

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV (New) EXAMINATION – WINTER 2015

Subject Code:2142905**Date:28/12/2015****Subject Name: Statistical Quality Control & Textile Costing****Time: 2:30pm to 5:00pm****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) What is Quality? Explain different dimensions of Quality in detail. **07**
 (b) For the following values, find out (i) Mean Deviation (ii) Percentage Mean Deviation (iii) Variance (iv) Standard Deviation (v) C.V.% **07**

No.	1	2	3	4	5	6	7	8	9	10
values	42	39	45	47	38	39	46	44	41	37

- Q.2** (a) Write short note on – 1) Frequency distribution curves & 2) Control charts. **07**
 (b) Explain Normal and Poisson distribution with their properties. **07**

OR

- (b) Discuss in brief about different statistical methods for quality control and improvement. **07**
- Q.3** (a) What is DMAIC process? Discuss different steps of DMAIC with suitable diagram. **07**
 (b) Five observations are taken daily, for Six days from a production process. Using following observations, find out LCL and UCL values for X-bar and R charts. **07**

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

(Take $A_2 = 0.577$, $D_3 = 0$, $D_4 = 2.114$)**OR**

- Q.3** (a) Highlight approach and philosophy of W. Edwards Deming in quality management. **07**
 (b) In relation to Design of experiments, define – 1) Factor, 2) Level, 3) Response & 4) Test Run. Also discuss significance and use of DOE. **07**

- Q.4 (a)** Define – “Cost”. Also explain in detail about Material cost. **07**
(b) Conduct the analysis of variance (one way classification) for the following data. State whether the lea count differ between the bobbins. **07**

Lea No.	Bobbin No.					
	1	2	3	4	5	6
1	22	23	24	21	20	19
2	21	20	22	23	24	19
3	20	19	21	20	22	23
4	18	24	20	19	22	24

Table value of F for 5, 18 d.f. at 5% level=2.77 & 1% level=4.25

OR

- Q.4 (a)** Discuss in brief about Labour cost. **07**
(b) What are overheads? Discuss various types of overheads briefly. **07**

- Q.5 (a)** Define – Primary Data, Secondary Data, Population and Sample. Also list out different types of Sampling methods & Data collection techniques. **07**
(b) Write short note on – 1) Probability & 2) Break even Analysis. **07**

OR

- Q.5 (a)** From the following given values, find the coefficient of correlation between x and y by Rank correlation method : **07**

x	15	17	14	13	11	12	16	18	10	9
y	18	12	4	6	7	9	3	10	2	5

- (b)** A spinning mill is working with following mix : **07**

Cotton Variety	Proportion (%)	Cost/kg. (in Rs.)
A	8	5.84
B	88	5
C	4	3

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