UPTU Notes

Printed Pages:02 **Sub Code: NBT401**

Paper Id: | 1 | 5 | 4 | 4 | 2 | 1 | **Roll No.** [redacted]

B. TECH.

(SEM IV) THEORY EXAMINATION 2017-18

ELEMENTARY MATHEMATICS-III

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

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION-A

1. Attempt all questions in brief. $2 \times 10 = 20$

(a) Explain Histogram chart in brief.
(b) What is the difference in classification and tabulation?
(c) What is the mean variance of Poisson distribution?
(d) What is the additive law of probability?
(e) Prove that correlation coefficient and regression coefficients have same sign.
(f) What is the range of correlation coefficient?
(g) Explain testing a hypothesis in brief.
(h) Define standard error.
(i) Explain np chart in brief.
(j) Define Latin cubes.

SECTION-B

2. Attempt any **THREE** of the following. $10 \times 3 = 30$

(a) The first four moments of a distribution about X=2 are -2, 12, -20 and 100. Calculate the moments about mean. Also calculate β_2 and show whether the distribution is leptokurtic or platykurtic.

(b) A fair dice is tossed twice. Find the probability of getting a 4, 5 or 6 on the first toss and a 1, 2, 3 or 4 on the second toss.

(c) Given the following data:

X	6	2	10	4	8
Y	9	11	5	8	7

Find the two regression equations and calculate the standard error of the estimate (S_{xy} and S_{yx}).

(d) In an experiment on pea-breeding Mendel obtained the following frequencies of seed: 315 round and yellow, 101 wrinkled and yellow, 108 round and green, 32 wrinkled and green. According to his theory of heredity the numbers should be in proportion 9: 3: 3:1. Is there any evidence to doubt the theory at 5 % level of significance?

(e) A daily sample of 30 items was taken over a period of 14 days in order to establish control limits. If 21 defectives were found, what should be the upper and lower control limits of the proportion of defectives.

SECTION-C

3. Attempt any **ONE** of the following: $10 \times 1 = 10$

(a) From the following data calculate Karl Pearson's coefficients of Skewness:

uptunotes.com

Marks More than	0	10	20	30	40	50	60	70	80
No. of Students	150	140	100	80	80	70	30	14	0

(b) The arithmetic mean and standard deviation of a series of 20 items were calculated by a student as 20 cm and 5 cm respectively. But while calculating, an item 13 was misread as 30. Find the correct arithmetic mean and standard deviation.

4. Attempt any **ONE** of the following. $10 \times 1 = 10$

(a) A student obtained the following answer to a certain problem given to him. Mean=2.4; Variance=3.2 for a binomial distribution. Comment on the result.

(b) State and Prove Baye's Theorem.

5. Attempt any **ONE** of the following. $10 \times 1 = 10$

(a) The correlation coefficients between two variables X and Y is 0.6. If $S_X = 1.50, S_Y = 2.00$, $\bar{X} = 10$ and $\bar{Y} = 20$ find the regression lines of : (i) Y on X (ii) X on Y

(b) Discuss the advantages of non parametric tests.

6. Attempt any **ONE** of the following. $10 \times 1 = 10$

(a) Perform a two-way ANOVA on the data given below:

Plots of Land	Treatment			
	A	B	C	D
I	38	40	41	39
II	45	42	49	36
III	40	38	42	32

(Use coding method subtracting 40 from the given numbers).

(b) Discuss the errors in testing a hypothesis.

7. Attempt any **ONE** of the following. $10 \times 1 = 10$

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

(b) Write short note on Randomized block design.

uptunotes.com