in next two decades ? **[1997]**
(a) Control of cancer
(b) Correction of genetic basis of diabetes mellitus
(c) A complete understanding of brain-mind interactions
(d) Production of biodegradable plastic

12. If a person shows production of interferons in his body, the chances are that he has got an infection of **[1997]**
(a) typhoid (b) measles
(c) tetanus (d) malaria

13. Which of the following symptoms indicate radiation sickness ? **[1997]**
(a) Red and ulcerated skin
(b) Nausea and anaemia
(c) Nausea and loss of hair
(d) Ulcerated skin, nausea and loss of hair

14. Botulism caused by Clostridium botulinum affects the **[1998]**
(a) spleen
(b) intestine
(c) lymph glands
(d) neuromuscular junction

15. Typhoid fever is caused by **[1998]**
(a) Giardia (b) Salmonella
(c) Shigella (d) Escherichia

16. Koch's postulates are not applicable to **[1999]**
(a) cholera (b) leprosy
(c) TB (d) diphtheria

17. The term 'humulin' is used for **[1999]**
(a) human insulin (b) powerful antibiotic
(c) isoenzyme (d) hydrolytic enzyme

18. Hybridoma cells are **[1999]**
(a) product of spore formation in bacteria
(b) hybrid cells resulting from myeloma cells
(c) nervous cells of frog
(d) only cells having oncogenes

19. Which one of the following correctly matches a Sexually Transmitted Disease (STD) with its pathogen ? **[2000]**
(a) AIDS — Bacillus anthracis
(b) Syphilis — Treponema pallidum
(c) Urethritis — Entamoeba gingivalis
(d) Gonorrhoea — Leishmania donovani

20. Small proteins produced by vertebrate cells naturally in response to viral infections and which inhibit mutliplication of viruses are called **[2000]**
(a) immunoglobulins (b) interferons
(c) antitoxins (d) lipoproteins

21. Bovine spongiform encephalopathy is a bovine disease. To which of the following human diseases it is related ?
(a) Kala-azar **[2000]**
(b) Encephalitis
(c) Cerebral spondylitis
(d) Creutzfeldt Jacob disease

22. Which one of the following is correct match? **[2001]**
(a) Reserpine — Tranquiliser
(b) Cocaine — Opiatic narcotic
(c) Morphine — Hallucinogenic
(d) Bhang — Analgesic

23. Which of these is most infectious disease? **[2001]**
(a) Hepatitis-B (b) AIDS
(c) Cough and cold (d) Malaria

24. Reason of lung cancer is **[2001]**
(a) coal mining (b) calcium fluoride
(c) cement factory (d) bauxite mining

25. LSD is **[2001]**
(a) hallucinogenic (b) sedative
(c) stimulant (d) tranquiliser

26. Salmonella is related with **[2001]**
(a) typhoid (b) polio
(c) TB (d) tetanus

27. Monoclonal antibodies **[2001]**
(a) are obtained from a cell and act on one antigen
(b) are obtained from a group of cells and act on more than one antigens
(c) are obtained from a group of same type of cells and act on single antigen
(d) are obtained from a group of same type of cells and act on more than one antigens

28. Cancerous cells can easily be destroyed by radiation due to **[2002]**
(a) rapid cell division (b) lack of nutrition
(c) fast mutation (d) lack of oxygen

29. The term "antibiotic" was coined by **[2003]**
(a) Selman Waksman (b) Alexander Fleming
(c) Edward Jenner (d) Louis Pasteur

30. Carcinoma refers to **[2003]**
(a) malignant tumours of the colon
(b) benign tumours of the connective tissue
(c) malignant tumours of the connective tissue
(d) malignant tumours of the skin or mucous membrane

31. Maximum application of animal cell culture technology today is in the production of **[2003]**
(a) vaccines (b) edible proteins
(c) insulin (d) interferons

32. Christmas disease is another name for **[2003]**
(a) Down's syndrome
(b) sleeping sickness
(c) haemophilia-B
(d) hepatitis-B

33. Which one of the following conditions though harmful in itself, is also a potential saviour from a mosquito borne infectious disease ? **[2003]**
(a) Pernicious anaemia
(b) Leukemia
(c) Thalassaemia
(d) Sickle cell anaemia

34. ELISA is used to detect viruses where the key reagent is **[2003]**
(a) DNA probe
(b) RNAase
(c) alkaline phosphatase
(d) catalase

35. Which one of the following pairs is not correctly matched ? **[2004]**
(a) Streptomyces — Antibiotic
(b) Serratia — Drug addiction
(c) Spirulina — Single cell protein
(d) Rhizobium — Biofertilizer

36. Which one of the following is not correctly matched ? **[2004]**
(a) Glossina palpalis— Sleeping sickness
(b) Culex pipiens — Filariasis
(c) Aedes aegypti — Yellow fever
(d) Anopheles culicifacies — Leishmaniasis

37. Which one of the following depresses brain activity and produces feelings of calmness, relaxation and drowsiness ? **[2005]**
(a) Valium (b) Morphine
(c) Hashish (d) Amphetamines

38. Which of the following is not a hereditary disease ? **[2005]**
(a) Cretinism (b) Cystic fibrosis
(c) Thalassaemia (d) Haemophilia

39. A person showing unpredictable moods, outbursts of emotion, quarrelsome behaviour and conflicts with others is suffering from **[2006]**
(a) schizophrenia
(b) Borderline Personality Disorder (BPD)
(c) mood disorders
(d) addictive disorders

40. The "blue baby syndrome" results from
(a) excess of chloride **[2006]**
(b) methaemoglobin

(c) excess of dissolved oxygen
(d) excess of TDS (Total Dissolved Solids)

41. Sickle cell anaemia has not been eliminated from the African population because
(a) it is controlled by recessive genes **[2006]**
(b) it is not a fatal disease
(c) it provides immunity against malaria
(d) it is controlled by dominant genes

42. Both sickle cell anaemia and Huntington's chorea are **[2006]**
(a) bacteria-related diseases
(b) congenital disorders
(c) pollutant-induced disorders
(d) virus-related diseases

43. Which one of the following is a viral disease of poultry ? **[2007]**
(a) Salmonellosis
(b) Coryza
(c) New castle disease
(d) Pasteurellosis

44. Probiotics are **[2007]**
(a) safe antibiotics
(b) cancer inducing microbes
(c) new kind of food allergens
(d) live microbial food supplement

45. If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence ? **[2007]**
(a) Serum albumins
(b) Serum globulins
(c) Fibrinogen in the plasma
(d) Haemocytes

46. Increased asthmatic attacks in certain seasons are related to **[2007]**
(a) hot and humid environment
(b) eating fruits preserved in tin containers
(c) inhalation of seasonal pollen
(d) low temperature

47. Match the disease in Column-I with the appropriate items (pathogen/prevention/ treatment) in Column-II **[2008]**

Column-I	Column-II
(A) Amoebiasis	i. Teporema pallidum
(B) Diphtheria	ii. Use only sterilized food and water
(C) Cholera	iii. DPT vaccine
(D) syphilis	vi. Use oval rehydration therapy

(a) A-(i), B-(ii), C-(iii), D-(iv)
(b) A-(ii), B-(iv), C-(i), D-(iii)
(c) A-(ii), B-(i), C-(iii), D-(iv)
(d) A-(ii), B-(iii), C-(iv), D-(i)

48. To which type of barriers under innate immunity, do the saliva in the mouth and the tears from the eyes, belong? **[2008]**
(a) cytokine barriers
(b) cellular barriers
(c) physiological barriers
(d) physical barriers

49. The letter T in T-lymphocyte refers to **[2009]**
(a) Tonsil (b) Thymus
(c) Thyroid (d) Thalamus

50. A person likely to develop tetanus is immunised by administering **[2009]**
(a) Wide spectrum antibiotics
(b) Weakened germs
(c) Dead germs
(d) Preformed antibodies

51. Which one of the following statements is correct ? **[2009]**
(a) Heroin accelerates body functions.
(b) Malignant tumours may exhibit metastasis.
(c) Patients who have undergone surgery are given cannabinoids to relieve pain.
(d) Benign tumours show the property of metastasis.

52. Sickle cell anemia is **[2009]**
(a) caused by a change in a single base pair of DNA
(b) characterized by elongated sickle like RBCs with a nucleus

(c) an autosomal linked dominant trait
(d) caused by substitution of valine by glutamic acid in the beta globin chain of haemoglobin

53. A health disorder that results from the deficiency of thyroxine in adults and characterised by (i) a low metabolic rate, (ii) increase in body weight and (iii) tendency to retain water in tissues is **[2009]**
(a) myxoedema (b) cretinism
(c) hypothyroidism (d) simple goiter

54. When breast feeding is replaced by less nutritive food low in proteins and calories; the infants below the age of one year are likely to suffer from: **[2009]**
(a) Kwashiorkor (b) Pellagra
(c) Marasmus (d) Rickets

55. Use of anti-histamines and steroids give a quick relief from : **[2009]**
(a) Cough (b) Headache
(c) Allergy (d) Nausea

56. Alzhimer disease in humans is associated with the deficiency of : **[2009]**
(a) acetylcholine
(b) gamma aminobutyric acid (GABA)
(c) dopamine (d) glutamic acid

57. Select the correct statement from the ones given below **[Pre. 2010]**
(a) Barbiturates when given to criminals make them tell the truth
(b) Morphine is often given to persons who have undergone surgery as a pain killer
(c) Chewing tobacco lowers blood pressure and heart rate
(d) Cocaine is given to patients after surgery as it stimulates recovery

58. Ringworm in human is caused by **[Pre. 2010]**
(a) Bacteria (b) Fungi
(c) Nematodes (d) Viruses

59. Widal test is used for the diagnosis of **[Pre. 2010]**
(a) Malaria (b) Pneumonia
(c) Tuberculosis (d) Typhoid

60. Which one of the following statements is correct with respect to AIDS? **[Pre. 2010]**
(a) The HIV can be transmitted through eating food together with an infected person
(b) Drug addicts are least susceptible to HIV infection
(c) AIDS patients are being fully cured cent percent with proper care and nutrition
(d) The causative HIV retrovirus enters helper T-lymphocytes thus reducing their numbers

61. The permissible use of the technique amniocentesis is for: **[Pre. 2010]**
(a) detecting sex of the unborn foetus
(b) artificial insemination
(c) transfer of embryo into the uterus of a surrogate mother
(d) detecting any genetic abnormality

62. Consider the following four statements (a-d) regarding kidney transplant and select the two correct ones out of these. **[Pre. 2010]**
(i) Even if a kidney transplant is proper the recipient may need to take immunosuppressants for a long time
(ii) The cell-mediated immune response is responsible for the graft rejection
(iii) The B-lymphocytes are responsible for rejection of the graft
(iv) The acceptance or rejection of a kidney transplant depends on specific interferons
(a) (ii) and (iii) (b) (iii) and (iv)
(c) (i) and (iii) (d) (i) and (ii)

63. Which one of the following techniques is safest for the detection of cancers ? **[Mains 2010]**
(a) Radiography (X-ray)
(b) Computed tomography (CT)
(c) Histopathological studies
(d) Magnetic resonance imaging (MRI)

64. A person suffering from a disease caused by *Plasmodium*, experiences recurring chill and fever at the time when ? **[Mains 2010]**

(a) The trophozoites reach maximum growth and give out certain toxins.
(b) The parasite after its rapid multiplication inside RBCs ruptures them, releasing the stage to enter fresh RBCs.
(c) The microgametocytes and megagametocytes are being destroyed by the WBCs.
(d) The sporozoites released from RBCs are being rapidly killed and broken down inside spleen.

65. Where will you look for the sporozoites of the malarial parasite ? **[Pre. 2011]**

(a) Saliva of infected female *Anopheles* mosquito
(b) Red blood corpuscles of humans suffering from malaria
(c) Spleen of infected humans
(d) Salivary glands of freshly moulted female Anopheles mosquito

66. At which stage of HIV infection does one usually show symptoms of AIDS ? **[Pre. 2011]**

(a) When the infecting retrovirus enters host cells
(b) When viral DNA is produced by reverse transcriptase
(c) When HIV replicates rapidly in helper T-lymphocytes and damages large number of these
(d) Within 15 days of sexual contact with an infected person.

67. Which one of the following acts as a physiological barrier to the entry of microorganisms in human body ? **[Pre. 2011]**

(a) Epithelium of Urogenital tract
(b) Tears
(c) Monocytes (d) Skin

68. A certain patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome. Which diagnostic technique will you recommend for its detection ? **[2011]**

(a) ELISA (b) MRI
(c) Ultra sound (d) WIDAL

69. Read the following statement having two blanks (A and B) **[Mains 2011]**

"A drug used for____(A)___patients is obtained from a species of the organism ____(B)____."

The one correct option for the two blanks is

	Blank – A	**Blank – B**
(a)	AIDS	*Pseudomonas*
(b)	Heart	*Penicillium*
(c)	Organ-transplant	*Trichoderma*
(d)	Swine flu	*Monascus*

70. Which one of the following options gives the correct matching of a disease with its causative organism and mode of infection. **[Mains 2011]**

	Disease	**Causative Organisms**	**Mode of Infection**
(1)	Malaria	*Plasmodium vivax*	Bite of male Anopheles Mosquito
(2)	Typhoid	*Salmonella typhi*	With inspired air
(3)	Pneumonia	*Streptococcus pneumoniae*	Droplet infection
(4)	Elephantiasis	*Wuchereria bancrofti*	With infected water and food

71. The pathogen *Microsporum* responsible for ringworm disease in humans belongs to the same Kingdom of organisms as that of **[Mains 2011]**

(a) *Ascaris*, a round worm
(b) *Taenia*, a tapeworm
(c) *Wuchereria*, a filarial wprm
(d) *Rhizopus*, a mould

72. Select the correct statement with respect to disease and immunisation **[Mains 2011]**

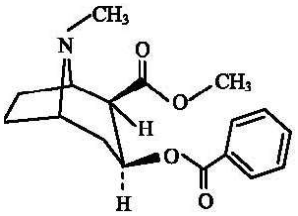
(a) Injection of snake antivenom against snake bite is an example of active immunisation.
(b) If due to some reason B-and T-lymphocytes ane damaged, the body will not produce antibodies against a pathogen.

(c) Injection of dead/inactivated pathogens causes passive immunity

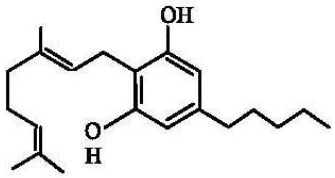
(d) Certain protozoans have been used to mass produce hepatitis B vaccine

73. Identify the molecules (a) and (b) shown below and select the right option giving their source and use **[Mains 2012]**

(A)



(B)



	Molecule	Source	Use
(a)	(B) Heroin	*Cannabis sativa*	Depressant and slows down body functions
(b)	(B) Cannabinoid	*Atropa belladonna*	Produces hallucinations
(c)	(A) Morphine	*Papaver somniferum*	Sedative and pain killer
(d)	(A) Cocaine	*Erythroxylum coca*	Asselerates the transport of dopamine

74. Which one of the following organisms is scientifically correctly named, correctly printed according to the International Rules of Nomenclature and correctly described ? **[Mains 2012]**

(a) Plasmodium falciparum – a protozoan pathogen causing the most serious type of malaria

(b) Felis tigris – The Indian tiger, well protected in Gir forests.

(c) E.coli – Full name Entamoeba coli, a commonly occurring bacterium in human intestine

(d) Musca domestica – The common house lizards, a reptile

75. Which one of the following statements is correct with respect to immunity ? **[Mains 2012]**

(a) The antibodies against small pox pathogen are produced by T-lymphocytes

(b) Antibodies are protein molecules each of which has four light chains

(c) Rejection of a kidney graft is the function of B-lymphocytes

(d) Preformed antibodies need to be injected to treat the bite by a viper snake

76. The first clinical gene therapy was given for treating **[Mains 2012]**

(a) Chicken pox

(b) Rheumatoid arthritis

(c) Adenosine deaminase deficiency

(d) Diabetes mellitus

77. A patient brought to a hospital with myocardial infarction is normally immediately given **[Pre. 2012]**

(a) Cyclosporin-A (b) Statins

(c) Penicillin (d) Streptokinase

78. Select the correct statement regarding the specific disorder of muscular or skeletal system **[Pre. 2012]**

(a) Myasthenia gravis auto immune disorder which inhibits sliding of myosin filaments

(b) Gout inflammation of joint due to extra disposition of calcium

(c) Muscular dystrophy –age related shortening of muscles

(d) Osteoporosis -decrease in bone mass and higher chances of fractures with advancing age

79. Common cold differs from pneumonia in that **[Pre. 2012]**

(a) Pneumonia is caused by a virus while the common cold is caused by the bacterium Haemophilus influenze

(b) Pneumonia pathogen infect alveoli whereas the common cold affects nose and respiratory passage but not the lungs

(c) Pneumonia is a communicable disease whereas the common cold is nutritional deficiency disease.

(d) Pneumonia can be prevented by a live attenuated bacterial vaccine whereas the common cold has no affective vaccine.

80. Widal Test carried out to test **[Pre. 2012]**

(a) HIV/AIDS (b) Typhoid fever

(c) Malaria (d) Diabetes mellitus

81. Cirrhosis of liver is caused by the chronic intake of **[Pre. 2012]**

(a) Tobacco (Chewing) (b) Cocaine

(c) Opium (d) Alcohol

82. Which one of the following in not a property of cancerous cells whereas the remaining three are **[Pre. 2012]**

(a) They divide in an uncontrolled manner

(b) They show contact inhibition

(c) They compete with normal cells for vital nutrients

(d) They do not remain confined in the area of formation

83. Motile zygote of *Plasmodium* occurs in **[Pre. 2012]**

(a) Human RBCs

(b) Human liver

(c) Gut of female Anopheles

(d) Salivary glands of Anopheles

84. In which one of the following options the two examples are correctly matched with their particular type of immunity? **[Pre. 2012]**

Examples	Type of immunity
(a) Saliva in mouth and Tears in eyes	Physical barriers
(b) Mucus coating of epithelium lining the urinogenital tract and the HCl in stomach	Physiological barriers
(c) Polymorphonuclear leukocytes and monocytes	Cellular barriers
(4) Anti-tetanus and anti-snake bite injections	Active immunity

85. People who have migrated from the planes to as area adjoining Rohtang pass about six months back **[Pre. 2012]**

(a) suffer from altitude sickness with symptoms like nausea, fatigue, etc.

(b) have the usual RBC count but their haemoglobin has very high binding affinity to O_2

(c) have more RBCs and their haemoglobin has lower binding affinity to O_2

(d) are not physically fit to play games like footba

86. Which of the following cannot be detected in a developing foetus by amniocentesis ?

(a) Klinefelter syndrome **[2013]**

(b) Sex of the foetus

(c) Down syndrome

(d) Jaundice

87. The incorrect statement with regard to Haemophilia is **[2013]**

(a) It is a sex-linked disease

(b) It is a recessive disease

(c) It is a dominant disease

(d) A single protein involved in the clotting of blood is affected

88. If both parents are carriers for thalessemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child ? **[2013]**

(a) no chance (b) 50%

(c) 25% (d) 100%

89. The cell-mediated immunity inside the human body is carried out by **[2013]**

(a) T- lymphocytes (b) B-lymphocytes

(c) Thrombocytes (d) Erythrocytes

90. Which is the particular type of drug that is obtained from the plant whose one flowering branch is shown below ?**[AIPMT 2014]**

(a) Hallucinogen (b) Depressant
(c) Stimulant (d) Pain-killer

91. At which stage of HIV infection does one usually show symptoms of AIDS? **[AIPMT 2014]**
(a) Within 15 days of sexual contact with an infected person
(b) When the infected retro virus enters host cells
(c) When HIV damages large number of helper T-lymphocytes
(d) When the viral DNA is produced by reverse transcriptase

92. Which of the following is not a sexually transmitted disease ? **[AIPMT 2015]**
(a) Acquired Immuno Deficiency Syndrome (AIDS)
(b) Trichomoniasis
(c) Encephalitis
(d) Syphilis

93. Which of the following does not favour the formation of large quantities of dilute urine? **[AIPMT 2015]**
(a) Caffeine (b) Renin
(c) Atrial-natriuretic factor
(d) Alcohol

64. HIV that causes AIDS, first starts destroying **[AIPMT 2015]**
(a) Leucocytes
(b) Helper T- Lymphocytes
(c) Thrombocytes
(d) B- Lymphocytes

95. The active from of Entamoeba histolytica feeds upon : **[AIPMT 2015]**
(a) mucosa and submucosa of colon only
(b) food in intestine
(c) blood only
(d) erythrocytes; mucosa and submucosa of colon

96. Which of the following viruses is not transferred through semen of an infected male? **[AIPMT 2015]**
(a) Human immunodeficiency virus
(b) Chikungunya virus
(c) Ebola virus
(d) Hepatitis B virus

97. Match each disease with its correct type of vaccine : **[AIPMT 2015]**
(a) Tuberculosis (i) Harmless virus
(b) Whooping cough (ii) Inactivated toxin
(c) Diphtheria (iii) Killed bacteria
(d) Polio (iv) Harmless bacteria
(a) (a) → (iii), (b) → (ii), (c) → (iv), (d) → (i)
(b) (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)
(c) (a) → (i), (b) → (ii), (c) → (iv), (d) → (iii)
(d) (a) → (ii), (b) → (i), (c) → (iii), (d) → (iv)

98. Grafted kidney may be rejected in a patient due to **[RE-AIPMT 2015]**
(a) Innate immune response
(b) Humoral immune response
(c) Cell-mediated immune response
(d) Passive immune response

99. If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence? **[RE-AIPMT 2015]**
(a) Serum globulins
(b) Fibrinogin in plasma
(c) Serum albumins
(d) Haemocytes

100. Which of the following immunoglobulins does constitute the largest percentage in human milk? **[RE-AIPMT 2015]**
(a) IgG (b) IgD
(c) IgM (d) IgA

Answers

1 -b	2 -c	3 -c	4 -c	5 -a	6 -d	7 -b	8 -b	9 -a	10 -b
11 -b	12 -b	13 -d	14 -d	15 -b	16 -b	17 -a	18 -b	19 -b	20 -b
21 -d	22 -a	23 -a	24 -c	25 -a	26 -a	27 -c	28 -a	29 -a	30 -d
31 -a	32 -c	33 -d	34 -c	35 -b	36 -d	37 -a	38 -a	39 -a	40 -b
41 -c	42 -b	43 -c	44 -d	45 -b	46 -c	47 -d	48 -c	49 -b	50 -d
51 -b	52 -a	53 -a	54 -c	55 -c	56 -a	57 -b	58 -b	59 -d	60 -b
61 -d	62 -d	63 -d	64 -a	65 -a	66 -c	67 -b	68 -a	69 -c	70 -c
71 -d	72 -b	73 -c	74 -a	75 -d	76 -c	77 -d	78 -d	79 -b	80 -b
81 -d	82 -b	83 -c	84 -c	85 -c	86 -d	87 -c	88 -c	89 -a	90 -a
91 -c	92 -c	93 -b	94 -b	95 -d	96 -b	97 -b	98 -c	99 -a	100 -d

31

Strategies for Enhancement in Food Production

1. In crop improvement programme, haploids are important because they **[1989]**
(a) require one half of nutrients
(b) are helpful in study of meiosis
(c) grow better under adverse conditions
(d) form perfect homozygous

2. Triticale has been evolved by intergeneric hybridization between **[1989]**
(a) wheat and rye
(b) wheat and rice
(c) rice and maize
(d) wheat and Aegilops

3. Pulses are obtained from **[1993]**
(a) Fabaceae
(b) Asteraceae
(c) Poaceae
(d) Solanaceae

4. Most of our crop plants are **[1994]**
(a) autopolyploid in origin
(b) allopolyploid in origin
(c) mixed genotypic in origin
(d) heterozygous in origin

5. Haploid plant cultures are got from **[1994]**
(a) leaves (b) root tip
(c) pollen grain (d) buds

6. The silk worm silk is the product of **[1995]**
(a) cuticle of the larva
(b) cuticle of the adult
(c) salivary gland of the larva
(d) salivary gland of the adult

7. The alkaloid ajmalicine is obtained from **[1995]**
(a) Atropa (b) Papaver
(c) Curcuma (d) Sarpgandha

8. The earliest animal to have been domesticated by man was most likely the **[1996]**
(a) horse (b) cow
(c) dog (d) pig

9. Pebrine is a disease of **[1997]**
(a) honey bee (b) fish
(c) silk worm (d) lac insect

10. Honey is **[1997]**
(a) acidic (b) neutral
(c) alkaline
(d) basic after some days

11. High milk yielding varieties of cows are obtained by **[1997]**
(a) super ovulation
(b) artificial insemination
(c) use of surrogate mother
(d) All of the above

12. Of the world's top five crops (in terms of annual production) **[1997]**

(a) three belong to Poaceae (Gramineae), one to Leguminosae, one to Solanaceae
(b) four belong to Poaceae, one to Leguminosae
(c) four belong to Poaceae, one to Solanaceae
(d) all five belong to Poaceae

13. Which plant will loss its economic value, if its fruits are produced by induced parthenocarpy ? **[1997]**
(a) Grape (b) Pomegranate
(c) Orange (d) Banana

14. The reason why vegetatively reproducing crop plants are best suited for maintaining hybrid vigour is that **[1998]**
(a) they can be easily propagated
(b) they have a longer life span
(c) they are more resistant to disease
(d) once a desired hybrid is produced, there are no chances of losing it

15. The term aquaculture means **[1999]**
(a) aspergillosis
(b) inland fisheries
(c) marine fisheries
(d) Both (b) and (c)

16. The new varieties of plants are produced by **[1999]**
(a) selection and hybridization
(b) selection and introduction
(c) mutation and selection
(d) introduction and mutation

17. One of the most important reason why wild plants should thrive is that these are good sources of **[2000]**
(a) unsaturated edible oils
(b) highly nutritive animals feed
(c) genes for resistance to diseases and pests
(d) rare and highly sought after fruits of medical importance

18. Before the European invaders which vegetable was/were absent in India ? **[2001]**
(a) Potato and tomato
(b) Simla mirch and brinjal
(c) Maize and chichinda
(d) Bitter gourd

19. Which statement is correct about centre of origin of plants? **[2001]**
(a) More diversity in varieties
(b) Frequency of dominant gene is more
(c) Climatic conditions more favourable
(d) None of the above

20. Which of the following crops have been brought to India from New world ? **[2002]**
(a) Cashewnut, potato, rubber
(b) Mango, tea
(c) Tea, rubber, mango
(d) Coffee

21. India's wheat yield revolution in the 1960s was possible primarily due to **[2004]**
(a) hybrid seeds
(b) increased chlorophyll content
(c) mutations resulting in plant height reduction
(d) quantitative trait mutations

22. The name of Norman Borlaug is associated with **[2005]**
(a) Green revolution
(b) Yellow revolution
(c) White revolution
(d) Blue revolution

23. The world's highly prized wool yielding 'Pashmina' breed is **[2005]**
(a) sheep
(b) goat
(c) goat-sheep cross
(d) Kashmiri sheep-Afghan sheep cross

24. Which of the following is generally used for induced mutagenesis in crop plants ? **[2005]**
(a) Alpha particles
(b) X-rays
(c) UVrays (260 nm)
(d) Gamma rays (from cobalt 60)

25. Why is vivipary an undesirable character for annual crop plants ? **[2005]**
(a) It reduces the vigour of plant
(b) The seeds cannot be stored under normal conditions for the next season
(c) The seeds exhibit long dormancy
(d) It adversely affects the fertility of the plant

26. Three crops that contribute maximum to global food grain production are **[2005]**
(a) wheat, rice and maize
(b) wheat, maize and sorghum
(c) rice, maize and sorghum
(d) wheat, rice and barley

27. Crop plants grown in monoculture are **[2006]**
(a) low in yield
(b) free from intraspecific competition
(c) characterized by poor root system
(d) highly prone to pests

28. Triticale, the first man-made cereal crop, has been obtained by crossing wheat with **[2006]**
(a) rye
(b) pearl millet
(c) sugarcane
(d) barley

29. Parthenocarpic tomato fruits can be produced by **[2006]**
(a) removing androecium of flowers before pollen grains are released
(b) treating the plants with low concentrations of gibberellic acid and auxins
(c) raising the plants from vernalized seeds
(d) treating the plants with phenyl mercuric acetate

30. Which one of the following pair is mismatched? **[2007]**
(a) Pila globosa — Pearl
(b) Apis indica — Honey
(c) Kenia lacca — Lac
(d) Bombyx mori — Silk

31. Which one of the following pair of organisms are exotic species introduced in India ? **[2007]**
(a) Ficus religiosa, Lantana camara
(b) Lantana camara, Water hyacinth
(c) Water hyacinth, Prosopis cinereria
(d) Nile perch, Ficus religiosa

32. Which one of the following pairs is wrongly matched? **[2009]**
(a) Fruit juice – pectinase
(b) Textile – amylase
(c) Detergents – lipase
(d) Alcohol – nitrogenase

33. Somaclones are obtained by **[2009]**
(a) Irradiation
(b) Genetic engineering
(c) Tissue culture
(d) Plant breeding

34. Polyethylene glycol method is used for **[2009]**
(a) Seedless fruit production
(b) Energy production from sewage
(c) Gene transfer without a vector
(d) Biodiesel production

35. Which of the following plant species you would select for the production of bioethanol? **[2009]**
(a) Pongamia
(b) Jatropha
(c) Brassica
(d) Zea mays

36. Which one of the following has maximum genetic diversity in India ? **[2009]**
(a) Wheat (b) Tea
(c) Teak (d) Mango

37. Breeding of crops with high levels of minerals vitamins and proteins is called **[Pre. 2010]**
(a) Somatic hybridization
(b) Biofortification
(c) Biomagnification
(d) Micropropagation

38. 'Jaya' and 'Ratna' developed for green revolution in India are the varieties of **[Pre. 2011]**
(a) Maize (b) Rice
(c) Wheat (d) Bajra

39. The most common substrate used in distilleries for the production of ethanol is **[Pre 2011]**

(a) Corn meal
(b) Soya meal
(c) Ground gram
(d) Molasses

40. 'Himgiri' developed by hybridisation and selection for disease resistance against rust pathogens is a variety of **[Pre. 2011]**

(a) Chilli (b) Maize
(c) Sugarcane (d) Wheat

41. Which one of the following shows maximum genetic diversity in India ? **[Pre. 2011]**

(a) Groundnut (b) Rice
(c) Maize (d) Mango

42. Green revolution in India occurred during

(a) 1970's (b) 1980's **[Pre. 2012]**
(c) 1950's (d) 1960's

43. To obtain virus-free healthy plants from a diseased one by tissue culture technique, which part/parts of the diseased plant will be taken? **[AIPMT 2014]**

(a) Apical meristem only
(b) Palisade parenchyma
(c) Both apical and axillary meristems
(d) Epidermis only

44. Which of the following enhances or induces fusion of protoplasts ? **[AIPMT 2015]**

(a) Polyethylene glycol and sodium nitrate
(b) IAA and kinetin
(c) IAA and gibberellins
(d) Sodium chloride and potassium chloride

45. A technique of micropropagation is :- **[AIPMT 2015]**

(a) Somatic embryogenesis
(b) Protoplast fusion
(c) Embryo rescue
(d) Somatic hybridization

46. A protoplast is a cell : **[RE-AIPMT 2015]**

(a) without cell wall
(b) without plasma membrane
(c) without nucleus
(d) undergoing division

47. Outbreeding is an important strategy of animal husbandry because it : **[RE-AIPMT 2015]**

(a) exposes harmful recessive genes that are eliminated by selection
(b) helps in accumulation of superior genes.
(c) is useful in producing purelines of animals.
(d) is useful in overcoming inbreeding depression

Answers

1 -d	2 -a	3 -a	4 -a	5 -c	6 -c	7 -d	8 -c	9 -c	10 -a
11 -d	12 -c	13 -b	14 -d	15 -d	16 -a	17 -c	18 -a	19 -a	20 -a
21 -c	22 -a	23 -b	24 -d	25 -b	26 -a	27 -d	28 -a	29 -b	30 -a
31 -c	32 -d	33 -c	34 -c	35 -b	36 -a	37 -b	38 -b	39 -d	40 -d
41 -b	42 -d	43 -c	44 -a	45 -a	46 -a	47 -d			

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MICROBES IN HUMAN WELFARE

1. Yeast (Saccharomyces cerevisiae) is used in the industrial production of **[1998]**
   (a) butanal (b) citric acid
   (c) tetracyclin (d) ethanol

2. Recently Govt. of India has allowed mixing of alcohol in petrol. What is the amount of alcohol permitted for mixing in petrol?
   (a) 2.5% (b) 10-15% **[2004]**
   (c) 10% (d) 5%

3. Which one of the following pair is wrongly matched? **[2007]**
   (a) Methanogens — Gobar gas
   (b) Yeast — Ethanol
   (c) Streptomycetes — Antibiotic
   (d) Coliforms — Vinegar

4. Which one of the following is not used in organic farming? **[Pre. 2010]**
   (a) Glomus (b) Earthworm
   (c) Oscillatoria (d) Snail

5. What gases are produced in anaerobic sludge digesters? [AIPMT 2014]
   (a) Methane and CO_2 only
   (b) Methane, hydrogen sulphide and CO_2
   (c) Methane, hydrogen sulphide and O_2
   (d) Hydrogen sulphide and CO_2

6. The guts of cow and buffalo possess: **[AIPMT 2015]**
   (a) Chlorella spp
   (b) Methanogens
   (c) Cyanobacteria
   (d) Fucus spp.

7. Match the following list of microbes and their importance : **[RE-AIPMT 2015]**

(a) Saccharomyces cerevisiae	(i) Production of immunosuppressive agents
(b) Monascus purpureus	(ii) Ripening of Swiss cheese
(c) Trichoderma polysporum	(iii) Commercial production of ethanol
(d) Propionibacterium sharmanii	(iv) Production of blood cholesterol lowering agents

   (a) (a) → (iii), (b) → (i), (c) → (iv), (d) → (ii)
   (b) (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)
   (c) (a) → (iv), (b) → (iii) (c) → (ii), (d) → (i)
   (d) (a) → (iv), (b) → (ii), (c) → (i), (d) → (iii)

Answers

1 -d 2 -d 3 -d 4 -d 5 -b 6 -b 7 -b

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BIOTECHNOLOGY : PRINCIPLES AND PROCESSES

1. The restriction enzymes are used in genetic engineering, because **[1995, 98, 2001, 02, 06]**
(a) they can degrade harmful proteins
(b) they can join different DNA fragments
(c) they can cut DNA at specific base sequence
(d) they are nucleases that cut DNA at variable sites

2. The basis for DNA fingerprinting is **[1996]**
(a) occurrence of Restriction Fragment Length Polymorphism (RFLP)
(b) phenotypic differences between individuals
(c) availability of cloned DNA
(d) knowledge of human karyotype

3. Introduction of one or more genes into an organism which normally does not possess them or their deletion by using artificial means (not by breeding) comes under **[1996]**
(a) Molecular Biology
(b) Cytogenetics
(c) Genetic hybridization
(d) Genetic Engineering

4. Recombinant DNA is obtained by cleaving the pro-DNA by **[1998]**
(a) primase
(b) exonucleases
(c) ligase
(d) restriction endonuclease

5. Genetic engineering is possible, because **[1998]**
(a) the phenomenon of transduction in bacteria is well understood
(b) we can see DNA by electron microscope
(c) we can cut DNA at specific sites by endonucleases like DNAse-I
(d) restriction endonucleases purified from bacteria can be used in vitro

6. The process of replication in plasmid DNA, other than initiation, is controlled by **[1999]**
(a) mitochondrial gene
(b) bacterial gene
(c) plasmid gene (d) None of the above

7. Which of the following is related to genetic engineering? **[1999]**
(a) Mutation (b) Plasmid
(c) Plastid (d) Heterosis

8. Plasmids are suitable vectors for gene cloning because **[2000]**
(a) these are small circular DNA molecules which can integrate with host chromosomal DNA
(b) these are small circular DNA molecules with their own replication origin site
(c) these can shuttle between prokaryotic and eukaryotic cells
(d) these often carry antibiotic resistance genes

9. Maximum number of bases in plasmids discovered so far is **[2001]**
(a) 50 kilo base (b) 500 kilo base
(c) 5000 kilo base (d) 5 kilo base

10. Plasmid is **[2001]**
(a) fragment of DNA which acts as vector
(b) a fragment which joins two genes
(c) mRNA which acts as carrier
(d) autotrophic fragment

11. In bacteria, plasmid is **[2002]**
(a) extrachromosomal material
(b) main DNA
(c) non-functional DNA
(d) repetetive gene

12. DNA finger-printing refers to **[2004]**
(a) molecular analysis or profiles of DNA samples
(b) analysis of DNA samples using imprinting device
(c) techniques used for molecular analysis of different specimens of DNA
(d) techniques used for identification of finger prints of individuals

13. Restriction endonudeases **[2004]**
(a) are present in mammalian cells for degradation of DNA when the cell dies
(b) are used in genetic engineering for ligating two DNA molecules
(c) are used for in vitro DNA synthesis
(d) are synthesized by bacteria as part of their defence mechanism

14. Which one of the following is commonly used in transfer of foreign DNA into crop plants? **[2009]**
(a) *Agrobacterium tumefaciens*
(b) *Penicillium expansum*
(c) *Trichoderma harzianum*
(d) *Meloidogyne incognita*

15. Which one of the following is used as vector for cloning genes into higher organisms?
(a) Baculovirus **[Pre. 2010]**
(b) Salmonella typhimurium
(c) Rhizopus nigricans
(d) Retrovirus

16. DNA or RNA segment tagged with a radioactive molecule is called: **[Pre. 2010]**
(a) Vector (b) Probe
(c) Clone (d) Plasmid

17. Restriction endonucleases are enzymes which **[Pre. 2010]**
(a) make cuts at specific positions within the DNA molecule
(b) recognize a specific nucleotide sequence for binding of DNA ligase
(c) restrict the action of the enzyme DNA polymerase
(d) remove nucleotides from the ends of the DNA molecule

18. Satellite DNA is useful tool in **[Pre. 2010]**
(a) Organ transplantation
(b) Sex determination
(c) Forensic science
(d) Genetic engineering

19. Silencing of mRNA has been used in producing transgenic plants resistant to **[Mains 2011]**
(a) Bacterial blights
(b) Bollworms
(c) Nematodes
(d) White rusts

20. Which one of the following techniques made it possible to genetically engineer living organisms **[Mains 2011]**
(a) Hybridization
(b) Recombinant DNA techniques
(c) X-ray diffraction
(d) Heavier isotope labelling

21. There is a restriction endonuclease called EcoRI. What does "co" part in it stand for ? **[Pre. 2011]**
(a) Colon (b) Coelom
(c) Coenzyme (d) Coli

22. In genetic engineering, the antibiotics are used **[Mains 2012]**
(a) To select healthy vectors
(b) As sequences from where replication starts
(c) To keep the cultures free of infection
(d) As selectable markers

23. Which one of the following represents a palindromic sequence in DNA ? **[Mains 2012]**
(a) 5'-CCAATG-3'
3'-GAATCC-5'
(b) 5'-CATTAG-3'
3'-GATAAC-5'
(c) 5'-GATACC-3'
3'-CCTAAG-5'
(d) 5'-GAATTC-3'
3'-CTTAAG-5'

24. What is it that forms the basis of DNA Fingerprinting ? **[Mains 2012]**
(a) The relative difference in the DNA occurrence in blood, skin and saliva
(b) The relative amount of DNA in the ridges and grooves of the fingerprints
(c) Satellite DNA occurring as highly repeated short DNA segments
(d) The relative proportions of purines and pyrimidines in DNA

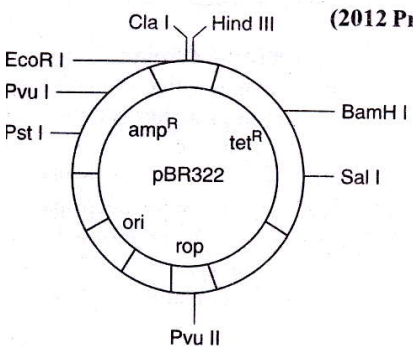
25. Biolistics (gene-gun) is suitable for **[Mains 2012]**
(a) Transformation of plant cells
(b) Constructing recombinant DNA by joining with vectors
(c) DNA finger printing
(d) Disarming pathogen vectors

26. PCR and Restriction Fragment Length Polymorphism are the methods for **[Pre. 2012]**
(a) DNA sequencing
(b) Genetic fingerprinting
(c) Study of enzymes
(d) Genetic transformation

27. A single strand of nucleic acid tagged with a radioactive molecule is called **[Pre. 2012]**
(a) Plasmid (b) Probe
(c) Vector (d) Selectable marker

28. For transformation, micro-particles coated with DNA to be bombarded with gene gun are made up of **[Pre. 2012]**
(a) Silicon or Platinum
(b) Gold or Tungsten
(c) Silver or platinum
(d) Platinum or zinc

29. The figure below is the diagrammatic representation of the E.coli vector pBR 322. Which one of the given options correctly identifies its certain component's) ? **[Pre. 2012]**



(a) Hind III. EcoBI-selecteble markers
(b) amp^R tet^R-antibiotic resistance genes
(c) ori-original restriction enzyme
(d) rop-reduced osmotic pressure

30. Which one of the following is a case of wrong matching ? **[Pre. 2012]**
(a) Micropropagation – In vitro production of plants in large numbers
(b) Callus – Unorganised mass of cells produced in tissue culture
(c) Somatic hybridization – Fusion of two diverse cells
(d) Vector DNA – Carries specific genes, Site for t-RNA synthesis

31. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by **[2013]**
(a) Centrifugation
(b) Polymerase chain reaction

(c) Electrophoresis
(d) Restriction mapping

32. The colonies of recombinat bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of **[2013]**
(a) Non-recombinant bacteria containing beta-galactosidase
(b) Insertional inactivation of alpha galactosidase in non-recombinant bacteria
(c) Insertional inactivation of alpha galactosidase in recombinant bacteria
(d) Inactivation of glycosidase enzyme in recombinant bacteria

33. An analysis of chromosomal DNA using the southern hybridisation technique does not use **[AIPMT 2014]**
(a) Electrophoresis (b) Blotting
(c) Autoradiography (d) PCR

34. In vitro clonal propagation in plants is characterized by **[AIPMT 2014]**
(a) PCR and RAPD
(b) Northern blotting
(c) Electrophoresis and HPLC
(d) Microscopy

35. Which vector can clone only a small fragment of DNA? **[AIPMT 2014]**
(a) Bacterial artificial chromosome
(b) Yeast artificial chromosome
(c) Plasmid
(d) Cosmid

36. Commonly used vectors for human genome sequencing are - **[AIPMT 2014]**
(a) T-DNA
(b) BAC and YAC
(c) Expression Vectors
(d) T/A cloning Vectors

37. The DNA molecules to which the gene of interest is integrated for cloning is called : **[RE-AIPMT 2015]**
(a) Carrier
(b) Transformer
(c) Vector
(d) Template

38. The cutting of DNA at specific locations became possible with the discovery of : **[RE-AIPMT 2015]**
(a) Ligases
(b) Restriction enzymes
(c) Probes
(d) Selectable markers

39. The introduction of t-DNA into plants involves : **[RE-AIPMT 2015]**
(a) Allowing the plant roots to stand in water
(b) Infection of the plant by Agrobacterium tumefaciens
(c) Altering the pH of the soil, then heat shocking the plants
(d) Exposing the plants to cold for a brief period

Answers

1 -c	**2 -a**	**3 -d**	**4 -d**	**5 -d**	**6 -b**	**7 -b**	**8 -b**	**9 -b**	**10 -a**
11 -a	**12 -a**	**13 -d**	**14 -a**	**15 -d**	**16 -b**	**17 -a**	**18 -d**	**19 -c**	**20 -b**
21 -d	**22 -d**	**23 -d**	**24 -c**	**25 -a**	**26 -b**	**27 -b**	**28 -b**	**29 -b**	**30 -d**
31 -c	**32 -a**	**33 -d**	**34 -a**	**35 -c**	**36 -b**	**37 -c**	**38 -b**	**39 -b**	

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BIOTECHNOLOGY AND ITS APPLICATIONS

1. The transgenic animals are those which have **[1995]**
(a) foreign DNA in some of its cells
(b) foreign DNA in all its cells
(c) foreign RNA in all its cells
(d) DNA and RNA both in the cells

2. Genetically engineered bacteria have been successfully used in the commercial production of **[1996]**
(a) human insulin (b) testosterone
(c) thyroxine (d) melatonin

3. The first successfully cloned mammals (animal) that gained worldwide publicity was **[2000]**
(a) Molly (a sheep) (b) Polly (a sheep)
(c) Chance (a bull) (d) Dolly (a sheep)

4. Producing a giant mouse in the laboratory was possible through **[2000]**
(a) gene mutation
(b) gene manipulation
(c) gene synthesis
(d) gene duplication

5. Production of a human protein in bacteria by genetic engineering is possible because **[2005]**
(a) bacterial cell can carry out the RNA splicing reactions
(b) the human chromosome can replicate in bacterial cell
(c) the mechanism of gene regulation is identical in humans and bacteria
(d) the genetic code is universal

6. Golden rice is a transgenic crop of the future with the following improved trait **[2005, 06]**
(a) high lysine (essential amino acid) content
(b) insect resistance
(c) high protein content
(d) high vitamin-A content

7. Cry-I endotoxins obtained from Bacillus thuringiensis are effective against **[2008]**
(a) mosquitoes (b) flies
(c) nematodes (d) bollworms

8. The bacterium Bacillus thuringiensis is widely used in contemporary biology as **[2009]**
(a) Agent for production of dairy products
(b) Source of industrial enzyme
(c) Indicator of water pollution
(d) Insecticide

9. Transgenic plants are the ones **[2009]**
(a) produced after protoplast fusion in artificial medium.
(b) grown in artificial medium after hybridization in the field.

(c) produced by a somatic embryo in artificial medium.

(d) generated by introducing foreign DNA in to a cell and regenerating a plant from that cell.

10. The genetic defect - adenosine deaminase (ADA) deficiency may be cured permanently by **[2009]**

(a) introducing bone marrow cells producing ADA into cells at early embryonic stages.

(b) enzyme replacement therapy.

(c) periodic infusion of genetically engineered lymphocytes having functional ADA cDNA.

(d) administering adenosine deaminase activators.

11. What is true about Bt toxin? **[2009]**

(a) The activated toxin enters the ovaries of the pest to sterilise it and thus prevent its multiplication.

(b) The concerned Bacillus has antitoxins.

(c) The inactive protoxin gets converted into active form in the insect gut.

(d) Bt protein exists as active toxin in the Bacillus.

12. The genetically-modified (GM) brinjal in India has been developed for **[Pre. 2010]**

(a) Insect-resistance

(b) Enhancing self life

(c) Enhancing mineral content

(d) Drought-resistance

13. Genetic engineering has been successfully used for producing **[Pre. 2010]**

(a) transgenic mice for testing safety of polio vaccine before use in humans

(b) transgenic models for studying new treatments for certain cardiac diseases

(c) transgenic Cow-Rosie which produces high fat milk for making ghee

(d) animals like bulls for farm work as they have super power

14. Some of the characteristics of Bt cotton are **[Pre. 2010]**

(a) Long fibre and resistance to aphids

(b) Medium yield, long fibre and resistance to beetle pests

(c) high yield and production of toxic protein crystals which kill dipteran pests

(d) High yield and resistance to bollworms

15. An improved variety of transgenic basmati rice **[Pre. 2010]**

(a) does not require chemical fertilizers and growth hormones

(b) gives high yield and is rich in vitamin A

(c) is completely resistant to all insect pests and diseases of paddy

(d) gives high yield but has no characteristic aroma

16. Read the following four statements (A-D) about certain mistakes in two of them. **[Mains 2011]**

(A) The first transgenic buffalo, Rosie produced milk which was human alpha-lactalbumin enriched.

(B) Restriction enzymes are used in isolation of DNA from other macro molecules.

(C) Downstream processing is one of the steps of R-DNA technology.

(D) Disarmed pathogen vectors are also used in transfer of R-DNA into the host.

Which are the two statements having mistakes ?

(a) Statements (A) and (B)

(b) Statements (B) and (C)

(c) Statements (C) and (D)

(d) Statements (A) and (C)

17. Maximum number of existing transgenic animals is of **[Pre. 2011]**

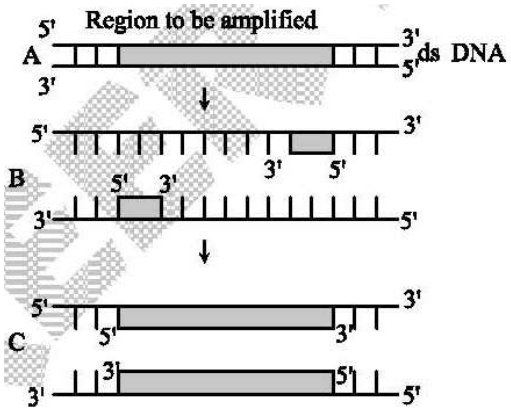
(a) Fish (b) Mice

(c) Cow (d) Pig

18. The process of RNA interference has been used in the development of plants resistant to **[Pre. 2011]**

(a) Nematodes (b) Fungi
(c) Viruses (d) Insects

19. The figure below shows three steps (A,B,C) of Polymerase Chain Reaction (PCR). Select the option giving correct identification together with what is represents ? **[Mains 2012]**



Options :

(a) A-Denaturation at a temperature of about 50°C
(b) C-Extension in the presence of heat stable DNA polymerase
(c) A-Annealing with two sets of primers
(d) B-Denaturation at a temperature of about 98°C separating the two DNA strands

20. Which one is a true statement regarding DNA polymerase used in PCR ? **[Pre. 2012]**

(a) It is isolated from a virus
(b) It remains active at high temperature
(c) It is used to ligate introduced DNA in recipient cells
(d) It serves as a selectable marker

21. Consumption of which one of the following foods can prevent the kind of blindness associated with vitamin 'A' deficiency ? **[Pre. 2012]**

(a) Golden rice
(b) Bt-Brinjal
(c) Flaver Savr tomato
(d) Canolla

22. The first human hormone produced by recombinant DNA technology is - **[AIPMT 2014]**

(a) Insulin (b) Estrogen
(c) Thyroxine (d) Progesterone

23. The crops engineered for glyphosate are resistant/ tolerant to :- **[AIPMT 2015]**

(a) Bacteria (b) Insects
(c) Herbicides (d) Fungi

24. In Bt cotton, the Bt toxin present in plant tissue as pro-toxin is converted into active toxin due to :- [AIPMT 2015]

(a) Acidic pH of the insect gut
(b) Action of gut micro-organisms
(c) Presence of conversion factors in insect gut
(d) Alkaline pH of the insect gut

25. Which body of the Government of India regulates GM research and safety of introducing GM organisms for public services ? **[AIPMT 2015]**

(a) Indian Council of Agricultural Research
(b) Genetic Engineering Approval Committee
(c) Research Committee on Genetic Manipulation
(d) Bio-safety committee

26. Golden rice is a genetically modified crop plant where the incorporated gene is meant for biosynthesis of : **[RE-AIPMT 2015]**

(a) Vitamin A (b) Vitamin B
(c) Vitamin C (d) Omega 3

Answers

1 -b	2 -a	3 -d	4 -b	5 -d	6 -d	7 -b	8 -d	9 -d	10 -c
11 -c	12 -a	13 -b	14 -d	15 -c	16 -a	17 -b	18 -a	19 -b	20 -b
21 -a	22 -a	23 -c	24 -d	25 -b	26 -a				

35

ORGANISMS AND POPULATIONS

1. Soil water available to roots is **[1991]**
(a) surface water
(b) hygroscopic water
(c) gravitational water
(d) capillary water

2. Deep black soil is productive due to high proportion of **[1991]**
(a) sand and zinc
(b) gravel and calcium
(c) clay and humus
(d) silt and earthworm

3. Velamen is found in **[1991]**
(a) roots of screwpine
(b) aerial and terrestrial roots of orchids
(c) leaves of Ficus elastica
(d) aerial roots of orchids

4. Homeostasis is **[1991]**
(a) tendency of biological system to change with change in environment
(b) tendency of biological systems to resist change
(c) disturbance of self regulatory system and natural controls
(d) biotic materials used in homeopathic medicines

5. A fertile agricultural soil appears dark coloured at the surface as compared to soil one metre down. The reason for colour of top soil is **[1992]**
(a) more moisture
(b) rich in organic matter
(c) rich in iron, calcium and magnesium
(d) recent formation

6. Soil particles determine its **[1992]**
(a) texture (b) field capacity
(c) water holding capacity (d) soil flora

7. River water deposits **[1992]**
(a) loamy soil (b) alluvial soil
(c) laterite soil (d) sandy soil

8. Soil best suited for plant growth is **[1993]**
(a) clay (b) loamy
(c) sandy (d) gravel

9. Animals that can tolerate a narrow range of salinity are **[1994]**
(a) stenohaline (b) euryhaline
(c) anadromous (d) catadromous

10. Species diversity increases as one proceeds from **[1994]**
(a) high altitude to low altitude and high latitude to low latitude
(b) low altitude to high altitude and high latitude to low latitude
(c) low altitude to high altitude and low latitude to high latitude

(d) high altitude to low altitude and low latitude to high latitude

11. Bulk CO_2 fixation occurs in **[1994]**
(a) crop plants (b) oceans
(c) tropical rain forests
(d) Temperate forests

12. Xeric environment is characterized by **[1994]**
(a) precipitation
(b) low atmospheric humidity
(c) extremes of temperature
(d) high rate of vapourization

13. Sunken stomata is the characteristic feature of **[1995]**
(a) hydrophyte (b) mesophyte
(c) xerophyte (d) halophyte

14. Which of the following does not have stomata? **[1995]**
(a) Hydrophytes
(b) Mesophytes
(c) Xerophytes
(d) Submerged hydrophytes

15. Which of the following pair is correctly matched? **[1995]**
(a) Uricotelism—aquatic habitat
(b) Parasitism — intra-specific relationship
(c) Excessive perspiration — xeric adaptation
(d) Stream lined body — aquatic adaptation

16. Desert plants are generally **[1995]**
(a) viviparous (b) succulent
(c) herbaceous (d) heterophyllus

17. In desert grasslands, which type of animals are relatively more abundant? **[1998]**
(a) Diurnal (b) Arboreal
(c) Aquatic (d) Fossorial

18. The response of different organisms to the environmental rhythms of light and darkness is called **[1998]**
(a) phototaxis (b) phototropism
(c) vernalization (d) photoperiodism

19. Temperature changes in the environment affect most of the animals which are **[1999]**
(a) homeothermic (b) aquatic
(c) poikilothermic (d) desert living

20. Special kinds of roots called pneumatophores are characteristics of the plants growing in **[2000]**
(a) sandy soils (b) saline soils
(c) marshy places and salt lakes
(d) dryland regions

21. What is the best pH of the soil for cultivation of plants? **[2001]**
(a) 3.4-5.4 (b) 6.5-7.5
(c) 4.5-8.5 (d) 5.5-6.5

22. There is no life on moon due to absence of
(a) O_2 (b) water **[2002]**
(c) light (d) temperature

23. Diffuse porous woods are characteristic of plants growing in **[2003]**
(a) temperate climate (b) tropics
(c) alpine region
(d) cold winter regions

24. In which one of the following pair is the specific characteristic of soil not correctly matched? **[2004]**
(a) Laterite — Contains aluminium compound
(b) Terra rossa — Most suitable for roses
(c) Chernozems — Richest soil in the world
(d) Black soil — Rich in calcium carbonate

25. Plants adapted to low light intensity have **[2004]**
(a) larger photosynthetic unit size than the sun plants
(b) higher rate of CO_2 fixation than the sun plants
(c) more extended root system
(d) leaves modified to spines

26. In which one of the following habitats does the diurnal temperature of soil surface vary most ? **[2004]**

(a) Shrubland (b) Forest
(c) Desert (d) Grassland

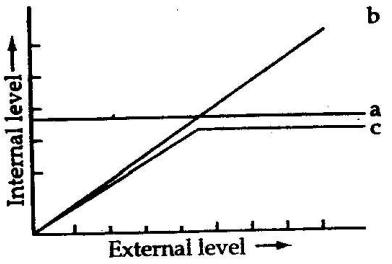
27. More than 70% of world's fresh water is contained in **[2005]**
(a) Antarctica
(b) glaciers and mountains
(c) greenland (d) polar ice

28. At which latitude, heat gain through insalation approximately equals heat loss through terrestrial radiation ? **[2005]**
(a) 66° North and South
(b) $22\frac{1}{2}°$ North and South
(c) 40° North and South
(d) $42\frac{1}{2}°$ North and South

29. Annual migration does not occur in the case of **[2006]**
(a) Salmon (b) Siberian crane
(c) salamander (d) Arctic tern

30. The slow rate of decomposition of fallen logs in nature is due to their **[2008]**
(a) low moisture content
(b) poor nitrogen content
(c) anaerobic environment around them
(d) low cellulose content

31. The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do a, b and c represent respectively? **[Pre. 2010]**



	(i)	(ii)	(iii)
(a)	conformer	regulator	partial regulator
(b)	regulator	partial regulator	conformer
(c)	partial regulator	regulator	conformer
(d)	regulator	conformer	partial regulator

32. Eutrophication is often seen in **[Pre. 2011]**
(a) Deserts (b) Fresh water lakes
(c) Ocean (d) Mountains

33. Large Woody Vines are more commonly found in **[Pre. 2011]**
(a) Temperate forests (b) Mangroves
(c) Tropical rainforests (d) Alpine forests

34. Consider the following four conditions (1 - 4) and select the correct pair of them as adaptation to environment in desert lizards. The conditions **[Pre. 2011]**
(1) Burrowing in soil to escape high temperature
(2) Losing heat rapidly from the body during high temperature
(3) Bask in sun when temperature is low
(4) Insulating body due to thick fatty dermis.
Options :
(a) (3), (4) (b) (1),(3)
(c) (2),(4) (d) (1),(2)

35. Which one of the following processes during decomposition is correctly described ? **[2013]**
(a) Fragmentation – Carried out by organisms such as earthworm
(b) Humification – Leads to the accumulation of a dark coloured substance humus which undergoes microbial action at a very fast rate
(c) Catabolism – Last step in the decomposition under fully anaerobic condition
(d) Leaching – Water soluble inorganic nutrients rise to the top layers of soil

36. An association of individuals of different species living in the same habitat and having functional interactions is : **[RE-AIPMT 2015]**
(a) Population (b) Ecological niche
(c) Biotic community (d) Ecosystem

Answers

1 -d	2 -c	3 -d	4 -b	5 -b	6 -a	7 -b	8 -b	9 -a	10 -a
11 -b	12 -b	13 -c	14 -d	15 -d	16 -b	17 -d	18 -d	19 -c	20 -c
21 -d	22 -b	23 -b	24 -c	25 -a	26 -c	27 -d	28 -c	29 -c	30 -a
31 -d	32 -b	33 -c	34 -b	35 -a	36 -c				

36

ECOSYSTEMS

1. A mutually beneficial association necessary for survival of both partners are **[1991,93]**
   (a) mutualism/symbiosis
   (b) commensalism
   (c) amensalism
   (d) Both (a) and (b)

2. The relation between algae and fungi in a lichen is **[1989]**
   (a) symbiosis (b) parasitism
   (c) commensalism (d) protocooperation

3. Pyramid of numbers in a grassland/true ecosystem is **[1990,91]**
   (a) always inverted
   (b) always upright
   (c) Both (a) and (b)
   (d) spindle-shaped

4. Pick up the correct food chain **[1991]**
   (a) Grass → Chaemeleon → Insect → Bird
   (b) Grass → Fox → Rabbit → Bird
   (c) Phytoplankton → Zooplankton → Fish
   (d) Fallen leaves → Bacteria → Insect larvae

5. Food chain in which micro-organisms breakdown the food formed by primary producers are **[1991]**
   (a) parasitic food chain
   (b) detritus food chain
   (c) consumer food chain
   (d) predator food chain

6. The sum total of the population of the same kind of organisms constitute **[1993]**
   (a) colony (b) genus
   (c) community (d) species

7. Pyramid of number deals with number of **[1993]**
   (a) species in an area
   (b) individuals in a community
   (c) individuals in a trophic level
   (d) sub-species in a community

8. Study of inter-relationships between living organisms and their environment is **[1993]**
   (a) Ecology (b) Ecosystem
   (c) Phytogeography (d) Ethology

9. Pyramid of number in a pond ecosystem is **[1993]**
   (a) irregular (b) inverted
   (c) upright (d) spindle-shaped

10. In grass-deer-tiger food chain, grass biomass is one tonne. The tiger biomass shall be **[1994]**
   (a) 100 kg (b) 10 kg
   (c) 200 kg (d) 1 kg

11. In a biotic community, the most important factor for survival of an animal is **[1994]**
   (a) day length (b) soil moisture
   (c) green food (d) predators

12. The pyramid which cannot be inverted in a stable ecosystem is that of **[1994]**
(a) biomass (b) number
(c) energy (d) All of these

13. In a food chain, the largest population is that of **[1994]**
(a) producers
(b) decomposers
(c) secondary consumers
(d) primary consumers

14. Second most important trophic level in a lake **[1994]**
(a) zooplankton (b) phytoplankton
(c) benthos (d) neuston

15. Which of the following is the most stable ecosystem? **[1995]**
(a) Forest (b) Desert
(c) Mountain (d) Ocean

16. The primary succession refers to the development of communities on a **[1995]**
(a) fleshly cleared crop field
(b) forest clearing after devastating fire
(c) pond, freshly filled with water after a dry phase
(d) newly-exposed habitat with no record of earlier vegetation

17. Mycorrhiza is a symbiotic relationship between roots of higher plants and **[1995]**
(a) virus (b) fungi
(c) bacteria (d) blue-green algae

18. Which of the following can fix atmospheric nitrogen? **[1995]**
(a) Albugo (b) Cystopus
(c) Saprolegnia (d) Anabaena

19. In a biotic community, the primary consumers are **[1995]**
(a) carnivores (b) omnivores
(c) detritivores (d) herbivores

20. Which of the following pair is a sedimentary type of biogeochemical cycle? **[1995]**
(a) Oxygen and nitrogen
(b) Phosphorus and sulphur
(c) Phosphorus and nitrogen
(d) Phosphorus and carbon dioxide

21. If we completely remove the decomposers, from an ecosystem, its functioning will be adversely affected, because **[1995]**
(a) energy flow will be blocked
(b) herbivores will not receive solar energy
(c) mineral movement will be blocked
(d) rate of decomposition will be very high

22. The transfer of energy from one trophic level to another is governed by the 2nd law of thermodynamics. The average efficiency of energy transfer from herbivores to carnivores is **[1996,99]**
(a) 5% (b) 10%
(c) 25% (d) 50%

23. The nature of climax community ultimately depends on **[1996]**
(a) climate
(b) bed rock
(c) soil organisms
(d) pool of available nutrients

24. In a food chain, the largest population is that of **[1996]**
(a) decomposers
(b) producers
(c) primary consumers
(d) tertiary consumers

25. Niche of a species in an ecosystem refers to its **[1996]**
(a) function at its place of occurrence
(b) place of its occurrence
(c) competitive ability
(d) centre of origin

26. Which of the following ecosystem has the highest gross primary productivity? **[1997]**
(a) Grasslands (b) Coral reefs
(c) Mangroves
(d) Equatorial rain forest

27. Keystone species in an ecosystem are those which **[1997]**
(a) are present in maximum number
(b) are most frequent
(c) attain a large biomass
(d) contribute to ecosystem properties

28. Which of the following is free-living aerobic non-photosynthetic nitrogen-fixing bacterium? **[1997]**
(a) Rhizobium (b) Azotobacter
(c) Nostoc (d) Azospirillum

29. An orchid resembling the female of an insect so as to be able to get pollinated is due to phenomenon of **[1998]**
(a) mimicry
(b) pseudocopulation
(c) pseudopollination
(d) pseudoparthenocarpy

30. Species restricted to a given area are called **[1998]**
(a) sibling (b) endemic
(c) sympatric (d) allopatric

31. Plants such as Prosopis, Acacia and Capparis represent examples of tropical **[1998]**
(a) grasslands
(b) thorn forests
(c) deciduous forests
(d) evergreen forests

32. the rate at which light energy is converted into chemical energy of organic molecules is the ecosystem's **[1998]**
(a) net primary productivity
(b) gross secondary productivity
(c) net secondary productivity
(d) gross primary productivity

33. In a terrestrial ecosystem such as forest, maximum energy is in which trophic level ? **[1998]**
(a) T_1 (b) T_2
(c) T_3 (d) T_4

34. Which part of the world has high density of organisms? **[1999]**
(a) Deciduous forests
(b) Grasslands
(c) Savannas
(d) Tropical rain forests

35. The maximum biomagnification would be in which of the following in case of aquatic ecosystem ? **[1999]**
(a) Fishes (b) Phytoplanktons
(c) Birds (d) Zooplanktons

36. The greatest biomass of autotrophs in the world's oceans is that of **[2000]**
(a) benthic brown algae, coastal red algae and daphnids
(b) benthic diatoms and marine viruses
(c) sea grasses and slime molds
(d) free-floating micro-algae, cyanobacteria and nanoplankton

37. Which type of association is found in between entomophilous flower and pollinating agent? **[2002]**
(a) Mutualism (b) Commensalism
(c) Cooperation (d) Co-evolution

38. Two different species cannot live for long duration in the same niche or habitat. This law is **[2002]**
(a) Allen's law
(b) Mendel's law
(c) Gause's competitive exclusion principal
(d) Weismann's theory

39. Cause of mimicry is **[2002]**
(a) attack (offence)
(b) protection (defence)
(c) Both (a) and (b)
(d) isolation

40. Choose the correct match Bladderwort, sundew, venus fly trap **[2002]**
(a) Nepenthes, Dionea, Drosera
(b) Nepenthes, Utricularia, Vanda

(c) Utricularia, Drosera, Dionea
(d) Dionea, Trapa, Vanda

41. Bamboo plant is growing in a far forest then what will be the trophic level of it? **[2002]**
(a) First trophic level (T_1)
(b) Second trophic level (T_2)
(c) Third trophic level (T_3)
(d) Fourth trophic level (T_4)

42. What is true for individuals of same species? **[2002]**
(a) Live in same niche
(b) Live in same habitat
(c) Interbreeding
(d) Live in different habitats

43. In which condition, the gene ratio remains constant for any species ? **[2002]**
(a) Sexual selection
(b) Random mating
(c) Mutation
(d) Gene flow

44. Which of the following is a correct pair? **[2002]**
(a) Cuscuta — Parasite
(b) Dischidia — Insectivorous
(c) Opuntia — Predator
(d) Capsella —Hydrophyte

45. Two different species cannot live for long duration in the same niche or habitat. This law is **[2002]**
(a) Allen's law (b) Gause's hypothesis
(c) Dollo'srule (d) Weismann's theory

46. Which of the following is most important for speciation? **[2002]**
(a) Seasonal isolation
(b) Reproductive isolation
(c) Behavioural isolation
(d) Tropical Isolation

47. Reason of fast speciation in present day crop plants is **[2002]**
(a) mutation (b) isolation
(c) polyploidy (d) sexual reproduction

48. Mycorrhiza is an example of **[2003]**
(a) endoparasitism (b) decomposers
(c) symbiotic relationship
(d) ectoparasitism

49. Escherichia coli is used as an indicator organism to determine pollution of water with **[2003]**
(a) industrial effluents
(b) pollen of aquatic plants
(c) heavy metals
(d) faecal matter

50. Species are considered as **[2003]**
(a) artificial concept of human mind which cannot be defined in absolute terms
(b) real units of classification devised by taxonomists
(c) real basic units of classification
(d) the lowest units of classification

51. What is a keystone species ? **[2004]**
(a) A species which makes up only a small proportion of the total biomass of a community, yet has a huge impact on the community's organization and survival
(b) A common species that has plenty of biomass, yet has a fairly low impact on the community's organization
(c) A rare species that has minimal impact on the biomass and on other species in the community
(d) A dominant species that constitutes a large proportion of the biomass and which affects many other species

52. Which of the following is expected to have the highest value ($gm/m^2/yr$) in a grassland ecosystem? **[2004]**
(a) Secondary Production (SP)
(b) Tertiary Production (TP)
(c) Gross Production (GP)
(d) Net Production (NP)

53. An ecosystem which can be easily damaged but can recover after some time if damaging effect stops, will be having **[2004]**

(a) low stability and high resilience
(b) high stability and low resilience
(c) low stability and low resilience
(d) high stability and high resilience

54. Lichens are well known combination of an alga and a fungus where fungus has **[2004]**
(a) a saprophytic relationship with the alga
(b) an epiphytic relationship with the alga
(c) a parasitic relationship with the alga
(d) a symbiotic relationship with the alga

55. There exists a close association between the alga and the fungus within a lichen. The fungus **[2005]**
(a) provides protection, anchorage and absorption for the alga
(b) provides food for the alga
(c) fixes the atmospheric nitrogen for the alga
(d) release oxygen for the alga

56. Animals have the innate ability to escape from predation. Examples for the same are given below. Select the incorrect example **[2005]**
(a) enlargement of body size by swallowing air in puffer fish
(b) melanism in moths
(c) poison fangs in snakes
(d) colour change in Chamaeleon

57. Which one of the following pairs is mismatched ? **[2005]**
(a) Savanna —Acacia trees
(b) Prairie — Epiphytes
(c) Tundra — Permafrost
(d) Coniferous forest — Evergreen trees

58. Praying mantis is a good example of **[2006]**
(a) warning colouration
(b) social insects
(c) camouflage
(d) Mullerian mimicry

59. Which of the following is not true for a species? **[2005]**
(a) Members of a species can interbreed
(b) Variations occur among members of a species
(c) Each species is reproductively isolated from every other species
(d) Gene flow does not occur between the populations of a species

60. Which one of the following is not used for construction of ecological pyramids?**[2006]**
(a) Dry weight
(b) Number of individuals
(c) Rate of energy flow
(d) Fresh weight

61. Niche overlap indicates **[2006]**
(a) active cooperation between two species
(b) two different parasites on the same host
(c) sharing of one or more resources between the two species
(d) mutualism between two species

62. Which of the following ecosystem types has the highest annual net primary productivity? **[2007]**
(a) Tropical rain forest
(b) Tropical deciduous forest
(c) Temperate evergreen forest
(d) Temperate deciduous forest

63. A high density of elephant population in an area can result in **[2007]**
(a) mutualism
(b) intraspecific competition
(c) interspecific competition
(d) predation on one another

64. The table below gives the populations (in thousands) of ten species (A-J) in four areas (a-d) consisting of the number of habitats given within brackets against each. Study the table and answer the question which follows

Which area out of a to d shows maximum species diversity? **[2008]**

Area and Number of habitats	Species, and their populations (in thousands) in the areas									
	A	B	C	D	E	F	G	H	I	J
a (11)	2.3	1.2	0.52	6.0	–	3.1	1.1	9.0	-	10.3
b (11)	10.2	–	0.62	–	1.5	3.0	–	8.2	1.1	11.2
c (13)	11.3	0.9	0.48	2.4	1.4	4.2	0.8	8.4	2.2	4.1
d (12)	3.2	10.2	11.1	4.8	0.4	3.3	0.8	7.3	11.3	2.1

(a) b (b) c
(c) d (d) a

65. Consider the following statements concerning food chains **[2008]**

(A) removal of 80% tigers from an area resulted in greatly increased growth of vegetation

(B) removal of most of the carnivores resulted in an increased population of deers

(C) the length of food chains is generally limited to 3-4 trophic levels due to energy loss

(D) the length of food chains may vary from 2 to 8 trophic levels

Which two of the above statements are correct?

(a) B and C (b) C and D
(c) A and D (d) A and B

66. About 70% of total global carbon is found in **[2008]**

(a) grasslands (b) agroecosystems
(c) oceans (d) forests

67. Quercus species are the dominant component in **[2008]**

(a) temperate deciduous forests
(b) alpine forests
(c) scrub forests
(d) tropical rain forests

68. Which one of the following types of organisms occupy more than one trophic level in a pond ecosystem ? **[2009]**

(a) Zooplankton (b) Frog
(c) Phytoplankton (d) Fish

69. The correct sequence of plants in a hydrosere is : **[2009]**

(a) Pistia → Volvox→ Scirpus → Hydrilla → Oak → Lantana
(b) Oak → Lantana → Volvox → Hydrilla → Pistia → Scirpus
(c) Oak → Lantana → Scirpus → Pistia → Hydrilla → Volvox
(d) Volvox → Hydrilla → Pistia → Scirpus → Lantana → Oak

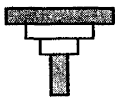
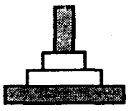
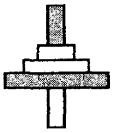
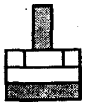
70. The biomass available for consumption by the herbivores and the decomposers is called: **[Pre. 2010]**

(a) Net primary productivity
(b) Secondary productivity
(c) Standing crop
(d) Gross primary productivity

71. Which one of the following is one of the characteristics of a biological community? **[Pre. 2010]**

(a) Stratification (b) Natality
(c) Mortality (d) Sex-ratio

72. Which of the following representations shows the pyramid of numbers in a forest ecosystem :- **[Mains 2010]**

(A) 
(B) 
(C) 
(D) 

(a) A (b) B
(c) C (d) D

73. Which one of the following is most appropriately defined ? **[Mains 2010]**

(a) *Amensalism* is a relationship in which one species is benefited where as the other is unaffected.
(b) *Predator* is an organism that catches and kills other organism for food.
(c) *Parasite* is an organism which always lives inside the body of other organism and may kill it.
(d) Host is an organism which provides food to another organism.

74. Mass of living matter at a trophic level in an area at any time is called **[Pre. 2011]**
(a) Standing crop (b) Detritus
(c) Humus (d) Standing state

75. Which one of the following statements is correct for secondary succession ? **[Pre. 2011]**
(a) It begins on a bare rock
(b) It occurs on a deforested site
(c) It follows primary succession
(d) It is similar to primary succession except than it has a relatively fast pace.

76. Which one of the following is categorised as a *parasite* in true sense ? **[Pre. 2011]**
(a) The female *Anopheles* bites and sucks blood from humans.
(b) Human foetus developing inside the uterus draws nourishment from the mother.
(c) Head louse living on the human scalp as well as laying eggs on human hair.
(d) The cuckoo (koel) lays its eggs in crow's nest.

77. Both, hydrarch and xerarch successions lead to **[Mains 2011]**
(a) Excessive wet conditions
(b) Medium water conditions
(c) Xeric conditions
(d) Highly dry conditions

78. Which one of the following animals may occupy more than one trophic levels in the same ecosystem at the same time ? **[Mains 2011]**
(a) Frog (b) Sparrow
(c) Lion (d) Goat

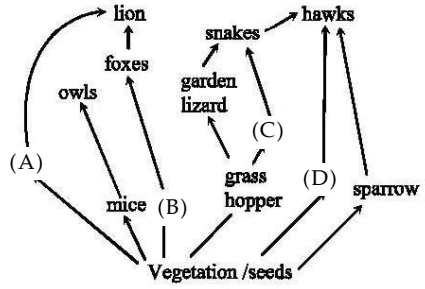
79. The breakdown of detritus into smaller particles by earthworm is a process called : **[Mains 2011]**
(a) Catabolism (b) Humification
(c) Fragmentation (d) Mineralisation

80. Consider the following statements (A)-(D) each with one or two blanks. **[Mains 2011]**
(A) Bears go into .....(1)..... during winter to .....(2)..... cold weather
(B) A conical age pyramid with a broad base represents ....(3)..... human population.
(C) A wasp pollinating a fig flower is an example of.....(4).....
(D) An are a with high levels of species richness is known as.....(5).....
Which one of the following options, gives the correct fill ups for the respective blank numbers from (1) to (5) in the statements?
(a) (1) - hibernation, (2) - escape; (3) - expanding, (5) - hot spot,
(b) (3) - stable (4) - commensalism, (5) – marsh
(c) (1) - aestivation, (2) - escape, (3) - stable, (4) mutualism
(d) (3) - expanding, (4) commensalism, (5) - biodiversity park

81. Which one of the following statements for pyramid of energy is incorrect, whereas the remaining three are correct ? **[2011]**
(a) Its base is broad
(b) It shows energy content of different trophic level organisms
(c) It is inverted in shape
(d) It is upright in shape

82. The rate of formation of new organic matter by rabbit in a grassland, is called : **[2012]**
(a) Secondary productivity
(b) Net primary productivity
(c) Gross primary productivity
(d) Net productivity

83. Identify the likely organism (A), (B), (C) and (D) in food web shown below : **[Mains 2012]**



	(A)	(B)	(C)	(D)
(a)	Dog	Squirrel	Bat	Deer
(b)	Rat	Dog	Tortoise	Crow
(c)	Squirrel	Cat	Rat	Pigeon
(d)	Deer	Rabbit	Frog	Rat

84. The second stage of hydrosere is occupied by plants like **[Mains 2012]**
(a) Typha
(b) Salix
(c) Vallisneria
(d) Azolla

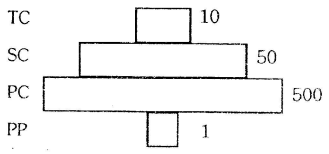
85. Which one of the following is not a functional part of an ecosystem **[Pre. 2012]**
(a) Productivity
(b) Stratification
(c) Energy flow
(d) Decomposition

86. The upright pyramid of number is absent in **[Pre. 2012]**
(a) Lake
(b) Grassland
(c) Pond
(d) Forest

87. Which one of the following is not a gaseous biogeochemical cycle in ecosystem ? **[Pre. 2012]**
(a) Nitrogen cycle
(b) Carbon cycle
(c) Sulphur cycle
(d) Phosphorus cycle

88. Which one of the following microbes forms symbiotic association with plants and helps them in their nutrition ? **[Pre. 2012]**
(a) *Glomus* (b) *Trichoderma*
(c) *Azotobacter* (d) *Aspergillus*

89. Given below is an imaginary pyramid of numbers what could be one of the possibilities about certain organisms at some of the different levels **[Pre. 2012]**



(a) Level one PP is "pipal trees" and the level SC is "sheep"
(b) Level PC "rats" and level SC is "cats"
(c) Level PC is "insects" and level SC is "small insectivorous birds"
(d) Level PP is " phytoplanktons " in sea and " whale " on top level TC

90. Idetify the possible link "A" in the following food chain : **[Pre. 2012]**
Plant → Insect → Frog → "A" → Eagle
(a) Cobra (b) Parrot
(c) Rabbit (d) Wolf

91. Natural reservoir of phosphorus is : **[2013]**
(a) Sea water
(b) Animal bones
(c) Rock
(d) Fossils

92. Secondary productivity is rate of formation of new organic matter by : **[2013]**
(a) Producer
(b) Parasite
(c) Consumer
(d) Decomposer

93. A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is : **[2013]**
(a) Ectoparasitism
(b) Symbiosis
(c) Commensalism
(d) Amensalism

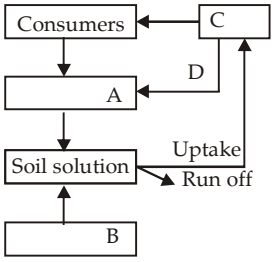
94. Match the following and select the correct option : **[AIPMT 2014]**

(a) Earthworm	(i) Pioneer species
(b) Succession	(ii) Detritivore
(c) Ecosystem service	(iii) Natality
(d) Population growth	(iv) Pollination

(a) (a) → (i); (b) → (ii); (c) → (iii); (d) → (iv)
(b) (a) → (iv); (b) → (i); (c) → (iii); (d) → (ii)
(c) (a) → (iii); (b) → (ii); (c) → (iv); (d) → (i)
(d) (a) → (ii); (b) → (i); (c) → (iv); (d) → (iii)

95. Given below is a simplified model of phosphorus cycling in a terrestrial ecosystem with four blanks (A-D).

Identify the blanks. **[AIPMT 2014]**



	A	B	C	D
(a)	Rock minerals	Detritus	Litter fall	Producers
(b)	Litter fall	Producers	Rock minerals	Detritus
(c)	Detritus	Rock minerals	Producers	Litter fall
(d)	Producers	Litter fall	Rock minerals	Detritus

96. If 20 J of energy is trapped at producer level, then how much energy will be available to peacock as food in the following chain? Plant → Mice → Snake → Peacock **[AIPMT 2014]**

(a) 0.02 J (b) 0.002 J
(c) 0.2 J (d) 0.0002 J

97. Most animals are tree dwellers in a - **[AIPMT 2015]**

(a) Thorn woodland
(b) Temperate deciduous forest
(c) Tropical rain forest
(d) Coniferous forest

98. Vertical distribution of different species occupying different levels in a biotic community is known as: **[AIPMT 2015]**

(a) Stratification
(b) Zonation
(c) Pyramid
(d) Divergence

99. The mass of living material at a trophic level at a particular time is called :**[AIPMT 2015]**

(a) Standing state
(b) Net primary productivity
(c) Standing crop
(d) Gross primary productivity

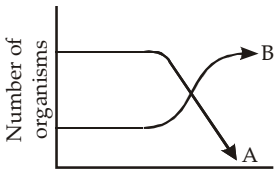
100. In an ecosystem the rate of production of organic matter during photosynthesis is termed as: **[AIPMT 2015]**

(a) Gross primary productivity
(b) Secondary productivity
(c) Net productivity
(d) Net primary productivity

101. Secondary Succession takes place on/in : **[AIPMT 2015]**

(a) Degraded forest
(b) Newly created pond
(c) Newly cooled lava
(d) Bare rock

102. The following graph depicts changes in two populations (A and B) of herbivores in a grassy field. A possible reason for these changes is that **[AIPMT 2015]**



(a) Population B competed more successfully for food than population A
(b) Population A produced more offspring than population B
(c) Population A consumed the members of population B
(d) Both plant populations in this habitat decreased

103. In which of the following interactions both partners are adversely affected ? **[RE-AIPMT 2015]**

(a) Mutualism
(b) Competition
(c) Predation
(d) Parasitism

104. Most animals that live in deep oceanic waters are : **[RE-AIPMT 2015]**

(a) Detritivores

(b) Primary consumers
(c) Secondary consumers
(d) Tertiary consumers

105. In which of the following both pairs have correct combination : **[RE-AIPMT 2015]**

(a) Gaseous nutrient cycle - Sulphur and Phosphorus, Sedimentary nutrient cycle - Carbon and Nitrogen.
(b) Gaseous nutrient cycle - Carbon and Nitrogen, Sedimentary nutrient cycle - Sulphur and Phosphorus.
(c) Gaseous nutrient cycle - Carbon and Sulphur, Sedimentary nutrient cycle - Nitrogen and Phosphorus.
(d) Gaseous nutrient cycle - Nitrogen and Sulphur, Sedimentary nutrient cycle - Carbon and Phosphorus.

106. During ecological succession : **[RE-AIPMT 2015]**

(a) the changes lead to a community that is in near equilibrium with the environment and is called pioneer community
(b) the gradual and predictable change in species composition occurs in a given area
(c) the establishment of a new biotic community is very fast in its primary phase
(d) the number and types of animals remain constant

Answers

1 -a	2 -a	3 -b	4 -c	5 -b	6 -d	7 -c	8 -a	9 -c	10 -b
11 -c	12 -c	13 -a	14 -a	15 -d	16 -d	17 -b	18 -d	19 -d	20 -b
21 -c	22 -b	23 -a	24 -b	25 -a	26 -b	27 -d	28 -b	29 -a	30 -b
31 -b	32 -d	33 -a	34 -d	35 -a	36 -d	37 -a	38 -c	39 -c	40 -c
41 -a	42 -c	43 -b	44 -a	45 -b	46 -b	47 -c	48 -c	49 -d	50 -c
51 -a	52 -c	53 -a	54 -d	55 -a	56 -c	57 -b	58 -c	59 -d	60 -d
61 -c	62 -a	63 -b	64 -c	65 -a	66 -c	67 -a	68 -d	69 -d	70 -c
71 -a	72 -b	73 -b	74 -a	75 -b	76 -c	77 -b	78 -b	79 -c	80 -a
81 -c	82 -a	83 -d	84 -c	85 -b	86 -d	87 -d	88 -a	89 -c	90 -a
91 -c	92 -c	93 -b	94 -d	95 -c	96 -a	97 -c	98 -a	99 -c	100 -a
101-a	102 -a	103 -b	104 -a	105 -b	106 -b				

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BIODIVERSITY AND CONSERVATION

1. Soil conservation is **[1989]**
(a) conversion of sterile soil into fertile one
(b) aeration of soil
(c) erosion of soil
(d) protection against loss

2. Deforestation will decrease **[1990]**
(a) soil erosion (b) land slides
(c) soil fertility (d) rainfall

3. Geothermal energy is **[1991, 92]**
(a) non-renewable non-conventional energy source
(b) non-renewable conventional energy source
(c) renewable non-conventional energy source
(d) renewable conventional energy source

4. Renewable source of energy is **[1991]**
(a) biomass (b) coal
(c) petroleum (d) kerosene

5. Petroleum is a **[1992]**
(a) synthetic product
(b) renewable resource
(c) non-renewable resource
(d) inconvenient resource

6. Fertility of soil is measured by its ability to
(a) retain nutrients **[1992]**
(b) hold organic materials
(c) hold water
(d) support life

7. Minerals and metals are **[1992]**
(a) biodegradable resources
(b) renewable
(c) non-renewable
(d) Both (b) and (c)

8. Water is a resource **[1992]**
(a) non-degradable, non-maintainable
(b) degradable, maintainable
(c) renewable
(d) non-renewable

9. Soil fertility is reduced by **[1992]**
(a) crop rotation
(b) nitrogen-fixing bacteria
(c) decaying organic matter
(d) intensive agriculture

10. American water plant that has become a troublesome water weed in India is **[1993]**
(a) *Cyperus rotundus*
(b) *Eichhornia crassipes*
(c) *Trapa latifolia*
(d) *Trapa bispinosa*

11. National Park associated with rhinoceros is **[1994, 2006]**
(a) Kaziranga (b) Ranthambore
(c) Corbett (d) Valley of flowers

12. Bulk fixation of carbon through photosynthesis takes place in **[1994]**
(a) tropical rain forests (b) tropical rain forests and crop plants
(c) crop plants (d) oceans

13. Deforestation does not lead to **[1994]**
(a) quick nutrient cycling
(b) soil erosion
(c) alteration of local weather conditions
(d) destruction of natural habitat of wild animals

14. Largest amount of fresh water is found in **[1994]**
(a) lakes and streams
(b) underground
(c) polar ice and glaciers
(d) rivers

15. Ranthambore National Park is situated in **[1994]**
(a) Maharashtra (b) Rajasthan
(c) Gujarat (d) UP

16. Wild life is destroyed most when **[1994,2002]**
(a) there is lack of proper care
(b) mass scale hunting for foreign trade
(c) its natural habitat is destroyed
(d) natural calamity

17. Which animal has become extinct from India? **[1994]**
(a) Snow leopard (b) *Hippopotamus*
(c) Wolf (d) Cheetah

18. Tropical forests occur in India **[1994]**
(a) Jammu and Kashmir
(b) Rajasthan
(c) Kerala and Assam
(d) The forests do not occur in India

19. Which of the following is the main factor of desertification? **[1995]**
(a) Tourism (b) Irrigated agriculture
(c) Over grazing (d) All of the above

20. Which of the following is the correct matching pair of a sanctuary and its main protected wild animal? **[1995]**
(a) Gir — lion
(b) Sariska — Tiger
(c) Sunderban — Rhino
(d) Kaziranga — Musk deer

21. Flamingoes breed in **[1996]**
(a) Rann of Kutch (b) Chilka lake
(c) Sambhar lake (d) Lake Mansarover

22. A number of natural reserves have been created to conserve specific wild life species. Identify the correct combination from the following **[1996]**
(a) Gir forest — Tiger
(b) Kaziranga — Elephants
(c) Rann of Kutch — Wild ass
(d) Manas Wild Life Sanctuary — Musk deer

23. MAB stands for **[1997]**
(a) Man And Biology programme
(b) Man And Biosphere programme
(c) Mammals And Biosphere
(d) Mammals And Biology programme

24. Which of the following is mainly responsible for extinction of wild life? **[1999]**
(a) Destruction of habitats
(b) Pollution of air and water
(c) Hunting for flesh
(d) All of the above

25. Land mass occupied by forests is about **[1999]**
(a) 60% (b) 30%
(c) 22% (d) 11%

26. The endangered largest living lemur *Idri idri* is inhabitant of **[2000]**
(a) Madagascar (b) Mauritius
(c) Sri Lanka (d) India

27. Which endangered animal is the source of the world's finest, lightest, warmest and – most expensive wool – the shahtoosh ? **[2003]**

(a) Kashmiri goat (b) Chiru
(c) Nilgai (d) Cheetal

28. Which group of vertebrates comprises the highest number of endangered species? **[2003]**
(a) Reptiles (b) Birds
(c) Mammals (d) Fishes

29. In your opinion, which is the most effective way to conserve the plant diversity of an area? **[2004]**
(a) By tissue culture method
(b) By creating biosphere reserve
(c) By creating botanical garden
(d) By developing seed bank

30. One of the most important function of botanical garden is that **[2005]**
(a) one can observe tropical plants there
(b) they allow ex situ conservation of germplasm
(c) they provide the natural habitat for wild life
(d) they provide a beautiful area for recreation

31. Biodiversity act of India was passed by the Parliament in the year **[2005]**
(a) 1996 (b) 1992
(c) 2002 (d) 2000

32. According to IUCN red list, what is the status of red panda *(Athurus fulgens)?* **[2005]**
(a) Vulnerable species
(b) Critically endangered species
(c) Extinct species
(d) Endangered species

33. Which of the following pairs of an animal and a plant represents endangered organisms in India ? **[2006]**
(a) *Bentinckia nicobarica* and red panda
(b) Tamarind and rhesus monkey
(c) Cinchona and leopard
(d) Banyan and black buck

34. Which one of the following is not included under *in situ* conservation? **[2006]**
(a) Sanctuary
(b) Botanical Gardens
(c) Biosphere reserve
(d) National Park

35. Which of the following is considered a hotspot of biodiversity in India? **[2006]**
(a) Western ghats (b) Indo-Gangetic plain
(c) Eastern ghats (d) Aravalli hills

36. ICBN stands for **[2007]**
(a) Indian Congress of Biological Names
(b) International Code of Botanical Nomenclature
(c) International Congress of Biological Names
(d) Indian Code of Botanical Nomenclature

37. Identify the odd combination of the habitat and the particular animal concerned **[2007]**
(a) Dachigam National Park — Snow leopard
(b) Sunderbans — Bengal tiger
(c) Periyar — Elephant
(d) Rann of Kutch — Wild ass

38. One endangered species of Indian medicinal plants is that of **[2007]**
(a) *Podophyllum* (b) *Ocimum*
(c) Garlic (d) *Nepenthes*

39. Which one of the following is not observed in biodiversity hotspots? **[2008]**
(a) Endemism
(b) Accelerated species loss
(c) Lesser interspecific competition
(d) Species richness

40. Chipko movement was launched for the protection of: **[2009]**
(a) Livestock (b) Wetlands
(c) Grasslands (d) Forests

41. Tiger is not a resident in which one of the following national park? **[2009]**

(a) Gir (b) Jim Corbett
(c) Ranthambhor (d) Sunderbans

42. Which one of the following is an example of ex-situ conservation? **[Pre. 2010]**
(a) Wildlife sanctuary
(b) Seed bank
(c) Sacred groves (d) National park

43. A renewable exhaustible natural resource is **[Pre. 2010]**
(a) Coal (b) Petroleum
(c) Minerals (d) Forest

44. The Indian Rhinoceros is a natural inhabitant of which one of the Indian states ? **[Mains 2010]**
(a) Uttar Pradesh
(b) Himachal Pradesh
(c) Assam (d) Uttarakhand

45. Which one of the following expanded forms of the following acronyms is correct ? **[Pre. 2011]**
(a) IPCC = International Panel for Climate Change
(b) UNEP=United Nations Environmental Policy
(c) EPA=Environmental Pollution Agency
(d) IUCN = International Union for Conservation of Nature and Natural Resources

46. A collection of plants and seeds having divers alleles of all the genes of a crop is called **[Pre. 2011]**
(a) Herbarium (b) Germplasm
(c) Gene library (d) Genome

47. Which one of the following statements for pyramid of energy is incorrect, whereas the remaining three are correct ? **[Pre. 2011]**
(a) Its base is broad
(b) It shows energy content of different trophic level organisms
(c) It is inverted in shape
(d) It is upright in shape

48. Biodiversity of a geographical region represents : **[2011]**
(a) Species endemic to the region
(b) Endangered species found in the region
(c) The diversity in the organisms living in the region.
(d) Genetic diversity present in the dominant species of the region.

49. Select the correct statement about biodiversity **[Mains 2012]**
(a) Large scale planting of Bt cotton has no adverse effect on biodiversity
(b) Western Ghats have a very high degree of species richness and endemism
(c) Conservation of biodiversity is just a fad pursued by the developed countries
(d) The desert areas of Rajasthan and Gujarat have a very high level of desert animal species as well as numerous rare animals

50. Sacred grooves are specially useful in **[Mains 2012]**
(a) preventing soil erosion
(b) year-round flow of water in rivers
(c) conserving rare and threatened species
(d) generating environmental awareness

51. The highest number of species in the world represented by **[Pre. 2012]**
(a) Algae (b) Lichens
(c) Fungi (d) Mosses

52. Which one of the following areas in India, is hot spot of biodiversity ? **[Pre. 2012]**
(a) Sunderbans (b) Western Ghats
(c) Eastern Ghats (d) Gangetic plain

53. Which one of the following is not used for *ex situ* plant conservation? **[2013]**
(a) Field gene banks
(b) Seed banks
(c) Shifting cultivation
(d) Botanical Gardens

54. Which of the following represent maximum number of species among global biodiversity ?
(a) Algae (b) Lichens **[2013]**
(c) Fungi (d) Mosses and Ferns

55. An example of ex situ conservation is - **[AIPMT 2014]**

(a) National Park
(b) Seed Bank
(c) Wildlife Sanctuary
(d) Sacred Groove

56. A species facing extremely high risk of extinction in the immediate future is called **[AIPMT 2014]**

(a) Vulnerable
(b) Endemic
(c) Critically Endangered
(d) Extinct

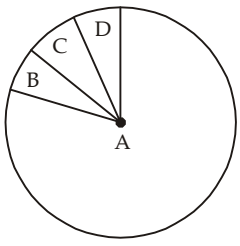
57. The organization which publishes the Red List of species is **[AIPMT 2014]**

(a) ICFRE (b) IUCN
(c) UNEP (d) WWF

58. Just as a person moving from Delhi to Shimla to escape the heat for the duration of hot summer, thousands of migratory birds from Siberia and other extremely cold northern regions move to - **[AIPMT 2014]**

(a) Western Ghats
(b) Meghalaya
(c) Corbett National Park
(d) Keoladeo National Park

59. Given below is the representation of the extent of global diversity of invertebrates. What groups the four portions (A-D) represent respectively? **[AIPMT 2014]**



Options :

	A	B	C	D
(1)	Insects	Crustaceans	Other animal Groups	Molluscs
(2)	Crustaceans	Insects	Molluscs	Other animal Groups
(3)	Molluscs	Other animal Groups	Crustaceans	Insects
(4)	Insects	Molluscs	Crustaceans	Other animal Groups

60. Cryopreservation of gametes of threatened species in viable and fertile condition can be referred to as:- **[AIPMT 2015]**

(a) Advanced ex-situ conservation of biodiversity
(b) In situ conservation by sacred groves
(c) In situ cryo-conservation of biodiversity
(d) In situ conservation of biodiversity

61. In which of the following, both pairs have correct combination : **[AIPMT 2015]**

(a) In situ conservation : Cryopreservation, Ex situ conservation : Wildlife Sanctuary
(b) In situ conservation : Seed Bank, Ex situ conservation : National Park
(c) In situ conservation : Tissue culture, Ex situ conservation : Sacred groves
(d) In situ conservation : National Park, Ex situ conservation : Botanical Garden

62. The species confined to a particular region and not found elsewhere is termed as : **[RE-AIPMT 2015]**

(a) Rare (b) Keystone
(c) Alien (d) Endemic

Answers

1 -d	2 -d	3 -a	4 -a	5 -c	6 -d	7 -c	8 -c	9 -d	10 -b
11 -a	12 -d	13 -a	14 -c	15 -b	16 -c	17 -d	18 -c	19 -c	20 -b
21 -b	22 -c	23 -b	24 -a	25 -c	26 -a	27 -b	28 -c	29 -b	30 -b
31 -c	32 -d	33 -a	34 -b	35 -a	36 -b	37 -a	38 -a	39 -c	40 -d
41 -a	42 -b	43 -d	44 -c	45 -d	46 -b	47 -c	48 -c	49 -b	50 -c
51 -c	52 -b	53 -c	54 -c	55 -b	56 -c	57 -b	58 -d	59 -d	60 -a
61 -d	62 -d								

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Environmental Issues

1. Lichens indicate SO_2 pollution because they **[1989, 92]**
   (a) show association between algae and fungi
   (b) grow faster than others
   (c) are sensitive to SO_2
   (d) flourish in SO_2 rich environment

2. Acid rains are produced by **[1989, 91]**
   (a) excess NO_2 and SO_2 from burning fossil fuels
   (b) excess production of NH_3 by industry and coal gas
   (c) excess release of carbon monoxide by incomplete combustion
   (d) excess formation of CO_2 by combustion and animal respiration

3. Green-house effect is warming due to **[1989,91,94]**
   (a) infra-red rays reaching earth
   (b) moisture layer in atmosphere
   (c) increase in temperature due to increase in carbon dioxide concentration of atmosphere
   (d) ozone layer of atmosphere

4. Major aerosol pollutant in jet plane emission is **[1990]**
   (a) sulphur dioxide
   (b) carbon monoxide
   (c) methane
   (d) chlorofluoro-carbons

5. Gas released during Bhopal tragedy was **[1990]**
   (a) methyl isocyanate
   (b) potassium isothiocyanate
   (c) sodium isothiocyanate
   (d) ethyl isothiocyanate

6. Domestic waste constitutes **[1991]**
   (a) non-biodegradable pollution
   (b) biodegradable pollution
   (c) effluents
   (d) air pollution

7. Which one is not a pollutant normally? **[1992]**
   (a) Hydrocarbons
   (b) Carbon dioxide
   (c) Carbon monoxide
   (d) Sulphur dioxide

8. Most hazardous metal pollutant of automobile exhausts is **[1992]**
   (a) mercury (b) cadmium
   (c) lead (d) copper

9. Ultraviolet radiations from sunlight cause a reaction which produces **[1993]**
   (a) O_3 (b) SO_2
   (c) CO (d) CH_4

10. Drawback of DDT as pesticide is **[1994,99]**
(a) it becomes ineffective after some time
(b) it is less effective than others
(c) it is not easily/rapidly degraded in nature
(d) its high cost

11. Highest DDT deposition shall occur in **[1994,99]**
(a) phytoplankton (b) sea gull/birds
(c) crab (d) eel

12. Fish die in water bodies polluted by sewage due to **[1994]**
(a) pathogens
(b) clogging of gills by silt
(c) reduction in oxygen
(d) fuel smell

13. Disease caused by eating fish found in water contaminated with industrial waste having mercury is **[1994]**
(a) Minamata disease
(b) Blight's disease
(c) Hashimoto's disease
(d) Osteosclerosis

14. Sound becomes hazardous noise pollution at level **[1994]**
(a) above 30 dB (b) above 80 dB
(c) above 100 dB (d) above 120 dB

15. Atmosphere of big/metropolitan cities is polluted most by **[1994]**
(a) automobile exhausts
(b) pesticide residue
(c) household waste
(d) radioactive fall-out

16. When huge amount of sewage is dumped into a river, its BOD will **[1995]**
(a) increase
(b) decrease
(c) sharply decrease
(d) remain unchanged

17. In Minamata Bay of Japan, the animals which remained free from Minamata disease, are **[1995]**
(a) pigs (b) rabbits
(c) dogs (d) cats

18. The Taj Mahal is threatened due to the effect of **[1995]**
(a) oxygen (b) hydrogen
(c) chlorine (d) sulphur dioxide

19. Sewage drained into water bodies kill fishes because **[1996]**
(a) excessive carbon dioxide is added to water
(b) it gives off a bad smell
(c) it removes the food eaten by fish
(d) it increases competition with fishes for dissolved oxygen

20. The major contributor of green-house gases to the atmosphere is **[1996,2002]**
(a) Russia (b) USA
(c) Germany (d) Brazil

21. The worst environmental hazards were created by accidents in nuclear power plant and MIC gas tragedy respectively in **[1996]**
(a) Russia in 1990 and Bhopal in 1986
(b) Ukrain in 1988 and USA in 1984
(c) Bhopal in 1984 and Russia in 1990
(d) Ukrain in 1986 and Bhopal in 1984

22. If the forest cover is reduced to half, what is most likely to happen on a long term basis? **[1996]**
(a) Tribals living in these areas will starve to death
(b) Cattle in these and adjoining areas will die due to lack of fodder
(c) Large areas will become deserts
(d) Crop breeding programmes will suffer due to a reduced availability of variety of germplasm

23. The most common indicator organism which represents polluted water is **[1997]**

(a) Escherichia coli
(b) Salmonella typhi
(c) Vibrio cholerae
(d) Entamoeba histolytica

24. Phosphate pollution is mainly caused by
(a) phosphate rock only **[1997]**
(b) agricultural fertilizers only
(c) sewage and phosphate rocks
(d) sewage and agricultural fertilizers

25. The CO_2content by volume, in the atmospheric air is about **[1997]**
(a) 0.0314% (b) 0.34%
(c) 3.34% (d) 4%

26. Formation of ozone hole is maximum over
(a) India (b) Antarctica **[1997]**
(c) Europe (d) Africa

27. In coming years, skin related disorders will be more common due to **[1997]**
(a) air pollution
(b) use of detergents
(c) water pollution
(d) depletion of ozone layer

28. Which one of the following organism is used as indicator of water quality ? **[1998]**
(a) Beggiatoa (b) Chlorella
(c) Azospirillum (d) Escherichia

29. Which important green-house gas, other than methane, is being produced from the agricultural fields? **[1998]**
(a) Arsine (b) Sulphur dioxide
(c) Ammonia (d) Nitrous oxide

30. The supersonic jets cause pollution by the thinning of **[1998]**
(a) CO_2 layer (b) SO_2 layer
(c) O_2 layer (d) O_3 layer

31. Warm ocean surge of the peru current recurring every 5 to 8 year or so in the East Pacific of South America is widely known as **[1998]**
(a) Magnox (b) Gull stream
(c) El Nino (d) Aye aye

32. Carbon monoxide is a pollutant because
(a) it reacts with O_2 **[1998]**
(b) it inhibits glycolysis
(c) it reacts with haemoglobin
(d) it makes nervous system inactive

33. If there was no CO_2 in the earth's atmosphere the temperature of earth's surface would be
(a) same as present **[1998]**
(b) less than the present
(c) higher than the present
(d) dependent on the amount of oxygen in the atmosphere

34. A sewage treatment process in which a portion of the decomposer bacteria present in the waste is recycled into the beginning of the process, is called **[1998]**
(a) cyclic treatment
(b) primary treatment
(c) activated sludge treatment
(d) tertiary treatment

35. Which of the following is the use of lichens in case of pollution? **[1999]**
(a) Lichens are not related with pollution
(b) They act as bioindicators of pollution
(c) They treat the polluted water
(d) They promote pollution

36. Which of the following is a secondary pollutant ? **[1999]**
(a) Aerosol (b) CO
(c) PAN (d) CO_2

37. Green-house effect refers to **[1999]**
(a) production of cereals
(b) cooling of earth
(c) trapping of UV rays
(d) warming of earth

38. In 1984, Bhopal gas tragedy was caused due to the leakage of **[1999]**
(a) potassium isocyanate
(b) sodium monoxide
(c) sodium thiocyanate
(d) methyl isocyanate

39. Which of the following is pollution related disorder ? **[1999]**
(a) Fluorosis (b) Leprosy
(c) Pneumonicosis (d) Silicosis

40. Relative Biological Effectiveness [RBE] usually refers to the damages caused by **[2000]**
(a) low temperature
(b) high temperature
(c) radiation (d) pollution

41. What is the intensity of sound in normal conversation? **[2001]**
(a) 10-20 dB (b) 30-60 dB
(c) 70-90 dB (d) 120-150 dB

42. What is BOD? **[2001]**
(a) The amount of O_2 utilized by organisms in water
(b) The amount of O_2 utilized by microorganisms for decomposition
(c) The total amount of O_2 present in water
(d) All of the above

43. Which of the following is absent in polluted water ? **[2002]**
(a) Hydrilla (b) Water hyacinth
(c) Larva of stone fly
(d) Blue-green algae

44. Fluoride pollution mainly affects **[2003]**
(a) teeth (b) kidney
(c) brain (d) heart

45. If by radiation all nitrogenase enzymes are inactivated, then there will be no **[2004]**
(a) fixation of nitrogen in legumes
(b) fixation of atmospheric nitrogen
(c) conversion from nitrate to nitrite in legumes
(d) conversion from ammonium to nitrate in soil

46. Lead concentration in blood is considered alarming if it is **[2004]**
(a) 20mg/100mL (b) 30mg/100mL
(c) 4-6mg/100mL (d) 10mg/100mL

47. In 1984, the Bhopal gas tragedy took place because methyl isocyanate **[2004]**
(a) reacted with DDT
(b) reacted with ammonia
(c) reacted with CO_2
(d) reacted with water

48. Prolonged liberal irrigation of agricultural fields is likely to create the problem of **[2005]**
(a) acidity (b) aridity
(c) metal toxicity (d) salinity

49. Which of the following is not used for disinfection of drinking water? **[2005]**
(a) Phenyl (b) Chloramine
(c) Chlorine (d) Ozone

50. Which one of the following pair is mismatched? **[2005]**
(a) Biomass burning — Release of CO_2
(b) Fossil fuel burning — Release of CO_2
(c) Nuclear power — Radioactive wastes
(d) Solar energy — Green-house effect

51. Photochemical smog pollution does not contain **[2006]**
(a) ozone
(b) nitrogen dioxide
(c) carbon dioxide
(d) PAN [Peroxy Acyl Nitrate]

52. Limit of BOD prescribed by Central Pollution Control Board for the discharge of industrial and municipal waste water into natural surface water, is **[2006]**
(a) < 3.0 ppm (b) < 10 ppm
(c) < 100 ppm (d) < 30 ppm

53. Montreal Protocol which calls for appropriate action to protect the ozone layer from human activities was passed in the year **[2006]**
(a) 1986 (b) 1987
(c) 1988 (d) 1985

54. In a coal fired power plant electrostatic precipitators are installed to control emission of **[2007]**

(a) SO_2 (b) NO_X
(c) SPM (d) CO

55. Which one of the following is not a bioindicator of water pollution ? **[2007]**
(a) Sludge worms (b) Blood worms
(c) Stone flies (d) Sewage fungus

56. In which one of the following the BOD (Biochemical Oxygen Demand) of Sewage (S), Distillery Effluent (DE), Paper mill Effluent (PE) and Sugar mill Effluent (SE) have been arranged in ascending order ? **[2007]**
(a) SE < S < PE < DE (b) SE < PE < S < DE
(c) PE < S < SE < DE (d) S < DE < PE < SE

57. A lake near a village suffered heavy mortality of fishes within a few days. Consider the following reasons for this **[2008]**
(1) Lots of urea and phosphate fertilizer were used in the crops in the vicinity.
(2) The area was sprayed with DDT by an aircraft.
(3) The lake water turned green and stinky.
(4) Phytoplankton populations in the lake declined initially thereby greatly reducing photosynthesis.
Which two of the above were the main causes of fish mortality in the lake?
(a) 2, 3 (b) 3, 4
(c) 1, 3 (d) 1, 2.

58. World Summit on Sustainable Development [2002] was held in **[2008]**
(a) Brazil (b) Sweden
(c) Argentina (d) South Africa

59. According to Central Pollution Control Board (CPCB), which paniculate size in diameter (in micrometers) of the air pollutants is responsible for greatest harm to human health? **[2008]**
(a) 2.5 or less (b) 1.5 or less
(c) 1.0 or less (d) 5.2 or 2.5

60. Which one of the following is the correct percentage of the two (out of the total of 4) greenhouse gases that contribute to the total global warming? **[2008]**
(a) CFCs 14%, CH_4 20%
(b) CO_2 40%, CFCs 30%
(c) N_2O 6%, CO2 86%
(d) CH_4 20%, N2O 18%

61. Steps taken by the Government of India to control air pollution include: **[2009]**
(a) Permission to use only pure diesel with a maximum of 500 ppm sulphur as fuel for vehicles.
(b) use of non-polluting Compressed Natural Gas (CNG) only as fuel by all buses and trucks.
(c) compulsory mixing of 20% ethyl alcohol with petrol & 20% biodiesel with diesel.
(d) compulsory PUC (Pollution Under Control) certification of petrol driven vehicles which tests for carbon monoxide and hydrocarbons.

62. Biochemical Oxygen Demand (BOD) in a river water: **[2009]**
(a) gives a measure of salmonella in the water.
(b) increases when sewage gets mixed with river water.
(c) remains unchanged when algal bloom occurs.
(d) has no relationship with concentration of oxygen in the water.

63. DDT residues are rapidly passed through food chain causing bio-magnification because DDT is **[2009]**
(a) non-toxic to aquatic animals
(b) water soluble
(c) lipo soluble (d) moderately toxic

64. Global agreement in specific control strategies to reduce the release of ozone depleting substances, was adopted by **[2009]**
(a) The Kyoto Protocol
(b) The Vienna Convention
(c) Rio de Janerio Conference
(d) The Montreal Protocol

65. Montreal Protocol aims at **[2009]**
(a) Control of water pollution
(b) Control of CO_2 emission

(c) Reduction of ozone depleting substances
(d) Biodiversity conservation

66. Select the correct statement from the following **[Pre. 2010]**
(a) Biogas is produced by the activity of aerobic bacteria on animal waste
(b) *Methanobacterium* is an aerobic bacterium found in rumen of cattle
(c) Biogas, commonly called gobar gas, is pure methane
(d) Activated sludge-sediment in settlement tanks of sewage treatment plant is a rich source of aerobic bacteria.

67. dB is a standard abbreviation used for the quantitative expression of **[Pre. 2010]**
(a) the density of bacteria in a medium
(b) a particular pollutant
(c) the dominant Bacillus in a culture
(d) a certain pesticide

68. The two gases making highest relative contribution to the greenhouse gases are **[Pre. 2010]**
(a) CO_2 and CH_4 (b) CH_4 and N_2O
(c) CFC and N_2O (d) CO_2 and N_2O

69. Stirred-tank bioreactors have been designed for **[Pre. 2010]**
(a) Addition of preservatives to the product
(b) Purification of the product
(c) Ensuring anaerobic conditions in the culture vessel
(d) Availability of oxygen throughout the process

70. When domestic sewage mixes with river water **[2010]**
(a) The increased microbial activity releases micro-nutrients such as iron.
(b) The increased microbial activity uses up dissolved oxygen.
(c) The river water is still suitable for drinking as impurities are only about 0.1%
(d) Small animals like rats will die after drinking river water.

71. Which one of the following pairs of gases are the major cause of "Greenhouse effect" ? **[Pre. 2011]**
(a) CO_2 and O_3 (b) CO_2 and CO
(c) CFCs and SO_2 (d) CO_2 and N_2O

72. Secondary sewage treatement is mainly a
(a) Physical process **[Pre. 2011]**
(b) Mechanical process
(c) Chemical process
(d) Biological process

73. Which of the following is mainly produced by the activity of anaerobic bacteria on sewage ? **[Pre. 2011]**
(a) Laughing gas (b) Propane
(c) Mustard gas (d) Marsh gas

74. Continuous addition of sugars in 'fed batch fermentation is done to **[Pre. 2011]**
(a) Produce methane
(b) Obtain antibiotics
(c) Purify enzymes (d) Degrade sewage

75. Which one of the following statements is wrong in case of Bhopal tragedy? **[Pre. 2011]**
(a) Methyl Isocyanate gas leakage took place
(b) Thousands of human beings died
(c) Radioactive fall out engulfed Bhopal
(d) It took place in the night of December 2 / 3,1984

76. "Good ozone" is found in the **[Mains 2011]**
(a) Ionosphere (b) Mesosphere
(c) Troposphere (d) Stratosphere

77. The domestic sewage in large cities **[Mains 2012]**
(a) is processed by aerobic and then anaerobic bacteria in the secondary treatment in Sewage Treatment Plant (STPs)
(b) When treated in STPs does not really require the aeration step as the sewage contains adequate oxygen
(c) has very high amounts of suspended solids and dissolved salts
(d) has a high BOD as it contains both aerobic and anaerobic bacteria.

78. Which one of the following is a wrong statement **[Pre. 2012]**
(a) Greenhouse effect is a natural phenomenon
(b) Eutrophication is a natural phenomenon in freshwater bodies
(c) Most of the forests have been lost in tropical areas
(d) Ozone in upper part of atmosphere is harmful to animals

79. In an area were DDT had been used extensively the population of birds declined significantly because **[Pre. 2012]**
(a) Cobras were feeding exclusively on birds
(b) Many of the eggs laid, did not hatch
(c) Bird stopped laying eggs
(d) Earthworms in the area got eradicated

80. Measuring Biochemical Oxygen Demand (BOD) is a method used for : **[2012]**
(a) Measuring the activity of *Saccharomyces cerevisae* in producing curd on a commercial scale.
(b) Working out the efficiency of R.B.Cs. about their capacity to carry oxygen.
(c) Estimating the amount of organic matter in sawage water.
(d) Working out the efficiency of oil driven automobile engines.

81. Kyoto-Protocol was endorsed at **[2013]**
(a) CoP-3 (b) CoP-5
(c) CoP-6 (d) CoP-4

82. During sewage treatment, biogases are produced which include **[2013]**
(a) methane, hydrogen sulphide, carbon dioxide
(b) methane, oxygen, hydrogen sulphide
(c) hydrogen sulphide, methane, sulphur dioxide
(d) hydrogen sulphide, nitrogen, methane

83. Global warming can be controlled by **[2013]**
(a) Reducing deforestation, cutting down use of fossil fuel
(b) Reducing reforestation, increasing the use of fossil fuel
(c) Increasing deforestation, slowing down the growth of human population
(d) Increasing deforestation, reducing efficiency of energy usage

84. The Air Prevention and Control of pollution act came into force in **[2013]**
(a) 1975 (b) 1981
(c) 1985 (d) 1990

85. A location with luxuriant growth of lichens on the trees indicates that the **[AIPMT 2014]**
(a) Trees are very healthy
(b) Trees are heavily infested
(c) Location is highly polluted
(d) Location is not polluted

86. The zone of atmosphere in which the ozone layer is present is called **[AIPMT 2014]**
(a) Ionosphere (b) Mesosphere
(c) Stratosphere (d) Troposphere

87. A scrubber in the exhaust of a chemical industrial plant removes **[AIPMT 2014]**
(a) Gases like sulphur dioxide
(b) Particulate matter of the size 5 micrometer or above
(c) Gases like ozone and methane
(d) Particulate matter of the size 2.5 micrometer or less

88. High value of BOD (Biochemical Oxygen Demand) indicates that : **[AIPMT 2015]**
(a) Water is highly polluted
(b) Water is less polluted
(c) Consumption of organic matter in the water is higher by the microbes
(d) Water is pure

89. The UN Conference of Parties on climate change in the year 2011 was held in :- **[AIPMT 2015]**

(a) South Africa (b) Peru
(c) Qatar (d) Poland

90. Rachel Carson's famous book "Silent Spring" is related to **[AIPMT 2015]**
(a) Noise pollution
(b) Population explosion
(c) Ecosystem management
(d) Pesticide pollution

91. Which of the following is not one of the prime health risks associated with greater UV radiation through the atmosphere due to depletion of stratospheric ozone ? **[AIPMT 2015]**
(a) Reduced Immune System
(b) Damage to eyes
(c) Increased liver cancer
(d) Increased skin cancer

92. Eutrophication of water bodies leading to killing of fishes is mainly due to non-availability of : **[RE-AIPMT 2015]**
(a) oxygen
(b) food
(c) light
(d) essential minerals

93. Acid rain is caused by increase in the atmospheric concentration of : **[RE-AIPMT 2015]**
(a) O_3 and dust (b) SO_2 and NO_2
(c) SO_3 and CO (d) CO_2 and CO

94. Increase in concentration of the toxicant at successive trophic levels is known as : **[RE-AIPMT 2015]**
(a) Biogeochemical cycling
(b) Biomagnification
(c) Biodeterioration
(d) Biotransformation

95. The UN conference of Parties on climate change in the year 2012 was held at : **[RE-AIPMT 2015]**
(a) Warsaw (b) Durban
(c) Doha (d) Lima

Answers

1 -c	2 -a	3 -c	4 -d	5 -a	6 -b	7 -b	8 -c	9 -a	10 -c
11 -b	12 -c	13 -a	14 -b	15 -a	16 -a	17 -b	18 -d	19 -d	20 -b
21 -d	22 -c	23 -a	24 -d	25 -a	26 -b	27 -d	28 -d	29 -d	30 -d
31 -c	32 -c	33 -b	34 -c	35 -b	36 -c	37 -d	38 -d	39 -a	40 -c
41 -b	42 -b	43 -c	44 -a	45 -a	46 -b	47 -d	48 -d	49 -a	50 -d
51 -c	52 -b	53 -b	54 -c	55 -c	56 -d	57 -c	58 -d	59 -a	60 -a
61 -d	62 -b	63 -c	64 -d	65 -c	66 -b	67 -b	68 -a	69 -d	70 -b
71 -d	72 -d	73 -d	74 -b	75 -c	76 -d	77 -a	78- d	79 -b	80 -c
81 -a	82 -a	83 -a	84 -b	85 -d	86 -c	87 -a	88 -a	89 -a	90 -d
91 -c	92 -a	93 -b	94 -b	95 -c					

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GROWTH AND REGENERATION

1. Auxetic growth is **[1994]**
(a) increase in cell volume only
(b) increase in cell number only
(c) increase in fatty tissue
(d) increase in intercellular material

2. According to the "immunity theory" of ageing, the process starts with the gradual atrophy and disappearance of **[1996]**
(a) thyroid
(b) parathyroid
(c) thymus
(d) islets of Langerhans

3. The process of series of changes from larva to adult, after embryonic development is called **[1999]**
(a) regeneration
(b) metamorphosis
(c) growth
(d) ageing

4. During regeneration, modification of an organ to other organ is known as **[2001]**
(a) morphogenesis
(b) epimorphosis
(c) morphallaxis
(d) acretionary growth

5. The semilog of per minute growing bacteria is plotted against time. What will be the shape of graph ? **[2002]**
(a) Sigmoid
(b) Hyperbola
(c) Ascending straight line
(d) Descending straight line

6. Choose the correct sequence of stages of growth curve for bacteria **[2002]**
(a) lag, log, stationary, decline phase
(b) lag, log, stationary phase
(c) stationary, lag, log, decline phase
(d) decline, lag, log phase

7. The maximum growth rate occurs in **[2004]**
(a) stationary phase
(b) senescent phase
(c) lag phase
(d) exponential phases

Answers

1 -a **2 -c** **3 -b** **4 -b** **5 -c** **6 -a** **7 -d**

40

Pesticides and Fertilizers

1. The rotenone is **[1995]**
   (a) an insect hormone
   (b) a bioherbicide
   (c) a natural herbicide
   (d) a natural insecticide

2. One of the major difficulties in the biological control of insect pests is the **[1995]**
   (a) practical difficulty of introducing the predator to specific areas
   (b) method is less effective as compared with the use of insecticides
   (c) predator does not always survive when transferred to a new environment
   (d) the predator develops a preference to other diets and may itself become a pest

3. A biofertilizer is **[1997]**
   (a) a cyanobacterium like Anabaena sp. living in cavities of Azolla leaves
   (b) symbiotic bacteria like Azotobacter which fix atmospheric nitrogen
   (c) farm yard manure consisting of mixture of cattle dung and crop
   (d) green manure in which a quickly growing crop is cultivated and ploughes under

4. Which one among the following chemicals is used for causing defoliation of forest trees? **[1998]**
   (a) Amo-1618
   (b) Phosphon-D
   (c) Malic hydrazide
   (d) 2, 4-D

5. Biological control component is central to advanced agricultural production. Which of the following is used as a third generation pesticide ? **[1998]**
   (a) Pathogens
   (b) Pheromones
   (c) Insect repellents
   (d) Insect hormone analogues

6. Which of the following is non-symbiotic biofertilizer ? **[1998]**
   (a) VAM
   (b) Azotobacter
   (c) Anabaena
   (d) Rhizobium

7. Which of the following pesticides is an acetylcholinesterase inhibitor? **[1998]**
   (a) Aldrin
   (b) Y-BHC
   (c) Endosulfan
   (d) Malathion

8. Fanners have reported over 50% higher yields of rice by using which of the following biofertilizer? **[1998, 99,2000]**

(a) Mycorrhiza
(b) Azolla pinnata
(c) Cyanobacteria
(d) Legume-Rhizobium symbiosis

9. The aquatic fern, which is an excellent biofertilizer, is **[1999, 2001]**
(a) Azolla (b) Pteridium
(c) Salvinia (d) Marselia

10. DDT is **[1999]**
(a) a non-degradable pollutant
(b) an antibiotic
(c) a biodegradable pollutant
(d) not a pollutant

11. Which of the following plants are used as green manure in crop fields and in sandy soils? **[2003]**
(a) Saccharum munja and Lantana camara
(b) Dichanthium annulatum and Azolla nilotica
(c) Crotalaria juncea and Alhagi comelorum
(d) Calotropis procera and Phyllanthus niruri

12. During anaerobic digestion of organic waste, such as in producing bio gas, which one of the following is left undegraded? **[2003]**
(a) Hemicellulose
(b) Cellulose
(c) Lipids
(d) Lignin

13. The most likely reason for the development of resistance against pesticides in insect damaging a crop is **[2004]**
(a) random mutations
(b) genetic recombinations
(c) directed mutations
(d) acquired heritable changes

14. A free-living nitrogen-fixing cyanobacterium which can also form symbiotic association with the water fern Azolla is **[2004]**
(a) Tolypothrix (b) Chlorella
(c) Nostoc (d) Anabaena

15. Bacillus thuringiensis (Bt) strains have been used for designing novel **[2005]**
(a) biometallurgical techniques
(b) biomineralization processes
(c) bioinsecticidal plants
(d) biofertilizers

16. Which one of the following is being utilized as a source of bio- diesel in the Indian countryside ? **[2007]**
(a) Euphorbia (b) Beet root
(c) Sugarcane (d) Pongamia

17. Which one of the following statements is correct ? **[2007]**
(a) Extensive use of chemical fertilizers may lead to eutrophication of nearby water bodies
(b) Both Azotobacter and Rhizobium fix atmospheric nitrogen in root nodules of plants
(c) Cyanobacteria such as Anabaena and Nostoc are important mobilizers of phosphates and potassium for plant nutrition in soil
(d) At present it is not possible to grow maize without chemical fertilizers

18. Which one of the following is linked to the discovery of Bordeaux mixture as a popular fungicide? **[2008]**
(a) Bacterial leaf blight of rice
(b) Downy mildew of grapes
(c) Loose smut of wheat
(d) Black rust of wheat

19. Which of the following is not used as a biopesticide ? **[2009]**
(a) Nuclear Polyhedrosis Virus (NPV)
(b) Xanthomonas campestris
(c) Bacillus thuringiensis
(d) Trichoderma harzianum

20. A common biocontrol agent for the control of plant diseases is : **[Pre. 2010]**
(a) Baculovirus (b) *Bacillus thuringiensis*
(c) *Glomus* (d) *Trichoderma*

21. Consider the following statement (A-D) about organic farming : **[Mains 2011]**

(A) Utilizes genetically modified crops like Bt cotton

(B) Uses only naturally produced inputs like compost

(C) Does not use pesticides and urea

(D) Produces vegetables rich in vitamins and minerals

Which of the above statement are correct ?

(a) (A) and (B) only

(b) (B), (C) and (D)

(c) (C) and (D) only

(d) (B) and (C) only

22. *Bacillus thuringiensis* forms protein crystals which contain insecticidal protein. **[Mains 2011]**

This protein :

(a) does not kill the carrier bacterium which is itself resistant to this toxin

(b) binds with epithelial cells of midgut of the insect pest ultimately killing it

(c) is coded by several genes including the gene *cry*

(d) is activated by acid pH of the foregut of the insect pest

23. Which one of the following is not a biofertilizer? **[Pre. 2011]**

(a) *Agrobacterium* (b) *Rhizobium*

(c) *Nostoc* (d) Mycorrhiza

24. An organism used as a biofertilizer for raising soyabean crop is **[Pre. 2011]**

(a) *Azotobacter* (b) *Azospirillum*

(c) *Rhizobium* (d) *Nostoc*

25. In gobar gas, the maximum amount is that of **[Mains 2012]**

(a) Methane (b) Propane

(3) Carbon dioxide (d) Butane

26. Which of the following Bt crops is being grown in India by the farmers ? **[2013]**

(a) Maize (b) Cotton

(c) Brinjal (d) Soyabean

27. In plant breeding programmes, the entire collection (of plants/seeds) having all the diverse alleles for all genes in a given crop is called **[2013]**

(a) selection of superior recombinants

(b) cross-hybridisation among the selected parents

(c) evaluation and selection of parents

(d) germplasm collection

Answers

1 -d	**2 -d**	**3 -a**	**4 -d**	**5 -b**	**6 -b**	**7 -d**	**8 -b**	**9 -a**	**10 -a**
11 -c	**12 -d**	**13 -a**	**14 -d**	**15 -c**	**16 -a**	**17 -a**	**18 -b**	**19 -b**	**20 -b**
21 -d	**22 -b**	**23 -a**	**24 -c**	**25 -a**	**26 -b**	**27 -d**			