Reg. No. : ..............................

**Code No. : 30553 E     Sub. Code : CEMI 52**

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

Fifth Semester

Microbiology — Major Elective — I

BIOSTATISTICS

(For those who joined in July 2021-2022)

Time : Three hours                    Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1.  Aims of biostatistics are

    (a) To design experimental investigation and sample surveys to generating data

    (b) To organize and represent the data in suitable tables, diagrams or graphs

    (c) To draw valid inferences from the data .

    (d) All of the above

2.  What is categorical data?

    (a) Data that can take on any numerical value

    (b) Data that is collected through qualitative observations

    (c) Data that can take on a limited number of distinct values or categories

    (d) Data that is collected through quantitative observations

3.  A plan for obtaining a sample from a population is called ———?

    (a) Population design     (b) Sampling design

    (c) Sampling frame        (d) Random distribution

4.  What does a bar graph represent?

    (a) Frequency distribution

    (b) Trends over time

    (c) Correlation between two variables

    (d) Proportions or percentage of categories

5.  Mode is ———

    (a) Most frequent value  (b) Least frequent value

    (c) Middle most value    (d) None of the above

6.  The potential average is ———

    (a) Median               (b) Mode

    (c) Mean                 (d) Harmonic mean

7.  Standard deviation is the ——— of variation.

    (a) Least measure        (b) Best measure

    (c) Average              (d) None of the above

8.  Variance is the square of ———?

    (a) Range                (b) Mean distribution

    (c) Quartile deviation   (d) Standard deviation

9.  Coefficient of regression of Y on X is expressed as ———?

    (a) bxy                  (b) byx

    (c) by+x                 (d) None of the above

10. The analysis of variance table is also called ——— table?

    (a) Logarithmic          (b) ANOVA

    (c) F-table              (d) t-table

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Explain various scales of measurements.

    Or

    (b) Define the following with examples.

        (i) Population (ii) Data (iii) Sample (iv) Variable

12. (a) Give a short note on Random sampling.

    Or

    (b) Explain presentation of data using pie diagram.

13. (a) Define harmonic mean. Write its merits and demerits.

    Or

    (b) The number of patients that visited a doctor for consultation for 10 consecutive days is arranged in an increasing order in the following table. Find out the median number of the patients that visited the doctor per day.

    8  10  12  14  16  18  19  20  22  25

14. (a) Differentiate between absolute and relative measures of dispersion.

    Or

    (b) Differentiate between Skewness and Kurtosis.

15. (a) Explain types of correlation in detail.

    Or

    (b) Briefly explain one-way classification of analysis of variance.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Write about of various types of data with examples.

Or

(b) Elaborate the applications of Biostatistics in different fields.

17. (a) What is sampling? Explain different methods of sampling.

Or

(b) Explain in detail about tabulation of data.

18. (a) The given table shows the marks obtained by different students in their model test. What is the mean, median and mode of the given data?

| S.No. | Name | Marks obtained |
|---|---|---|
| 1 | Roja | 80 |
| 2 | Selvan | 52 |
| 3 | Kalaiarasi | 40 |
| 4 | Gowtham | 52 |
| 5 | Mukesh | 70 |
| 6 | Malar | 1 |
| 7 | Roshan | 6 |

Or

(b) Find the mean by short-cut method using the following data

59  65  71  67  61  63  69  73

19. (a) Serum lipid Peroxidase (SLP) levels of ten adults undergoing treatment for diabetes mellitus were recorded to be: compute the mean, variance, standard deviation.

| No. of patients | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| SLP value | 5.85 | 6.17 | 6.09 | 7.70 | 3.17 |

| No. of patients | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| SLP value | 3.83 | 5.17 | 4.31 | 3.09 | 5.24 |

Or

(b) Calculate the mean, variance and standard deviation for the following data:

| Class interval | 0-10 | 10-20 | 20-30 |
|---|---|---|---|
| Frequency | 27 | 10 | 7 |

| Class interval | 30-40 | 40-50 | 50-60 |
|---|---|---|---|
| Frequency | 5 | 4 | 2 |

20. (a) Calculate Karl Pearson's correlation between X and Y series from data given below:

X series  12  9  8  10  11  13  7
Y series  14  8  6  9  11  12  13

Or

(b) Elaborate the importance of test of significance.

———————