B.Tech. Eighth Semester (Polymer (Plastic) Technology) (CGS)
11147 : Polymer Viscoelasticity & Rheology : 8 PP 02

P. Pages : 2

AW - 3506

Time : Three Hours

Max. Marks : 80

0817

Notes :
1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Discuss the reaction, mechanism wherever necessary.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Discuss assemblage or state of aggregation in polymers. — 6

   b) Differentiate between state of aggregation and phase states of matter. — 7

OR

2. a) Describe various types of relaxation processes in polymers? — 6

   b) What is rubber like deformation in polymer? Explain in detail. — 7

3. Explain the various experimental techniques to determine the glass transition temperature. — 14

OR

4. Define & discuss the following terms with suitable examples: - — 14
   i) Glass transition temperature   ii) Crystallization

5. a) Define & explain the following terms: - — 7
   i) Shear modulus   ii) Young's modulus
   iii) Bulk modulus

   b) Discuss various types of viscosity & their relations. — 6

OR

6. Explain viscoelastic behaviour of polymers by both Maxwell's & Kelvin model. — 13

SECTION - B

7. a) What do you mean by fluid? Discuss the types of fluid & give examples of fluid. — 7

   b) What do you mean by Rheology? Give it's introduction and basic concept, with few examples. — 7

OR

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8. a) Explain the dependency of viscosity with temperature. 7

   b) Explain shear stress & shear rate of fluid flowing through channel. 7

9. a) Explain the principle, working and application of capillary rheometer. 6

   b) Explain entanglement concept in detail. 7

OR

10. Discuss DeBye Bucche theory of viscosity of dilute solution in detail. 13

11. a) What are assumptions given by Einstein Theory? 5

    b) Explain the effect of rheology during injection moulding of polymers? 8

OR

12. a) Discuss the principle, working and significance of Bubble inflation rheometer. 7

    b) Explain the rheological properties of blown film extrusion of polymers. 6

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