Roll No. : .....

Total No. of Questions : **11**] [Total No. of Printed Pages : **3**

BPP–1084

M.Sc. (Previous) Examination, 2022

MICROBIOLOGY

Paper - III

(Microbial Physiology, Biochemistry and Bioinstrumentation)

*Time : **3** Hours*] [*Maximum Marks : **75***

Section–A **(Marks : 2 × 10 = 20)**

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section–B **(Marks : 5 × 5 = 25)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

Section–C **(Marks : 10 × 3 = 30)**

Note :– Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

Section–A

1. Attempt all *ten* questions. Answer should not exceed **50** words in each question.

   (i) Define Mesophilic Bacteria. In what temperature range do they grow ?

   (ii) Define Allosteric Enzymes with a suitable example.

(iii) Draw labelled diagram of a Triacylglycerol Molecule.

(iv) Give one example of a Coenzyme and also draw its structure.

(v) What is the structural and functional difference between Bacteriochlorophyll 'a' and Chlorophyll 'a' ?

(vi) What are the inorganic forms of sulphur and what is their significance ?

(vii) Define Autotrophy. How many types of autotrophies occur in bacteria ?

(viii) What are the common products of transamination of amino acids ?

(ix) What do you understand by Microscope Resolution ? What is the limit of resolution of SEM ?

(x) Which supporting medium is used for zonal/zone electrophoresis of biomolecules ?

Section–B

Note :– Attempt *five* questions in all, selecting *one* question from each Unit. Answer should not exceed **200** words in each question.

Unit–I

2. How medium pH affects bacterial growth ? Explain with an example.

Or

Explain feedback regulation of enzyme activity.

Unit–II

3. Which amino acids come in α-ketoglutarate family ? Give a brief outline of the synthesis of any one amino acid falling in this family.

Or

What are Steroid Hormones ? Give a simple outline of their synthesis.

Unit–III

4. Write a note on microbial oxidation of inorganic forms of iron.

Or

Define Entropy. What is the significance of entropy in microorganisms ?

Unit–IV

5. Illustrate the photo-systems of Green Sulphur Bacteria.

Or

Write a note on Glyoxalate Cycle.

Unit–V

6. Write a note on Confocal Microscopy.

Or

Write a note on Gradient Electrophoresis.

Section–C

Note :– Answer any *three* questions out of five. Answers should not exceed **500** words in each question.

7. Give a comprehensive account on Microbial Transport Systems.

8. Write a detailed note on Bacterial Cell Wall Synthesis.

9. Write notes on the following :

   (a) Microbial Oxidation of Hydrogen

   (b) Bioluminescence

10. Write notes on the following :

    (a) Calvin Cycle

    (b) Artificial Electron Donors

11. Write notes on the following :

    (a) Gas-liquid Chromatography

    (b) Specimen preparation for TEM