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B.Sc. (Hons. with Research)/ B.Sc. (Hons.) as per FYUP
Semester I Examination (January 2025)

Paper Code: BCH MDC 101
Paper Title: BASICS OF STATISTICS

Time: 2 hours

Maximum Marks: 45

Attempt all Questions. All the parts of the Question must be attempted in continuation. Start answering each Question on a new page.

SECTION-A

Q1. Fill in the blanks in the following questions. Answer all questions. [1x10 =10 marks]

- A. Arithmetic mean is very much affected by -----
- B. In open end distribution----- cannot be determined.
- C. For symmetric distribution coefficient of skewness is-----
- D. Name any two sources of primary and secondary data.
- E. If A and B are independent events, $P(A)=0.8$, $P(A \cap B)=0.2$. Then $P(B)$ is-----
- F. If the assumed hypothesis is tested for rejection considering it to be true is called-----
- G. The mean of binomial distribution $B(n, p)$ is -----and its variance is-----
- H. The root mean square deviation of a series is called-----
- I. The median of a series is 10. Two additional observations 7 and 20 are added to the series. Then the median of the new series will be-----
- J. What will be the relationship among the mean, median and mode for the following data:

X	1	2	3	4	5
f	25	50	100	50	25

SECTION-B

Q2. Attempt ANY THREE questions from the following. [5x3 = 15 marks]

- A. Briefly explain qualitative and quantitative data with examples.
- B. Define coefficient of variation. The following table shows the price of a particular commodity in U.P and Delhi for six months

U.P	50	60	55	62	58	57
Delhi	48	52	50	46	64	58

Compare the consistency in prices of two cities

- C. Differentiate Type-I and Type-II errors with real life examples.
- D. Define and three measures of dispersion with their formulae. Calculate the mean and mean deviation for the following data.

Salary (in rupees)	0-4	4-8	8-12	12-16	16-20
No. of employees	4	6	8	5	2

- E. In a certain population of women 4 percent have had breast cancer, 20 percent are smokers, and 3 percent are smokers and have had breast cancer. A woman is selected at random from the population. What is the probability that she has had breast cancer or smokes or both?

SECTION-C

Q3. Attempt ANY TWO questions from the following.

[10x2 = 20 marks]

- A. What is a Z-test and when it is used? We wish to know if we can conclude that the mean daily caloric intake in the adult rural population of a developing country is less than 2000. A sample of 500 had a mean of 1985 and a standard deviation of 210. At the 5% of level of significance the critical value is 1.96.
- B. Define binomial distribution. Describe the main features of the binomial distribution. The survival rate for a particular disease is 20% and we have 10 patients with this disease. What is the probability that exactly 3 patients will survive.
- C. Define correlation and its types. From the following data, compute the correlation between X & Y.

	X	Y
No. of items	15	15
Arithmetic Mean	25	18
Sum of squares of deviations from mean	136	138

Summation of product of deviations of X & Y series from the respective arithmetic means=122.

- D. Briefly explain the additional and multiplication law of probability. Also write a short note on conditional probability with an example.

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