Seat No.: _____ Enrolment No._____

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**

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