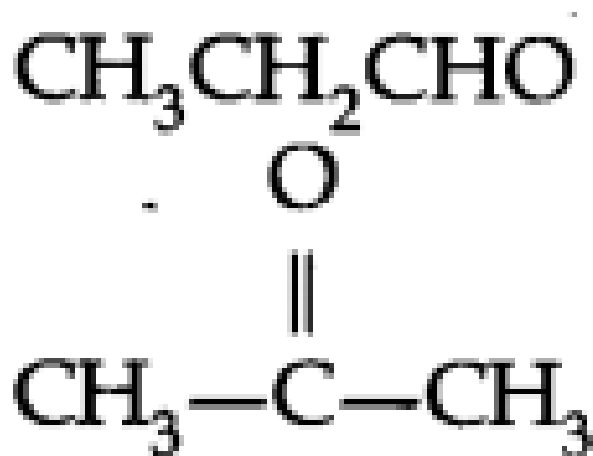




## II. Short Answer Type Questions

Question 1. Write all structural isomers of molecular formula  $C_3H_6O$ .

Answer:



Question 2. (a) What do you understand by Homolytic fission?

(b) What are carbanions? Give an example.

Answer:

(a) Homolytic fission is breaking of a bond in such a manner that each atom takes one electron each to form free radicals.

$A-----B \rightarrow A + B$

(b) Organic ions which contain a negatively charged carbon atom are called carbanions. e.g.,  $\text{CH}_3^-$  is carbanion.

Question 3. How will you detect the presence of nitrogen and sulphur in Lassaigne's extract?

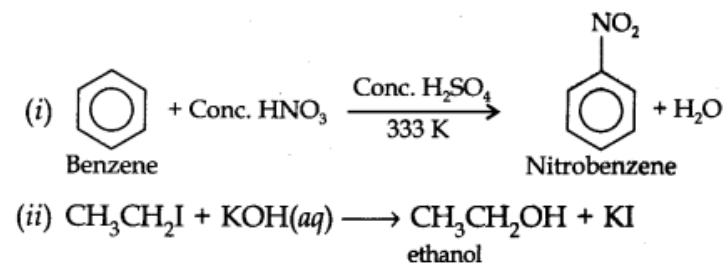
Answer: If freshly prepared  $\text{FeSO}_4$  and then dil.  $\text{H}_2\text{SO}_4$  is added to Lassaigne's extract, a blue green colouration confirms the nitrogen.

Question 4. Give equation for the following:

(i) Electrophilic Substitution

(ii) Nucleophilic Substitution

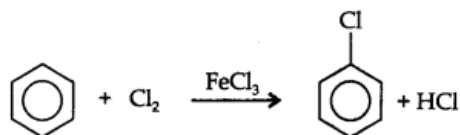
Answer:



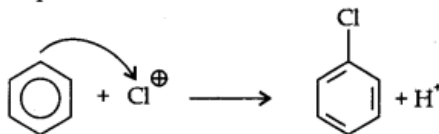
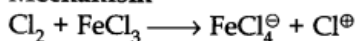
Question 5. What are electrophiles? Explain electrophile substitution reaction with the help of example.

Answer: A reagent which can accept an electron pair in a reaction is called an electrophile.

Examples are,  $\text{H}^+$ ,  $\text{Cl}^+$ ,  $\text{NO}_2^+$ ,  $\text{R}_3\text{C}^+$ ,  $\text{RN}_2^+$



**Mechanism**



Question 6. 0.25 g of an organic compound gave  $38 \text{ cm}^3$  of  $\text{N}_2$  at 300 K and 96 k Pa pressure. Calculate % of N in the sample.

Answer:

$$V_1 = 38 \text{ cm}^3$$

$$V_2 = ?$$

$$P_1 = 96 \text{ k Pa}$$

$$P_2 = 101.3 \text{ Pa}$$

$$T_1 = 300 \text{ K} \quad T_2 = 273 \text{ K}$$

$$V_2 = \frac{96 \times 38 \times 273}{300 \times 101.3}$$

$$= \frac{995904}{30390} = 32.77 \text{ cm}^3$$

$$\% \text{ of N} = \frac{28}{22400} \times \frac{100 \times V_2}{W}$$

$$= \frac{1}{8} \times \frac{V_2}{W} = \frac{1}{8} \times \frac{32.77}{0.25} = 16.38\%$$

Question 7. 0.15 g of an organic compound gave 0.12 g of Ag Br by the Carius method. Find percentage of Br in the compound.

Answer:

$$\% \text{ of Br} = \frac{80}{188} \times \frac{\text{weight of Ag Br} \times 100}{\text{weight of organic compound}}$$

$$= \frac{80}{188} \times \frac{0.12}{0.15} \times 100$$

$$= 34\%$$

Question 8. 0.12 g of an organic compound containing phosphorous gave 0.22 g of  $\text{Mg}_2\text{P}_2\text{O}_7$  by usual analysis. Calculate the percentage of phosphorous in the compound.

Answer:

$$\% \text{ of P} = \frac{62}{222} \times \frac{\text{weight of } \text{Mg}_2\text{P}_2\text{O}_7 \text{ formed} \times 100}{\text{weight of organic compound}}$$

$$= \frac{62}{222} \times \frac{0.22}{0.12} \times 100$$

$$= 51.20\%$$

Question 9. (a) Which is more suitable method for the purification of a compound in liquid state which decomposes at or below its boiling

point?

(b) How will you separate a mixture of ammonium chloride and common salt?

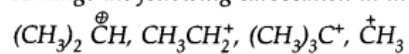
Answer:

(a) Distillation under reduced pressure or vacuum distillation.

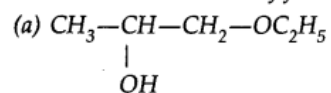
(b) Sublimation.

Question 10.

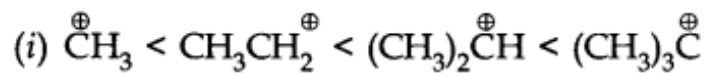
(i) *Arrange the following carbocation in increasing order of their stability.*



(ii) *Write the IUPAC name of following compound.*



Answer:



(ii) 1-Ethoxypropan-2-ol

\*\*\*\*\* END \*\*\*\*\*