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T 3932

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Annual Pattern - First Year

(Regulation 2004)

Textile Technology

TT 1 X 01 — POLYMER SCIENCE AND TEXTILE FIBRE PRODUCTION

(Common to Textile Technology (Textile Chemistry))

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give any two advantages and disadvantages of bulk polymerization technique.
2. Distinguish between addition and condensation polymerization.
3. How do you prepare Nylon 6 and Nylon 6.6?
4. What are conducting polymers? Give two examples.
5. What is the function of a coagulation bath in the spinning process?
6. What is the difference between glass transition temperature and melting temperature of a polymer?
7. Mention the need for drawing in fibre production.
8. What is meant by texturisation?
9. List any four important properties of jute.
10. What is wool shearing?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the principle and working of a thermo gravimetric analyzer. (8)
- (ii) Discuss the determination of weight average and average molecular weight by light scattering method. (8)

Or

- (b) (i) Explain the procedure involved in the determination of number average molecular weight by Gel permeation chromatography. (8)
- (ii) Illustrate the mechanism of radical and ionic polymerization reactions. (8)
12. (a) (i) Give the preparation, properties and uses of polyester and polyurethane. (8)
- (ii) Discuss the various steps involved in the manufacture of viscose. (8)

Or

- (b) (i) Describe the preparation of polyethylene. Give properties and applications of polyethylene. (8)
- (ii) Summarize the important characteristics of fibre forming polymers. (8)
13. (a) (i) Describe the important features and basic operations of a single and multi screw extruder. (8)
- (ii) What is meant by phase transition? Explain the factors which affect the first and second order phase transitions in polymers? (8)

Or

- (b) (i) Describe the melt spinning and dry spinning processes employed in the production of fibres. (8)
- (ii) Write a note on optical properties and chemical and weather resistant characteristics of polymers. (8)
14. (a) (i) What is meant by heat setting? Explain the need for heat setting and steps involved in it. (8)
- (ii) Discuss about tow to yarn converters. (8)

Or

- (b) (i) Give a detailed account on the spin draw process. (8)
- (ii) Write a note on spin finishes. (8)

15. (a) (i) Discuss the varieties of silk and their properties. (8)
(ii) Give a detailed summary of cotton and jute cultivation. (8)

Or

- (b) (i) Describe the varieties of cotton and wool. (8)
(ii) Write a note on grading and baling of cotton. (8)
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