

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. **07**
 Their proportions and rates/kg. are as shown below :

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**
