Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIth SEMESTER–EXAMINATION – MAY- 2012

Subject code: 162901 **Date: 09/05/2012**

Subject Name: Statistical Quality Control & 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)** Define : (i) Mean (ii) Mode (iii) Standard deviation , (iv) Coefficient of Variation. **07**

(b) Following data refers to strength of fabric in lbs. Calculate (i) C.V % (ii) Variance (iii) Mean deviation **07**

No	1	2	3	4	5	6	7	8	9	10
Fabric Strength in lbs	42	39	45	47	38	39	46	44	41	37

Q.2 **(a)** Describe in detail about Control charts. **07**

(b) 4 readings are taken daily, for 10 days from a production process. Find LCL and UCL for X - bar and R- Charts. **07**

Day	Observation			
1	20	30	28	22
2	26	29	23	24
3	24	28	25	27
4	26	27	22	26
5	30	23	25	26
6	28	31	29	26
7	27	25	25	26
8	29	25	44	27
9	26	25	25	24
10	21	23	20	21

(A2 = 0.729 , D3 = 0 , D4 = 2.282)

OR

(b) Two Yarn samples are tested for lea strength. The result is as follows: **07**

	Yarn A	Yarn B
Number of Test	25	25
Mean lea Strength(lb)	48	55
Standard Deviation	5.8	7.9

Is there a significant difference between strengths of 2 yarns?
(Value of significance at 5% = 1.96 and at 1% = 2.58)

Q.3 **(a)** Describe Binomial distribution and Poisson distribution briefly. **07**

(b) Discuss the significance of Sampling. Also, state the factors affecting Sampling methods. **07**

Hence, briefly describe Random Sampling and Representative sampling method.

OR

Q.3 **(a)** Describe designing of experiment briefly along with specifications of Population. **07**

(b) Describe various types of Scatter diagram. **07**

From the following data prepare a scattered diagram and hence discuss the relationship between 'X' & 'Y' .

X	1	2	3	4	5	6	7	8
Y	2	3	6	4	8	10	9	14

Q.4 **(a)** What is Correlation ? **07**

Explain what is Positive Correlation & Negative Correlation.

Describe merits and demerits of Karl Pearson's Method to study correlation briefly.

(b) Calculate 'r' from the following data by Karl Pearson's method of correlation. **07**

X	46	54	56	62	62
Y	36	44	46	44	50

OR

Q.4 **(a)** Discuss the various elements of Capital cost briefly for Textile mills. **07**

(b) What is Marginal Costing? What is its importance? **07**
Explain with a suitable example.

Q.5 **(a)** What is Break even analysis? Explain Briefly with a diagram. State its importance with reference to setting up of Textile mill. **07**

(b) A Spinning mill is working with following mix . **07**

Cotton Variety	% in Mix	Cost / kg
X	20	5.00
Y	65	6.00
Z	15	7.00

Calculate clean cotton cost if yarn realization is 80%, and out of 20 % loss, 10 % is saleable at 2 Rs. per kg.

OR

Q.5 **(a)** A Ring frame department has 20 ring frames, each having 3 HP main motor and 1.5 HP auxiliary motor. If the efficiency of department is 90%, load factor is 0.75 and rate of power / unit is 6 Rs. Calculate Power cost per day for the mill. **07**

(b) What is Replication? Discuss in detail. **07**

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