

Roll No. : .....

Total No. of Questions : 16 ]

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# MICRSEM-139

M.Sc. (Ist Semester) Examination Dec., 2022

## MICROBIOLOGY

Paper - MB-102

(Microbial Physiology and Biochemistry)

Time : 3 Hours ]

[ Maximum Marks : 40

The question paper contains three Sections.

### Section-A

(Marks : 1 × 10 = 10)

*Note* :- The candidate is required to answer all the *ten* questions carries 1 mark each. The answer should not exceed 50 words.

### Section-B

(Marks : 3 × 5 = 15)

*Note* :- The candidate is required to 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* :- The candidate is required to answer *three* questions by selecting at least *one* question from each Unit. Each question carries 5 marks. The answer should not exceed 500 words.

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**MICRSEM-139** P.T.O.

### Section–A

1. (i) Which bonds hold together the hydrogen and oxygen atoms of an individual water molecule ?
- (ii) Write *two* characteristics of biocatalysts which make them superior to non-biological catalysts.
- (iii) Write *two* purposes of allosteric sites present in enzymes.
- (iv) Which type of lipid acts as a precursor of hormones ?
- (v) What are the common names of the vitamins (a) Niacin (b) Folic acid ?
- (vi) What is the value of  $\Delta G$  of a reaction at equilibrium ?
- (vii) Write *two* functions of Cytochromes.
- (viii) Give *two* examples of a microbe which can oxidize Fe(II) ?
- (ix) What is the purpose of deamination of amino acids ?
- (x) What is the fate of pyruvic acid under anaerobic condition ?

### Section–B

#### Unit–I

2. Write a note on Oxidoreductases.
3. Write a note on role of van der Waals interactions in maintaining the structure of a bio-molecule.
4. Write a note on sequential feedback inhibition of enzymes.

#### Unit–II

5. Briefly outline the Biosynthesis of Ketone Bodies.
6. Write a note on Glucogenic Amino Acids.
7. Write a note on inhibitors of ETC.

### Unit-III

8. Write a note on Bioluminescence.
9. Briefly outline how a protein can be used as substrate to gain energy.
10. Entner Doudroff Pathway.

### Section-C

#### Unit-I

11. Give a comprehensive account on enzyme purification methods.
12. Write notes on the following :
  - (i)  $K_m$
  - (ii) Enzyme specificity

#### Unit-II

13. Write notes on the following :
  - (i) Substrate level phosphorylation
  - (ii) Anoxygenic photosynthesis
14. Give a comprehensive account on bioenergetics.

### Unit-III

15. Write notes on the following :
  - (i) Microbial oxidation of nitrogen
  - (ii) Heterolactic fermentation
16. Give a detailed account on ETC and oxidative phosphorylation.