15297

B. Tech 7th Semester Examination

Process Control in Textile (NS)

TE-412

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in total selecting one question from each of the section A, B, C and D and all subparts of the question in section E.

SECTION - A

1, (a) Explain the application of linear programming techniques in a spinning mill to optimize mixing cost and quality.
(10)

(b) Discuss principle involved in instrumental evaluation of following cotton quality parameters:

(ii) Neps   (ii) Span length

(iii) Immaturity   (iv) Fibre bundle strength.   (10)

2. (a) What do you mean by the term Statistical process control? Discuss the various steps involved in process control in spinning industry.   (10)

(b) Discuss the impact of yarn realization in profitability of a spinning mill. Determine the approximate yarn realization percentage and cost of clean cotton : (other data may assumed suitably)

Cost of Shankar-4 Rs 85/kg

[P.T.O.]

Cost of MECH Rs 70/kg

Mixing is prepared as Shankar-4 : MECH 88: 12

Resultant trash in the mixing is 5.5%

Saleable waste produced 8Kg per 100 kg of yarn.

Sale value of waste Rs 30 /Kg

Count spun is 40^s Ne (combed)

Noil extracted 18%.   (10)

SECTION - B

3. (a) Discuss the importance of performance carding machine on quality of the yarn. Discuss the major control points in the carding machine to ensure its performance. (10)

(b) How do control the long term and short variation in the yarn? Discuss their effect on subsequent process and fabric quality.   (10)

4. (a) Explain the term perfect drafting . Why it is not possible to achieve perfect drafting in practice? What is index of irregularity?   (10)

(b) Discuss the origin of periodic irregularity and quasi-periodic irregularity in the yarn .How do you detect this in practice? Discuss the remedial measures of the same.
(10)

SECTION - C

5. (a) Discuss the various factors that affect the quality of warping beam. How do you assess the performance of warping?   (10)

(b) How do you control the size pick up of the yarn ? Discuss how sizing affects the efficiency of loom shed?   (10)

6. (a) Discuss the possible reasons in loss in productivity of a automatic winding machine.   (10)

   (b) How does the performance of winding machine affect the efficiency of the subsequent processes?   (10)

SECTION - D

7. (a) Describe the process of dyeing of polyester cotton blends (using disperse and reactive dyes) in batch wise method.   (10)

   (b) What could be the possible for uneven dyeing of cotton yarn in form of package? Discuss the remedial measures.   (10)

8. (a) Discuss the limitation of winch and conventional jiggers. How these are overcome in modern machineries?   (10)

   (b) Discuss the possible reason and remedial measures for following types of dyeing defects.

       (i) patchy dyeing in vat dyed cotton fabrics.

       (ii) centre to selvedge variation in dyeing of cotton fabrics using reactive dyeing in pad - dry - cure process.

       (iii) Tailing effect in fabrics dyed in jiggers.

       (iv) oxidation marks in vat dyed fabric.

       (v) tendering of fabrics dyed with sulphur dyes.   (10)

SECTION - E

9. Attempt all questions:

   (i) What do you mean by Visible foreign matter?

   (ii) Define the term Spinning consistency index (SCI).

   (iii) What do you mean Uniformity ratio?

   (iv) Define the term random sampling.

   (v) What is an autoleveller?

   (vi) Define the term machine audit.

   (vii) What do you mean by knot factor?

   (viii) What is the importance of viscosity of printing paste in screen printing?

   (ix) What is barium activity number?

   (x) What is role of retarding agent in dyeing of polyester fabrics using disperse dyes?   (10×2=20)