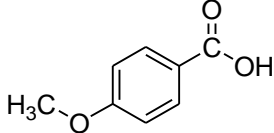


Q	Statement I	Because	Statement II
1.	Carbon is a nonmetal	Because	Carbon atoms can bond with each other
2.	The hybrid orbital form of carbon in acetylene is believed to be the sp form	Because	It is a linear compound with a triple bond between carbons
3.	Normal butyl alcohol and 2-butanol are isomers	Because	Isomers vary in the number of neutrons in the nucleus of the atom
4.	The reaction of CaCO_3 and HCl goes to completion	Because	Reactions that form a precipitate go to completion
5.	The alkanes are considered a homologous series	Because	Homologous series have the same functional group but differ in the formula by the addition of a fixed group of atoms
6.	Benzene is a poor electrolyte in water solution	Because	It does not ionize
7.	Benzene does not have true single and double bonds between its carbon atoms in the ring	Because	It is composed of delocalized pi electrons in the ring giving rise to resonance structures
8.	Long chain hydrocarbons are insoluble in water	Because	"like dissolves like" and water contains oxygen and no carbon and long chain hydrocarbons contain carbon, but no oxygen
9.	Ethylene (C_2H_4) has a higher carbon-carbon bond energy than acetylene	Because	Ethylene contains a double bond and acetylene has only a single bond between the carbons
10.	Benzene (C_6H_6) can be drawn as a series of resonance structures	Because	Its bonds are a hybrids of single and double bond character

11. Which of the following has the strongest carbon-carbon bond?
- C_2H_2
 - C_2H_4
 - C_2H_6
 - C_2H_8
 - C_2H_{10}
12. Which of the following statements is true of ethene?
- Both carbon atoms are sp^2 hybridized and the molecule is planar
 - Both carbon atoms are sp^2 hybridized and all bond angles are approximately 109.5°
 - One carbon atom is sp hybridized while the other is sp^2
 - Both carbon atoms are sp^3 hybridized and all bond angles are approximately 109.5°
 - Both carbon atoms are sp hybridized and the molecule is planar
13. Which of the following is the formula for a non-cyclic, saturated hydrocarbon?
- C_7H_{12}
 - C_7H_{14}
 - C_7H_{16}
 - C_7H_{18}
 - C_7H_{20}
14. What functional groups are present in the compound below?
- 
- Ester and ether
 - Ester and amine
 - Ester and carboxylic acid
 - Ether and carboxylic acid
 - Ether and ketone
15. Which of the following compounds contains the greatest percentage of oxygen by weight?
- $\text{C}_3\text{H}_6\text{O}_5\text{Cl}$
 - $\text{C}_3\text{H}_6\text{O}_2$
 - $\text{C}_5\text{H}_{10}\text{O}_5$
 - $\text{C}_4\text{H}_8\text{O}_3$
 - All are equal
16. The first and simplest alkane is
- Ethane
 - Methane
 - C_2H_2
 - Methene
 - CCl_4
17. Compounds that have the same composition but differ in structural formulas
- Are used for substitution products
 - Are called polymers
 - Are usually alkanes
 - Have the same properties
 - Are called isomers
18. Ethene is the first member of the
- Alkane series
 - Alkyne series
 - Saturated hydrocarbons
 - Unsaturated hydrocarbons
 - Aromatic hydrocarbons
19. The characteristic group of the organic ester is
- $-\text{CO}-$
 - $-\text{COOH}$
 - $-\text{CHO}$
 - $-\text{O}-$
 - $-\text{COO}-$
20. Coke is produced from bituminous coal by
- Cracking
 - Synthesis
 - Substitution
 - Destructive distillation
21. An ester can be prepared by the reaction of
- Two alcohols
 - An alcohol and an aldehyde
 - An alcohol and an organic acid
 - An organic acid and an aldehyde
 - An acid and a ketone
22. The usual method for preparing carbon dioxide in the laboratory is
- Heating a carbonate
 - Fermentation
 - Reacting an acid and a carbonate
 - Burning carbonaceous materials
23. Slight oxidation of a primary alcohol gives
- a ketone
 - an organic acid
 - an ether
 - an aldehyde
 - an ester
24. The organic acid that can be made from ethanol is
- acetic acid
 - formic acid
 - $\text{C}_3\text{H}_7\text{OH}$
 - Found in bees and ants
 - Butanoic acid
25. The normal electron configuration for ethyne (acetylene) is
- $\text{H}:\text{C}::\text{C}:\text{H}$
 - $\text{H}:\text{C}:\text{C}:\text{H}$
 - $\text{H}:\text{C}:::\text{C}:\text{H}$
 - $\text{H}:\text{C}:::\text{C}:\text{H}$
 - $\text{H}:\text{C}:\text{C}:\text{H}$
26. The atomic structure of the alkane series contains hybrid orbitals designated as
- sp
 - sp^2
 - sp^3
 - sp^3d^2
 - sp^4d^3

27. Which of the following statements is the best expression for the sp^3 hybridization of carbon electrons?

- The new orbitals are one s orbital and three p orbitals
- The s electron is promoted to the p orbitals
- The s orbital is deformed into a p orbital
- Four new and equivalent orbitals are formed
- The s orbital electron loses energy to fall back into a partially filled p orbital

28. The following statements about carbon dioxide are true EXCEPT

- It can be prepared by the action of acid on $CaCO_3$
- It is used in fire extinguishers
- It dissolves in water at room temperature
- It sublimates rather than melts at $20^\circ C$ and 1 atm pressure
- It is a product of photosynthesis in plants

29. The structure of the third member of the alkyne series is

- $H-C\equiv C-H$
- $H-C\equiv C-CH_3$
- $H-C\equiv C-CH_2CH_3$
- $H-C\equiv C-C\equiv C-H$
- $H-C-C-CH=C-H_2$

30. The primary products of hydrocarbon combustion are

- Water and carbon
- Water and carbon monoxide
- Water and carbon dioxide
- Hydrogen and carbon monoxide
- Hydrogen and carbon

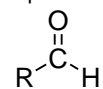
31. The production of alkanes from alkenes is accomplished by

- Burning in the presence of water
- Distillation
- Methylation
- Catalytic hydrogenation
- Hydrolysis

32. sp^2 hybridization will be found for carbon in

- CH_4
- C_2H_4
- C_2H_6
- CH_3OH
- CH_3OCH_3

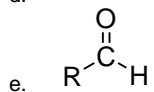
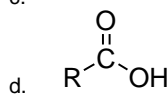
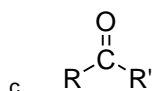
33. The functional group shown below represents



- An alcohol
- An ether
- An aldehyde
- A ketone
- An organic acid derivative

34. Which of the following is the functional group of an ether?

- $R-OH$
- $R-O-R'$



35. A triple bond may best be described as

- Two sigma bonds and one pi bond
- Two sigma bonds and two pi bonds
- One sigma bond and two pi bonds
- Three sigma bonds
- Three pi bonds

Answers:

- T, T, CE
- T, T, CE
- T, F
- T, T
- T, T, CE
- T, T, CE
- T, T, CE
- T, T, CE
- F, F
- T, T, CE
- A
- A
- C
- D
- C
- B
- E
- D
- E
- D
- C
- D
- A
- D
- C
- C
- D
- B
- C
- C
- B
- C