

This question paper contains 3 printed pages.

3141

Your Roll No.

M.E.

J

POLYMER TECHNOLOGY

Paper – CH.501

(Basic Principles of Chemistry)

Time : 3 hours

Maximum Marks : 100

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

*Attempt any five questions.
All questions carry equal marks.*

1. Write about the following with suitable examples:

(a) Ionic Bonding

(b) Hydrogen Bonding

(c) Covalent Bonding

(d) Chelation.

4×5=20

2. (a) What do you understand with the hydrophobic bonding?

(b) Differentiate natural and synthetic polymers. Report their special properties also.

(c) Give brief of the charge-transfer forces. 5,10,5

P.T.O.

3. (a) Define number average and weight average molecular weights of polymer sample.
- (b) Explain the following terms:
- (i) Molecular Weight Distribution (MWD)
 - (ii) Polydispersity.
- (c) 216 g of butadiene is copolymerized with 104 g of styrene. What is the molecular formula of the copolymer? 6,6,8
4. (a) Discuss about the end group analysis method to determine number average molecular weight of polymer sample.
- (b) Write about the osmometry method to determine average molecular weight of polymers. 10,10
5. Give the details of principle, working and applications of IR spectroscopy. 20
6. Discuss about the principles and applications of any *two* of the following:
- (i) NMR
 - (ii) ESR
 - (iii) Mass Spectrometry. 10,10
7. (a) How does the thermal analysis help in polymer characterization?

- (b) Describe the principle, instrumentation and application of TGA or DTA in polymer analysis. 4,16

8. Write short notes on any *four* of the following:

- (i) Light scattering method
- (ii) Sedimentation
- (iii) GPC
- (iv) Beer-Lambert's law
- (v) DSC
- (vi) TMA.

4×5=20

