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**M.Sc. (Semester-I) Examination,
Dec.-Jan. (2025-26)**

MICROBIOLOGY

**(Computer Application
Bioinstrumentation and Biostatistics)**

Time Allowed : Three Hours

Maximum Marks : 70

Note : This question paper is divided into **four** sections. Attempt questions of **all four** sections as per direction. Distribution of marks is given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **any ten** questions. Each question carries 1 mark. [10×1=10]

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(1)

[P.T.O.]



1. (i) The graph of a cumulative frequency distribution is called :

- (a) Histogram
- (b) Frequency polygon
- (c) Ogive
- (d) Multiple bar chart

(ii) Given classes 1-5, 6-10,..... class interval size is :

- (a) 3
- (b) 4
- (c) 5
- (d) 5.5

(iii) Charts and graphs facilitate :

- (a) Comparison of values
- (b) To know the trend
- (c) To know the relationship
- (d) All of these

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(iv) What are the variables whose calculation is done according to the weight, height, and length known as?

- (a) Flowchart variables
- (b) Discrete variables
- (c) Continuous variables
- (d) Measuring variable

(v) In a distribution of 10, 20, 30, 40, 50, the \bar{x} is 30, the sum of deviations from \bar{x} will be :

- (a) 60
- (b) 30
- (c) Zero
- (d) 15

(vi) When all the values in a series occur the same number of times, then one must not compute the:

- (a) Mean
- (b) Median
- (c) Mode
- (d) Weighted mean

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[P.T.O.]

(vii) The correlation for the values of two variables moving in the opposite direction is :

- (a) Positive
- (b) Negative
- (c) Nonlinear
- (d) No correlation

(viii) Histogram is a graph of :

- (a) Time series
- (b) Ogive
- (c) Qualitative data
- (d) Frequency distribution

(ix) The grouped data is :

- (a) Primary data
- (b) Secondary data
- (c) Raw data
- (d) None of these

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(x) The mean of 10 observations is 10. All observations are increased by 10%. The mean of the increased observations shall be :

- (a) 20
- (b) 11
- (c) 10
- (d) 100

(xi) What is the significance of hypothesis testing?

- (a) It is a significant assessment of issue
- (b) Its a way of making a powerful statement
- (c) It is a rule for accepting or rejecting the research problem's hypothesis
- (d) None of the preceding

(xii) Which of these distributions is used for a testing hypothesis?

- (a) Normal Distribution
- (b) Chi-Squared Distribution
- (c) Gamma Distribution
- (d) Poisson Distribution

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[P.T.O.]



SECTION-B

(Very Short Answer Type Questions)

Note: Attempt any five questions. Each question carries 2 marks. (Word limit : 25-30 words) : [5×2=10]

- 2.
- Name four important parts of MS Word.
 - What do you understand by placeholder in MS PowerPoint?
 - Name any two statistical software.
 - When would you use a SEM?
 - What is SDS-PAGE used for?
 - Why use standard deviation?
 - What is the p-value in statistics?

SECTION-C

(Short Answer Type Questions)

Note: Attempt any five questions. Each question carries 4 marks. (Word limit : 250 words) [5×4=20]

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(6)

- 3.
- Explain MS Excel in brief.
 - How to insert a hyperlink to a PowerPoint presentation?
 - Write short note on Ion exchange chromatography.
 - Write short note on density gradient centrifugation.
 - What is the difference between linear regression and multiple regressions?
 - Find the mean and the standard deviation for the values 78, 90, 98, 93, 94.
 - The size of land holdings of 380 families in a village is given below. Find the median size of land holdings.

Size of land holding	0-100	100-200	200-300	300-400	400-500
Number of families	40	89	148	64	39

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(7)

[P.T.O.]



SECTION-D

(Essay Type Questions)

Note: Attempt any three questions. Each question carries 10 marks. (Word limit : 500 words) [3×10=30]

4. (i) What is computer application in microbiology? Explain.
- (ii) Write principle method and application of spectrophotometer.
- (iii) Why are t tests used? Calculate an independent t test for the following data sets and conclude if the tabulated t value at an alpha level of 0.05 and degree of freedom 18 is 2.10.

Data set A : 1, 2, 2, 3, 3, 4, 4, 5, 5, 6

Data set B : 1, 2, 4, 5, 5, 5, 6, 6, 7, 9

- (iv) Calculate the regression coefficient and obtain the lines of regression for the following data :

X	1	2	3	4	5	6	7
Y	9	8	10	12	11	13	14

— x —

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