ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
END SEMESTER EXAM: OCT 2019
B.Sc. BIOTECHNOLOGY- I SEM
BT 118: Fundamentals of Biochemistry and Microbiology

Time: 2.5 Hrs   Max Marks: 70

Note- The question paper has three parts and one printed page

I. Answer any Ten of the following   **10x2=20**

1. State the role of heavy metals in control of microorganisms.

2. What are the practical advantages of Koch postulates?

3. What are Bacterial Endospores?

4. What is zonation with relation to algae?

5. What are some economically important products of fungi?

6. Mention the different types of media used for chemoheterotrophic bacteria.

7. Describe the importance of tertiary structure in protein function.

8. Lipids are the only biomolecules capable of forming membranes. Substantiate.

9. Differentiate endocrine and paracrine signals. Give examples.

10. State any 4 characteristics of denaturation.

11. State the sources and deficiency symptoms of Riboflavin.

12. Define Iodine number. What will you infer regarding a fat with a high Iodine number?

II. Answer any Five of the following   **5x6=30**

13. Explain the role of antibiotics in bacterial growth control.

14. How is chemo-taxonomical approach useful in classifying bacteria?

15. Describe with an illustration the life cycle of the malarial parasite.

16. Mention characteristics of a prokaryotic and eukaryotic model organism using examples.

17. Outline Urey- Miller experiment in support of biochemical evolution.

18. Give the structure and function of glycogen.

19. Compare and contrast the various enzyme inhibition mechanisms.

III.   Answer the following   **2x10=20**

20. a. Explain pI of amino acids using appropriate diagrams. Add a note on salting out of proteins.

OR

b. Explain the general structure of tRNA. Add a note on Wobble hypothesis.

21.   a. An *E. coli* culture containing 1000 cells was inoculated into LB broth and incubated at 37°C for 3.5 hours at the end of which the total cells were 20 lakh. Assuming no cell death, (i) calculate the number of generations underwent by bacteria in this time. (ii) Calculate its generation time and growth rate in this media. (iii) Describe how you would maintain this culture in log phase for another 5 days. (log2=0.301, log3=0.477, log4=0.602)

OR

b. Explain the epidemiology of HIV infection.

BT-118-B-19