

Ref. No. : Ex/FTBE/BS/B/T/212/2025

**B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING SECOND YEAR
FIRST SEMESTER – 2025**

Subject : BASICS OF MICROBIOLOGY

Time: 3hr

Full Marks: 100

Part I (Total Marks 50)

Instructions : Use Separate Answer scripts for each part

Answer any **five** questions from the following:

5x10=50

1. Name and draw any two parts of bacterial cell structure present outside the cell wall. What are the functions of them? Write the name of two endospore former bacteria. 3+3+3+1=10 (CO2)

2. How bacteria are classified on the basis of their temperature and oxygen requirement?

5+5=10 (CO3)

3. How bacterial media are classified on the basis of consistency? Write the difference between simple and complex media? What are the criteria of transport media? 3+3+4=10 (CO3)

4. What do you mean by generation time? Draw a bacterial growth curve and explain its different phases. A culture is inoculated at noon with 10^3 cells/ml. At 10 pm the population is determined to be 10^9 cells/ml. What is the number of generations? What is the generation time?

2+5+3=10 (CO3)

5. Mention any five features of fungi. What are dimorphic fungi? Give one example of it. How fungi are classified on the basis of their mode of nutrition. 5+1+1+3=10 (CO2)

6. Explain any one method of quantitative estimation of bacteria. How bacterial culture are preserved for long term- explain any one method. 6+4=10 (CO3)

7. Write short notes on:

5+5=10 (CO2)

i. Vegetative reproduction of fungi

ii. Lytic cycle of virus

[Turn over

B.E (FTBE) 2ND YEAR-1ST SEMESTER 2025

Basics of Microbiology

Time: 3 hours

Full Marks: 100

Part II (Marks 50)

Answer Q1 and any two from the rest(Q2-Q5) 5x6+2x10

1. Explain any five of the following: 5x6
 - a) Picric acid is a dye
 - b) Gram negative bacteria take the colour of counter stain such as safranin.
 - c) Phenol coefficient method for evaluation of disinfectant
 - d) Acid fast bacteria.
 - e) Working principle of Arnold sterilizer
 - f) Halogens as disinfectant
2. a) What is meant by :sterilization, bactericide, bacteriostasis, disinfectant. 4x1.5
 b) Give one example each of oxazine, thiazine and triphenyl methane dye. 4
3. What is biological N₂ fixation? Explain symbiotic N₂ fixation. What essential reactants are required for N₂ fixation. 2+6+2
4. A suspension contains 2x10⁵ organisms per ml. If the bacteria are destroyed at the rate of 90% per min, find the deaths per unit time and number of survivors at the end of 3,4,6 and 8 min respectively. 4x2.5
5. Write short notes on (any two) : 2x5
 - a) Hot air oven.
 - b) Symbiotic and non-symbiotic N₂ fixing microorganisms
 - c) Classification of disinfectant based on mechanism of action.