B.TECH. DEGREE EXAMINATIONS: NOVEMBER 2009

Second Semester

TEXTILE TECHNOLOGY

U07TT202: Polymer Science

Time: Three Hours   **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. The size of individual polymer molecule is of the order of

   a) 10^{-1} to 10^{-3} cm   b) 10^{-4} to 10^{-7} cm   c) 10^{-1} to 10^{-3} m   d) 10^{1} to 10^{7} mm

2. Which one is a co polymer?

   a) Buna –S   b) Teflon   c) PVC   d) Polypropylene

3. The fibre obtained by condensation of Hexa Methylene diamine and Adipic acid is

   a) Dacron   b) Nylon 6,6   c) Rayon   d) Terylene

4. Teflon is obtained by the polymerization of

   a) Vinyl chloride   b) Tetrachloro ethylene   c) Tetrafluro ethylene d) Tetrabromo ethylene.

5. The cellulose derivative which is used in the manufacture of shatter-proof glass is

   a) Cellulose acetate   b) Ethyl cellulose   c) Cellulose nitrate   d) Cellulose xanthate.

6. The Schweitzer's reagent which is used in manufacture of Cupra silk

   a) Ammonical solution of cupric hydroxide   b) NaOH and carbon disulphide

   c) Acetic anhydride   d) Con HNO_3 and H_2SO_4.

7. The temperature of both sample and reference is kept identical in

   a) TGA   b) DTA   c) DSC   d) Spectrophotometer

8. The most convenient and least complex method for the determination of molecular weight of polymer is

   a) Light scattering   b) Viscosity   c) End group analysis   d) Osmometer

9. The function of anti oxidant in plastics is mainly to

   a) Prevent UV radiation and oxidation   b) Increase thermal stability

   c) Prevent friction   d) Acceleration polymerization

10. Cellophane sheets are manufactured by the process

    a) Calendaring   b) Die casting   c) Film casting d) Extrusion Moulding

PART B (10 x 2 = 20 Marks)

11. Name two synthetic polymers which are used as textile fibres.

12. Differentiate between homopolymer and copolymer.

13. Why is PVC used in chemical industries?

14. Why is Kevlar much less flexible than nylons?

15. What is mercerized cotton?

16. Give any two important uses of Ethocel.

17. Give the principle involved in high speed membrane Osmometer.

18. What is degree of polymerization?

19. Name any two coloring agents added to plastics.

20. What is compounding of polymers?

PART C (5 x 14 = 70 Marks)

21. a) i) Explain the different steps and mechanism involved in condensation Polymerization. (8)

    ii) What is solution polymerization? (6)

(OR)

    b) i) Explain classification of polymers with suitable examples (7)

    ii) What is melt poly condensation Techniques? (7)

22. a) i) Write short notes production and properties of PPT. (7)

    ii) Explain the production of Poly Tetrafluro Ethylene. Give the important uses. (7)

(OR)

    b) i) Give importance of polyamides in industries. (7)

    ii) Differentiate LDPE and HDPE in structure, properties and users. (7)

23. a) i) Explain the manufacture of Rayon by viscose process. (7)

    ii) Write notes about high wet modulus polynosic yarn. (7)

(OR)

    b) i) Explain the manufacture of Lyocell super high wet modulus yarn. (8)

    ii) What is Casein? Give its important uses. (6)

24. a) i) Explain determination of viscosities of dilute polymer solutions the Ubbelonode viscometer. (7)

    ii) Discuss the thermal characterization of polymers by TGA. (7)

(OR)

    b) i) Explain determination of weight average by light scattering method. (10)

    ii) What is the principle involved in DSC. (4)

25. a) i) Explain Extrusion molding with suitable sketch. (7)

    ii) Write a short note about recovery of Nylon polymers. (7)

(OR)

    b) i) Explain manufacture of polymer sheets by Calendaring. (7)

    ii) Discuss the reuse of acrylic and polypropylene wastes. (7)

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