A 506

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

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. Differentiate reversals and convolutions.

2. State the range of fineness of man-made fibre.

3. Draw the diffraction pattern of powder crystal.

4. State the types of electron microscopes.

5. Define heat of wetting.

6. What is standard atmospheric condition?

7. What do you understand by mechanical conditioning of fibres?

8. What is the significance of birefringence?

9. Define DFE of wool fibre.

10. State the flammability characteristics of polyester fibre.

PART B — (5 × 16 = 80 marks)

11. (i) With a neat diagram, highlight the morphological features of wool fibre. (8)

(ii) Explain the physical structure of wool fibre. (4)

(iii) Explain the chemical structure of wool fibre. (4)

12. (a) Discuss the basic principle of X-ray diffraction technique and highlight the interpretation of X-ray photograph.

Or

(b) With a neat schematic diagram explain the working of a scanning electron microscope and highlight the features identifiable by such technique.

13. (a) Discuss the moisture absorption behaviour of textile fibres and highlight the effect of temperature stress and fibre structure on the same.

Or

(b) With neat graphs, discuss the mechanism of moisture conditioning and highlight the effect of any two factors influencing the conditioning.

14. (a) Define torsional rigidity of fibres and highlight the effect of fibre properties influencing the same.

Or

(b) Discuss creep and stress relaxation experimental techniques.

15. (a) State the problems due to static electricity and suggest suitable methods to eliminate such problems during processing.

Or

(b) Define the characterisation of dielectric nature of fibres and discuss the factors influencing dielectricity.
