

M.TECH. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING
FIRST YEAR SECOND SEMESTER EXAM 2025

ADVANCED MICROBIAL TECHNOLOGY

Time: 3 hrs

Full Marks: 100

Use a separate Answer-Script for each part.

Part – I
(50 marks)

Answer any five questions

5×10 = 50

1. Briefly describe the role of microorganisms in food and bioprocesses. What are the factors effecting the development of microbial association in foods? 5+5 = 10
2. Briefly describe, how microbial growth depends on environmental factors in food. Aerobic and obligate anaerobic microorganisms tolerate oxygen but strict anaerobic organisms cannot-explain why? 6+4 = 10
3. Milk has the capacity to generate antimicrobials in the presence of hydrogen peroxide-explain with reason. Define halotolerant, osmotolerant and xerotolerant organisms. What is intermediate moisture food? Give examples. Define water activity. 3+3+2+2 = 10
4. What are the different microbial sources in raw milk? What is microbial cause of typical odor of fish? Write the role of *Erwinia carotovora* in vegetable spoilage? 5+2+3 = 10
5. Define selective, elective and diagnostic media. A plate has 300 colonies. Express result in statically with 95% confidence level. Briefly describe microbial count by direct examination. 3+3+4 = 10
6. Write short note on DNA / RNA methodology for microbial count and Microbial count by ATP determination. 5+5 = 10
7. Briefly describe detection of microorganism by immunological methods. Write the use of Baird-Parker media, MacConkey broth, Rose Bengal / Chloramphenicol agar and Rappaport-Vassiliadis broth. 6+4 = 10

Ref. No. : Ex/PG/FTB/PC/T/121/2025

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Part II (50 marks)

Answer any **five** of the following: 10x5=50

1. How enrichment technique has been used to isolate pure culture? Mention any two physical methods by which pure cultures can be isolated. 4+6=10

2. How bacterial growth can be quantitatively measured? 10

3. Explain the working principle, advantage and disadvantages of any new physical method of sterilization. 10

4. What are the disadvantages of plant and animal sources for enzyme production?

5+5=10

5. Write the principle, advantages and disadvantages of gas plasma sterilization. 10

6. What are pectinases? Write about the fermentative production, purification and application of pectinase. 2+3+3+2=10

7. Write a short note on any **one**: 10

i. Methods of maintenance of microbial culture.

ii. Microbial production of amino acids