

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – SUMMER • 2014

Subject Code: 162901**Date: 19-05-2014****Subject Name: Statistical Quality Control and Textile Costing****Time: 10:30 am - 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** The mean range of the count test results on a 50s cotton yarn is 3.4. Four bobbins are tested in each sample. Calculate : (a) Standard Deviation (b) C.V.% (c) Mean Deviation (d) P.M.D. (Take $a_n = 0.4857$) **07**
- (b)** What are Control Charts? Also explain significance and types of control charts. **07**
- Q.2 (a)** From the below given data of textile mill, find out Central line, UCL and LCL values for NP chart. **07**

Phase	Units produced (Constant subgroup size)	Number of defective units
1	42	10
2	42	9
3	42	10
4	42	14
5	42	4
6	42	11
7	42	9
8	42	8
9	42	12
10	42	12
11	42	9
12	42	14
13	42	8
14	42	9
15	42	11
16	42	8
17	42	13
18	42	5
19	42	10
20	42	9
21	42	12
22	42	10
23	42	8
24	42	13
25	42	11

- (b)** Write in detail about Normal distribution. **07**

OR

- (b) Two yarns, each of 32s cotton count, were tested for lea strength. Thirty tests were made on each yarn and the following results were obtained : 07

	YARN - A	YARN - B
No. of tests	30	30
Mean lea Strength (lb)	58	65
Standard deviation	7.8	8.2

Is there a real difference between the lea strengths ? (Corresponding t values for degree of freedom (v) at 5% =1.96 and at 1% = 2.58)

- Q.3 (a) What is Sampling? Explain different sampling methods in detail. 07
 (b) Conduct the analysis of variance (one way classification) for the following data. State whether the lea count differ between the bobbins. 07

Lea No.	Bobbin No.					
	1	2	3	4	5	6
1	42	43	44	41	40	39
2	41	40	42	43	44	39
3	40	39	41	40	42	43
4	38	44	40	39	42	44

Table value of F for 5, 18 d.f. at 5% level=2.77 & 1% level=4.25

OR

- Q.3 (a) Explain in detail about Correlation. Also write types of correlation. 07
 (b) What are different methods of studying Correlation? Explain any one method in detail. 07

- Q.4 (a) With Karl pearson's method, find out 'r' from the following data : 07

Length	Weight
3	9
4	11
6	14
7	15
10	16

- (b) Explain Randomize block design and Latin Square design in detail. 07

OR

- Q.4 (a) Write in detail about Replication, Randomization and Treatment. 07
 (b) What is regression? Give basic idea about regression lines and regression co-efficient. 07

- Q.5 (a) Explain Break even analysis with suitable diagram. 07
 (b) Following data refers to a cotton spinning mill : 07

Variety	%	Rate/kg. (Rs.)
A	8	5.84
B	88	5.00
C	4	3.00

If yarn realization is 86% and 8 kg. yarn waste is sold at 1.75 Rs./kg., calculate Clean cotton cost per kg..

OR

- Q.5 (a) Discuss in detail about overheads along with classification of overheads. 07
 (b) Write in detail about Labour cost. 07
