SEMM–416

M.Sc. (IVth Semester) Examination, 2022
MICROBIOLOGY

Paper – MBEO–402 (A)

(Biostatistics)

*Time : **1½** Hours*] [*Maximum Marks : **40***

Note :– The Question paper contains three Sections.

Section–A **(Marks : 1 × 10 = 10)**

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **1** mark.

Section–B **(Marks : 3 × 5 = 15)**

Note :– Answer *five* questions by selecting at least *one* question from each Unit. Each question carries **3** marks. Answer should not exceed **200** words.

Section–C **(Marks : 5 × 3 = 15)**

Note :– Answer *three* questions by selecting *one* from each Unit. Each question carries **5** marks. Answer should not exceed **500** words.
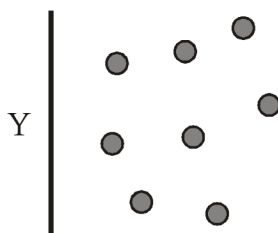
Section–A

1. (i) What is the value of lower and upper class limit in the given grouped frequency distribution ?

Class	?–10	10–20	20–30	30–40	40–?
Frequency	2	5	3	7	4

(ii) What do you understand by Parameter in Statistics ?

(iii) Define attributes.

(iv) Lottery method of sampling comes under which type of Sampling-random or Non-random ?

(v) Bar charts or diagram are used for the graphical presentation of which type of variables-discrete or continuous ?

(vi) Gaussian distribution of data is also known as .... distribution.

(vii) Give *two* examples of Count Data.

(viii) Explain Dependent Variable.

(ix) The relationship between the two variables X and Y in the given graph is known as :

(a) Linear Correlation

(b) Non-linear Correlation

(c) No Correlation

(d) Curvilinear Correlation

(x) The mathematical calculation of relationship between two variables is calculated using regression or correlation.

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Section–B

Unit–I

2. Write *six* applications of Biostatistics in Microbiology.

3. Write an illustrative note on Grouped Frequency Distribution.

4. Write a note on Cluster Sampling.

Unit–II

5. Write a short note on Histogram.

6. Draw a bar diagram from the given data :

Year	2010	2012	2014	2016
Malaria Cases	10	20	5	30

7. In a grassland the bacterial population was sampled from ten randomly located plots of 1 m^2 area. The following table gives the number of bacteria obtained. Examine the distribution patterns of bacteria using the Chi-square Test.

Area	No. of Bacteria/m^2
1	2×10^6
2	25×10^6
3	17×10^6
4	23×10^6
5	15×10^6
6	39×10^6
7	27×10^6
8	19×10^6
9	22×10^6
10	26×10^6

Unit–III

8. Write an illustrative note on Simple Probability.

9. Write a note on Partial Covariance.

10. Write a note on Applications of Multiple Regression.

Section–C

Unit–I

11. Write a note on Non-random Sampling Methods.

12. Write notes on the following :

    (a) Bias in Sampling

    (b) Sequential Sampling

Unit–II

13. Calculate Mean and Median from the given data :

Class Interval	10–25	25–40	40–55	55–70	70–85	85–100
Number of Observations	2	3	7	6	6	6

14. Write notes on the following :

    (a) Statistical basis of Radioactivity

    (b) Ogive Curves

Unit–III

15. Write notes on the following :

    (a) Use of correlation in Biostatistics

    (b) Cole's measure of correlation between two species

16. Write notes on the following :

    (a) Statistical analysis of LD_{50}

    (b) Response-dose Relationship