

B.Tech. Seventh Semester (Polymer (Plastic) Technology) (CGS)
11136 : Structure Property Relationship in Polymers : 7 PP 03

P. Pages : 2

Time : Three Hours



AU - 2941

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Diagrams and chemical equations should be given wherever necessary.
 3. Illustrate your answer necessary with the help of neat sketches.
 4. Discuss the reaction, mechanism wherever necessary.

SECTION – A

1. a) Classify polymer on basis of : 8
 - i) Molecular Weight Distribution
 - ii) Chemical constitution.
- b) What do you mean by internal rotation in macro-molecules? State different types of interaction. 5

OR

2. Explain the followings in detail:- 13
 - i) Configuration
 - ii) Conformation
 - iii) Linear, Branched & Cross-linked structure.
3. a) What do you mean by Super molecular structure? 4
- b) Explain in detail with help of neat sketch of X- ray diffraction pattern for Amorphous and Crystalline polymer. 10

OR

4. a) What do you mean by molecular aggregation? 4
- b) Explain degree of crystallinity? Give methods of determination of degree of crystallinity. 10
5. a) What do you mean by partial & equilibrium melting temperature? 6
- b) What do you mean by crystallization? State factors responsible for crystallization. 7

OR

6. What is Glass Transition temperature? State the effect of molecular weight & chemical constitution on glass transition temperature. 13

SECTION – B

7. a) Explain morphology of polymers, with few examples. 5
b) What are spherulites? Give it's various type with help of neat sketch.

OR

8. a) How does spherulite effects on properties of polymeric material? 6
b) What are different kinds of defects in the structure of Crystalline polymer? 7
9. a) Give any two electrical properties of polymer & state the factors affecting it. 5
b) What is the effect of molecular weight & chemical constitution of polymers on T_g & T_f ? 8

OR

10. a) Explain fracture & give its type and mechanism. 6
b) Explain the following terms: http://www.sgbauonline.com 7
i) Dielectric loss.
ii) Dielectric Breakdown strength
11. a) What do you mean by pores? Discuss the concept of porosity & methods of forming porous structure of polymers. 8
b) Define foll. terms:- 6
i) Sorption ii) Adsorption
iii) Chemisorption iv) Adsorbent
v) adsorbate vi) Porosity

OR

12. What are Liquid-Crystalline Polymers? Give classification with neat diagram, State few examples & application. 14
