



Register Number:

Date:

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
B.Sc. MICROBIOLOGY – II SEMESTER
SEMESTER EXAMINATION: APRIL 2022
(Examination conducted in July 2022)

MB 218- BIOPHYSICS, BIOCHEMISTRY AND MICROBIAL DIVERSITY

Time- 2 ½ hrs

Max Marks-70

This paper contains **2** printed pages and **4** parts

I. Answer any Five of the following

5 x 3 =15

1. Write the principle of Centrifugation.
2. What is mRNA? Write its function.
3. Write the requirements for performing an agarose gel electrophoresis.
4. Give names of one disorder each caused by deficiency of Vitamin A, D and C.
5. List the different classes of enzymes.
6. Explain interaction of water with amphiphilic substances.
7. Give the importance of cofactors in an enzymatic reaction.

II. Answer any Five of the following

5 x 5 =25

8. Derive the Henderson-Hasselbalch equation and give its importance.
9. Give the classification of carbohydrates giving examples of each type.
10. List the different types of radioactive emissions. Give applications of radioactive isotopes in biology.
11. Explain the factors influencing enzyme activity.
12. Write a note on any two microbial associations.
13. Explain the Watson and Crick model of DNA.
14. Write in short on-
 1. Amino acids
 2. Bergey's manual

III. Answer any Two of the following:

2 x 10 =20

15. Give the structural organization of proteins and explain secondary structure in detail.
16. Describe in detail the classification of microorganisms based on temperature.

17. A. Explain the general structure and function of tRNA. (5)
B. Explain the viral classification in a flow chart. (5)

IV. Answer the following:

1 x 10 = 10

18. A. What is the $[H^+]$ and the $[OH^-]$ in a solution of 1.0×10^{-3} M HCl? Also find the pH of this solution. (5)
B. Identify the given formula and comment on the technique which utilizes the concept.

$$A = \epsilon bC$$

- A = absorbance
 ϵ = molar absorptivity
b = length of light path
C = concentration

(5)