

B.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2010

Fifth Semester

TEXTILE TECHNOLOGY

U07TT501: Process and Quality Control in Yarn Manufacture

Time: Three Hours**Maximum Marks: 100****Answer ALL the Questions:-****PART A (10 x 1 = 10 Marks)**

1. Aim of the process control is to
 - A. Increase production
 - B. Reduce the waste
 - C. Improve the Quality
 - D. Produce quality product at minimum cost.
2. Process variable is changed
 - A. To increase the production
 - B. To improve the quality and production
 - C. To increase the waste
 - D. To reduce the waste
3. Object of mixing cotton is to
 - A. Reduce the cost by using lower quality cotton
 - B. To reduce the cost of production
 - C. To maintain uniform quality of yarn
 - D. Mixing cotton from various suppliers
4. Neps will be more with
 - A. Higher cylinder speed
 - B. Immature cotton
 - C. Cotton having high short fibre %
 - D. Lower flat speed
5. Cleaning efficiency in blow room depends upon
 - A. The frequency of cleaning the machine
 - B. Trash content in cotton
 - C. Speed of the Beater
 - D. Setting between beater and the grid bar
6. Control of waste will
 - A. Improve the quality
 - B. Improve the production
 - C. Reduce the raw material cost
 - D. Increase waste price

7. Yarn evenness depends upon
- A. Maturity of cotton
 - B. Length and micronaire values of cotton
 - C. Strength of cotton
 - D. Cleaning efficiency of blow room and card.
8. Periodic variation in yarn is caused by
- A. Piecing defect in draw frame
 - B. Eccentric roller in ring frame and fly frame
 - C. Worn out ring
 - D. Eccentric spindle
9. HOK is a measure of
- A. Machine productivity
 - B. Labour productivity
 - C. Ring frame efficiency
 - D. Control on waste
10. Ring data will
- A. Improve the quality of ring yarn
 - B. Improve the cleanliness of the ring frame
 - C. Improve the productivity of the ring frame
 - D. Improve the yarn realization

PART B (10 x 2 = 20 Marks)

11. What are process variables and product characteristics?
12. What is the use of statistical techniques in quality control?
13. Mention the important cotton fibre characteristic that decide the spinnability of yarn.
14. What is the index of blend irregularity?
15. What is the importance of yarn realization to a spinning mill?
16. What do you understand by combing efficiency?
17. What do you understand by drafting waves?
18. What is hairiness in yarn?
19. What is the importance of maintaining labour productivity and machine productivity in a spinning mill?
20. Why a yarn breaks during ring spinning.

PART C (5 x 14 = 70 Marks)

21. a. i. Discuss the scope of process control in spinning. (7)
- ii. What process variables you will adopt for spinning course count? Discuss them in short during the various stages of yarn manufacturing. (7)

(OR)

- b. i. Discuss the concept of developing norms and standards for spinning process. (6)
- ii. The yarn count values obtained for 20^s count is as follows, 20.1, 19.5, 19.8, 19.9, 20.1, 20.0, 20.5, 19.6, 19.7, 19.8, 20.1, 19.6, 19.7, 19.9, 20.1, 20.2, 20.4, 20.3, 20.2, 20.0, calculate mean, medium, mode and C.V% of count. (8)

22. a. i. A mill spinning 40^s Carded count achieves a lea CSP of 1950 from a cotton having the following fibre properties:

- 2.5% span length	(l)	=	28 mm
- Uniformity ratio	(u)	=	0.47
- Micronaire value	(f)	=	4.3 Micro grams/inch
- Bundle Strength at 3mm	(s)	=	22.5 grams per tex
- Maturity Co efficient	(m)	=	0.72

How do you rate the spinning performance of the mill? (10)

- ii. How you will estimate the yarn unevenness from fibre properties and other parameters. (4)

(OR)

- b. i. Define nep and discuss the causes of nep generation. (7)
- ii. Discuss the any two online monitoring systems. (7)

23. a. Describe a procedure for estimation of yarn realization in a spinning mill manufacturing 40^s carded yarn in all 25000 spindles.

(OR)

b. A mill is producing 40^s combed yarn using the following mixing

Variety	Mixing %	Trash Content in %
Shankar 4	50%	5.0
H4	30%	6.5
MCU 5	20%	4.8

While processing the mixing is having a trash content 4.0% after step cleaner, 2.6% after ERM Cleaner, 1.8% after RKS beater, 1.5% in the lap and 0.3% in the card sliver. The mill is having a blow room line consisting of step cleaner, ERM cleaning, RKS beater and three bladed beaters. Calculating the cleaning of the blow room line, carding machine and individual cleaning points.

24. a. Describe the contribution of each department towards the overall count variation in the yarn.

(OR)

b. What is drafting waves and periodic variation? Describe the causes for the same.

25. a. i. Describe the factors affecting productivity in ring spinning. (7)

ii. How you will maximize the production in ring frame using Ring Data. (7)

(OR)

b. i. How machinery maintenance will improve the productivity and quality. (7)

ii. What is role of humidity on productivity and quality? (7)
