

Paper Id:

199258

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B TECH
(SEM IV) THEORY EXAMINATION 2018-19
ELEMANTARY MATHEMATICS-III

Time: 3:00 Hours**Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION-A****1. Attempt ALL questions in brief.****7× 2=14**

- (a) Define Histogram.
- (b) Write the Empirical relation and find mean if mode=64.2 and median =66.33.
- (c) An unbiased dice is thrown .What is the probability of getting 5 or 6.
- (d) Write the basic properties of the normal distribution.
- (e) Define Sign test.
- (f) Find the coefficients of correlation if two regression lines are
 $5x - y = 22$ and $64x - 45y = 24$
- (g) Define t-test.

SECTION-B**2. Attempt any THREE parts of the following.****7× 3=21**

(a) Find the mean, median and mode---

X	0-10	10-20	20-30	30-40	40-50
f	12	18	20	25	23

(b) In a sample of 1000 cases, the mean of a certain test is 14 and standard deviation (S.D.) is 2.5.

Assuming the distribution to be normal,

- (i) How many students score between 12 and 15.?
- (ii) How many score about 18?

(c) calculate the coefficient of correlation

X	1	3	4	5	7	8	10
y	2	6	8	10	14	16	20

(d) Quinine was administered to 812 persons out of a total population of 3248. The number of fever cases is shown below:

Treatment	Fever	No Fever
Quinine	20	792
No-Quinine	220	2216

Discuss the usefulness of quinine preventing malaria using χ^2 test of significance.

(e) Write the assumptions in analysis of Latin squares and what are steps to construct a Latin square.

SECTION-C

3. Attempt any ONE part of the following.

7 × 1 = 7

(a) Calculate the moment coefficient of skewness for the following distribution.

Classes	2.5-7.5	7.5-12.5	12.5-17.5	17.5-22.5	22.5-27.5	27.5-32.5	32.5-37.5
f	8	15	20	32	23	17	5

(b) Calculate first 4 moments about mean

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

4. Attempt any ONE part of the following.

7 × 1 = 7

(a) Define Multiplication theorem of probability A bag contains 10 white and 15 black balls. Two balls are drawn in succession without replacement. What is the probability that first is white and second is black?

(b). Out of 800 families with 4 children each ,how many families would be expected to have (i)2 boys & 2 girls (ii)at least one boy (iii)no girl

5. Attempt any ONE part of the following.

7 × 1 = 7

(a) Define Mann Whitene Wilcoxon test.

(b) For 10 obsevation on price (x) and supply (y),the following data were obtained

$\sum x = 130$ $\sum y = 220$ $\sum x^2 = 2288$ $\sum y^2 = 5506$ $\sum xy = 3467$ Obtain the lines of regression and estimate the supply when the price is 16 units.

6. Attempt any ONE part of the following.

7 × 1 = 7

(a) Write a short note on Hypothesis tests.

(b) The life time of electric bulbs for a random sample of 10 from a large consignment gave the following data:

Item	1	2	3	4	5	6	7	8	9	10
Life in '000 hours	4.2	4.6	3.9	4.1	5.2	3.8	3.9	4.3	4.4	5.6

Can we accept the hypothesis that average life time of bulb is 4000 hours?

7. Attempt any ONE part of the following.

7 × 1 = 7

- (a) Write the advantages and limitations of statistical quality control.
- (b) Three varieties of crop A, B, C of a crop are tested in a randomized block design with four replications. The plot yields in pounds are as follows:

A(6)	C(5)	A(8)	B(9)
C(8)	A(4)	B(6)	C(9)
B(7)	B(6)	C(10)	A(6)

Analyse the experimental yield and state your conclusion.