QP Code: PV25C001

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

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

III SEMESTER (CBCSS - VPG) DEGREE EXAMINATIONS, OCTOBER 2025
M. Voc. Applied Biotechnology
GEC3AB08 : BIOSTATISTICS AND BIOPHYSICS
2024 Admission Onwards

Time:3 Hours **Maximum Weightage:30**

Part A

*Short answer type questions: Answer **any four** questions. Weightage **2** for each question.*
(4x2 = 8 Weightage)

1. Define classification and tabulation of data.
2. State the different types of bar diagrams.
3. Describe scatter diagram and draw a simple scatter diagram and interpret.
4. Explain the principle of Rayleigh scattering.
5. Compare ultrafiltration with dialysis and gel filtration in terms of efficiency, selectivity and speed.
6. Analyze mean deviation from the mean: 5, 10, 15, 20.
7. Assess the challenges of GC in analyzing thermolabile and high–molecular weight compounds.

Part B

*Short essay-type questions: Answer **any four** questions. Weightage **3** for each question.*
(4x3 = 12 Weightage)

8. Explain least square method for curve fitting.
9. Explain Type I and Type II errors in hypothesis testing.
10. Demonstrate how dialysis is used to remove salts after protein precipitation.
11. Estimate rank correlation for ranks: A: 1, 2, 3 B: 2, 1, 3.
12. Demonstrate how half-life calculations are applied to determine safe handling periods for isotopes.
13. Demonstrate how spectrophotometry can be used to estimate DNA concentration and purity.
14. Choose a real-life biological application of normal distribution.

Turn Over

Part C

*Essay-type questions: Answer **any two** questions. Weightage **5** for each question.*
(2x5 = 10 Weightage)

15. Define different models of data presentation using biological data as examples.

16. Explain the principle of distillation.

17. a)Find the mode of the following values: 12, 15, 18, 12, 20,18,12,15,18
    b)The marks obtained by students in a quiz are: 5, 7, 6, 8, 6, 9, 6, 7, 8 .
    Find the mode.
    c) Calculate the mode from the following frequency distribution.

Class interval	Frequency
0-10	3
10-20	7
20-30	12
30-40	15

18. Analyze how differential centrifugation and density gradient centrifugation differ in principle and application. Give suitable examples for each.

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