Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI • EXAMINATION - SUMMER 2013

Subject Code: 162901 Date: 24-05-2013

Subject Name: Statistical Quality Control and Textile Costing

Time: 10.30 am - 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.
- Q.1 (a) State the properties and applications of Normal distribution and Binomial 07 distribution.
 - (b) i. Define mean, median and mode. State the relationship between them. 07
 - ii. Define treatment and replication.
- Q.2 (a) The following table shows the scores of different group. Find the correlation 07 coefficient between age and scores of the test. Also find coefficient of determination.

Scores		Group						
Scores	A	В	C	D				
50-100	4	4	2	1				
100-150	3	5	4	2				
150-200	2	6	8	5				
200-250	1	4	6	10				

(b) Explain correlation. Write down different methods of studying correlation. Discuss 07 in detail about scatter diagram method also write down merit and demerits of it.

OR

(b) Two judges have given ranks to ten students for their honesty. Find the rank 07 correlation coefficient.

X	28	27	26	35	39	42	39	37	32	22
Y	40	42	38	49	40	50	38	44	45	36

Q.3 (a) Four mixing A, B, C and D were prepared and allocated at random on six different R.F. Conduct the analyses of variance (two-way classification) and give your conclusions. Figure in the table indicate lea strength in lbs. Strength origin = 70 lbs.

Miving			Ring 1	Frame		
Mixing	I	II	III	IV	V	VI
A	11	13	10	11	12	11
В	09	09	11	11	08	08
C	14	13	14	11	15	14
D	08	08	07	06	07	08

Table value:-

For 3 and 15 d.f. at 5% level is 3.29 and 1% level is 5.42 For 5 and 15 d.f. at 5% level is 2.9 and 1% level is 4.56

Dove	Spindle set						
Days	1	2	3	4			
I	46.2(A)	42.8(B)	43.4(C)	43(D)			
II	46.2(D)	47(A)	41.8(B)	42.5(C)			
III	44(C)	42(D)	46.5(A)	42(B)			
IV	43(B)	42.5(C)	41.6(D)	44.5(A)			

Does mixing defer significantly in terms of lea strength? Also study the effect of days and spindle set on yarn strength offer your conclusion.(F table value for D.f. 3 and 6 5% lead 4.76 and 1% lead 9.78)

OR

Q.3 (a) Conduct the analysis of variance (one-way classification) for the following data. 07 State whether the lea count differ between the bobbins:

Lea	Bobbin No.							
No.	I	II	III	IV	V	VI		
A	42	43	44	41	40	39		
В	41	40	42	43	44	39		
С	40	39	41	40	42	43		
D	38	44	40	39	42	44		

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

(b) Fibres from two plant A and B were tested for the maturity the results obtained are 07 as follows:

Particular	Plant A	Plant B
(i) Matured fibre	260	335
(ii)Immature Fibre	140	165

Can we say that maturity is same in plant A and B?

The table value for X^2 at 5% level is 3.84 and at 1% level is 6.63.

Q.4 (a) The sampling data of garment company is given. Draw X and R charts and decide 07 whether the process may be regarded under control or not.

Sample No.	I	II	III	IV
1	30	38	42	50
2	20	30	18	42
3	22	32	36	40
4	50	40	30	25
5	28	42	35	25
6	48	22	20	30
7	32	32	42	42
8	36	34	35	37
9	31	48	51	71
10	20	22	24	31
11	22	33	44	55
12	72	62	65	25
13	18	68	74	50
14	14	18	52	62
15	60	62	65	63

[For n=4 $A_2 = 0.73$, $D_3 = 0$, $D_4 = 2.28$]

(b) Daily 250 samples were collected for 10 days. The numbers of defective samples found are given below. Draw an appropriate control chart and report on the state of control.

Date	1	2	3	4	5	6	7	8	9	10
Defects	18	25	38	39	29	60	52	12	29	25

OR

Q.4 (a) Explain marginal costing. What are the assumptions made in it? Give its advantages 07 and limitations.

Q.4 (b) The sales and profits during the two periods are given below

07

 Years
 Sales(Rs.)
 Profits(Rs.)

 2011
 2000000
 200000

 2012
 3000000
 400000

Calculate: - (i) Margin of safety at a profit of Rs. 450000,

- (ii) variable cost in 2012,
- (iii) Profit when sales are Rs. 4000000.
- Q.5 (a) The following figures relates to the factory

07

Fixed cost:- Rs. 400000 Variable cost/unit:- Rs. 10 Output:- 80000 units Selling price/unit:-20

- i. Draw a break even chart.
- ii. If new selling price is Rs. 18/unit, what will be the new break even point?
- (b) Write in short on Textile Mill Budget planning explaining direct labour and direct of material budgeting? State importance of department wise budgeting.

OR

- Q.5 (a) Describe different methods of costing. Explain scheme of Cost distribution in 07 textile mill.
 - (b) Explain OC Curve. State advantages of acceptance sampling. List out different 07 steps in planning of an experiment.
