Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2142905 **Date: 03/06/2017**

Subject Name: Statistical Quality Control & Textile Costing

Time: 10:30 AM to 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.**

MARKS

Q.1 **Short Questions** **14**

1 The area under the frequency curve represents the total number of _____.

2 The normal distribution is often referred to as the _____ distribution.

3 _____ is the middle value of a series of values arranged in order of magnitude.

4 Define Mode.

5 In moderately asymmetrical curve, what is the relation between mean, median and mode?

6 _____ is the difference between each value and the arithmetic mean.

7 What is degree of freedom?

8 Define Probability.

9 Quality is inversely proportional to _____

10 _____ is a very useful process monitoring technique.

11 What is Total Quality Management?

12 What is PDCA cycle?

13 State any two components of Juran Trilogy.

14 Define – Correlation.

Q.2 **(a)** Explain about collection and types of Data. **03**

(b) Discuss in brief about Regression. **04**

(c) Find the coefficient of correlation between the EPI (X) and PPI (Y) : **07**

X	23	27	28	28	29	30	31	33	35	36
Y	18	20	22	27	21	29	27	29	28	29

OR

(c) Find the coefficient of Rank Correlation from following detail : **07**

Marks

A	29	32	53	47	45	32	70	45	70	53
B	56	60	72	48	72	35	67	67	75	31

Q.3 **(a)** Explain different types of distribution curves. **03**

(b) Discuss significance and types of Control Charts. **04**

(c) Explain in detail about DMAIC process. **07**

OR

Q.3 **(a)** Discuss about Six-sigma. **03**

(b) Explain in brief about Theory of Probability. **04**

(c) Five observations are taken daily, for Six days from a production process. Find out LCL and UCL for X-bar and R charts. **07**

(A_2 = 0.577, D_3 = 0, D_4 = 2.114)

Date	Observation				
1	50	60	58	52	58
2	56	59	53	54	53
3	54	58	55	57	59
4	56	57	52	56	53
5	60	53	55	56	56
6	58	61	59	56	54

Q.4 **(a)** Explain about Binomial distribution. **03**

(b) Discuss any 4 points of Deming's philosophy. **04**

(c) Table gives the ends/cm measured for 3 fabrics made at different periods. Carry out ANOVA. **07**

Fabrics	Periods				
	1	2	3	4	5
A	20	21	23	16	20
B	18	20	17	15	25
C	25	28	22	28	32

Table value : F_{tab} = 3.88 (2,12 at 5%)

OR

Q.4 **(a)** Discuss about Poisson distribution. **03**

(b) In relation to quality, explain 1) Reliability & 2) Aesthetics **04**

(c) 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	5.84
B	88	5.00
C	4	3.00

Calculate clean cotton cost/kg., if yarn realization is 86% & that out of 14kg. lost per 100 kg. put through, 8kg. are saleable at 1.75 Rs./kg.

Q.5 **(a)** Discuss about Population and Sample. **03**

(b) Write short note on Material Cost. **04**

(c) Explain in detail about Overhead cost and Depreciation cost. **07**

OR

Q.5 **(a)** Discuss about Labour Cost. **03**

(b) Write short note on Break even analysis. **04**

(c) Discuss in detail about Design of Experiments. **07**

****