Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2015

Subject code: 162901 **Date: 01/05/2015**

Subject Name: Statistical Quality Control & Textile Costing

Time : 10.30am-01.00pm **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)** Define – Mean, Median and Mode. Also explain in detail about different types of distribution curves. **07**

(b) The mean range of the count test results on a 50s cotton yarn is 3.4. Four bobbins are tested in each sample. Calculate : 1) Standard Deviation; 2) Coefficient of Variation; 3) The Mean deviation; 4) The Percentage mean deviation. (a_n = 0.4857) **07**

Q.2 **(a)** Two yarns are tested for lea strength with the following results : **07**

	YARN A	YARN B
No. of tests	32	32
Mean lea strength (lb)	58	65
Standard Deviation	7.2	8.4

Is there a significant difference between the two S.D.s, i.e. is yarn B more variable in lea strength than yarn A ? (Corresponding *t* values for degree of freedom (v) at 5% =1.96 and at 1% = 2.58)

(b) What are Control charts? Explain different types of control charts in detail. **07**

OR

(b) From given sample data of textile unit, find out UCL and LCL values with respect to NP-Chart : **07**

Units produced (Subgroup size)	No. of defective units	Units produced (Subgroup size)	No. of defective units
42	10	42	14
42	9	42	8
42	10	42	9
42	14	42	11
42	4	42	8
42	11	42	13
42	9	42	5
42	8	42	10
42	12	42	9
42	12	42	12

Q.3 **(a)** Explain Normal distribution & Binomial Distribution . **07**

(b) What is Sampling? Explain Random and Non random sampling in brief. **07**

OR

Q.3 **(a)** The data below shows the time (in second) for water to penetrate fabric was measured for four different shower proof fabrics. Carry out Analysis of Variance on this data and state that whether there are real difference in the make of the shower proof fabric? (Actual time – 100 sec) **07**

Make of fabric			
I	II	III	IV
3	27	49	23
10	41	13	18
7	36	46	6
-14	27	34	37
19	19	53	6

Table value of F for 3, 16 D.f. at 1% level = 5.29

(b) What is Design of Experiments? Also give classification of Design of Experiments. **07**

Q.4 **(a)** The following data were obtained in an experiment to investigate the relation between the tenacity of a sliver and processing speed : **09**

Speed (m/min)	6	12	18	24	30
Tenacity (mN/tex)	0.76	0.70	0.65	0.59	0.57

Calculate the Karl Pearson's coefficient of correlation and find out regression equation for predicting speed from tenacity.

(b) Define the terms - 1) Randomization 2) Replication & 3) Treatment **05**

OR

Q.4 **(a)** Define - Labour cost. Also explain elements of labour cost in detail. **07**

(b) What are Overheads? Discuss various types of overheads briefly. **07**

Q.5 **(a)** Explain different types of Correlation. Also write different methods of studying correlation. Discuss Scatter method in detail. **07**

(b) Explain various elements of capital cost briefly. **07**

OR

Q.5 **(a)** Explain in brief about Break even analysis. **07**

(b) For spinning 18s warp carded yarn, three qualities of cottons are used. Their proportions and rates/kg. are as shown below : **07**

Cotton Variety	% in mix	Cost/kg. (in Rs.)
A	8	6.84
B	78	6.00
C	4	4.00

Calculate Clean cotton cost/kg., if yarn realization is 88% & that out of 14kg. lost per 100 kg. put through, 7kg. are saleable at 1.85 Rs./kg.

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