17326

21314

3 Hours / 100 Marks Seat No. | | | | | | | | |

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 Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Answer any <u>TEN</u> of the following: **20**

a) Define atom and state as to why atom is neutral in nature.

b) Define:

i) molecule

ii) compound.

c) Define organic compound. Give name of any two organic compounds.

d) Define empirical formula and give any one example.

e) Write the characteristics of aromatic compounds in general.

f) Draw structure of benzene and show various positions in it.

g) Name a polymer containing chloride as a functional group. Write structural formula of the polymer.

Marks

h) Write the formula of:

i) acetone and

ii) formaldehyde.

Name functional group present in them,

i) Name halogens in the increasing order of their reactivity.

j) Define homolytic and heterolytic fission.

k) What is metamerism ? Give an example.

l) Which type of isomerism exist in alkane and alkene type of organic compounds ?

2. Answer any FOUR of the following: **16**

a) Define covalent bond. Explain any one type of covalent bond with an example.

b) Differentiate between organic and inorganic compound.

c) Explain the addition reaction between benzene and chlorine.

d) What is alkyl halide ? Write the structures of mono-di-tri and tetra-halide of an alkane.

e) What is condensation reaction ? Explain with an example.

f) What is optical isomerism ? Explain it with an example.

3. Answer any FOUR of the following: **16**

a) Define polarity. Explain it with an example.

b) State the rules to calculate empirical formula of an organic compound.

c) i) Explain the importance of organic chemistry.

ii) Define functional group.

d) Differentiate between aliphatic and aromatic compounds.

e) What is alkyl alcohol ? How are alcohols classified on the basis of hydroxyl group ?

f) Differentiate between electrophylic and neucleophylic reagents.

Marks

4. Answer any FOUR of the following: **16**

a) What is hydrogen bond ? Explain it with an example.

b) Differentiate between empirical and molecular formula.

c) Explain Freidel crafts alkylation reaction.

d) Explain nitration reaction of benzene.

e) Are amines acidic or basic ? Name and write structural formula of a primary amine, secondary amine and a tertiary amine.

f) Define oxidation reaction. Give a specific example of oxidation reaction. Mentioning conditions involved.

5. Answer any FOUR of the following: **16**

a) Classify organic compounds based on structure. Give examples of each class.

b) Explain sulphonation reaction benzene.

c) Write the general formula of alkyl carboxylic acid. Write the structures of any four carboxylic acids.

d) Explain mechanism of nitration.

e) What is stereo isomerism ? Name the two types of stereo isomerism and differentiate between them.

f) Describe functional isomerism with an example.

Marks

6. Answer any <u>FOUR</u> of the following: **16**

a) Percentage composition of an organic substance as determined by a analysis was: carbon = 20.04, hydrogen = 6.60, nitrogen - 46.63. Calculate the empirical formula. (Aotmic weight: H = 1, C = 12, 'O' = 16).

b) Write any four properties of benzene.

c) Write the structural formulaes of the following:

i) methyl, methyl ether

ii) ethyl, methyl ether

iii) diethyl ether

iv) acetamide

d) Explain with an example, an addition reaction.

e) Classify esterification as addition or condensations reactions. Give a specifical example of esterification reaction. State the conditions which will favour the reaction in forward direction.

f) What is an asymmetric carbon atom ? Write the properties of asymmetric carbon atom.

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