

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- IV(NEW) EXAMINATION – SUMMER 2015

Subject Code: 2142905**Date:30/05/2015****Subject Name: Statistical Quality Control & Textile Costing****Time:10:30am-1.00pm****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 – Quality. Discuss quality engineering terminology in brief. **07**
(b) Explain in brief about normal and binomial distributions. **07**

- Q.2** (a) What is DMAIC process? Discuss objectives and characteristics of DMAIC with suitable diagram. **07**
(b) Discuss Deming’s 14 points for quality management. **07**

OR

- (b) Define – Mean, Median, Mode, S.D. and C.V.%. Also find median from following thread strength values (gms). **07**
156,155,147,149,151,151,152,153,154,153

- Q.3** (a) Following table gives the results of Abrasion tests (in thousands of rubs) on four fabrics. Carry out one way Anova test. **07**

Test No.	Fabrics			
	A	B	C	D
1	26	24	21	20
2	23	22	18	19
3	24	24	17	17

Table value of F for 3 and 8 degree of freedom at 1 % level = 7.6

- (b) Calculate the Karl Pearson’s coefficient of correlation (r) between x and for the following data collected from 160 cards: **07**
Sum of x-Values = 548, Sum of y-values = 156
Sum of squares of x = 21522 Sum of squares of y = 1675
Sum of products of x and y = 4883

OR

- Q.3** (a) In a fancy dress competition, two judge accorded the following rank to eight participants: **07**

Judge X	8	7	6	3	2	1	5	4
Judge Y	7	5	4	1	3	2	6	8

Calculate coefficient of rank correlation (R).

- (b) Explain design of experiment for two-level (2^k) factorial design with suitable example. **07**

- Q.4** (a) Obtain the two regression equation X on Y and Y on X from the following data: **07**

X	2	4	6	8	10	12
Y	4	2	5	10	3	6

- (b) Explain probability and Non-Probability sampling in brief. **07**

OR

- Q.4 (a)** The mean GSM of 4 sample of 1 meter length of cotton duck fabric each measured and ranges over 20 sub-group is as follows: **07**

Sub-group no.	Mean weight (g)	Range
1	452	3
2	456	6
3	452	5
4	453	6
5	455	4
6	454	4
7	458	1
8	456	5
9	455	0
10	455	7
11	452	4
12	453	0
13	456	4
14	457	5
15	457	2
16	453	7
17	452	5
18	461	9
19	456	3
20	454	0

Find out Central line, UCL and LCL value for X-bar and R chart. Take $D_3 = 0$, $D_4 = 2.282$, $A_2 = 0.729$

- (b)** Define - Probability. Explain addition and multiplication rule of probability. **07**
- Q.5 (a)** Following data refers to a spinning mill. Their product mix and rate/kg are as follows. **07**

Cotton Variety	% of Mix	Cost per Kg. in Rs.
A	10	6.00
B	86	5.00
C	4	3.00

Calculate clean cotton cost per kg if yarn realization is 87% and that out of 13 kg loss per 100 kg. 8 kgs are saleable at Rs. 2.75 per kg.

- (b)** What is Break even analysis? Explain Briefly with a diagram. **07**
- OR**
- Q.5 (a)** What are overheads? Discuss various types of overheads briefly. **07**
- (b)** Briefly explain the material cost and labor cost with reference to a textile mill. **07**
