ಎಸ್ಎಸ್ಎಲ್ಸಿ–ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ

SCIENCE

Carbon and its Compounds

VERY SHORT ANSWER TYPE QUESTIONS

38. Ethane, with the molecular formula C_2H_6 has

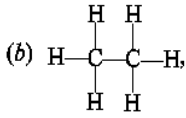
(a) 6 covalent bonds

(b) 7 covalent bonds

(c) 8 covalent bonds

(d) 9 covalent bonds

Ans:



(b) H—C—C—H, it has 7 covalent bonds.

39. Butanone is a four carbon compound with functional group

(a) Carboxylic acid **(b) aldehyde**

(c) ketone **(d) alcohol**

Ans: (c) Butanone has ketone functional group**.**

40. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that

(a) The food is not cooked completely.

(b) The fuel is not burning completely.

(c) The fuel is wet.

(d) The fuel is burning completely.

Ans: (b) The fuel is not burning completely and unburnt carbon particles get deposited on the vessel making it black.

41. The molecular formula of two members of a homologous series are C_3H_4 and C_6H_{10}. Write the molecular formula of the member with five carbon atoms in a molecule.

Ans: C_5H_8

42. Write the molecular formula of an alkene and an alkane with twenty carbon atoms.

Ans: $C_{20}H_{40}$ is an alkene and $C_{20}H_{42}$ is an alkane**.**

43. A vegetable oil contains two double bonds in its molecule. How many moles of hydrogen gas are required for complete hydrogenation of 1 mole of oil?

Ans: 2 moles of H_2

44. A compound has molecular formula C_2H_6O. It is usable as a fuel. Identify the compound.

Ans: C_2H_5OH, Ethanol

45. Which of the following are carboxylic acids: $C_2H_4O_2$, C_2H_4O, C_2H_6O, $C_3H_6O_2$?

Ans: $C_2H_4O_2$, $C_3H_6O_2$ are carboxylic acids**.**

36. Which alcohol is used in cough syrups and tonics?

Ans: Ethanol is used in cough syrups and tonics**.**

38. An organic compound 'A' of molecular formula $C_2H_4O_2$ turns blue litmus red and gives brisk effervescence with $NaHCO_3$. Identify 'A' and give chemical reaction.

Ans: A is Ethanoic acid, CH_3COOH.

$$\underset{\text{'A'}}{CH_3COOH} + NaHCO_3 \rightarrow CH_3COONa + H_2O + CO_2$$

39. Is ethanol harmful for drinking? If yes, why?

Ans: Yes, it is because it attacks central nervous system and leads to loss of control over body and mind.

40. What is the effect of drinking methanol?

Ans: It leads to blindness and even death if taken in excess.

SHORT ANSWER TYPE QUESTIONS

1. Write the name and molecular formula of an organic compound having its name suffixed with '-ol' and having two carbon atoms in the molecule. With the help of a balanced chemical equation indicate what happens when it is heated with excess of conc. H_2SO_4.

Ans: It is ethanol, its molecular formula is C_2H_6O and structural formula is CH_3CH_2OH.

Ethanol forms ethene, when heated with conc. H_2SO_4.

$$\underset{\text{Ethanol}}{CH_3CH_2OH} \xrightarrow[\text{heat}]{\text{Conc.}H_2SO_4} \underset{\text{Ethene}}{CH_2 = CH_2} + H_2O$$

2. Write the names and molecular formula of two organic compounds having functional group suffixed as '-oic acid'. With the help of a balanced chemical equation and explain what happens when any one of them reacts with sodium hydroxide.

Ans: HCOOH (Methanoic acid), its molecular formula is CH_2O_2. CH_3COOH (Ethanoic acid), its molecular formula is $C_2H_4O_2$. When acid reacts with sodium hydroxide, its sodium salt and water is formed.

$$\underset{\text{Ethanoic acid}}{CH_3COOH} + NaOH \rightarrow \underset{\text{Sodium ethanoate}}{CH_3COONa} + \underset{\text{Water}}{H_2O}$$

3. What is a homologous series? Which two of the following organic compounds belong to the same homologous?

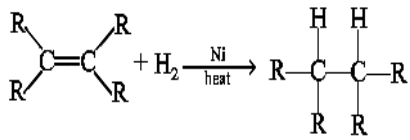
C_2H_6, C_2H_6O, $C_2H_6O_2$, CH_4O.

Ans: Homologous series is a series of organic compounds which have same functional group and similar chemical properties. Each member of this series is differ by $–CH_2-$ in its molecular formula and 14 u in its molecular mass.

C_2H_6O (C_2H_5OH) and CH_4O (CH_3OH) belong to same homologous series.

4. With the help of a suitable example explain in brief the process of hydrogenation mentioning the conditions for the reaction and also state any one physical property of substances which changes due to hydrogenation.

Ans:



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