

(i) Printed Pages : 2

Roll No.

(ii) Questions : 9

Sub. Code :

1	3	8	2	4
---	---	---	---	---

Exam. Code :

5	0	5	2
---	---	---	---

**B.Sc. (Hons.) (Bio-Technology) FYUP 2nd Semester
(2056)**

FOUNDATIONS OF MICROBIOLOGY

Paper : BTED201

Time Allowed : Three Hours]

[Maximum Marks : 68

Note :— (1) Attempt **five** questions.

(2) Question **one** is compulsory.

(3) Attempt **one** question from each unit.

1. (a) Explain two methods to classify bacteria.
- (b) What is pasteurization and how is it related to human health?
- (c) Describe monoauxic and diauxic growth patterns in bacteria.
- (d) Which factors affect the composition of human normal flora?

4×3=12

UNIT-I

2. (a) Describe the major contributions of Leeuwenhoek to the field of microbiology. How Tyndall's experiments helped to disapprove spontaneous generation of life?
- (b) Explain the principle and working of electron microscope. What are its major applications in microbiology? 7,7
3. (a) What is the germ theory of disease? Explain the four Koch's postulates and their significance.
- (b) Define resolution in light microscopy. Compare bright-field and dark-field microscopy with respect to principle and applications. 7,7

UNIT-II

4. (a) Describe the structural components of a bacterial cell in detail.
- (b) Explain the structure and function of peptidoglycan in Gram positive and Gram negative bacteria. 7,7
5. (a) Make a labeled diagram of bacterial endospore. Explain the process of sporulation and its high resistance to heat.
- (b) Describe the structure and functions of lipopolysaccharide in Gram-negative bacteria. 7,7

UNIT-III

6. (a) Define generation time. Describe the bacterial growth curve in a batch culture. Explain the characteristics of each phase of growth.
- (b) Describe the principle and working of a turbidostat and compare it with a chemostat. 7,7
7. (a) What is sterilization? Describe the physical and chemical methods of sterilization, highlighting their advantages and limitations.
- (b) Explain the concept of synchronous growth in bacteria and its significance and discuss the methods used to obtain synchronous cultures. 7,7

UNIT-IV

8. (a) Define normal flora and discuss the distribution and importance of normal microbiota in the human body.
- (b) Explain how pathogens are able to cause disease in humans. 7,7
9. (a) What are commensals? How commensals residing in gut affect human health ?
- (b) Explain the difference between symbiosis and antibiosis with suitable examples. 7,7