

H 1538

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Sixth Semester

Textile Technology

TT 344 — NEW SPINNING TECHNOLOGIES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Compare the quality of yarns produced from ring spinning machine with and without condensation arrangement.
2. State the influence of rotor diameter on spinning tension in rotor spinning.
3. What do you understand by 'wrapper fibres' in rotor spun yarns?
4. Compare four important properties of rotor spun yarn and ring spun yarn.
5. What are the sequence of operations involved during friction spun yarn production?
6. What are the main applications of friction spun yarns?
7. Draw the structure of air-jet spun yarn.
8. State two methods where ply yarn is produced during spinning itself.
9. What is the suitability of air-jet spinning with respect to yarn linear density?
10. What is the principle of double-rove yarn production?

PART B — (5 × 16 = 80 marks)

11. (i) What is the limitation in ring spinning with respect to formation of spinning triangle? (6)
- (ii) Explain how the above limitation is overcome in condensed yarn spinning. (10)

12. (a) Compare the economics of rotor yarn production with that of ring yarn production.

Or

- (b) In a rotor spinning machine the feed rate is 0.75 m/min. The rotor rpm is 50000 and the yarn count is 10 Ne with a twist multiplier of 4.9. The rotor diameter is 36 mm.

Calculate

- (i) The draft between the feed roller and the rotor. (6)
- (ii) The production in g/hour/ rotor at 92% efficiency. (6)
- (iii) The number of doubling in the rotor. (4)
13. (a) Explain the production of yarn with polyester fibre in the core and wool in the sheath using DREF 2 spinning machine.

Or

- (b) Calculate the number of friction spinning heads required to produce 2000 kg of 4 Ne yarn per day with the following particulars.

spinning drum speed = 4500 rpm

frictional slippage between spinning drum and the fibre strand = 60%

ratio of spinning drum diameter to yarn diameter = 120

nominal twist per inch of the yarn = 12

production efficiency = 80%

14. (a) (i) Explain the principle of 'false twisting'. (6)
- (ii) How a fascinated yarn structure can be obtained by false twisting principle? (10)

Or

- (b) Compare and discuss the drafting methods used in rotor and air-jet spinning.

15. (a) Write short notes on :

- (i) Suitability of double-rove spinning. (8)
- (ii) Economics of double-rove yarn production. (8)

Or

- (b) Explain how a wrap yarn with parallel staple-fibres in the core and twisted filament yarn on the surface can be produced.