

Reg. No. :

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**J 3441**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

Fourth Semester

Textile Technology

TT 1255 — STRUCTURE AND PROPERTIES OF FIBRES

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Diagrammatically indicate the chemical structure of cotton fibre.
2. Define the terms 'crystallinity' and 'orientation'.
3. If cotton fibre of mass 5 g absorbs 2 g of water, what will be the moisture regain and moisture content?
4. What is meant by differential heat of sorption?
5. The specimen AB is extended upto AC and after removal of load the length of the specimen is AO, what will be the elastic recovery?
6. Define the term 'flexural rigidity'.
7. Enlist the factors influencing lustre of fibres.
8. What do you mean by 'directional frictional effect'.
9. State the importance of heat setting of fibres.
10. Enumerate the factors influencing electrical resistance of textile fibres.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the structural features of two different fibres with same origin and relate that with their physical properties. (8 + 8)

Or

- (b) Explain the structural investigation of fibres using infra-red radiation.
12. (a) Draw the moisture absorption curve of different fibres and explain the term absorption hysteresis. (12 + 4)

Or

- (b) Explain the theory of conditioning process and the factors influencing it. (10 + 6)
13. (a) Discuss in detail creep and stress relaxation of fibres. (8 + 8)

Or

- (b) Draw the stress-strain curves for various textile fibres and explain their significance. (10 + 6)
14. (a) Explain optical properties of textile fibres.

Or

- (b) Discuss the importance of fibre friction in textile production and processing, and its measurement.
15. (a) Discuss the causes, effects and remedies of static electricity in textile industry. (5 + 5 + 6)

Or

- (b) Write about the following :
- (i) Flammability characteristics of fibres (8)
- (ii) Fibre structural changes on heating. (8)