GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2018

Subject Code: 2142905   **Date:01/12/2018**
Subject Name: Statistical Quality Control & Textile Costing
Time: 02:30 PM TO 05:00 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	**(a)**	State the properties of binomial distribution.	**03**
	(b)	Explain in briefly about theory of probability.	**04**
	(c)	Explain in detail about DMAIC process.	**07**
Q.2	**(a)**	Stat the advantages of acceptance of sampling.	**03**
	(b)	Describe the different methods of costing.	**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.(A_2 = 0.577, D_3 = 0, D_4 = 2.114)	**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

OR

	(c)	For spinning 18^s 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 14 kg lost per 100kg put through, 8 kg are saleable at 1.75 Rs./kg.

Q.3	**(a)**	State the properties of normal distribution.	**03**
	(b)	Define terms: 1. Mean 2. Coefficient of variation 3. Mean deviation 4. Standard deviation.	**04**
	(c)	Find mean and mode for the following classified data.	**07**

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	2	4	4	6	5	3

OR

Q.3	**(a)**	What is break even analysis?	**03**
	(b)	What is correlation? Explain positive and negative correlation.	**04**
	(c)	The results of percentage humidity and warp breakages were recorded from a weaving factory as follows.	**07**

% Humidity	60	62	59	70	56	58	75
Warp breakages	112	110	120	102	122	118	90

Compute Karl Pearson's coefficient of correlation from the above data and comment on it.

Q.4	**(a)**	Describe various types of scatter diagram.	**03**

(b) Explain briefly control charts. **04**

(c) Find the spearmen's rank correlation coefficient for the following data of marks in physics and textile testing and comment on it. **07**

Marks in Physics	70	60	65	50	58	75	68
Marks in textile testing	74	62	70	40	45	78	56

OR

Q.4
(a) Factor affecting sampling. **03**

(b) Discuss labour cost in brief. **04**

(c) An experiment was conducted to study the effect of a dye produced by four different companies (A, B, C, and D) on the strength of the fabric and following results were obtained. **07**

	Dye			
	A	B	C	D
Fabric strength	250	225	250	300
	275	250	275	250
	275	225	250	275
	300	300	250	300

Carry out the analysis (One way ANOVA) of above data and write the conclusion. (Table value of F for 3, 12 degree of freedom at 5% level=3.49)

Q.5
(a) What is marginal costing? What is its importance? **03**

(b) Explain Poisson distribution briefly. **04**

(c) Five strength tests each carried out on the two fabrics have shown following results. **07**

A	15.2	15.5	15.0	15.4	15.6
B	15.0	14.8	13.6	15.5	15.2

Find CV% for both and decide which fabric is more consistent?

OR

Q.5
(a) State the steps in planning of an experiment. **03**

(b) Discuss various types of overheads briefly. **04**

(c) If the value of correlation coefficient between the two variable X and Y is 0.83, find the equation of regression of X on Y and Y on X using following data. **07**

	Variables	
	X	Y
Mean	112	65
Standard deviation	2.5	3.2

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