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Total No. of Questions : 09

B.Tech.(Textile) (2011 Onwards) (Sem.–5)

YARN MANUFACTURE – II

Subject Code : BTTE-502

M.Code : 71613

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) State the objects of a comber. How do you assess the performance of a comber?

b) Show schematically the was reversal of hook direction in post carding process is done as a part of combing preparatory process.

c) Give a comparison between dual speed drive and VPS drive as used in modern ring frames.

d) Name the organs of a rotor spinning machine which are involved in twist insertion.

e) Suggest a spinning line for producing yarn in air jet spinning system.

f) Arrange the fibre quality requirements in rotor spinning in order of their importance.

g) Calculate the speed of the drafting unit-I and drafting unit-II of a Dref-3 friction spinning machine with the following particulars :

Count to be spun = $12^{s}N_{e}$, sliver weight = 2.62g/m, delivery speed = 140m/min, Core sheath ratio = 70:30 and drum speed = 3000 *rpm*.

h) A comber producing a sliver of 3.25 g/m at a rate of 160 m/min, while extracting noil at the rate of 150 g/min. Calculate the noil %.

i) State the range of twist that is generally used to produce 100% cotton roving. Also state the role of false twist attachment.

j) If a ring frame produces 40^{s} N_{e} yarn while the front roller delivery speed is 500 inches per minute, calculate the production per spindle when the efficiency of the machine is 90%.

SECTION-B

2. With the help of a neat sketch, describe the twist insertion principle in rotor spinning system. Also discuss the effect of the rotor diameter, rotor rpm and peripheral twist extent on spinning stability and the properties of yarn.

3. A mill has an output of 25000 lbs/hr of yarn of 16/1 (N^e) at 3.8 Tm spun on ring frames running at 15000 *rpm* at an efficiency of 92% and a waste level of 1.8%. The ring frames are supplied with 1.1 hank roving (N_e) made on roving frames running at 1200 rpm and with a TM of 0.996. The efficiency of roving frame is 93% and the fibre loss is 0.2%. Calculate

   (a) the number of ring frame spindles and

   (b) number of roving spindles required.

4. Find the waste% and draft put on a comber with the following particulars on a 6 head comber :

   Nips/min = 300, Weight of feed - 60 ktex, Length fed per nip = 0.2 inches, Production = 11 hanks / 8 hours, Hank of sliver produced = 0.17 inches and Efficiency = 80%.

5. State the problems associated with air jet spun yarn. Discuss possible remedial measures.

6. Discuss the building mechanism in a roving frame, Give necessary diagram in support of your answer.

SECTION-C

7. Give a comparative assessment of the structures of ring and air jet spun yarns and hence compare their mechanical properties.

8. a) A roving frame produces a package of 450gms. The back roller of one inch diameter runs at 30*rpm*. The draft employed is 8.4. If the machine runs at 82% efficiency, find the time for one full doff when machine delivers a 3 hank roving.

   b) Why a periodic variation in strength is found in friction spun yarn? Discuss the effect of yarn delivery speed and drum speed on the properties of yarn.

9. a) Write the probable causes of end breakages in ring spinning and suggest remedial measures. Discuss the factors that are to be considered for performance assessment of roving frame.

   b) A traveler slides at 140ft/sec on a 1.75inch diameter ring. The twist density of the yarn being spun is 22 tpi and it is wound on to a 1.25inch diameter bobbin. What is the percentage difference between the traveler and package speeds? What does the difference represent?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.