

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Textile Engg.) (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 have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

- What do you mean by 'RATCHING' in roving frame? State the factor(s) which can influence it.
- Define fractionation efficiency index. How many machine passages are given between card and the comber? Justify your answer.
- Give a comparison between dual speed drive and VPS drive as used in modern ring frames.
- State the objects of a roving frame and state the parameters to be judged to assess its performance.
- State the role of opening roller in rotor spinning and hence indicate the problem of rotor spinning of wool.
- Arrange the fibre quality requirements in air-jet spinning in order of their importance. Specify the role of fibre length distribution.
- With the help of a suitable diagram define angle of pull in ring spinning and state its importance.
- A comber producing a sliver of 3.75 g/m at a rate of 160 m/min, while extracting noil at the rate of 150 g/min. Calculate the noil %.
- State two application field of core spun yarn. State the factors on which break draft in a ring frame depends.
- Compare 3/3 and 4/4 drafting systems in regards to their advantages and disadvantages.

SECTION-B

2. With the help of a neat sketch, describe the twist insertion principle in air jet spinning system. Also discuss the effect of the associated process parameters on the properties of the yarn.
3. A ring frame produces 80s Ne combed yarn. The spindle speed is 14500 rpm, $TM = 3.8$, ring diameter = $1\frac{7}{8}$ inch, bare bobbin diameter = $1\frac{1}{16}$ inch, full bobbin diameter = $1\frac{3}{4}$ inch. The working efficiency of the machine is 91% and hank of the roving fed, change pinion and twist wheel used are 1.5 hank 32T and 40T respectively. Find the production, the traveler speed, draft constant and the twist constant of the machine. Also find the angle of pull.
4. Find the waste% and draft put on a comber with the following particulars on a 6 head comber :
Nips/min = 200, 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. Discuss the effect of rotor speed, rotor diameter and opening roller speed on the mechanical properties of the yarn.
6. Write a short note on compact spinning system or on core spinning system.

SECTION-C

7. Give a comparative assessment of the structures of ring, air jet and rotor spun yarns and hence compare their mechanical properties. Comment on the superiority of ring spun yarn.
8. a) A roving frame produces a package of 450 gms. 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) Discuss in detail the role of yarn delivery speed, drum speed and friction ration in governing the properties of friction spun yarn.
9. a) Write the probable causes of end breakages in ring spinning and suggest remedial measures. Discuss the influence of traveler in governing the process and product performance.
b) Discuss the effect of the following on the combing performance :
 - i) Detachment setting.
 - ii) Depth of penetration of top comb.
 - iii) Type of delivery pan used.15

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.