312331

12526
3 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 monomer and oligomer.

b) Define polymer degradation. Enlist it's types.

c) Write types of polymerization technique.

d) Define degree of polymerization.

e) Enlist any two thermal stabilizer.

f) Define glass transition temperature.

g) Define weight average molecular weight.

P.T.O.

Marks

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

a) Explain classification of polymer on the basis of their structure.

b) Distinguish between thermoplastic and thermosetting plastic.

c) Explain block copolymer and graft copolymer.

d) Explain schematically the formation of micelles in emulsion polymerization technique.

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

a) Explain condensation polymerization reaction with suitable example.

b) Describe practical significance of molecular weight with graphical representation.

c) Explain with neat labelled diagram viscometry method for determination of molecular weight.

d) Explain relation between glass transition temperature and melting point.

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

a) Describe with neat sketch :–

i) Chain end polymer degradation.

ii) Random polymer degradation.

b) Describe the procedure of Ebulliometry for determination of average molecular weight of polymer.

c) Explain optical stereoregular polymer with suitable example.

d) Explain antioxidants preventive methods for polymer degradation.

e) Explain factors affecting on glass transition temperature.

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

a) Compare solution and suspension polymerization technique with respect to their characteristics.

b) Explain ring opening polymerization with suitable example.

c) Explain initiation, propagation and termination in anionic polymerization.

Marks

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

a) Define co-polymer. Give it's classification. Explain in detail any two types of co-polymer.

b) Calculate weight average molecular weight and number average molecular weight of polymer sample has following data:

Number of Molecules in Polymer	Molecular Weight
03	5,000
05	8,000
10	10,000
10	12,000
15	10,000
08	9,000

c) Explain mechanism of free radical polymerization with respect to their initiation, propagation and termination steps

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