

E 340

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2003.

Fifth Semester

Textile Technology

TT 338 — PHYSICAL STRUCTURE AND PROPERTIES OF FIBRES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State in general the morphological features of manmade fibres.
2. Give the chemical structure of cotton fibre.
3. State the significance of structural analysis of fibres.
4. Differentiate electron microscopy and X-ray techniques.
5. What is moisture hysteresis?
6. Define heat of wetting.
7. Give the typical stress-strain nature of textile fibres.
8. Define Flexural rigidity.
9. What is bi-refringance?
10. What do you understand by heat setting of fibres?

PART B — (5 × 16 = 80 marks)

11. Explain the significance of rate of conditioning and discuss the mechanism of conditioning.

12. (a) Discuss the morphological and chemical structure of wool fibre.

Or

(b) Explain the chemical structure of cotton, viscose, polynosic fibres and discuss the physical structure of cotton fibre.

13. (a) Explain the various types of electron microscopic techniques of structural analysis of fibres and state the significance of sample preparation techniques.

Or

(b) Explain the X-ray diffraction method of fibre investigation and discuss the results of any two diffraction photos of fibres.

14. (a) Define torsional rigidity of fibres and derive an express and explain the various factors influencing the torsional rigidity of fibres.

Or

(b) Discuss the tensile characteristics of any two man-made and natural fibres and explain the effect of temperature and humidity on the stress-strain nature of the above fibres.

15. (a) Discuss the parameters of Dielectricity and explain the various factors influencing the same.

Or

(b) Explain the problems due to static electricity and suggest suitable remedial measures.