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 Register Number:

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**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**B.SC MICROBIOLOGY- II SEMESTER**

**SEMESTER EXAMINATION- OCTOBER 2018.**

**MB218- BIOPHYSICS, BIOCHEMISTRY AND MICROBIAL DIVERSITY.**

**Time: 2 ½ hrs Max Marks: 70**

This question paper has **2** printed pages and **4** parts.

**I. Answer any Five of the following: 5x3 =15**

1. List three functions of Carbohydrates.
2. Define the following: a) Mutarotation b) Enantiomers c) Centrifugal force
3. State the Henderson Hasselbalch equation and explain the terms.
4. Draw the structure of the eukaryotic mRNA.
5. List one water and one fat soluble vitamin and name one vitamin deficiency disorder of the same.

6. Draw the various parts of a spectrophotometer.

 7. Identify the amino acids based on the clues given:

i) This amino acid is considered a helix breaker-

ii) This amino acid is the most flexible and not optically active-

iii) This is a sulphur containing amino acid that does not readily participate in

 formation of disulphide bonds.

**II. Answer any Five of the following: 5x5= 25**

8. How are enzymes classified based on the chemical reaction they catalyze?

9. Write the saponification and halogenation reactions of Lipids.

10. Explain two mechanisms of enzyme regulation.

11. List the types of Radioactive decay with examples.

 12. Describe Watson and Crick model of DNA.

13. How are organisms classified based on their oxygen requirement (list examples)?

14. Illustrate the structural features of water that make it a good solvent.

**III. Answer any Two of the following: 2X10 =20**

15. Write notes on a) Mutualism b) Antagonism c) Predation

 (Use relevant examples only from the microbial community)

 16. What are secondary structures of proteins? Explain the forces that stabilize these

 structures.

 17. List the chemical components and the function of each component that make up the

 following:

 a. Gel loading dye.

 b. Stacking Gel.

 c. Mobile phase for amino acid separation using paper chromatography.

**IV. Answer the following: 1x10 = 10**

18. You are working on a Microbiology project that involves isolation and identification of an amylase producing bacteria. Based on the subject knowledge you have gained during this semester briefly explain how you will plan this project and what biophysical techniques will you use during your work.