NEET Exam. 2018 (6th May 2018)

(Paper & Solution)

Code – PP

Q.1 An em wave is propagating in a medium with a velocity $\vec{V} = V\hat{i}$. The instantaneous oscillating electric field of this em wave is along +y axis. Then the direction of oscillating magnetic field of the em wave will be along

(1) –z direction (2) +z direction (3) – y direction (4) – x direction

Students may find similar question in CP exercise sheet :

[*Chapter : EMW, Exercise # 1, Page 258, Q.1*]

Ans. **[2]**

Sol. Propagation = $+\hat{i}$

$\vec{E} = +\hat{j}$

$\hat{V} = \hat{E} \times \hat{B}$

$\hat{i} = \hat{j} \times \hat{B}$

$\vec{B} = +\hat{k}$

Q.2 The refractive index of the material of a prism is $\sqrt{2}$ and the angle of the prism is 30º. One of the two refracting surfaces of the prism is made a mirror inwards, by silver coating. A beam of monochromatic light entering the prism from the other face will retrace its path (after reflection from the silvered surface) if its angle of incidence on the prism is -

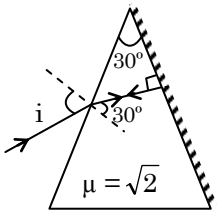
(1) 60º (2) 45º (3) 30º (4) zero

Students may find similar question in CP exercise sheet :

[*Chapter : Ray Optics, Exercise # 2, Q.231*]

Ans. **[2]**

Sol.



$1.\sin i = \sqrt{2}\sin 30^o$

$\sin i = \frac{1}{\sqrt{2}} = \sin 45^o$

$\Rightarrow i = 45^o$

Q.3 The magnetic potential energy stored in a certain inductor is 25 mJ, when the current in the inductor is 60 mA. This inductor is of inductance

(1) 0.138 H (2) 138.88 H (3) 1.389 H (4) 13.89 H

Students may find similar question in CP exercise sheet :

[*Module – 4(B), Page 116*]

Ans. **[4]**

Sol. $\frac{1}{2}Li^2 = 25 \times 10^{-3}$

$L = \frac{2\times 25\times 10^{-3}}{(60\times 10^{-3})^2}$

$= \frac{50\times 10^{-3}}{36\times 10^{-4}} = \frac{500}{36}$

$= 13.89$ H

Q.4 An object is placed at a distance of 40 cm from a concave mirror of focal length 15 cm. If the object is displaced through of distance of 20 cm towards the mirror, the displacement of the image will be

(1) 30 cm away from the mirror (2) 36 cm away from the mirror

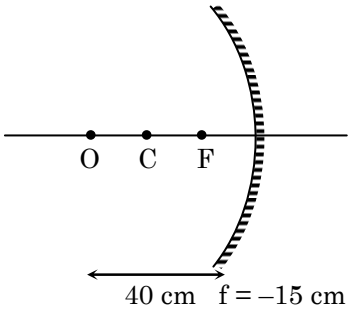
(3) 30 cm towards the mirror (4) 36 cm towards the mirror

Students may find similar question in CP exercise sheet :

[*Class Notes*]

Ans. **[2]**

Sol.



$\frac{1}{}$ + $\frac{1}{}$ = $\frac{1}{}$

v -40 -15

$\frac{1}{v} = \frac{1}{40} - \frac{1}{15}$

$\frac{1}{v} = \frac{-25}{40\times15}$

$v = \frac{-120}{5}$

v = – 24 cm

when it is displaced by 20 cm

then u = – 20 cm

$\therefore \frac{1}{v} + \frac{1}{u} = \frac{1}{f}$

$\frac{1}{v} - \frac{1}{20} = \frac{1}{-15}$

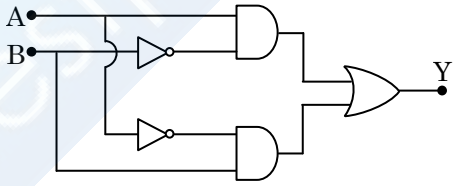
$\frac{1}{v} = \frac{1}{20} - \frac{1}{15}$

$\frac{1}{v} = \frac{-5}{20\times15}$

v = – 60 cm

$\therefore$ displacement of image will be = 60 – 24 = 36 cm away from the mirror

Q.5 In the combination of the following gates the output Y can be written in terms of inputs A and B as

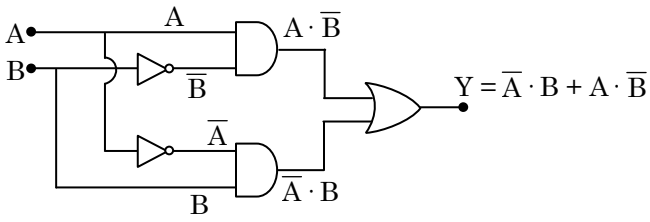


(1) $\overline{A\cdot B}$ (2) $A\cdot\overline{B} + \overline{A}\cdot B$ (3) $\overline{A\cdot B} + A\cdot B$ (4) $\overline{A+B}$

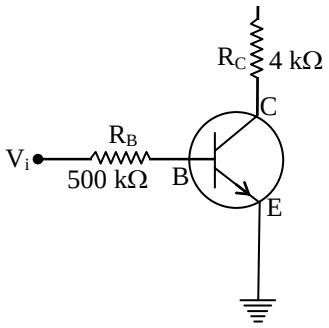
Students may find similar question in CP exercise sheet :
[Module -6, Page 197, Q.49]

Ans. **[2]**

Sol.



Q.6 In the circuit shown in the figure, the input voltage V_i is 20 V, $V_{BE} = 0$ and $V_{CE} = 0$. The values of I_B, I_C



(1) $I_B = 40\ \mu A$, $I_C = 10$ mA, $\beta = 250$ (2) $I_B = 25\ \mu A$, $I_C = 5$ mA, $\beta = 200$

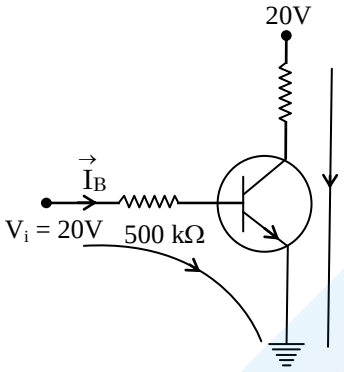
(3) $I_B = 20\ \mu A$, $I_C = 5$ mA, $\beta = 250$ (4) $I_B = 40\ \mu A$, $I_C = 5$ mA, $\beta = 125$

Students may find similar question in CP exercise sheet :

[Chapter : Electronics, Exercise # 3B, Page 216, Q.84]

Ans. **[4]**

Sol.



Applying KVL at input side

$20 - I_B.500 \times 10^3 - V_{BE} = 0$

$\Rightarrow I_B = \dfrac{20}{5\times10^5} = 4 \times 10^{-5}$

$\boxed{I_B = 40\mu A}$

Applying KVL at output side

$20 - 4 \times 10^3\ I_C - V_{CE} = 0$

$\Rightarrow I_C = \dfrac{20}{4\times10^3}$

$\boxed{I_C = 5mA}$

$\beta = \dfrac{I_C}{I_B} = \dfrac{5\times10^{-3}}{40\times10^{-6}} = \dfrac{5000}{40} = 125$

Q.7 In a p-n junction diode, change in temperature due to heating

(3) does not affect resistance of p-n junction

(4) affects the overall V – I characteristics of p-n junction

Students may find similar question in CP exercise sheet :
[Module-6; Chapter : Electronics, Page 173-174]

Ans. **[4]**

Sol. Due to temperature resistance changes

$I = I_0(e^{qv/kT} - 1)$

Q.8 A small sphere of radius 'r' falls from rest in a viscous liquid. As a result, heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity, is proportional to -

(1) r^3 (2) r^2 (3) r^5 (4) r^4

Students may find similar question in CP exercise sheet :
[Class Notes]

Ans. **[3]**

Sol. $\frac{d(Heat)}{dt}$ = Power by viscous force

$= -6\pi\eta rv.v$

$= -6\pi\eta r[v^2]$ $(v \propto r^2)$

$\frac{d(Heat)}{dt} \propto r^5$

Q.9 A sample of 0.1 g of water at 100°C and normal pressure (1.013×10^5 Nm^{-2}) requires 54 cal of heat energy to convert to steam at 100°C. If the volume of the steam produced is 167.1 cc, the change in internal energy of the sample, is

(1) 104.3 J (2) 208.7 J (3) 42.2 J (4) 84.5 J

Students may find similar question in CP exercise sheet :
[Class Notes]

Ans. **[2]**

Sol. m = 0.1 gm $V_1 = \frac{m}{\rho} = \frac{0.1}{1} = 0.1$ cc

T = 100°C

$P = 1.013 \times 10^5$ N/m^2

Heat = 54 cal= $54 \times 4.18 = 225.72$ Joule

Work done against atmospheric pressure $W = P\Delta V$

$= 1.013 \times 10^5 (V_2 - V_1)$

$= 1.013 \times 10^5 [167.1 - 0.1]$

$= 1.013 \times 10^5 \times 167 \times 10^{-6}$

$= 169.171 \times 10^5 \times 10^{-6}$

$= 16.91$ J

$\therefore$ Change in internal energy = H – W

$= 225.72 - 16.91$

$= 208.7$ J

Q.10 Two wires are made of the same material and have the same volume. The first wire has cross-sectional by Δl

(1) 9 F (2) 6 F (3) 4 F (4) F

Students may find similar question in CP exercise sheet :

[*Chapter : Properties of Matter, Exercise # 1B, Q.42*]

Ans. **[1]**

Sol. $Y = \frac{F/A}{\Delta\ell/\ell}$

$\frac{\Delta\ell}{\ell} = \frac{F}{AY}$

$\Delta\ell = \frac{F}{AY}\ell$

$\Delta\ell_1 = \Delta\ell_2$

$\frac{F\ell_1}{AY} = \frac{F'\ell_2}{3AY}$

$V = A\ell$

$\frac{FV}{A^2Y} = \frac{F'V}{9A^2Y}$

$F' = 9\ F$

Q.11 The power radiated by a black body is P and it radiates maximum energy at wavelength, λ_0. If the temperature of the black body is now changed so that it radiates maximum energy at wavelength $\frac{3}{4}\lambda_0$, the power radiated by it becomes nP. The value of n is

(1) $\frac{3}{4}$ (2) $\frac{4}{3}$ (3) $\frac{256}{81}$ (4) $\frac{81}{256}$

Students may find similar question in CP exercise sheet :

[*Class Notes*]

Ans. **[3]**

Sol. $\frac{dQ}{dt} = U = e\sigma AT^4$

$\Rightarrow U \propto T^4$ ..... (1)

and from wein's displacement law

$\lambda T = b$

$T \propto \frac{1}{\lambda}$ ..... (2)

from (1) and (2)

$\because U \propto \frac{1}{\lambda}$

$\lambda_1 = \lambda_0, \quad \lambda_2 = \frac{3}{4}\lambda_0$

$\therefore \frac{U_2}{U_1} = \left(\frac{\lambda_1}{\lambda_2}\right)^4$

$\frac{nP}{P} = \left(\frac{\lambda_0}{\frac{3}{4}\lambda_0}\right)^4 = \left(\frac{4}{3}\right)^4 = \frac{256}{81}$

$\Rightarrow n = \frac{256}{81}$

Q.12 A set of 'n' equal resistors, of value 'R' each, are connected in series to a battery of emf 'E' and internal resistance 'R'. The current drawn is I. Now, the 'n' resistors are connected in parallel to the same battery. Then the current drawn from battery becomes 10 I. The value of 'n' is

(1) 10 (2) 11 (3) 20 (4) 9

Students may find similar question in CP exercise sheet :

[Chapter : Current Electricity, Exercise # 4(A), Page 153-154]

Ans. **[1]**

Sol. $I_1 = \frac{E}{nR + R} = \frac{E}{R(n+1)} = I$ ..... (1)

$I_2 = \frac{E}{R/n + R} = 10\ I$

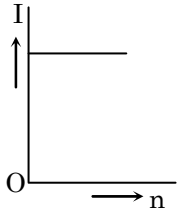
$I_2 = \frac{nE}{R(n+1)} = 10\ I$ ..... (2)

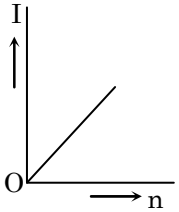
dividing (1) by (2)

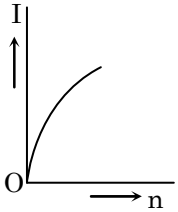
$\frac{1}{n} = \frac{1}{10}$

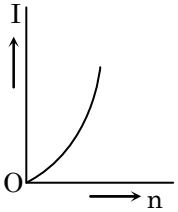
$n = 10$

Q.13 A battery consist of a variable number 'n' of identical cells (having internal resistance 'r' each) which are connected in series. The terminals of the battery are short-circuited and the current I is measured. Which of the graphs shows the correct relationship between I and n?

(1) 

(2) 

(3) 

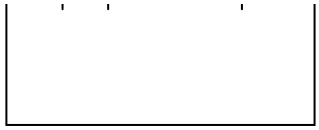
(4) 

Students may find similar question in CP exercise sheet :

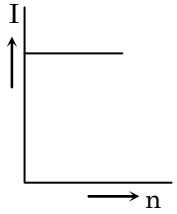
[Chapter : Current Electricity, Article No. (1), Series Combination Page 153]

Ans. **[1]**

Sol.



$$I = \frac{nE}{nr} = \frac{E}{r}$$



Q.14 A carbon resistor of $(47 \pm 4.7)k\Omega$ is to be marked with rings of different colours for its identification. The colour code sequence will be -

(1) Violet – Yellow – Orange – Silver
(2) Yellow – Violet – Orange – Silver
(3) Yellow – Green – Violet – Gold
(4) Green – Orange – Violet – Gold

Students may find similar question in CP exercise sheet :
[*Class Notes*]

Ans. **[2]**

Sol. $47 \times 10^3 \pm \frac{4.7}{47} \times 100\%$

$47 \times 10^3 \pm 10\%$

yellow violet orange silver

Q.15 Which one of the following statements is ***incorrect*** ?

(1) Rolling friction is smaller than sliding friction
(2) Limiting value of static friction is directly proportional to normal reaction
(3) Frictional force opposes the relative motion
(4) Coefficient of sliding friction has dimensions of length

Students may find similar question in CP exercise sheet :
[*Class Notes*]

Ans. **[4]**

Sol. $F = \mu N$

$MLT^{-2} = \mu MLT^{-2}$

$\mu = M^0L^0T^0$

dimensionless

Q.16 A moving block having mass m, collides with another stationary block having mass 4m. The lighter block cient

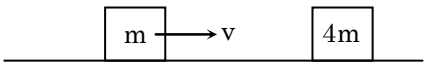
(1) 0.5 (2) 0.25 (3) 0.8 (4) 0.4

Students may find similar question in CP exercise sheet :

[*Chapter : Work Power Energy, Exercise # 3A, Page 112, Q.41*]

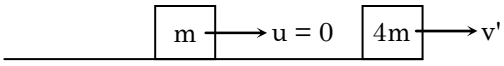
Ans. **[2]**

Sol. Before collision



initially momentum $P_i = mv + 4m \times 0$

After collision



final momentum $P_f = m \times 0 + 4mv'$

$\therefore P_i = P_f$

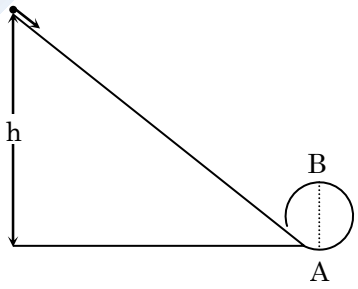
$mv = 4mv'$

$v' = \frac{v}{4}$

$e = \frac{v_2 - v_1}{u_1 - u_2} = \frac{\frac{v}{4} - 0}{v - 0} = \frac{1}{4}$

$e = 0.25$

Q.17 A body initially at rest and sliding along a frictionless track from a height h (as shown in the figure) just completes a vertical circle of diameter AB = D. height h is equal to



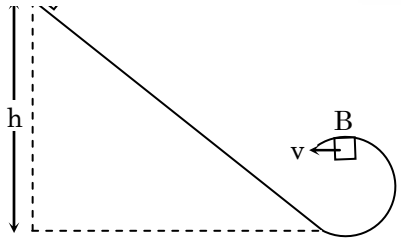
(1) $\frac{3}{2}$ D (2) D (3) $\frac{7}{5}$ D (4) $\frac{4}{5}$ D

Students may find similar question in CP exercise sheet :

[*Chapter : Circular Motion, Example -2 , Page 191*]

Ans. **[4]**

Sol.

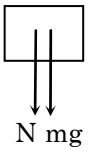


Conservation of energy at A and B

$mg\,(h - D) = \frac{1}{2}\,m\,v^2$

$\Rightarrow v = \sqrt{2g(h - D)}$

for completing circle.



$mg + N = \frac{mv^2}{r}$

$\Rightarrow v^2 = rg$

$\Rightarrow 2g\,(h - D) = \frac{D}{2}\,g$

$\Rightarrow h - D = \frac{D}{4}$

$h = \frac{5}{4}\,D$

Q.18 Three objects, A : (a solid sphere), B : (a thin circular disk) and C : (a circular ring), each have the same mass M and radius R. They all spin with the same angular speed ω about their own symmetry axes. The amounts of work (W) required to bring them to rest would satisfy the relation

(1) $W_C > W_B > W_A$ (2) $W_A > W_B > W_C$ (3) $W_B > W_A > W_C$ (4) $W_A > W_C > W_B$

Ans. **[1]**

Sol. $W = \frac{1}{2}\,I\,\omega^2$

$\omega \rightarrow$ same

$W \propto I$

$I_s = \frac{2}{5}\,mr^2$

$I_d = \frac{1}{2}\,mr^2$

$I_R = mr^2$

$W_C > W_B > W_A$

Q.19 A tuning fork is used to produce resonance in a glass tube. The length of the air column in this tube can ed at nd in air at 27 °C is

(1) 330 m/s (2) 339 m/s (3) 350 m/s (4) 300 m/s

Students may find similar question in CP exercise sheet :
[Chapter : Wave Theory, Exercise # 2, Page 56, Q.38]

Ans. **[2]**

Sol. $\ell_1 - \ell_1 = \lambda/2$

$$\frac{73-20}{100} = \frac{\lambda}{2}$$

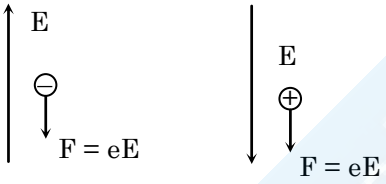
$$\frac{53\times 2}{100} = \frac{v}{f} \Rightarrow v = \frac{320\times 53}{50} = 339 \text{ m/s}$$

Q.20 A electron falls from rest through a vertical distance h in a uniform and vertically upward directed electric field E. The direction of electric field in now reversed, keeping its magnitude the same. A proton is allowed to fall from rest in it through the same vertical distance h. The time of fall of the electron, in comparison to the time of fall of the proton is

(1) smaller (2) 5 times greater (3) 10 times greater (4) equal

Ans. **[1]**

Sol.



$|f| = eE = \text{Same}$

$$a = \frac{eE}{m}$$

$$a \propto \frac{1}{m}$$

$a_e > a_p$ as $m_e < m_p$

$\therefore t_e < t_p$

Q.21 A pendulum is hung from the roof of a sufficiently high building and is moving freely to and fro like a simple harmonic oscillator. The acceleration of the bob of the pendulum is 20 m/s^2 at a distance of 5 m from the mean position. The time period of oscillation is

(1) 2π s (2) π s (3) 2 s (4) 1 s

Students may find similar question in CP exercise sheet :
[Chapter : SHM, Exercise # 1, Page 264, Q.23]

Ans. **[2]**

Sol.

$20 = 5\omega^2$

$\omega^2 = 4$

$\omega = 2$

$T = \frac{2\pi}{\omega} = \frac{2\pi}{2} = \pi$ sec

Q.22 The electrostatic force between the metal plates of an isolated parallel plate capacitor C having a charge Q and area A, is

(1) independent of the distance between the plates

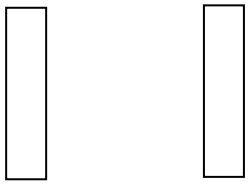
(2) linearly proportional to the distance between the plates

(3) proportional to the square root of the distance between the plates

(4) inversely proportional to the distance between the plates

Ans. **[1]**

Sol.



$F = \overset{+}{Q}E^{-} = Q\left(\frac{\sigma}{2\epsilon_0}\right) = Q\left(\frac{Q}{2A\epsilon_0}\right)$

$F = \frac{Q^2}{2A\varepsilon_0} \Rightarrow$ F is independent of distance between plate

Q.23 An electron of mass m with an initial velocity $\vec{V} = V_0\hat{i}(V_0 > 0)$ enters an electric field $\vec{E} = -E_0\hat{i}$ (E_0 = constant > 0) at t = 0. If λ_0 is its de-Broglie wavelength initially, then its de-Broglie wavelength at time t is

(1) $\frac{\lambda_0}{\left(1+\frac{eE_0}{mV_0}t\right)}$ (2) $\lambda_0\left(1+\frac{eE_0}{mV_0}t\right)$ (3) $\lambda_0 t$ (4) λ_0

Students may find similar question in CP exercise sheet :
[Class Notes]

Ans. **[1]**

Sol. $\vec{F} = q\vec{E}$

$\vec{F} = -e(-E_0\hat{i})$

$\vec{F} = eE_0\hat{i}$

$\vec{a} = \frac{eE_0}{m}\hat{i}$

$\vec{v}_x = v_0\hat{i} + \frac{eE_0}{m}t\hat{i}$

$$m\left(v_0 + \frac{eE_0t}{m}\right)$$

$$\lambda = \frac{h}{mv_0\left(1 + \frac{eE_0t}{mv_0}\right)}$$

$$\lambda = \frac{\lambda_0}{1 + \frac{eE_0t}{mv_0}}$$

Q.24 For a radioactive material, half-life is 10 minutes. If initially there are 600 number of nuclei, the time taken (in minutes) for the disintegration of 540 nuclei is

(1) 20 (2) 10 (3) 30 (4) 15

Students may find similar question in CP exercise sheet :
[Chapter : Radioactivity, Example-1, Page 41]

Ans. **[1]**

Sol. Remaining nuclei = 600 – 415
= 150

600 Nuclei $\xrightarrow[T_{1/2}]{}$ 300 Nuclei $\xrightarrow[T_{1/2}]{}$ 150 nuclei

$t = 2T_{1/2}$

t = 20 minutes

Q.25 When the light of frequency $2\nu_0$ (where ν_0 is threshold frequency), is incident on a metal plate, the maximum velocity of electrons emitted is v_1. When the frequency of the incident radiation is increased to $5\nu_0$, the maximum velocity of electrons emitted from the same plate is v_2. The ratio of v_1 to v_2 is

(1) 1 : 2 (2) 1 : 4 (3) 4 : 1 (4) 2 : 1

Students may find similar question in CP exercise sheet :
[Chapter : Photoelectric Effect, Exercise # 2, Page 80, Q.5]

Ans. **[1]**

Sol. $E = \phi + \frac{1}{2}mv^2$

$2h\nu_0 = h\nu_0 + \frac{1}{2}mv_1^2$

$h\nu_0 = \frac{1}{2}mv_1^2$ …(i)

$E = \phi + \frac{1}{2}mv^2$

$5h\nu_0 = h\nu_0 + \frac{1}{2}mv_2^2$

$4h\nu_0 = \frac{1}{2}mv_2^2$ …(ii)

By (i) / (ii)

$4\pi\varepsilon_0 \quad \frac{1}{2}mv_2^2$

$$\frac{1}{4}=\left(\frac{v_1}{v_2}\right)^2$$

$$\frac{v_1}{v_2}=\frac{1}{2}$$

Q.26 The ratio of kinetic energy to the total energy of an electron in a Bohr orbit of the hydrogen atom is

(1) 1 : 1 (2) 1 : –1 (3) 2 : –1 (4) 1 : –2

Students may find similar question in CP exercise sheet :
[Class Notes]

Ans. **[2]**

Sol. $KE = \frac{kZe^2}{2r}$

$$E = -\frac{Kze^2}{2r}$$

Required ratio

= 1 : – 1

Q.27 The moment of the force $\vec{F} = 4\hat{i} + 5\hat{j} - 6\hat{k}$ at (2, 0, –3), about the point (2, –2, –2), is given by

(1) $-8\hat{i} - 4\hat{j} - 7\hat{k}$ (2) $-4\hat{i} - \hat{j} - 8\hat{k}$ (3) $-7\hat{i} - 8\hat{j} - 4\hat{k}$ (4) $-7\hat{i} - 4\hat{j} - 8\hat{k}$

Students may find similar question in CP exercise sheet :
[Chapter : Rotational Motion, Exercise # 1, Page 160, Q.46]

Ans. **[4]**

Sol. $\vec{F} = 4\hat{i} + 5\hat{j} - 6\hat{k}$

O $\xrightarrow{\vec{r}}$ P (2, 0, –3)

(2, –2, –2)

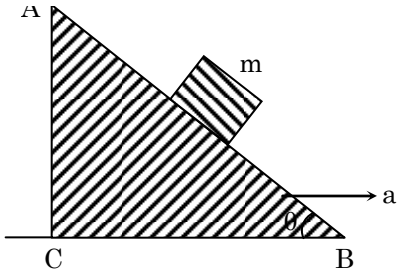
$\vec{r} = 2\hat{j} - \hat{k}$

$$\vec{\tau} = \vec{r} \times \vec{F} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 0 & 2 & -1 \\ 4 & 5 & -6 \end{vmatrix}$$

$\vec{\tau} = (-12 + 5)\hat{i} - (+4)\hat{j} + (-8)\hat{k}$

$\vec{\tau} = -7\hat{i} - 4\hat{j} - 8\hat{k}$

Q.28 A block of mass m is placed on a smooth inclined wedge ABC of inclination θ as shown in the figure. The main

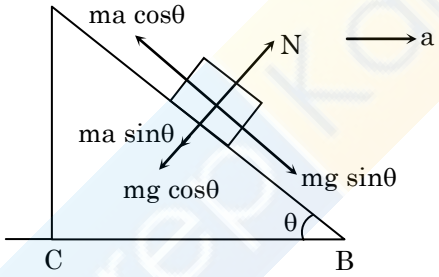


(1) $a = \frac{g}{\cos ec\theta}$ (2) $a = \frac{g}{\sin\theta}$ (3) $a = g\cos\theta$ (4) $a = g\tan\theta$

Students may find similar question in CP exercise sheet :
[*Chapter : NLM, Exercise # 1, Page 44, Q.87*]

Ans. **[4]**

Sol.



for equilibrium wrt wedge

$mg\sin\theta = ma\cos\theta$

$a = g\tan\theta$

Q.29 A toy car with charge q moves on a frictionless horizontal plane surface under the influence of a uniform electric field $\vec{E}$. Due to the force $q\vec{E}$ its velocity increases from 0 to 6 m/s in one second duration. At that instant the direction of the field is reversed. The car continues to move for two more seconds under the influence of this field. The average velocity and the average speed of the toy car between 0 to 3 seconds are respectively

(1) 2 m/s, 4 m/s (2) 1 m/s, 3 m/s (3) 1 m/s, 3.5 m/s (4) 1.5 m/s, 3 m/s

Ans. **[2]**

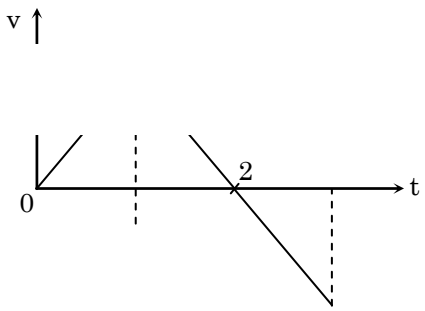
Sol.

(i) $a = \frac{qE}{m}$

$v = u + at$

$6 = 0 + \frac{qE}{m}.1$

$\frac{qE}{m} = 6$



(ii) $v = u + at$

$0 = 6 - \frac{qE}{m} \times t$

$t = 1$

(iii) for next one

average velocity = $\frac{\text{displacement}}{t}$

$= \frac{\text{area}}{t}$

$= \frac{6-3}{3} = 1$

Average speed = $\frac{6+3}{3} = 3$

Q.30 A student measured the diameter of a small steel ball using a screw gauge of least count 0.001 cm. The main scale reading is 5 mm and zero of circular scale division coincides with 25 division above the reference level. If screw gauge has a zero error of – 0.004 cm, the correct diameter of the ball is

(1) 0.521 cm (2) 0.525 cm

(3) 0.053 cm (4) 0.529 cm

Ans. **[4]**

Sol. LC (Least Count) = 0.001 cm = 0.01 mm

MSR (Main Scale Reading) = 5 mm

CSR (Circular Scale Reading) = 25 × 0.01 = 0.25 mm

Total reading = MSR + CSR = 5.25 mm

correct reading = Total reading – zero error = (5.25 + 0.04) mm

= 5.29 mm

= 0.529 cm

Q.31 Unpolarised light is incident from air on a plane surface of a material of refractive index 'μ'. At a each

(1) Reflected light is polarised with its electric vector parallel to the plane of incidence

(2) Reflected light is polarised with its electric vector perpendicular to the plane of incidence

(3) $i = \sin^{-1}\left(\frac{1}{\mu}\right)$

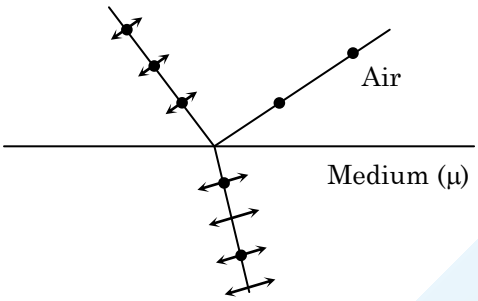
(4) $i = \tan^{-1}\left(\frac{1}{\mu}\right)$

Students may find similar question in CP exercise sheet :

[*Chapter : Polarisation, Module -5, Page 119*]

Ans. **[2]**

Sol. According to given condition angle of incidence is Brewster angle so reflected light is polarized with its electric field perpendicular to the plane of incidence



Q.32 In Young's double slit experiment the separation d between the slits is 2 mm, the wavelength λ of the light used is 5896 Å and distance D between the screen and slits is 100 cm. It is found that the angular width of the fringes is 0.20°. To increase the fringe angular width to 0.21° (with same λ and D) the separation between the slits needs to be changed to

(1) 1.8 mm (2) 1.9 mm (3) 2.1 mm (4) 1.7 mm

Students may find similar question in CP exercise sheet :

[*Class Notes*]

Ans. **[2]**

Sol. $\beta = \frac{\lambda D}{d} = 0.20$

$\frac{\lambda D}{d_1} = 0.21$

$\frac{0.2 \times 2\,mm}{0.21} = d_1$

$\frac{0.40}{0.21} = d_1$

$d_1 = 1.9$ mm

Q.33 An astronomical refracting telescope will have large angular magnification and high angular resolution,

(3) large focal length and large diameter (4) small focal length and small diameter

Students may find similar question in CP exercise sheet :
[Class Notes]

Ans. **[3]**

Sol. $RP = \frac{a}{1.22\lambda}$

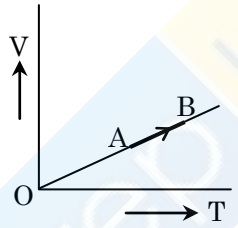
to have high resolution objective lens must have large diameter

$MP = \frac{f_0}{f_e}$

for high MP

f_0 must be large

Q.34 The volume (V) of a monatomic gas varies with its temperature (T), as shown in the graph. The ratio of work done by the gas, to the heat absorbed by it, when it undergoes a change form state A to stage B, is



(1) $\frac{2}{5}$ (2) $\frac{2}{3}$ (3) $\frac{1}{3}$ (4) $\frac{2}{7}$

Students may find similar question in CP exercise sheet :
[Chapter : Thermodynamics, Exercise # 1, Page 171, Q.24]

Ans. **[1]**

Sol.

$dQ = nC_pdT$

$dW = nRdT$

$\frac{dW}{dQ} = \frac{nRdT}{nC_pdT} = \frac{R}{C_p}$

$= \frac{R}{\gamma R}(1-\gamma)$

$= \frac{1-\gamma}{\gamma} = \frac{1-5/3}{5/3}$

$= \frac{2/3}{5/3} = \frac{2}{5}$

$C_p - C_v = R$

$\frac{C_p}{C_v} = \gamma$

$C_v = \frac{C_p}{\gamma}$

$C_p - \frac{C_p}{\gamma} = R$

$C_p = \frac{\gamma R}{1-\gamma}$

$\gamma = 1 + \frac{2}{f} = 1 + \frac{2}{3}$

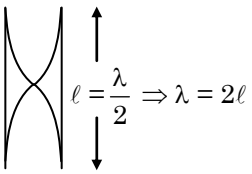
$\gamma = \frac{5}{3}$

Q.35 The fundamental frequency in an open organ pipe is equal to the third harmonic of a closed organ pipe. If

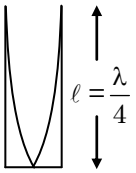
Students may find similar question in CP exercise sheet :
[Chapter : Wave Theory, Exercise # 1, Page 49, Q.145]

Ans. **[1]**

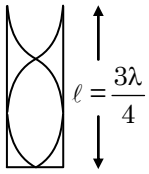
Sol.



$\ell = \frac{\lambda}{2} \Rightarrow \lambda = 2\ell$



$\ell = \frac{\lambda}{4}$



$\ell = \frac{3\lambda}{4}$

$f = \frac{v}{2\ell_1}$

$f_3 = \frac{3v}{4\ell_2}$

$\ell_2 = 20$ cm

$\frac{v}{2\ell_1} = \frac{3v}{4\ell_2}$

$\ell_1 = \frac{2\ell_2}{3} = \frac{2\times 20}{3} = \frac{40}{3} = 13.3$ cm

Q.36 The efficiency of an ideal heat engine working between the freezing point and boiling point of water, is

(1) 26.8% (2) 20% (3) 6.25% (4) 12.5%

Students may find similar question in CP exercise sheet :
[Chapter : Thermodynamics, Example-11, Page 166]

Ans. **[1]**

Sol. $T_2 = 0°C = 273$ K

$T_1 = 100°C = 373$ K

$\eta = 1 - \frac{T_2}{T_1} = 1 - \frac{273}{373}$

$\eta = 1 - 0.732 = 26.8\ \%$

Q.37 At what temperature will the rms speed of oxygen molecules become just sufficient for escaping from the Earth's atmosphere ? (Given : Mass of oxygen molecule (m) = 2.76×10^{-26} kg, Boltzmann' constant $k_B = 1.38 \times 10^{-23}$ J K^{-1})

(1) 2.508×10^4 K (2) 8.360×10^4 K (3) 5.016×10^4 K (4) 1.254×10^4 K

Ans. **[2]**

Sol. $v_{rms} = \sqrt{\frac{3KT}{m}}$

$v_{rms}^2 = \frac{3KT}{m}$

$T = \frac{mv_{rms}^2}{3K}$

Given $v_{rms} = v_{es}$

$T = \frac{mv_{es}^2}{3 \times 1.38 \times 10^{-23}}$

$T = \frac{2.76 \times 11.2 \times 11.2}{3 \times 1.38} \times 10^{-26+6+23}$

$T = 83.63 \times 10^3$

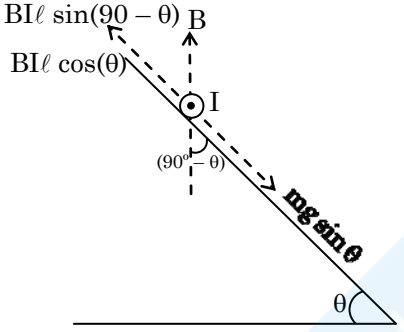
$T = 8.363 \times 10^4$ K

Q.38 A metallic rod of mass per unit length 0.5 kg m^{-1} is lying horizontally on a smooth inclined plane which makes an angle of 30° with the horizontal. The rod is not allowed to slide down by flowing a current through it when a magnetic field of induction 0.25 T is acting on it in the vertical direction. The current flowing in the rod to keep it stationary is

(1) 7.14 A (2) 5.98 A (3) 14.76 A (4) 11.32 A

Ans. **[4]**

Sol.



$mg \sin\theta = i\,\ell B \cos\theta$

$i = \frac{mg \tan\theta}{\ell B}$

$i = \frac{0.5 \times 9.8}{0.25} \frac{1}{\sqrt{3}}$

$i = 11.32$ A

Q.39 An inductor 20 mH, a capacitor 100 μF and a resistor 50 Ω are connected in series across a source of emf, V = 10 sin 314 t. The power loss in the circuit is

(1) 0.79 W (2) 0.43 W (3) 2.74 W (4) 1.13 W

Ans. **[1]**

Sol. $L = 20 \times 10^{-3}$ H

$C = 100 \times 10^{-6}$ F

$R = 50\ \Omega$

$V_0 = 10$, $\Omega = 314$

$\Rightarrow 2\pi f = 314$

$P = v_{rms}\, I_{rms} \cos\phi$

$P = \frac{v_{rms}^2}{2} \times \frac{R}{Z} = \frac{v_{rms}^2 R}{2Z} = \frac{v_0^2 R}{2Z^2}$

$P = \frac{v_0^2 R}{2[R^2 + (X_L - X_C)^2]}$

$X_L = 2\pi fL = 3.14 \times 20 \times 10^{-3}$

$X_C = \frac{1}{2\pi fC} = \frac{1}{314 \times 10^{-4}}$

$X_L = 6.28\ \Omega$

$X_C = 31.85\ \Omega$

$P = \frac{100 \times 50}{2[(50)^2 + (6.28 - 31.85)^2]}$

$P = \frac{5000}{2 \times [2500 + 653.8]}$

$P = \frac{5000}{6307.7} = 0.79\ W$

Q.40 A thin diamagnetic rod is placed vertically between the poles of an electromagnet. When the current in the electromagnetic is switched on, then the diamagnetic rod is pushed up, out of the horizontal magnetic field. Hence the rod gains gravitational potential energy. The work required to do this comes from

(1) the current source

(2) the magnetic field

(3) the lattice structure of the material of the rod

(4) the induced electric field due to the changing magnetic field

Students may find similar question in CP exercise sheet :

[Class Notes]

Ans. **[1]**

Sol. In electromagnet magnetic energy is obtained by the current source which is balanced gravitational potential energy.

Q.41 Current sensitivity of a moving coil galvanometer is 5 div/mA and its voltage sensitivity (angular deflection per unit voltage applied) is 20 div/V. The resistance of the galvanometer is

(1) 40 Ω (2) 25 Ω (3) 250 Ω (4) 500 Ω

Students may find similar question in CP exercise sheet :

[Class Notes]

Ans. **[3]**

Sol.

$$v_S = \frac{BNA}{CG} = \frac{I_S}{G}$$

$$G = \frac{I_S}{v_S} = \frac{5}{10^{-3}} \times \frac{1}{20} = \frac{5000}{20} = 250\ \Omega$$

Q.42 If the mass of the Sun were ten times smaller and the universal gravitational constant were ten times larger in magnitude, which of the following is **not** correct ?

(1) Raindrops will fall faster

(2) Walking on the ground would become more difficult

(3) Time period of a simple pendulum on the Earth would decrease

(4) 'g' on the Earth will not change

Students may find similar question in CP exercise sheet :

[*Class Notes*]

Ans. **[4]**

Sol. $M = 10$ time smaller $= \frac{M_S}{10}$

G becomes 10G

$g = \frac{GM_e}{R^2}$ = g becomes 10 times.

So rain drop will fall faster (1) is correct

Walking is difficult (2) is correct

$T = 2\pi\sqrt{\frac{\ell}{g}}$, $g\uparrow$ $T\downarrow$ (3) is correct

(4) is incorrect.

Q.43 A solid sphere is in rolling motion. In rolling motion a body possesses translational kinetic energy (K_t) as well as rotational kinetic energy (K_r) simultaneously. The ratio $K_t : (K_t + K_r)$ for the sphere is

(1) 7 : 10 (2) 5 : 7 (3) 10 : 7 (4) 2 : 5

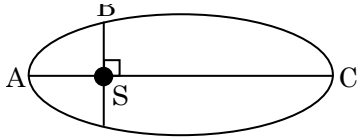
Ans. **[2]**

Sol.

$$\frac{k_t}{k_t + k_r} = \frac{\frac{1}{2}mV^2}{\frac{1}{2}mV^2\left[1 + \frac{K^2}{R^2}\right]} = \frac{1}{1 + \frac{K^2}{R^2}}$$

$$= \frac{1}{1 + \frac{2}{5}} = \frac{5}{7}$$

Q.44 The kinetic energies of a planet in an elliptical orbit about the Sun, at positions A, B and C are K_A, K_B S as



(1) $K_A < K_B < K_C$ (2) $K_A > K_B > K_C$ (3) $K_B < K_A < K_C$ (4) $K_B > K_A > K_C$

Students may find similar question in CP exercise sheet :

[Class Notes]

Ans. **[2]**

Sol. $r_A < r_B < r_C$, then according to angular momentum conservation principle

$v_A > v_B > v_C$

$K_A > K_B > K_C$

Q.45 A solid sphere is rotating freely about its symmetry axis in free space. The radius of the sphere is increased keeping its mass same. Which of the following physical quantities would remain constant for the sphere ?

(1) Angular velocity (2) Moment of inertia

(3) Rotational kinetic energy (4) Angular momentum

Q.46 A mixture of 2.3 g formic acid and 4.5 g oxalic acid is treated with conc. H_2SO_4. The evolved gaseous

Students may find similar question in CP exercise sheet :
[Chapter : Atom, Molecule, Solved example, Page 67, Q.23]

Ans. **[3]**

Sol. **Sol.** (a) $HCOOH \xrightarrow{H_2SO_4} H_2O + CO$

Initial	0.05 ml	?	?
Final	0	0.05 mol	0.05 mol

(b) $H_2C_2O_4 \xrightarrow{H_2SO_4} H_2O + CO + CO_2$

Initial	0.05 ml	?	?	?
Final	0	0.05 mol	0.05 mol	0.05 mol

KOH will absorb CO_2 and conc. H_2SO_4 will absorb obtain water so in final solution only

0.05 mol CO + 0.05 mol CO means = 0.1 mol CO will obtain

0.1 mol CO means = $0.1 \times 28 = 2.8$ g CO

Q.47 Nitration of aniline in strong acidic medium also gives m-nitroaniline because

(1) In spite of substituents nitro group always goes to only m-position

(2) In electrophilic substitution reactions amino group is meta directive

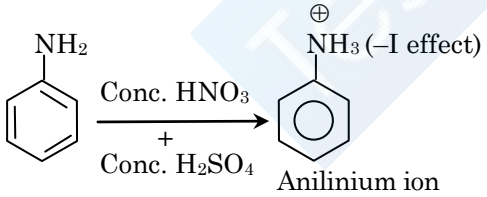
(3) In absence of substituents nitro group always goes to m-position

(4) In acidic (strong) medium aniline is present as anilinium ion

Students may find similar question in CP exercise sheet :
[Chapter : Nitrogen containing compounds from Class Notes]

Ans. **[4]**

Sol.



(deactivating m-directing group $-\overset{\oplus}{N}H_3$)

Q.48 Which of the following oxides is most acidic in nature?

(1) MgO (2) BeO (3) BaO (4) CaO

Students may find similar question in CP exercise sheet :
[Chapter : s-block, Exercise # 3B, Page 22, Q.46]

Ans. **[2]**

Sol. Basic strength of oxide $\propto \frac{1}{\text{Ionization energy}}$

$\longrightarrow$

Ionization energy ↓

Basic nature of oxide ↑
Acidic nature of oxide ↓

Q.49 The difference between amylose and amylopectin is

(1) Amylopectin have 1 → 4 α-linkage and 1 → 6 α-linkage

(2) Amylose have 1 → 4 α-linkage and 1 → 6 β-linkage

(3) Amylopectin have 1 → 4 α-linkage and 1 → 6 β linkage

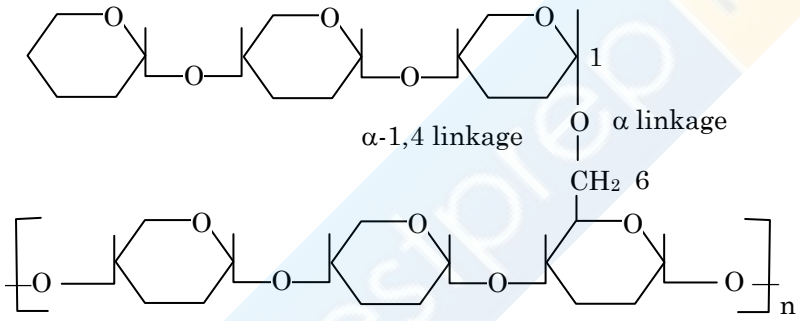
(4) Amylose is made up of glucose and galactose

Students may find similar question in CP exercise sheet :

[*Chapter : Biomolecules, Booklet Page 170*]

Ans. **[1]**

Sol. In branched amylopectin having 1, 4 as well as 1, 6 α –glycosilic linkage



Q.50 Regarding cross-linked or network polymers, which of the following statements is incorrect?

(1) They contain covalent bonds between various linear polymer chains.

(2) They are formed from bi-and tri-functional monomers

(3) Examples are bakelite and melamine

(4) They contain strong covalent bonds in their polymer chains

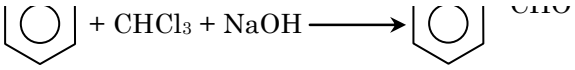
Students may find similar question in CP exercise sheet :

[*Chapter : Polymers Booklet Page 198*]

Ans. **[4]**

Sol. Cross linked polymer contains strong co-valent bonds between various linear polymer chains.

Q.51 In the reaction



the electrophile involved is

(1) dicloromethyl cation ($\overset{\oplus}{C}HCl_2$)

(2) formyl cation ($\overset{\oplus}{C}HO$)

(3) dichloromethyl anion ($\overset{\ominus}{C}HCl_2$)

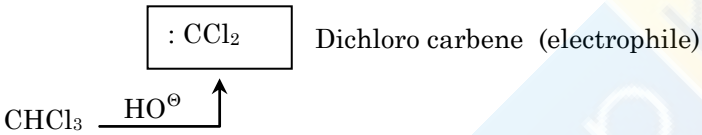
(4) dichlorocarbene ($:CCl_2$)

Students may find similar question in CP exercise sheet :

[*Chapter : Phenol (Oxygen compounds*) from Class Notes]

Ans. **[4]**

Sol. Reimer Tiemann reaction



Q.52 Carboxylic acids higher boiling points than aldehydes, ketones and even alcohols of comparable molecular mass. It is due to their

(1) formation of intramolecular H-bonding

(2) formation of carboxylate ion

(3) more extensive association of carboxylic acid via vander Waals force of attraction

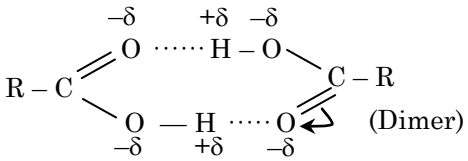
(4) formation of intermolecular H-bonding

Students may find similar question in CP exercise sheet :

[*Chapter :* Carboxylic Acic (Oxygen Compounds) Booklet *Page 73,*]

Ans. **[4]**

Sol.

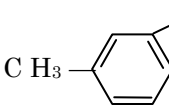


Inter molecular H-bonding

Q.53 Compound A, $C_8H_{10}O$, is found to react with NaOI (produced by reacting Y with NaOH) and yields a

(2)  $-CH_2-CH_2-OH$ and I_2

(3)  $-\underset{\underset{OH}{|}}{CH}-CH_3$ and I_2

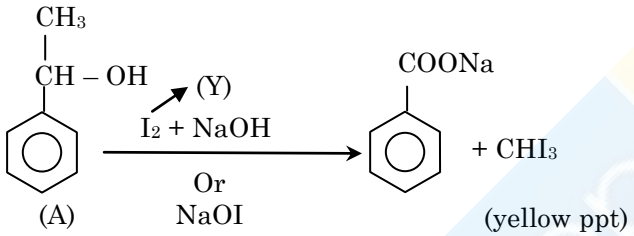
(4)  and I_2

Students may find similar question in CP exercise sheet :

[Chapter : Phenol (Oxygen Compounds), Exercise # 2, Page 53, Q. 30]

Ans. **[3]**

Sol. Haloform reaction



Q.54 The correct difference between first and second order reactions is that

(1) the rate of a first-order reactions does not depend on reactant concentrations; the rate of a second-order reaction does depend on reactant concentrations

(2) the half-life of a first-order reaction does not depend on $[A]_0$; the half-life of a second-order reaction does depend on $[A]_0$

(3) a first-order reaction can be catalyzed; a second-order reaction cannot be catalyzed

(4) the rate of a first-order reaction does depend on reactant concentrations; the rate a second-order reaction does not depend on reactant concentrations

Students may find similar question in CP exercise sheet :

[Chapter : Chemical kinetic, Exercise # 1, Page 198, Q.46]

Ans. **[2]**

Sol. For first order

$t_{1/2}$ is independent from initial concentration

For second order

$$t_{1/2} = \frac{1}{K \times a} = \frac{1}{K[A]_0}$$

depends on initial concentration $[A]_0$

Q.55 Among CaH_2, BeH_2, BaH_2, the order of ionic character is

Students may find similar question in CP exercise sheet :
[Chapter : s-block, Exercise # 3B, Page 22, Q.31]

Ans. **[1]**

Sol. Covalent character $\propto$ polarisation $\propto \frac{1}{\text{size of cation}}$

Down the group ionic character of hydrides increases because polarisation decreases

$BeH_2 \quad CaH_2 \quad BaH_2$

$\longrightarrow$

Size of cation $\uparrow$

Polarisation $\downarrow$
Covalent character $\downarrow$
Ionic character $\uparrow$

Q.56 Consider the change in oxidation state of Bromine corresponding to different emf values as shown in the diagram below :

$$BrO_4^- \xrightarrow{1.82V} BrO_3^- \xrightarrow{1.5V} HBrO \xrightarrow{1.595V} Br_2 \xrightarrow{1.0652V} Br^-$$

Then the species undergoing disproportionation is

(1) BrO_3^- (2) BrO_4^- (3) Br_2 (4) HBrO

Students may find similar question in CP exercise sheet :
[Chapter : Electrochemistry, Exercise # 3A, Page 30, Q.5]

Ans. **[4]**

Sol. Only following combination give positive E°_{cell} value.

$$\overset{+1}{HBrO} \,|\, \overset{+5}{BrO_3^-} \;\|\; \overset{+1}{HBrO} \,|\, \overset{0}{Br_2}$$

Oxidation Reduction

E°_{cell} = SOP of anode + SRP of cathode

= –1.5 + 1.595

= 0.095V

$\therefore$ HBrO undergoes dis proportionation.

Q.57 In which case is the number of molecules of water maximum ?

(1) 18 mL of water (2) 0.18 g of water

(3) 0.00224 L of water vapours at 1 atm and 273 K (4) 10^{-3} mol of water

Students may find similar question in CP exercise sheet :
[Chapter : Atom Molecule, Chemical Airthmetic; Exercise # 1, Page 75, Q.62]

Ans. **[1]**

Sol.

(3) $n = \frac{0.00224}{22.4} = 10^{-4}$ mole means $10^{-4}\ N_A$ molecule

(4) 10^{-3} mol means $10^{-3} \times N_A$ molecule

Q.58 Magnesium reacts with an element (X) to form an ionic compound. If the ground state electronic configuration of (X) is $1s^2\ 2s^2\ 2p^3$, the simplest formula for this compound is

(1) Mg_2X_3 (2) MgX_2 (3) Mg_2X (4) Mg_3X_2

Students may find similar question in CP exercise sheet :
[Chapter : p-block]

Ans. **[4]**

Sol. $X = 1s^2\ 2s^2\ 2p^3$

Mg form ionic compound with 'X' valency of X is –3

Mg^{+2} X^{-3}

$\downarrow$

Mg_3X_2

Q.59 Iron exhibits bcc structure at room temperature. Above 900°C, it transforms to fcc structure. The ratio of density of iron at room temperature to that at 900°C (assuming molar mass and atomic radii of iron remain constant with temperature) is

(1) $\frac{\sqrt{3}}{\sqrt{2}}$ (2) $\frac{4\sqrt{3}}{3\sqrt{2}}$ (3) $\frac{3\sqrt{3}}{4\sqrt{2}}$ (4) $\frac{1}{2}$

Students may find similar question in CP exercise sheet :
[Chapter : Solid State, Class Notes, Density of solid]

Ans. **[3]**

Sol. Density $(\rho) = \frac{Z \times M_w}{N_A \times V}$

For BCC $r = \frac{\sqrt{3}a}{4}$ $\therefore V = \frac{4}{3}\pi r^3$

$$= \frac{4}{3}\pi\left(\frac{\sqrt{3}a}{4}\right)^3$$

$$= \frac{4}{3}\pi \times \frac{3\sqrt{3} \times a^3}{64}$$

$$= \frac{\sqrt{3}\pi a^3}{16}$$

For FCC $r = \frac{a}{2\sqrt{2}}$ $V = \frac{4}{3}\pi r^3$

$$= \frac{4}{3}\pi\left(\frac{a}{2\sqrt{2}}\right)$$

$$= \frac{4}{3}\pi \times \frac{a^3}{8\times 2\sqrt{2}}$$

$$= \frac{\pi a^3}{12\sqrt{2}}$$

$$\frac{BCC}{FCC} = \frac{\rho_1}{\rho_2} = \frac{Z_1 \times V_2}{V_1 \times Z_2}$$

$$\frac{\rho_1}{\rho_2} = \frac{2\times\frac{\sqrt{3}\pi a^3}{16}}{4\times\frac{\pi a^3}{12\sqrt{2}}}$$

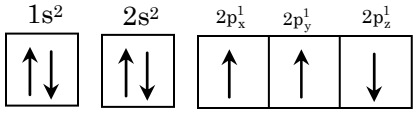
$$= \frac{2\times\sqrt{3}\times 12\times\sqrt{2}}{4\times 16}$$

$$= \frac{3\sqrt{3}}{4\sqrt{2}}$$

Q.60 Which one is a wrong statement ?

(1) Total orbital angular momentum of electron in 's' orbital is equal to zero

(2) An orbital is designated by three quantum numbers while an electron in an atom is designated by four quantum numbers.

(3) The electronic configuration of N atom is 

(4) The value of m for d_{z^2} is zero

Students may find similar question in CP exercise sheet :

[*Chapter : Atomic Structure, Exercise # 3B, Page 37, Q.5*]

Ans. **[3]**

Sol. In degnerate orbital all unpaired electrons show same spin

Q.61 Consider the following species :

(1) NO (2) CN^- (3) CN^+ (4) CN

Students may find similar question in CP exercise sheet :
[Chapter : Chemical Bonding, Exercise # 1, Page 247, Q.112]

Ans. **[2]**

Sol. Bond order

NO = 2.5

CN^+ = 2.0

CN = 2.5

CN^- = 3.0

$CN^- = \sigma 1s^2\ \sigma^* 1s^2\ \sigma 2s^2\ \sigma^* 2s^2\ (\pi\ 2px^2 = \pi 2py^2)\ \sigma 2p_2^2$

$$\text{Bond order} = \frac{N_b - N_a}{2}$$

$$\text{Bond order} = \frac{6-0}{2} = 3.0$$

Q.62 Which of the following statements is not true for halogens ?

(1) All form monobasic oxyacids

(2) All are oxidizing agents

(3) All but fluorine show positive oxidation states

(4) Chlorine has the highest electron-gain enthalpy

Students may find similar question in CP exercise sheet :
[Chapter : Halogen Family, Exercise # 1, Page 27, Q.8]

Ans. **[Bonus]**

Sol. Fluorine shows only-1 oxidation state and other halogen shows negative and positive oxidation state.

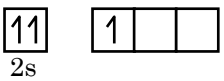
Q.63 Which one of the following elements is unable to form MF_6^{3-} ion ?

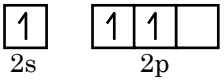
(1) Ga (2) Al (3) B (4) In

Students may find similar question in CP exercise sheet :
[Chapter : Boron Family, Exercise # 3, Page 37, Q.31]

Ans. **[3]**

Sol. Boron does not BF_6^{-3} due to absence of vacant d orbital $B = 1s^2\ 2s^2\ 2p^1$

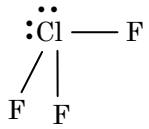
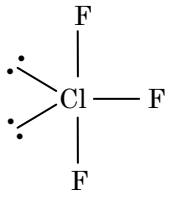
ground state 

excited state 

Q.64 In the structure of ClF_3, the number of lone pairs of electrons on central atom 'Cl' is

[Chapter : Chemical Bonding, Exercise # 3B, Page 267, Q.64]

Ans. **[2]**

Sol. $ClF_3 \Rightarrow$  sp^3d 

Two lone pair present on central 'Cl' atom.

Q.65 Considering Ellingham diagram, which of the following metals can be used to reduce alumina ?

(1) Fe (2) Zn (3) Mg (4) Cu

Students may find similar question in CP exercise sheet :
[Chapter : Thermodynamics]

Ans. **[3]**

Sol. Mg is below Al in ellingham diagram therefore it reduces Al_2O_3.

Q.66 The correct order of atomic radii in group 13 elements is

(1) B < Al < In < Ga < Tl (2) B < Al < Ga < In < Tl

(3) B < Ga < Al < Tl < In (4) B < Ga < Al < In < Tl

Students may find similar question in CP exercise sheet :
[Chapter : Boron Family, Exercise # 1, Page 31, Q.8]

Ans. **[4]**

Sol. Ga is slightly smaller than Al due poor shielding of d e^- so $Z_{eff.}$ increasing.

Atomic size : B < Ga < Al < In < Tl

Q.67 The correct order of N-compounds in its decreasing order of oxidation states is

(1) HNO_3, NO, N_2, NH_4Cl (2) HNO_3, NO, NH_4Cl, N_2

(3) HNO_3, NH_4Cl, NO, N_2 (4) NH_4Cl, N_2, NO, HNO_3

Students may find similar question in CP exercise sheet :
[Chapter : Oxidation Reduction, Exercise # 3A, Page 109, Q.20]

Ans. **[1]**

Sol. In $H\underline{N}O_3$ $+1 + x - 6 = 0$

$x = +5$

In $\underline{N}O$ $x - 2 = 0$

$x = +2$

In N_2 $x = 0$

In NH_4Cl means NH_4^+

Q.68 On which of the following properties does the coagulating power of an ion depend ?

(1) The magnitude of the charge on the ion alone

(2) Size of the ion alone

(3) Both magnitude and sign of the charge on the ion

(4) The sign of charge on the ion alone

Students may find similar question in CP exercise sheet :

[Chapter : Surface Chemistry, Exercise # 2, Page 168, Q.2]

Ans. **[3]**

Sol. According to Hardy Schulze law. Greater is the valency of oppositely charged ion of the electrolyte being added. It is independent of nature of ions.

Q.69 Following solutions were prepared by mixing different volumes of NaOH and HCl of different concentrations :

(a) 60 mL $\frac{M}{10}$ HCl + 40 mL $\frac{M}{10}$ NaOH

(b) 55 mL $\frac{M}{10}$ HCl + 45 mL $\frac{M}{10}$ NaOH

(c) 75 mL $\frac{M}{5}$ HCl + 25 mL $\frac{M}{5}$ NaOH

(d) 100 mL $\frac{M}{10}$ HCl + 100 mL $\frac{M}{10}$ NaOH

pH of which one of them will be equal to 1 ?

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

Students may find similar question in CP exercise sheet :

[Chapter : Ionic Equilibrium, Exercise # 1B, Page 165, Q.15]

Ans. **[4]**

Sol. (a) M_{eq} of HCl = $NV_{ml} = \frac{1}{10} \times 60 = 6$

M_{eq} of NaOH = $\frac{1}{10} \times 40 = 4$

$N_{eff}\, M_{eq} = 2$ (Acidic)

$NV = 2$

$N = \frac{2}{100} = 2 \times 10^{-2}$

$\therefore$ pH = 2 – log 2 = 1.7 (×)

(b) M_{eq} of HCl = $\frac{1}{10} \times 55 = 5.5$

Net $M_{eq} = 1$ (Acidic)

$NV = 1$

$N = \frac{1}{100} = 10^{-2}$

$\therefore$ pH = 2

(c) M_{eq} of HCl = $\frac{1}{5} \times 75 = 15$

M_{eq} of NaOH = $\frac{1}{5} \times 25 = 5$

Net $M_{eq} = 10$ (Acidic)

$NV = 10$

$N = \frac{10}{100} = 10^{-1}$

$\therefore$ $p^H = 1$

(d) M_{eq} of HCl $= \frac{1}{10} \times 100 = 10$

M_{eq} of NaOH $= \frac{1}{10} \times 100 = 10$

Net $M_{eq} = 0$ (Neutral)

Q.70 The solubility of $BaSO_4$ in water is 2.42×10^{-3} gL^{-1} at 298 K. The value of its solubility product (K_{sp}) will be (Given molar mass of $BaSO_4$ = 233 g mol^{-1})

(1) 1.08×10^{-10} mol^2 L^{-2} (2) 1.08×10^{-12} mol^2 L^{-2}

(3) 1.08×10^{-14} mol^2 L^{-2} (4) 1.08×10^{-8} mol^2 L^{-2}

Students may find similar question in CP exercise sheet :

[Chapter : Ionic Equilibrum, Exercise # 2A, Page 175, Q.17]

Ans. **[1]**

Sol. Convert solubility in $\frac{mol}{lit}$

$S = \frac{2.42 \times 10^{-3}}{233} = 1.03 \times 10^{-5}$

$\therefore$ $K_{sp} = s^2 = (1.03 \times 10^{-5})^2$

$= 1.08 \times 10^{-10}$

Q.71 Given vanderwaals constant for NH_3, H_2, O_2 and CO_2 are respectively 4.17, 0.244, 1.36 and 3.59,

Students may find similar question in CP exercise sheet :
[Chapter : Gaseous State, Exercise # 3B, Page 132, Q.7]

Ans. **[1]**

Sol. NH_3 because its Vander wall gas constant is high so it will easily liquefied. Because more force of attraction.

Q.72 The compound A on treatment with Na gives B, and with PCl_5 gives C, B and C react together to give diethyl ether. A, B and C are in the order.

(1) C_2H_5OH, C_2H_6, C_2H_5Cl (2) C_2H_5OH, C_2H_5Cl, C_2H_5ONa

(3) C_2H_5Cl, C_2H_6, C_2H_5OH (4) C_2H_5OH, C_2H_5ONa, C_2H_5Cl

Students may find similar question in CP exercise sheet :
[Chapter : Oxygen Containing Compounds, Exercise # 1, Page 44, Q.19]

Ans. **[4]**

Sol.

$$\underset{(A)}{C_2H_5OH} \xrightarrow{PCl_5} \underset{(C)}{C_2H_5Cl}$$

$$C_2H_5OH \xrightarrow{Na} \underset{(B)}{C_2H_5\overset{\ominus}{O}\overset{\oplus}{Na}} + \frac{1}{2}H_2\uparrow$$

$$\underset{(B)}{C_2H_5\overset{\ominus}{O}\overset{\oplus}{Na}} + \underset{(C)}{Cl - C_2H_5} \longrightarrow \underset{\text{Diethylether}}{C_2H_5OC_2H_5}$$

Q.73 Hydrocarbon (A) reacts with bromine by substitution to form an alkyl bromide which by Wurtz reaction is converted to gaseous hydrocarbon containing less than four carbon atoms. (A) is

(1) $CH \equiv CH$ (2) $CH_2 = CH_2$ (3) $CH_3 - CH_3$ (4) CH_4

Students may find similar question in CP exercise sheet :
[Chapter : Hydrocarbon from class notes]

Ans. **[4]**

Sol. $CH_4 \xrightarrow{Br_2/Hr} CH_3 - Br$

$$CH_3 - Br \xrightarrow[\text{Ether}]{Na/Dry} CH_3 - CH_3$$

(less than form carbon)

n = 1 to n = 4 → (gaseous)

Q.74 The compound C_7H_8 undergoes the following reactions :

The product 'C' is

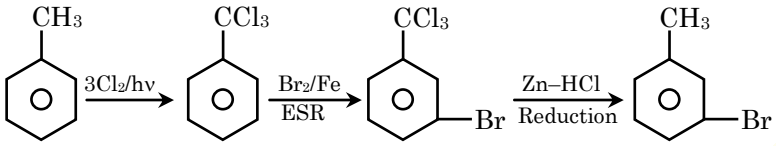
(1) *m*-bromotoluene (2) *o*-bromotoluene

(3) 3-bromo-2,4,6-trichlorotoluene (4) *p*-bromotoluene

Students may find similar question in CP exercise sheet :
[Chapter : Aromatic Hydrocarbons from class notes_]

Ans. **[1]**

Sol.



m – Bromo toluene

Q.75 Which oxide of nitrogen is not a common pollutant introduced into the atmosphere both due to natural and human activity ?

(1) N_2O_5 (2) NO_2 (3) N_2O (4) NO

Students may find similar question in CP exercise sheet :
[Chapter : Environmental Chemistry, , Page 238, Q.]

Ans. **[1]**

Sol. N_2O_5 is highest oxidation number oxide which will not easily formed by common or natural oxidation of lower oxides of nitrogen.

Q.76 For the redox reaction

$$MnO_4^- + C_2O_4^{2-} + H^+ \longrightarrow Mn^{2+} + CO_2 + H_2O$$

the correct coefficients of the reactants for the balanced equation are -

	MnO_4^-	$C_2O_4^{2-}$	H^+
(1)	16	5	2
(2)	2	5	16
(3)	2	16	5
(4)	5	16	2

Students may find similar question in CP exercise sheet :
[Chapter : Oxidation - Reduction , Exercise # 2, Page 106, Q.30]

Ans. **[2]**

Sol. Acc. to Ion electron method

Oxidation Half reaction	Reduction Half reaction
Multiply equation (1) by (5)	Multiply equation (2) by (2)

$$5C_2O_4^{-2} + 2MnO_4^- + 16H^+ \longrightarrow 10CO_2 + 2Mn^{+2} + 8H_2O$$

Q.77 Which one of the following conditions will favour maximum formation of the product in the reaction

$$A_2(g) + B_2(g) \rightleftharpoons X_2(g) \quad \Delta_rH = -X \text{ kJ} ?$$

(1) Low temperature and high pressure
(2) Low temperature and low pressure
(3) High temperature and high pressure
(4) High temperature and low pressure

Students may find similar question in CP exercise sheet :
[Chapter : Chemical Equilibrium, Exercise # 01, Page 127, Q.71]

Ans. **[1]**

Sol. Exothermic reaction

when $\Delta n_g < 0$

then favorable condition Low temp. and High pressure

Q.78 The correction factor 'a' to the ideal gas equation corresponds to -

(1) density of the gas molecules
(2) volume of the gas molecules
(3) electric field present between the gas molecules
(4) forces of attraction between the gas molecules

Students may find similar question in CP exercise sheet :
[Chapter : Gaseous State, Exercise # 3B, Page 132, Q.7]

Ans. **[4]**

Sol. Conceptual

Q.79 When initial concentration of the reactant is doubled, the half-life period of a zero order reaction

(1) is halved
(2) is doubled
(3) is tripled
(4) remains unchanged

Students may find similar question in CP exercise sheet :
[Chapter : Chemical Kinetics, Exercise # 01, Page 199, Q.59]

Ans. **[2]**

Sol. Half life of zero order

$$t_{1/2} = \frac{a}{2k}$$

$\therefore$ $t_{1/2} \propto a$

Doubled

Q.80 The bond dissociation energies of X_2, Y_2 and XY are in the ratio of 1 : 0.5 : 1. ΔH for the formation of

(3) 800 kJ mol^{-1} (4) 400 kJ mol^{-1}

Students may find similar question in CP exercise sheet :

[Chapter : Chemical Thermodynamics and Energetic, Exercise # 02, Page 165, Q.45]

Ans. **[3]**

Sol. $\frac{1}{2}x_2 + \frac{1}{2}y_2 \longrightarrow xy$ $\quad x_2 : y_2 : xy$

$1a : 0.5a : 1a$

$\Delta H°_{reaction} = \sum B.E_R - \sum B.E_P$

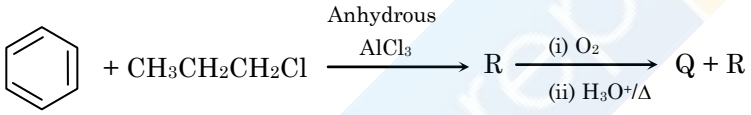
$= \left(\frac{a}{2} + \frac{0.5a}{2}\right) - a$

$-200 = \frac{1.5a}{2} - a = -0.25a$

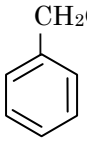
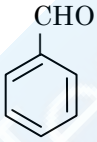
$-a = \frac{-200}{0.25} = -800$

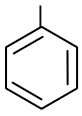
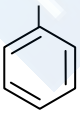
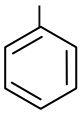
a= Bond dissociation energy = 800 kJ/mole

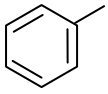
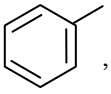
Q.81 Identify the major products P, Q and R in the following sequence of reactions -

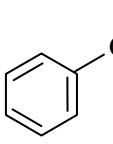
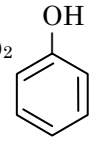


P Q R

(1)  ,  , $CH_3CH_2 - OH$

(2)  ,  , 

(3)  ,  , $CH_3CH(OH)CH_3$

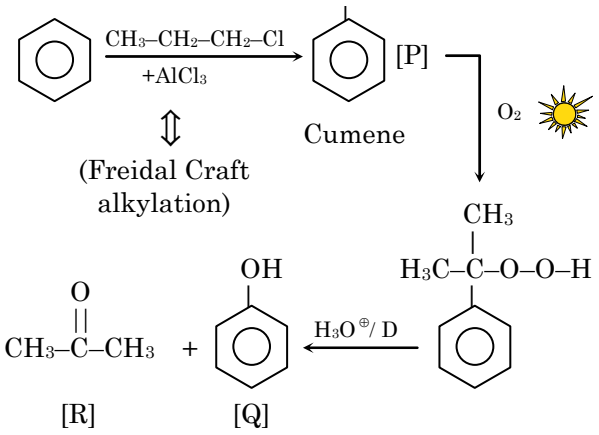
(4)  ,  , $CH_3 - CO - CH_3$

Students may find similar question in CP exercise sheet :

[Chapter : Phenol, Exercise # 02, Page 52, Q.20]

Ans. **[4]**

Sol.



Q.82 Which of the following compounds can form a zwitterion ?

(1) Aniline (2) Acetanilide

(3) Benzoic acid (4) Glycine

Students may find similar question in CP exercise sheet :

[Chapter : Nitrogen Compound from Class Notes

Ans. **[4]**

Sol. $\underset{\text{[Glycine]}}{NH_2-CH_2-COOH} \rightleftharpoons \underset{\text{Zwitter ion [Dipolar ion]}}{\overset{\oplus}{N}H_3-CH_2-COO^{\ominus}}$

Q.83 The type of isomerism shown by the complex $[CoCl_2(en)_2]$ is -

(1) Geometrical isomerism (2) Coordination isomerism

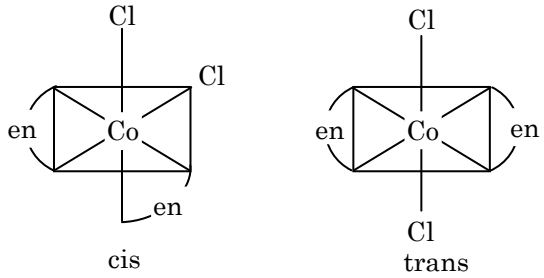
(3) Ionization isomerism (4) Linkage isomerism

Students may find similar question in CP exercise sheet :

[Chapter : Coordination Compound, Exercise # 11A, Page 79, Q.147]

Ans. **[1]**

Sol. $[COCl_2(en)_2]$ Shows geometrical isomerism and exist in cis and trans form



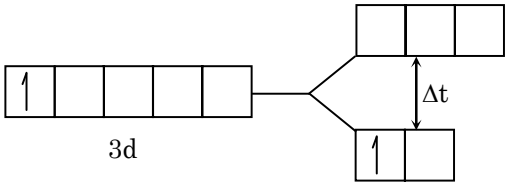
Q.84 Which one of the following ions exhibits d-d transition and paramagnetism as well ?

Students may find similar question in CP exercise sheet :
[Chapter : Coordination Compound, From Class Notes

Ans. **[4]**

Sol. $MnO_4^{-2} \Rightarrow Mn^{+6} = [Ar]3d^1$

n =1, para magnetic and also shows d-d transition



d^0 and d^{10} complex ion does not shows d-d transition

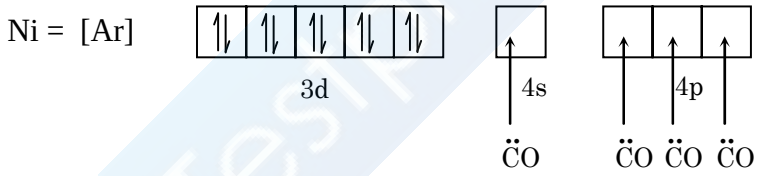
Q.85 The geometry and magnetic behavior of the complex $[Ni(CO)_4]$ are
(1) square planar geometry and diamagnetic
(2) tetrahedral geometry and diamagnetic
(3) square planar geometry and paramagnetic
(4) tetrahedral geometry and paramagnetic

Students may find similar question in CP exercise sheet :
[Chapter : Coodination Compound, Exercise # 11 A, Page 73, Q.41]

Ans. **[2]**

Sol. $Ni(CO)_4$

Ni = [Ar] $3d^8 4s^2$



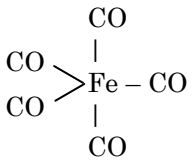
$Ni(CO)_4$ is a diamagnetic and sp^3 hybridisation so shape is tetrahedral

Q.86 Iron carbonyl, $Fe(CO)_5$ is
(1) tetranuclear (2) mononuclear (3) trinuclear (4) dinuclear

Students may find similar question in CP exercise sheet :
[Chapter : Coordination Compound, Exercise #03, Page 85, Q.11]

Ans. **[2]**

Sol. $Fe(CO)_5$ is mononuclear carbonyl because it contain one metal atom



Q.87 Match the metal ions given in column I with the spin magnetic moments of the ions given in

	Column I		Column II
(a)	Co^{3+}	(i)	$\sqrt{8}$ B.M.
(b)	Cr^{3+}	(ii)	$\sqrt{35}$ B.M.
(c)	Fe^{3+}	(iii)	$\sqrt{3}$ B.M.
(d)	Ni^{2+}	(iv)	$\sqrt{24}$ B.M.
		(v)	$\sqrt{15}$ B.M.

	a	**b**	**c**	**d**
(1)	iv	v	ii	i
(2)	i	ii	iii	iv
(3)	iv	i	ii	iii
(4)	iii	v	i	ii

Students may find similar question in CP exercise sheet :
[*Chapter : Coordination Compound, Exercise # 04, Page 57, Q.8*]

Ans. **[1]**

Sol. Magnetic moment (μ) $\propto$ n

$$\mu = \sqrt{n(n+2)}$$

CO^{+3} = [Ar] $3d^6$ n = 4 $\mu = \sqrt{24}$

Cr^{+3} = [Ar] $3d^3$ n = 3 $\mu = \sqrt{15}$

Fe^{+3} = [Ar] $3d^5$ n = 5 $\mu = \sqrt{35}$

Ni^{+2} = [Ar] $3d^8$ n = 2 $\mu = \sqrt{8}$

Q.88 Which of the following is correct with respect to –I effect of the substituents ? (R = alkyl)

(1) $-NH_2 < -OR < -F$ (2) $-NR_2 < -OR < -F$

(3) $-NH_2 > -OR < -F$ (4) $-NR_2 > -OR > -F$

Students may find similar question in CP exercise sheet :
[*Chapter : GOC - II, Page 87*]

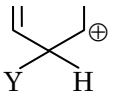
Ans. **[1 and 2]**

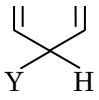
Sol. Due to EN difference

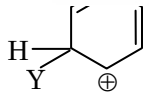
$-NH_2 < -OR < -F$

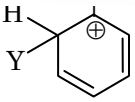
$-NR_2 < -OR < -F$

Q.89 Which of the following carbocations is expected to be most stable ?

(1) 

(2) 

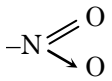
(3) 

(4) 

Students may find similar question in CP exercise sheet :

[Chapter : GOC - II, From Class Notes

Ans. **[3]**

Sol. Carbocation is stabilized by continue conjugation with least deactivating effect of  group

Q.90 Which of the following molecules represents the order of hybridisation sp^2, sp^2, sp, sp from left to right atoms ?

(1) $HC \equiv C - C \equiv CH$

(2) $CH_2 = CH - C \equiv CH$

(3) $CH_2 = CH - CH = CH_2$

(4) $CH_3 - CH = CH - CH_3$

Students may find similar question in CP exercise sheet :

[Chapter : GOC - I, Exercise # 01, Page 25, Q. 11]

Ans. **[2]**

Sol. $\underset{sp^2}{CH_2} = \underset{sp^2}{CH} - \underset{sp}{C} \equiv \underset{sp}{C} - H$

Q.91 The experimental proof for semiconservative replication of DNA was first shown in a -

(3) Plant

(4) Virus

Students may find similar question in CP exercise sheet :

[*Chapter : Genetic and biotechnology, Page 108*]

Ans. **[2]**

Q.92 Select the correct statement -

(1) Franklin Stahl coined the term "linkage"

(2) Punnett square was developed by a British scientist.

(3) Spliceosomes take part in traslation

(4) Transduction was discovered by S.Altman

Students may find similar question in CP exercise sheet :

[*Chapter : NCERT, Principal of Inheritance and Variation, Page 73*]

Ans. **[2]**

Q.93 Offsets are produced by

(1) Meiotic divisions

(2) Mitotic divisions

(3) Parthenocarpy

(4) Parthenogenesis

Students may find similar question in CP exercise sheet :

[*Chapter : Structural Organization in plants*]

Ans. **[2]**

Sol. Offset is sub aerial modification of vegetative part stem and show growth by mitotic division and also produced new plant by mitotic cell division.

Q.94 Which of the following pairs is **wrongly** matched ?

(1) Starch synthesis in pea : Multiple alleles

(2) ABO blood grouping : Co-dominance

(3) XO type sex determination : Grasshopper

(4) T.H.Morgan : Linkage

Students may find similar question in CP exercise sheet :

[*Chapter : NCERT, Principal of Inheritance and Variation, Page 78*]

Ans. **[1]**

Q.95 Which of the following flowers only once in its life time ?

(3) Mango

(4) Papaya

Students may find similar question in CP exercise sheet :

[*Chapter : Structural Organization in plants*]

Ans. **[1]**

Sol. Bamboo is monocarpic flowering plant and give flowering once in life time

Q.96 Select the correct match :

(1) Alec jeffreys	:	Streptococcus pneumoniae
(2) Alfred Hershey and Martha Chase	:	TMV
(3) Matthew Meselson and F.Stahl	:	Pisum sativum
(4) Francois Jacob and Jacques Monod	:	Lac operon

Students may find similar question in CP exercise sheet :

[*Chapter : NCERT, Molecular basis of inheritance, Page 121*]

Ans. **[4]**

Q.97 Which of the following has proved helpful in preserving pollen as fossils ?

(1) Pollenkitt

(2) Cellulosic intine

(3) Oil content

(4) Sporopollenin

Students may find similar question in CP exercise sheet :

[*Chapter : Sexual reproduction in flowering plant, molule 4A, Page 36*]

Ans. **[4]**

Q.98 Stomatal movement is **not** affected by -

(1) Temperature

(2) Light

(3) O_2 concentration

(4) CO_2 concentration

Students may find similar question in CP exercise sheet :

[*Chapter : Plant Physiology CP module 3A, Page 30*]

Ans. **[3]**

Sol. Temperature, light & CO_2 affect stomatal movement

Q.99 The stage during which separation of the paired homologous chromosomes begins is

(3) Diakinesis

(4) Zygotene

Students may find similar question in CP exercise sheet :

[*Chapter : Cell Structure & Cell Division, Meiosis, Page 64*]

Ans. **[2]**

Sol. Homologous chromosomes get separated by dissolution of syneptonemal complex after over in diplotene stage.

Q.100 The two functional groups characteristic of sugars are -

(1) Hydroxyl and methyl

(2) Carbonyl and methyl

(3) Carbonyl and phosphate

(4) Carbonyl and hydroxyl

Students may find similar question in CP exercise sheet :

[*Chapter : Biomolecule, Page 119*]

Ans. **[4]**

Q.101 Which of the following is not a product of light reaction of photosynthesis ?

(1) ATP

(2) NADH

(3) NADPH

(4) Oxygen

Students may find similar question in CP exercise sheet :

[*Chapter : Plant Physiology CP module 3A, Page 101*]

Ans. **[2]**

Sol. NADH is formed in respiration while NADPH, ATP & O_2 are formed in Photosynthesis.

Q.102 Stomata in grass leaf are -

(1) Dumb-bell shaped

(2) Kidney shaped

(3) Rectangular

(4) Barrel shaped

Students may find similar question in CP exercise sheet :

[*Chapter : Structural Organization in plants*]

Ans. **[1]**

Sol. In monocots like grasses stomata have Dumb-bell shape gaurd cells.

Q.103 Which among the following is **not** a prokaryote ?

(3) Nostoc

(4) Oscillatoria

Students may find similar question in CP exercise sheet :
[Chapter : Plant Diversity, Module 1A, Page 92]

Ans. **[1]**

Sol. Saccharomyces ⇒ Yeast (Fungi – Eukaryote)
Mycobacterium ⇒ Actinomyces – Prokaryote
Nostoc & Oscillatoria ⇒ Cynobacteria - Prokaryote

Q.104 Which of the following is true for nucleolus ?

(1) Larger nucleoli are present in dividing cells

(2) It is a membrane-bound structure

(3) It takes part in spindle formation

(4) It is a site for active ribosomal RNA synthesis.

Students may find similar question in CP exercise sheet :
[Chapter : Cell Structure & Cell Division, Nucleolus, Page 45]

Ans. **[4]**

Sol. Nucleolus is factory of ribosome which is formed by active ribosomal RNA synthesized under nucleolus.

Q.105 The Golgi complex participates in -

(1) Fatty acid breakdown

(2) Formation of secretory vesicles

(3) Respiration in bacteria

(4) Activation of amino acid

Students may find similar question in CP exercise sheet :
[Chapter : Cell Structure & Cell Division, Golgibody, Page 29]

Ans. **[2]**

Sol. Golgibody is known for packaging & formation of secretory vesicles

Q.106 In stratosphere, which of the following elements acts as a catalyst in degradation of ozone and release of molecular oxygen ?

(1) Carbon

(2) Cl

(3) Fe

(4) Oxygen

Students may find similar question in CP exercise sheet :
[Chapter : Ecology, CP module 6, Page 168]

Ans. **[2]**

Sol. Chloro fluoro carbon gives Cl due to U.V. rays that degrade O_3.

Q.107 Which of the following is a secondary pollutant ?

(3) SO_2

(4) O_3

Students may find similar question in CP exercise sheet :
[Chapter : Ecology, CP module 6, Page 160]

Ans. **[4]**

Sol. Secondary pollutant are formed by interaction of primary pollutants

Q.108 Niche is -

(1) All the biological factors in the organism's environment

(2) The physical space where an organism lives

(3) The range of temperature that the organism needs to live

(4) The functional role played by the organism where it lives.

Students may find similar question in CP exercise sheet :
[Chapter : Ecology, CP module 6, Page 5]

Ans. **[4]**

Sol. Niche is functional role of organism in ecosystem

Q.109 Natality refers to

(1) Death rate

(2) Birth rate

(3) Number of individuals leaving the habitat

(4) Number of individuals entering a habitat

Students may find similar question in CP exercise sheet :
[Chapter : Ecology, CP module 6, Page 29]

Ans. **[2]**

Sol. Natality – increase is number of individual due to birth.

Q.110 What type of ecological pyramid would be obtained with the following data ?

Secondary consumer : 120 g

Primary consumer : 60 g

Primary producer : 10 g

(1) Inverted pyramid of biomass

(2) Pyramid of energy

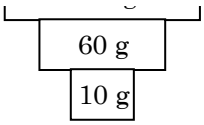
(3) Upright pyramid of numbers

(4) Upright pyramid of biomass

Students may find similar question in CP exercise sheet :
[Chapter : Ecology, CP module 6, Page 84]

Ans. **[1]**

Sol.



Q.111 World Ozone Day is celebrated on

(1) 5th June

(2) 21st April

(3) 16th September

(4) 22nd April

Students may find similar question in CP exercise sheet :

[*Chapter : Ecology, CP module 6, Page 180*]

Ans. **[3]**

Sol. World Ozone Day – 16th September

Q.112 Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes ?

(1) Retrovirus

(2) Ti plasmid

(3) λ phage

(4) pBR 322

Students may find similar question in CP exercise sheet :

[*Chapter : Biotechnology, Page 191*]

Ans. **[1]**

Q.113 In India, the organisation responsible for assessing the safety of introducing genetically modified organisms for public use is -

(1) Indian Council of Medical Research (ICMR)

(2) Council for Scientific and Industrial Research (CSIR)

(3) Research Committee on Genetic Manipulation (RCGM)

(4) Genetic Engineering Appraisal Committee (GEAC)

Students may find similar question in CP exercise sheet :

[*Chapter : Biotechnology, Page 194*]

Ans. **[4]**

Q.114 A 'new' variety of rice was patented by a foreign company, though such varieties have been present in

(2) Sharbati Sonora
(3) Lerma Rojo
(4) Basmati

Students may find similar question in CP exercise sheet :
[*Chapter : Biotechnology, Page 194*]

Ans. **[4]**

Q.115 Select the correct match :

(1) Ribozyme - Nucleic acid
(2) F2 × Recessive parent - Dihybrid cross
(3) T.H.Morgan - Transduction
(4) G.Mendel - Transformation

Students may find similar question in CP exercise sheet :
[*Chapter : Principles of inheritance and variation*]

Ans. **[1]**

Q.116 Use of bioresources by multinational companies and organisations without authorisation from the concerned country and its people is called -

(1) Bio-infringement
(2) Biopiracy
(3) Biodegradation
(4) Bioexploitation

Students may find similar question in CP exercise sheet :
[*Chapter : Biotechnology*]

Ans. **[2]**

Q.117 The correct order of steps in Polymerase Chain Reaction (PCR) is -

(1) Extension, Denaturation, Annealing
(2) Annealing, Extension, Denaturation
(3) Denaturation, Extension, Annealing
(4) Denaturation, Annealing, Extension

Students may find similar question in CP exercise sheet :
[*Chapter : Molecular basis of inheritance*]

Ans. **[4]**

Q.118 Secondary xylem and phloem in dicot stem are produced by

(3) Phellogen

(4) Axillary meristems

Students may find similar question in CP exercise sheet :

[*Chapter : Structural Organisation in plants*]

Ans. **[2]**

Sol. Vascular cambium ring in Dicot stem are responsible to form secondary xylem toward pith and secondary phloem toward pericycle

Q.119 Pneumatophores occur in

(1) Halophytes

(2) Free-floating hydrophytes

(3) Carnivorous plants

(4) Submerged hydrophytes

Students may find similar question in CP exercise sheet :

[*Chapter : Structural Organization in plants*]

Ans. **[1]**

Sol. Halophyte or mangrove grow in oxygen deficient marshy area. In these plants root grow vertically upward & have breathing pore as pneumotophore.

Q.120 Sweet potato is a modified

(1) Stem

(2) Adventitious root

(3) Tap root

(4) Rhizome

Students may find similar question in CP exercise sheet :

[*Chapter : Structural Organization in plants*]

Ans. **[2]**

Sol. Ipomea batata (sweet potato) is a modified tuberous adventitious roots

Q.121 Which of the following statements is correct ?

(1) Ovules are not enclosed by ovary wall in gymnosperms.

(2) Selaginella is heterosporous, while salvinia is homosporous.

(3) Horsetails are gymnosperms.

(4) Stems are usually unbranched in both Cycas and Cedrus.

Students may find similar question in CP exercise sheet :

[*Chapter : Plant Diversity, Module-1A, Page 161, 162, 165 Q.37*]

Ans. **[1]**

Sol.

aked seed.

(2) Selaginella and solvinia both are heterosporoos pteridophytes.

(3) Equisitum (Horse tail) are pteriodophytes.

(4) Stems are unbranched in Cycas and branched in Cedrus.

Q.122 Select the wrong statement :

(1) Cell wall is present in members of Fungi and Plantae.

(2) Mushrooms belong to Basidiomycetes.

(3) Pseudopodia are locomotory and feeding structures in Sporozoans.

(4) Mitochondria are the powerhouse of the cell in all kingdoms excepts Monera.

Students may find similar question in CP exercise sheet :
[*Chapter : Plant Diversity*]

Ans. **[3]**

Sol. Pseudopodia are locomotary and feeding structure in Sarcodina/Rhizopoda where as sporozons do not have locomotory structures.

Q.123 Casparian strips occur in -

(1) Epidermis

(2) Pericycle

(3) Cortex

(4) Endoermis

Students may find similar question in CP exercise sheet :
[*Chapter : Structural Organization in Plants, Anatomy*]

Ans. **[4]**

Sol. Casparion strip present in endodermis of root these strip are made up of subenin and check apoplast pathway of water.

Q.124 Plants having little or no secondary growth are -

(1) Grasses

(2) Deciduous angiosperms

(3) Cenifers

(4) Cycads

Students may find similar question in CP exercise sheet :
[*Chapter : Structural Organization in Plants, Anatomy*]

Ans. **[1]**

Sol. Grasses are monocot and have closed type of vascular bundle there fore they do not show secondary growth.

Q.125 Which one is wrongly matched ?

(3) Gemma cups – Marchantia

(4) Unicellular organism – Chlorella

Students may find similar question in CP exercise sheet :

[*Chapter : Plant Diversity, Module-1A, Page 139, Q.31*]

Ans. **[1]**

Sol. Polysiphonia is red algae and do not show any motile cell in their life history.

Q.126 Match the items given in Column I with those in column II select the correct option given below :

	Column-I		**Column-II**
a.	Herbarium	**i.**	It is a place having a collection of preserved plants and animals.
b.	Key	**ii.**	A list that enumerates methodically all the species found in an area with brief description aiding identification.
c.	Museum	**iii.**	Is a place where dried and pressed plants specimens mounted on sheets are kept.
d.	Catalogue	**iv.**	A booklet containing a list of characters and their alternates which are helpful in identification of various taxa.

	a	**b**	**c**	**d**
(1)	i	iv	iii	ii
(2)	iii	ii	i	iv
(3)	ii	iv	iii	i
(4)	iii	iv	i	ii

Students may find similar question in CP exercise sheet :

[*Chapter : Plant Diversity, Module-1A, Page 18*]

Ans. **[4]**

Q.127 Winged pollen grains are present in -

(1) Mustard

(2) Cycas

(3) Mango

(4) Pinus

Students may find similar question in CP exercise sheet :

[*Chapter : Plant Diversity, Module-1A, Page 169*]

Ans. **[4]**

Q.128 After karyogamy followed by meiosis, spores are produced exogenously in -

(3) Agaricus

(4) Saccharomyces

Students may find similar question in CP exercise sheet :
[*Chapter : Plant Diversity, Module-1A, Page 93*]

Ans. **[3]**

Sol. Agaricus (Mushroom) are member of Basidiomycetes and during sexual reproduction spores are produce exogenously on Basidium.

Q.129 What is the role of NAD^+ in cellular respiration ?

(1) It functions as an enzyme

(2) It functions as an electron carrier.

(3) It is nucleotide source for ATP synthesis

(4) It is the final electron acceptor for anaerobic respiration

Students may find similar question in CP exercise sheet :
[*Chapter : Plant Physiology, CP Module-3A, Page 185, Q.150 Similar Question*]

Ans. **[2]**

Sol. NAD^+ accept $2e^{\ominus}$ & $2H^{\oplus}$ to form $NADH^{\oplus}$ in respiration.

Q.130 Oxygen is not produced during photosynthesis by -

(1) Green sulphur bacteria

(2) Nastoc

(3) Cycas

(4) Chara

Students may find similar question in CP exercise sheet :
[*Chapter : Plant Physiology, CP Module-3A, Page 103*]

Ans. **[1]**

Sol. Oxygenic photosynthesis occurs in cyanobacteria not in Bacteria. Chara is green algae & Cycas is gymnosperms showing oxygenic photosynthesis.

Q.131 Pollen grains can be stored for several years in liquid nitrogen having a temperature of -

(1) –120°C

(2) –80°C

(3) –196°C

(4) –160°C

Students may find similar question in CP exercise sheet :
[*CP Module-3A*]

Ans. **[3]**

Q.132 In which of the following forms is iron absorbed by plants -

(3) Free element

(4) Both ferric and ferrous

Students may find similar question in CP exercise sheet :
[Chapter : Plant Physiology, CP Module-3A, Page 40]

Ans. **[1]**

Sol. Iron is absorbed in form of $Fe^{\oplus 3}$.

Q.133 Double fertilization is -

(1) Fusion of two male gametes of a pollen tube with two different eggs.

(2) Fusion of one male gamete with two polar nuclei

(3) Fusion of two male gametes with one egg

(4) Syngamy and triple fusion

Students may find similar question in CP exercise sheet :
[CP Module-4A, Page 30]

Ans. **[4]**

Sol. In angiosperm double fertilization occurs that includes syngamy and triple fusion.

Q.134 Which of the following elements is responsible for maintaining turgor in cells ?

(1) Magnesium

(2) Sodium

(3) Potassium

(4) Calcium

Students may find similar question in CP exercise sheet :
[Chapter : Plant Physiology, CP Module-3A, Page 30]

Ans. **[3]**

Sol. $K^{\oplus}$ play very important role in maintaing osmotic pressure in cell and responsible for turgidity.

Q.135 Which one of the following plants shows a very close relationship with a species of moth, where none of the two can complete its life cycle without the other ?

(1) Hydrilla

(2) Yucca

(3) Banana

(4) Viola

Students may find similar question in CP exercise sheet :
[Chapter : Ecology, CP Module-6, Page 35]

Ans. **[2]**

Sol. Relationship between Yucca & Pronuba moth is mutualism.

Q.136 Hormones secreted by the placenta to maintain pregnancy are -

(3) hCG, hPL, progestogens, estrogens

(4) hCG, progestogens, estrogens, glucocorticoids

Students may find similar question in CP exercise sheet :

[*Chapter : Human reproduction & Reproductive health, Placenta, Page 62*]

Ans. **[3]**

Sol. During pregnancy placenta releases hCG, hPL, progestogens estrogen which all essential to maintain pregnancy.

Q.137 The contraceptive 'SAHELI'

(1) blocks estrogen receptors in the uterus, preventing eggs from getting implanted.

(2) increases the concentration of estrogen and prevents ovulation in females.

(3) is an IUD

(4) is a post-coital contraceptive.

Students may find similar question in CP exercise sheet :

[*Chapter : Human reproduction & Reproductive health, Oral contraceptive, Page 66*]

Ans. **[1]**

Sol. 'SAHELI' is steroidal contraceptive pills which after the receptor site of estrogen hormone which prevents implantation.

Q.138 The difference between spermiogenesis and spermiation is -

(1) In spermiogenesis spermatids are formed, while in spermiation spermatozoa are formed.

(2) In spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed.

(3) In spermiogenesis spermatozoa from sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed.

(4) In spermiogensis spermatozoa are formed, while in spermiation spermatozoa are relaeased from sertoli cells into the cavity of seminiferous tubules.

Students may find similar question in CP exercise sheet :

[*Chapter : Huamn reproduction & Reproductive health, Histology of seminiferous tubule, Page 7*]

Ans. **[4]**

Sol. Spermiogenesis is formation of spermatids (Spermatozoa) where as spermiation is releasing of spermatozoa from seminiferous tubule.

Q.139 The amnion of mammalian embryo is derived from -

(3) mesoderm and trophoblast

(4) ectoderm and endoderm

Students may find similar question in CP exercise sheet :

[*Chapter : Human reproduction & Reproductive health, Extra embryonic membrane, Page 59*]

Ans. **[1]**

Sol. Amnion of mammalian embryo formed by ectoderm & extra embryonic mesoderm.

Q.140 In a growing population of a country,

(1) pre-reproductive individuals are more than the reproductive individuals.

(2) reproductive individuals are less than the post-reproductive individuals.

(3) reproductive and pre-reproductive individuals are equal in number.

(4) pre-reproductive individuals are less than the reproductive individuals.

Students may find similar question in CP exercise sheet :

[*Chapter : Ecology, CP Module-6, Page 28*]

Ans. **[1]**

Sol. Pyramid for expanding population is triangular.

Q.141 All of the following are included in 'Ex-situ conservation' except -

(1) Wildlife safari parks

(2) sacred groves

(3) Botanical gardens

(4) seed banks

Students may find similar question in CP exercise sheet :

[*Chapter : Ecology, CP Module-6, Page 135*]

Ans. **[2]**

Sol. Sacred groves are included in insitu conservation.

Q.142 Which part of poppy plant is used to obtain the drug 'Smack" ?

(1) Flowers

(2) Latex

(3) Roots

(4) Leaves

Students may find similar question in CP exercise sheet :

[*NCERT, Page 158, Last line*]

Ans. **[2]**

Q.143 Match the items given in Column-I with those in column-II and select the correct option given below -

b.	Sanitary landfill	**ii.**	Deforestation
c.	Snow blindness	**iii.**	Nutrient enrichment
d.	Jhum cultivation	**iv.**	Waste disposal

	a	**b**	**c**	**d**
(1)	ii	i	iii	iv
(2)	i	iii	iv	ii
(3)	iii	iv	i	ii
(4)	i	ii	iv	iii

Students may find similar question in CP exercise sheet :
[*Chapter : Ecology, CP Module-6, Page 173, 177, 178*]

Ans. **[3]**

Sol. $\Rightarrow$ Eutrophication due to Nutrient enrichment of water body.
$\Rightarrow$ Sanitary landfill to manage solid waste.
$\Rightarrow$ Snow blindness due to U.V.-B
$\Rightarrow$ Jhum cultivation $\Rightarrow$ Croping after deforestation.

Q.144 Which one of the following population interactions is widely used in medical science for the production of antibiotics ?
(1) Commensalism
(2) Mutualism
(3) Parasitism
(4) Amensalism

Students may find similar question in CP exercise sheet :
[*CP Module-6 Page 39*]

Ans. **[4]**

Sol. Antibiosis is a type of Amensalism.

Q.145 Which of the following events does not occur in rough endoplasmic reticulum ?
(1) protein folding
(2) protein glycosylation
(3) Cleavage of signal peptide
(4) Phospholipid synthesis

Students may find similar question in CP exercise sheet :
[*Chapter : Cell structure & Cell division, Endoplasmic reticulum, Page 27*]

Ans. **[4]**

Sol. Site of Lipid & Phospholipid is smooth endoplasmic reticulum.

Q.146 Which of these statements is incorrect ?

(3) Glycolysis operates as long as it is supplied with NAD that can pick up hydrogen atoms.

(4) Oxidative phosphorylation takes place in outer mitochondrial membrane.

Students may find similar question in CP exercise sheet :
[Chapter : Plant Physiology, CP Module-3A, Page 164]

Ans. **[4]**

Sol. Oxidative phsophorylation occurs in inner mitochondrial membrane.

Q.147 Many ribosomes may associate with a single mRNA to form multiple copies of a polypeptide simultaneously. Such strings of ribosomes are termed as -

(1) Polysome

(2) Polyhedral bodies

(3) Plastidome

(4) Nucleosome

Students may find similar question in CP exercise sheet :
[Chapter : Cell Structure & Cell division, Ribosome, Page 35]

Ans. **[1]**

Sol. Many ribosome associate with single mRNA to form multiple copies of polypeptide in prokaryotes called polysome, or polyribosome or Eregosome.

Q.148 Select the incorrect match -

(1) Lampbrush chromosomes – Diplotene bivalents

(2) Allosomes – Sex chromosomes

(3) Submetacentric chromosomes – L-shaped chromosomes

(4) Polytene chromosomes – Oocytes of amphibians

Students may find similar question in CP exercise sheet :
[Chapter : Cell structure & Cell division, Polytene chromosome, Page 51]

Ans. **[4]**

Sol. Polytene chromosomes is characteristic of insect of larva called chrinomous larva to form maximum amount of yolk in megalecithal egg of insect.

Q.149 Nissl bodies are mainly composed of -

(1) Proteins and lipids

(2) DNA and RNA

(3) Nucleic acids and SER

(4) Free ribosomes and RER

Students may find similar question in CP exercise sheet :
[Chapter : Cell structure & Cell division, Type of E.R., Page 27]

Ans. **[4]**

Sol. Nissl body is diagnostic forever of neuron composed by ribosome & RER help in formation of protein.

Q.150 Which of the following terms describe human dentition ?

(3) Pleurodont, Monophyodont, Homodont.

(4) Pleurodont, Diphyodont, Heterodont.

Students may find similar question in CP exercise sheet :
[*Chapter : Digestion and absorbtion, Types of teeth, Page-9*]

Ans. **[2]**

Sol. In human dental formula is Thecodont diphyodont and hetrodont means deeply rooted two times comes in life and all four variety are present incisor, canine, premolar and molar.

Q.151 Match the items given in Column I with those in Column II and select the ***correct*** option given below :

Column I	***Column II***
a. Glycosuria	i. Accumulation of uric acid in joints
b. Gout	ii. Mass of crystallized salts within the kindney
c. Renal calculi	iii. Inflammation in glomeruli
d. Glomerular nephritis	iv. Presence of glucose in urine

	a	**b**	**c**	**d**
(1)	iii	ii	iv	i
(2)	i	ii	iii	iv
(3)	ii	iii	i	iv
(4)	iv	I	ii	iii

Students may find similar question in CP exercise sheet :
[*Chapter : Excretory product & their elimination, page 226*]

Ans. **[4]**

Sol. - Glycosuria is presence of glucose is urine

- Gout is accumulation of uric acid in joints

- Renal calculi – kidney stone

- Glomeruler nephritis is inflammation of nephron

Q.152 Match the items given in column I with those in Column II and select the ***correct*** option given below :

Column I (Function)	***Column II*** (Part of Excretory System)
a. Ultrafiltration	i. Henle's loop
b. Concentration of urine	ii. Ureter
c. Transport of urine	iii. Urinary bladder
d. Storage of urine	iv. Malpighian corpuscle
	v. Proximal convoluted tubule

	a	b	c	d
(3)	v	iv	i	ii
(4)	v	iv	i	iii

Students may find similar question in CP exercise sheet :
[*Chapter : Excretory product & their elimination, page 217*]

Ans. **[2]**

Sol. - Ultra filleration occurs of malpighians lorpuscles.
- Concertration of urine by help of henl's loop
- Transiartation of urine by help of water
- Storage of urine is urivary bladder

Q.153 The similarity of bone structure in the forelimbs of many vertebrates is an example of
(1) Homology
(2) Analogy
(3) Convergent evolution
(4) Adaptive radiation

Students may find similar question in CP exercise sheet :
[*Chapter : Evolution, page 16*]

Ans. **[1]**

Sol. Done structure is similar of forelimb in vertebrates this similarity regularly origin is example of Homology.

Q.154 Which of the following is ***not*** an autoimmune disease?
(1) Psoriasis
(2) Rheumatoid arthritis
(3) Alzheimer's disease
(4) Vitiligo

Students may find similar question in CP exercise sheet :
[Chapter : Human health & disease, *CP Module, Page 79*]

Ans. **[3]**

Q.155 Among the following sets of examples for divergent evolution, select the ***incorrect*** option :
(1) Forelimbs of man, bat and cheetah
(2) Heart of bat, man and cheetah
(3) Brain of bat, man and cheetah
(4) Eye of octopus, bat and man

Students may find similar question in CP exercise sheet :
[*Chapter : Evolution, page 18*]

Ans. **[4]**

Sol. Eye of octopus is skis derivatives where as bat & man heavy eye is various origin so it's comergent evolution & long Analogous organ.

Q.156 Which of the following characteristics represent 'Inheritance of blood groups' in humans?

c. Multiple allele
d. Incomplete dominance
e. Polygenic inheritance
(1) b, c and e
(2) a, b and c
(3) b, d and e
(4) a, c and e

Students may find similar question in CP exercise sheet :
[*Chapter : Principal of Inheritance and Variation, Page 22*]

Ans. **[2]**

Q.157 In which disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels?
(1) Elephantiasis
(2) Ascariasis
(3) Ringworm disease
(4) Amoebiasis

Students may find similar question in CP exercise sheet :
[*NCERT, Page 159 Third Para 4th Line*]

Ans. **[1]**

Q.158 Conversion of milk to curd improves its nutritional value by increasing the amount of
(1) Vitamin D
(2) Vitamin A
(3) Vitamin B_{12}
(4) Vitamin E

Students may find similar question in CP exercise sheet :
[*NCERT, Page 181 Second Para 9th Line*]

Ans. **[3]**

Q.159 Which of the following is an amino acid derived hormone?
(1) Epinephrine
(2) Ecdysone
(3) Estradiol
(4) Estriol

Students may find similar question in CP exercise sheet :
[*Chapter : Chemical coordination & integration, page 366*]

Ans. **[1]**
Sol. Epinephrine is amino acid derivative hormone derived from tyrosine amino acid.

Q.160 Which of the following structures or regions is ***incorrectly*** paired with its function?

	ontrols movement.
(3) Hypothalamus	Production of releasing hormones and regulation of temperature, hunger and thirst.
(4) Corpus callosum	Band of fibers connecting left and right cerebral hemispheres.

Students may find similar question in CP exercise sheet :
[Chapter : Neural congtrol & coordination, page 252]

Ans. **[2]**

Sol. Limbic system is deeper part of cerebral curtod includes hypothalames, Hippocampal lobe, Amygdala lobe olfactory tract etc.

Q.161 Which of the following hormones can play a significant role in osteoporosis?

(1) Aldosterone and Prolactin
(2) Progesterone and Aldosterone
(3) Estrogen and Parathyroid hormone
(4) Parathyroid hormone and Prolactin

Students may find similar question in CP exercise sheet :
[Chapter : Chemical coordination and integration]

Ans. **[3]**

Sol. Estrogen & parathyroid normal (paratharmal) prevents osteoclastic activity & helps is storage of Ca^{+2} is bone chemical co-ordination & integration.

Q.162 The transparent lens in the human eye is held in its place by

(1) ligaments attached to the ciliary body
(2) ligaments attached to the iris
(3) smooth muscles attached to the iris
(4) smooth muscles attached to the ciliary body

Students may find similar question in CP exercise sheet :
[Chapter : Neural control & coordination, page 282]

Ans. **[1]**

Sol. Lens remaing in it's position by ciliary body & suspensory ligaments.

Q.163 Which of the following animals does ***not*** undergo metamorphosis?

(1) Earthworm
(2) Tunicate
(3) Moth
(4) Starfish

Students may find similar question in CP exercise sheet :
[Chapter : Animal kingdom, Page 109]

Ans. **[1]**

Sol. Earthworm donot show metamorprosis

Q.164 Identify the vertebrate group of animals characterized by crop and gizzard in its digestive system.

(3) Aves

(4) Osteichthyes

Students may find similar question in CP exercise sheet :

[*Chapter : Animal kingdom, Page 28*]

Ans. **[3]**

Sol. Crop, gizzard is feature of birds (Aves).

Q.165 Which of the following organisms are known as chief producers in the oceans?

(1) Dinoflagellates

(2) Diatoms

(3) Cyanobacteria

(4) Euglenoids

Students may find similar question in CP exercise sheet :

[*Chapter : Ecology, Exercise # 6, Page 75*]

Ans. **[2]**

Sol. Main producer in ocean is phytoplankton i.e. Diatomes

Q.166 Which one of these animals is ***not*** a homeotherm?

(1) *Macropus*

(2) *Chelone*

(3) *Camelus*

(4) *Psittacula*

Students may find similar question in CP exercise sheet :

[*Chapter : Animal Diversity*]

Ans. **[2]**

Sol. Chelone is reptile

Q.167 Ciliates differ from all other protozoan in

(1) using flagella for locomotion

(2) having a contractile vacuole for removing excess water

(3) using pseudopodia for capturing prey

(4) having two types of nuclei

Students may find similar question in CP exercise sheet :

[*Chapter : Animal kingdom, Page 88*]

Ans. **[4]**

Sol. Ciliales in which paramoeciums comes where Macronucleous & Micronucleus are present.

Q.168 Which of the following features is used to identify a male cockroach from a female cockroach?

(3) Forewings with darker tegmina

(4) presence of anal cerci

Students may find similar question in CP exercise sheet :

[*Chapter : Respiration & gaseous exchange, page 132*]

Ans. **[2]**

Sol. Anal styles (Caudal styles) are sign of sexual dimorphism.

Q.169 Which of the following options correctly represents the lung conditions in asthma and emphysema, respectively?

(1) Inflammation of bronchioles; Decreased respiratory surface

(2) Increased number of bronchioles; Increased respiratory surface

(3) Increased respiratory surface; Inflammation of bronchioles

(4) Decreased respiratory surface; Inflammation of bronchioles

Students may find similar question in CP exercise sheet :

[*Chapter : Structural organisation of animals, page 161*]

Ans. **[1]**

Sol. In asthma in flamation occurs is bronchioles where as emphysema is reversible distention of alveoli leads to decreasing of respiratory surface.

Q.170 Match the items given in Column I with those in Column II and select the ***correct*** option given below :

Column I	***Column II***
a. Tricuspid valve	i. Between left atrium and left ventricle
b. Bicuspid valve	ii. Between right ventricle and pulmonary artery
c. Semilunar valve	iii. Between right atrium and right ventricle

	a	**b**	**c**
(1)	iii	i	ii
(2)	i	iii	ii
(3)	i	ii	iii
(4)	ii	i	iii

Students may find similar question in CP exercise sheet :

[*Chapter : Body fluid & circulation, page 160*]

Ans. **[1]**

Sol. Tricuspid valve – Right atrium & Right ventricle

Biscuspid valve – Left atrium & Left ventricle

Semilumar valve – Base of Primary order

Q.171 Match the items given in Column I with those in Column II and select ***correct*** option given below :

b.	Inspiratory Reserve volume	ii.	1100 – 1200 mL
c.	Expiratory Reserve volume	iii.	500 – 550 mL
d.	Residual volume	iv.	1000 – 1100 mL

	a	**b**	**c**	**d**
(1)	iii	ii	i	iv
(2)	iii	i	iv	ii
(3)	i	iv	ii	iii
(4)	iv	iii	ii	i

Students may find similar question in CP exercise sheet :
[*Chapter : Respiratory volumes and capacities, CP module 3B*]

Ans. **[2]**

Sol. Respiratory volumes and capacities.

Q.172 AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA?

(1) AGGUAUCGCAU
(2) UGGTUTCGCAT
(3) ACCUAUGCGAU
(4) UCCAUAGCGUA

Students may find similar question in CP exercise sheet :
[*Chapter : Molecular basis of inheritance, CP module 5A, page 111*]

Ans. **[1]**

Sol. Molecular Basis of Inheritance.

Q.173 According to Hugo de Vries, the mechanism of evolution is

(1) Multiple step mutations
(2) Saltation
(3) Phenotypic variations
(4) Minor mutations

Students may find similar question in CP exercise sheet :
[*Chapter : Evolution, page 32*]

Ans. **[2]**

Sol. According to Hugo de uries the mechanism of evolution single step variation called saltation.

Q.174 Match the items given in Column I with those in Column II and select the ***correct*** option given below :

b.	Secretory Phase	ii.	Follicular Phase
c.	Menstruation	iii.	Luteal Phase

	a	**b**	**c**
(1)	iii	ii	i
(2)	i	iii	ii
(3)	ii	iii	i
(4)	iii	i	ii

Students may find similar question in CP exercise sheet :
[*Chapter : Menstrual cycle, page 17*]

Ans. **[3]**

Sol. Menstruation is a phase of bleeding by breakdown of endometrial long, Proliferate phase is follicular phase where as secretary phase is lacteal phase.

Q.175 A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by

(1) Only daughters
(2) Only sons
(3) Only grandchildren
(4) Both sons and daughters

Students may find similar question in CP exercise sheet :
[*Chapter : CP module5A, page 21*]

Ans. **[4]**

Sol. Female gives X-chromosome to both son & daughter.

Q.176 All of the following are part of an operon *except*

(1) an operator
(2) structural genes
(3) an enhancer
(4) a promoter

Students may find similar question in CP exercise sheet :
[*Chapter : CP module 5A, page 122*]

Ans. **[3]**

Sol. Operon includes regulator, Promoter operator & structural gene.

Q.177 Which of the following gastric cells indirectly help in erythropoiesis?

(3) Goblet cells

(4) Parietal cells

Students may find similar question in CP exercise sheet :

[*Chapter : Digestive system, CP module, Page 15*]

Ans. **[4]**

Sol. Oxyntic Cells (Parietal Cells) Secrete Hydrochloric Acid & Castle Intrinsic Factor.

Q.178 Match the items given in Column I with those in Column II and select the ***correct*** option given below

Column I	***Column II***
a. Fibrinogen	i. Osmotic balance
b. Globulin	ii. Blood clotting
c. Albumin	iii. Defence mechanism

	a	**b**	**c**
(1)	iii	ii	i
(2)	i	ii	iii
(3)	i	iii	ii
(4)	ii	iii	i

Students may find similar question in CP exercise sheet :

[*Chapter : Bodyfuild & circulation, CP module, page 31-32*]

Ans. **[4]**

Sol. Albumin – Responsible to maintain BCOP(28-32 mm kg) Globin-Y Globunin provide immunity Fibrinogen-NHLP in Blood Clotting.

Q.179 Calcium is important in skeletal muscle contraction because it

(1) binds to troponin to remove the masking of active sites on actin for myosin

(2) activates the myosin ATPase by binding to it.

(3) detaches the myosin head from the actin filament.

(4) prevents the formation of bonds between the myosin cross bridges and the actin filament.

Students may find similar question in CP exercise sheet :

[*Chapter : Chemical coordination & integration, CP module page 77*]

Ans. **[1]**

Sol. "But troponin-C combines with Ca^{++} ion, some Physiochemical changes occur in Troponyosin & Tropomyosin move away from active site of actin".

Q.180 Which of the following is an occupational respiratory disorder?

(3) Botulism

(4) Emphysema

Students may find similar question in CP exercise sheet :

[*Chapter : Ecology, CP Module 6, Page 181*]

Ans. **[2]**

Sol. Silicosis is occupational respiratory disorder is ston grinders