

# 17326

16172

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

1. Answer any TEN :

10 × 2 = 20

- Define an electrophilic reaction. Give an example.
- Define 'stereochemistry'.
- Define an atom. Give two examples.
- Define functional group. Represent : aldehyde-, ketone-functional group.
- Define a molecule. Give two examples.
- Write full form of IUPAC.
- Write the structural formula of benzene. Is it aliphatic or aromatic ?
- Define the term nucleophilic reaction. Give an example.
- Write hydrogenation reaction of benzene. Name the product formed.
- Define empirical formula. Give an example.
- Name an addition polymer containing chloride as a functional group. Write its structural formula.
- Name isomers of butanol. Write their structural formula.

**2. Answer any FOUR :****4 × 4 = 16**

- (a) Define alkyl halides. Write the structural formulas of methyl chloride, ethyl bromide, isopropyl iodide and chloroform.
- (b) (i) Define an endothermic, reaction. Give an example.
- (ii) Define a covalent bond. Give an example of a compound having covalent bond.
- (c) An organic compound on analysis shows C = 24.48%, H = 3.32% and remaining oxygen. Calculate the empirical formula of this compound.
- (Take atomic wt. of H = 1, C = 12, 'O' = 16)
- (d) List any four general characteristics of aromatic compounds.
- (e) Define addition reaction. Explain addition reaction with examples.
- (f) Explain structural isomerism giving examples.

**3. Answer any FOUR :****4 × 4 = 16**

- (a) Explain co-ordination bond giving examples.
- (b) Classify the organic compounds based on their structure.
- (c) Compare in general aromatic and aliphatic compounds.
- (d) List IUPAC rules for naming alkyl halides.
- (e) Explain geometric isomerism in alkanes.
- (f) Define oxidation reaction. Give an example indicating reaction conditions involved.

**4. Answer any FOUR :****4 × 4 = 16**

- (a) Explain reversible and irreversible reaction. Give an example of each.
- (b) Classify the organic compounds based on functional groups.
- (c) Explain chlorination of benzene with its reaction mechanism.
- (d) Define an alcohol. Write its general formula. Write the structural formula for ethyl alcohol, n-propyl alcohol, isopropyl alcohol and methanol.
- (e) Define condensation reaction. Give examples of two condensation reactions indicating reaction conditions.
- (f) Explain optical isomerism of lactic acid.

**5. Answer any FOUR :****4 × 4 = 16**

- (a) Percentage composition of an organic compound as determined by analysis was C = 14.5, H = 1.5, O = 19.34 and CL = 64.66. Calculate its empirical formula. (A.W. of chlorine is 35.5)
- (b) Describe nitration of benzene, mentioning reaction conditions. Name product(s) formed.
- (c) List the IUPAC rules for naming ketones. Name the 'simplest' ketone.
- (d) Describe a substitution reaction.
- (e) What is asymmetric carbon atom ? Explain it with examples.
- (f) Explain the importance of organic chemistry.

**P.T.O.**

6. Answer any FOUR :

4 × 4 = 16

- (a) State any four general characteristics of organic compounds.
  - (b) Explain Friedel-Crafts alkylation of benzene indicating the nature of catalyst.
  - (c) Represent carboxylic, ether, ester and amide functional group. Name a compound containing each of these and write corresponding structural formula.
  - (d) Define sulphonation reaction. Explain sulphonation with a suitable example.
  - (e) Define molecular formula. How does it relate with empirical formula? Write molecular formula and empirical formula of ethylene.
  - (f) Define halogenation reaction. Explain halogenation with an example. In general comment on relative reactivity of halogens in the group.
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