



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 154411**

Roll No.

### B. Tech.

#### (SEM. IV) THEORY EXAMINATION, 2014-15 ELEMENTARY MATHEMATICS-III

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all question. Provide the statistical tables which are required to student.

1. Attempt any FOUR parts of the following:  $5 \times 4 = 20$
- (a) What do you mean by internal and external data with example?
  - (b) Find the missing frequency from the following data :

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	5	15	20	-	20	10

The Arithmetic mean is 34.

- (c) From the following data find out Karl Pearson's coefficient of skewness :

Measurement	10	11	12	13	14	15
Frequency	2	4	10	8	5	1

- (d) Calculate first four moments about mean:

x	2	4	6	8	10	12
f	6	9	7	15	7	6

- (e) What do you understand by Histogram?
- (f) Write the Empirical relation and find mean if mode = 64.2 and median = 66.33.

2 Attempt any TWO parts of the following :  $10 \times 2 = 20$

- (a) A large number of measurement is normally distributed with a mean 65.5 cm. and standard deviation is 6.2 cm. Find the percentage of measurement that fall between 54.8 cm. and 68.8 cm.
- (b) Find the mean and variance of Binomial distribution.
- (c) If the probability that an individual suffers a bad reaction from a certain injection is 0.001, determine the probability that out of 2000 individuals (a) exactly 2, (b) more than 2 individuals.

3 Attempt any TWO parts of the following :  $10 \times 2 = 20$

- (a) Find the rank correlation co-efficient between x and y for the following data:

x	35	23	47	17	10	43	9	6	28
y	30	33	45	23	8	49	12	4	31

- (b) Find the coefficient of correlation between X and Y from the following data :

X	65	66	67	68	69	70	71
Y	67	68	66	69	72	72	69

- (c) Obtain a regression plane by using multiple linear regression of the following data:

x	1	2	3	4
y	12	18	24	30
z	0	1	2	3

4 Attempt any TWO parts of the following:  $10 \times 2 = 20$

- (a) The standard deviation calculated from two random samples of sizes 9 and 13 are 2.1 and 1.8 respectively. May the samples be regarded as drawn from the normal distribution with the same standard deviation?
- (b) The theory predicts the proportion of beans in the four groups,  $G_1, G_2, G_3, G_4$  should be in the ratio 9 : 3 : 3 : 1. In an experiment with 1600 beans the numbers in the four groups were 882, 313, 287 and 118. Does the experimental result support the theory?

- (c) What is analysis of variance? Give the analysis of variance for one way classification of data.
- 5 Attempt any TWO parts of the following:  $10 \times 2 = 20$
- (a) Write advantage, disadvantages and applications of a Latin Square design.
- (b) Three varieties A, B, C of a crop are tested in a completely randomized design with four replications. The plot yields in quintals per acre are as follows:

A(8)	B(7)	A(4)	C(2)
B(5)	C(5)	C(4)	B(5)
A(6)	C(4)	B(10)	A(6)

- (c) In a blade manufacturing factory 1000 blades are examined daily. Draw the np Chart for the following data and examine whether the process is under control?

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of defective	9	10	12	8	7	15	10	12	10	8	7	13	14	15	16