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B.Sc. (Hons. with Research)/ B.Sc. (Hons.) Chemistry
Supplementary Exam, Semester I (JULY 2024)
Paper Code: BCH MDC 101
Paper Title: BASICS OF STATISTICS

Time: 2 hours

Maximum Marks: 45

Write the Roll No. at top immediately upon receipt of the Question Paper. 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. Records provide _____ source of data.
- B. An average is a measure of _____.
- C. Histograms can be drawn only for _____ distribution.
- D. The median of a series is 10. Two additional observations 7 and 20 are added to the series. The median of the new series will be _____.
- E. The relationship between arithmetic mean, geometric mean and harmonic mean is _____.
- F. The square root of standard deviation is called _____.
- G. If two events, A and B, are mutually exclusive events, then the $P(A \cup B) =$ _____.
- H. Two variables are said to be _____ if the change in one variable results in corresponding change in other variable.
- I. The mean of binomial distribution $B(n, p)$ is _____, and its variance is _____.
- J. For a normal distribution, all measures of central tendency i.e., mean, median and mode are _____.

SECTION-B

Q2. Attempt ANY THREE questions from the following. [3x5 = 15 marks]

- A. Briefly explain primary and secondary data with examples.
- B. Draw positive and negative skewed frequency curves and mark the position of mean, median and mode on each curve.
- C. Differentiate between Type-I error and Type-II error with real life examples.
- D. Define the null and alternative hypothesis. Write the step-wise procedure for testing the hypothesis.
- E. Define the term correlation and with the help of an example differentiate Karl Pearson's and Spearman's rank correlation methods.

SECTION-C

Q3. Attempt ANY TWO questions from the following.

[10x2 = 20 marks]

- A. (a) Define Binomial distribution. Describe the main features of Binomial distribution.
(b) 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.
- B. What are important measures used for central tendency and write its equations and terms.
- C. 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. Calculate mean deviation from mean values of the following data:

Class interval	0-4	4-8	8-12	12-16	16-20
Frequency	4	6	8	5	2

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