

- (b) What are the applications of single tail and double tail test ? Explain also Poisson's distribution in textile industries. $7\frac{1}{2} \times 2 = 15$

Section D

7. (a) The no. of defects (holes) in 50 metre length of a woven cloth were seen and the result is given below :

Sample No.	Holes	Sample No.	Holes
1	1	11	3
2	2	12	1
3	1	13	5
4	3	14	4
5	1	15	3
6	4	16	6
7	2	17	4
8	3	18	3
9	5	19	1
10	2	20	2

Draw control chart for the above characteristic and check whether there is an indication of any lack of control.

Roll No.

Total Pages : 05

J-21-0165

B. Tech. EXAMINATION, 2021

Semester VII (CBCS)

STATISTICS AND QUALITY CONTROL FOR
TEXTILE INDUSTRY

TE-704

Time : 2 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D.
Q. No. **9** is compulsory.

Section A

1. What are quality and its importance in textile industries ? Describe Deming's fourteen points and Ishikawa's seven tools of quality. **15**

2. (a) What are the advantages of ISO 9000 certification for textile industries ? Describe in detail the certification criteria of ISO 9000 for textile industries.
- (b) What is Pareto analysis ? How does it help in quality control ? $7\frac{1}{2} \times 2 = 15$

Section B

3. (a) What is TQM ? Explain the application of TQM for process and product control.
- (b) How can you measure central tendency ? Describe in detail. $7\frac{1}{2} \times 2 = 15$
4. (a) Define discrete, continuous and random variables.
- (b) What do you understand by frequency distribution ? To facilitate some comparison, we use the relative frequencies instead of actual frequency. Justify it. $7\frac{1}{2} \times 2 = 15$

Section C

5. (a) Red, green and blue fibres are nominally mixed in proportions 2 : 3 : 5 to form a certain blend.

A sample of 1000 fibres chosen at random from a large batch of the mixture was examined and the number of fibres of each colour counted.

Colour	Red	Green	Blue
No. of Fibres	231	281	488

Did the proportions differ significantly from the normal ?

- (b) Two yarns, each of 30^s count, were tested for lea strength. The following results are obtained :

	Yarn A	Yarn B
No. of tests	30	40
Mean lea strength (lb)	50	55
SD	7.8	8.2

Is there real difference between the mean strength and SD ? $7\frac{1}{2} \times 2 = 15$

6. (a) Two sets of garments were tested for mass variation and the results are given below :

Parameters	Garments	
	Set 1	Set 2
Sample size	15	20
Variance (gms)	25	14

Find out the 95% confidence limits for ratio of variance. Whether the above results suggest that the one set of garment is more variable than other.

(b) Explain in detail the concept of six sigma process control. How is it useful for textile industries ? $7\frac{1}{2}\times 2=15$

8. (a) What are the process capability ration (CP and CPK) ? Explain producer's and consumer's risk.

(b) Describe CUSUM and EWMA chart. $7\frac{1}{2}\times 2=15$

(Compulsory Question)

9. Define and illustrate the following :

(a) Quality cost.

(b) What is statistical estimation theory ?

(c) Chi-square test.

(d) F-distribution.

(e) OC curve.

(f) Correlation and standard error. $2\frac{1}{2}\times 6=15$