22230

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer 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.

Marks

1. Attempt any FIVE of the following: **10**

a) Define:

i) Monomer

ii) Polymer.

b) List the types of chain polymerisation reaction.

c) Name the types of polymerisation reaction occurs in following polymer:

i) Polyvinyl chloride

ii) Nylon 6.

d) State the four techniques of polymerisation.

Marks

e) "An anionic polymerisation is known as living polymerisation". Justify your answer.

f) State the advantages of suspension polymerisation.

g) Define degree polymerisation and write it's relation with molecular weight of polymer.

2. Attempt any THREE of the following: **12**

a) Define copolymer and classify copolymer with example.

b) Explain cationic polymerisation with reaction.

c) List the factors affecting glass transition and explain any one in brief.

d) "Mastigation is carried out in rubber before processing in which degradation of rubber occurs." Name the degradation take place in mastigation process and explain it.

3. Attempt any THREE of the following: **12**

a) Differentiate between monomer and polymer.

b) Describe the bulk polymerisation technique with example.

c) State the relation of glass transition temperature of polymer with melting point of crystallite and amorphous polymer and explain it.

d) State and explain the mechanism of degradation with example.

4. Attempt any THREE of the following: **12**

a) Classify the polymer on basic of:

i) Origin

ii) Structure

iii) Carbon linear

iv) Thermal behaviour with example.

b) Suggest the polymerisation techniques used to manufacture adhesive/paint and explain it with example.

c) Define glass transition temperature and significances of glass transition.

d) State the principle of Osmosis pressure to measure molecule weight of polymer and explain the method.

Marks

5. Attempt any TWO of the following: **12**

a) Describe polycondensation reactions. Explain polycondensation reaction of Nylon 6,6 with example.

b) State the function of initiator and explain free radical polymerisation with reaction.

c) Define critical micelle concentration. (CMC) and explain emulsion polymerisation techniques with example.

6. Attempt any TWO of the following: **12**

a) List the types of molecular weight consider the polymer. Derive expression to determine number average (N_n) and weight average (N_w) in polymer.

b) Define molecular weight distribution state the types of molecular weight distribution and explain molecular weight distribution concept in polymer with neat sketch.

c) State the different method used to measured molecular weight of polymer and explain viscometry method to measure molecular weight of polymer.