16117

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.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(8) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Answer the following (any TEN) : **20**

(a) Define electronegativity. Give example of any one electronegative element.

(b) Write the electronic configuration of following element :

(i) Fe^{26} (ii) Si^{14}

(c) State the importances of organic chemistry.

(d) Define empirical formula with example.

(e) Name & write the structure of any four aromatic compound.

(f) Write the properties of Benzene.

(g) Define aromatic compound. How aromatic name given to this compound ?

(h) Define functional group. Write the example of any one functional group.

(i) Name the polymer containing chlorine as function group. Write the formula of alkyl chloride.

(j) Define :

(i) Substrate (ii) Intermediate

(k) How organic reaction differ from inorganic reaction ?

(l) Define Homolytic fission with example.

(m) Define metamerism.

(n) Define asymmetric carbon atom.

2. Answer the following (any FOUR) : 16

(a) Define co-ordination bond. Explain co-ordination bond with example.

(b) Differentiate between sigma bond & pie bond.

(c) Explain the hydrogen bond with example.

(d) Define isomerism. Classify the isomerism.

(e) Describe the optical isomerism with example.

(f) Explain the geometric isomerism with example.

3. Answer the following (any FOUR) : 16

(a) An organic compound having molecular weight 60 containing oxygen, carbon, hydrogen & nitrogen, containing 20% carbon, 6.7% hydrogen & 46.67% nitrogen. Find the molecular formula of compound.

(b) An organic compound on analysis was found to contain C = 34.6%, H = 3.85% & O = 61.55%. Calculate the empirical formula of compound.

(c) An organic compound on analysis gave the following percentage composition :

Carbon = 57.8%, Hydrogen = 3.6%. Find the empirical formula of organic compound.

(d) State the rule to calculate the empirical formula of organic compound.

(e) Define organic compound. Write the characteristics of organic compound.

(f) Give the classification of organic compound on basis of structure.

4. Answer the following (any FOUR) : 16

(a) State & explain characteristics of aromatic compound with example.

(b) Explain the structure of benzene in brief.

(c) Write & explain addition reaction between benzene & chlorine.

(d) Explain the Friedal Crafts alkylation reaction.

(e) Explain with reaction how cyclohexane is prepared from benzene.

(f) Explain sulphonation reaction with example.

5. Answer the following (any FOUR) : 16

(a) What are halogen derivatives of alkanes ? How they are classified ? Give one example of each.

(b) What are alcohol ? Give the classification of alcohol with example.

(c) Write formula of carboxylic acid. Write the name & structure of any three carboxylic acid.

(d) Define alkyl amine. Write the formula & structure of any three amine.

(e) Write the formula of alkyl ether function group. Write the formula & structure of following ether (i) Methyl, methyl ether (ii) Ethyl, methyl ether (iii) Dipropyl ether

(f) Differentiate between structure isomerism & stereo isomerism.

P.T.O.

6. Answer the following (any FOUR) : **16**

(a) Define addition reaction. Explain it with the example.

(b) Explain the substitution reaction with example.

(c) Differentiate between Electrophilic & Nucleophilic reagent.

(d) Describe condensation reaction with example.

(e) What is oxidation reaction ? Explain it with example.

(f) Explain mechanism of chemical bond.
