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

Subject Code: 2142905Date:30/05/2015Subject Name: Statistical Quality Control & Textile CostingTime:10:30am-1.00pmTime: 10:30am-1.00pmTotal 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 07 with suitable diagram.
 - (b) Discuss Deming's 14 points for quality management.

OR

- (b) Define Mean, Median, Mode, S.D. and C.V.%. Also find median from 07 following thread strength values (gms). 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.

Test	Fabrics					
No.	А	В	С	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:
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 07 participants:

	Judge X	8	7	6	3	2	1	5	4
	Judge Y	7	5	4	1	3	2	6	8
-	avlate as officient of neuly completion (D)								

Calculate coefficient of rank correlation (R).

(b) Explain design of experiment for two-level (2^{K}) factorial design with suitable 07 example.

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
1 .11.	1 3 7	D 1 1		1	1 . 0	

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

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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

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

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.
- Q.5 (a) Following data refers to a spinning mill. Their product mix and rate/kg are as 07 follows.

Cotton Variety	% of Mix	Cost per Kg. in Rs.		
А	10	6.00		
В	86	5.00		
С	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.

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

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