Printed Pages : 4

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

PAPER ID : 994301

Roll No. | | | | | | | | | | |

B. Tech.

(SEM. III) (ODD SEM.) THEORY EXAMINATION, 2014-15

STATISTICAL TECHNIQUES

Time : **3** Hours]   [Total Marks : **100**

Note: Attempt Questions from each Section as per instructions. Symbols have their usual meaning. Provide the statistical tables which are required to student.

SECTION - A

1   Attempt all parts of this question. Each part   **2×10=20**
carries 2 marks :

(a)   What do you understand by Histogram?

(b)   Write the Empirical relation and find mean if mode = 64.2 and median = 66.33.

(c)   An unbiased die is thrown. What is the probability of (i) getting a six and (ii) getting either five or six.

(d)   The first four central moments are 0, 2.5, 0.7, and 18.75 comments on the kurtosis.

(e)   Define non parametric tests.

994301]   **1**   **[Contd...**

(f) The mean of a binomial distribution is 12 and standard deviation is 2. Calculate n, p and q.

(g) Define Level of significance.

(h) Define F – test.

(i) Write the advantages of randomized block design.

(j) Write LCL, CL and UCL of C - Chart.

SECTION - B

2 Attempt any three parts of this question : **3×10=30**

(a) Calculate first four moments about 9 and also calculate central moments :

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

(b) 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.

(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

(d) 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?

(e) Write advantages, disadvantages and applications of a Latin Square design.

SECTION - C

Attempt any two parts from each question   **5×2×5=50**
of this section :

3 (a) Explain internal and external data.

(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

4 (a) Define addition theorem of probability. A card is drawn from a well shuffled pack of playing cards. Find the probability that it is either a diamond or a king.

(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.

5 (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) Write short note on non parametric tests.

6 (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) Ten individuals are chosen at random from a population and their heights are found to be in inches 63, 63, 64, 65, 66, 69, 69, 70, 70, 71. Discuss the suggestion that the mean height in universe is 65 inches given that for 9 degree of freedom the value of student's t – test and 5 per- sent level of significance is 2.262.

(c) What is analysis of variance? Give the analysis of variance for one way classification of data.

7 (a) Explain the terms:
(i) Local Control,
(ii) Randomization.

(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) The number of defectives found inspection of 4 lots of 25 items each Draw the p- Chart for the following data and examine whether the process is under control?

Lot	1	2	3	4
No of defective	9	10	12	8

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