

(i) Printed Pages : 4

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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Bachelor of Science (FYUP) 1st Semester

(2125)

MICROBIOLOGY

Paper : Basic Microbiology MICDSC1

Time Allowed : Three Hours]

[Maximum Marks : 67

Note :— Attempt *five* questions in all selecting *one* from Units (I—IV). Question No. 1 is compulsory.

1. Attempt **ALL** parts :

- (a) Differentiate between spontaneous generation and biogenesis. 2
- (b) List two differences between bright field and phase contrast microscopy. 2
- (c) What is synchronous growth? 2
- (d) What is the significance of the lag phase in a bacterial growth curve? 2
- (e) Define the term 'disinfection' and 'sterilization'. 2
- (f) Which region of the human body is predominantly colonized by *Lactobacillus* and *E. coli*? 2

- (g) What is the purpose of a McConkey agar medium? 1
(h) In which bacteria is teichoic acid present? 1
(i) Name the scientist who discovered penicillin. 1

UNIT—I

2. (a) Describe the 'Swan-neck flask' experiment by Louis Pasteur. How did it disprove the theory of spontaneous generation?
(b) Explain the principle and applications of Dark Field Microscopy.
(c) Write a short note on the Germ Theory of Disease.

5+4+4=13

3. (a) Compare and contrast the principles of Simple staining and Gram staining.
(b) Discuss the contributions of Robert Koch to the field of Microbiology.
(c) Why is Acid-fast staining considered a differential stain? Name the primary stain used in this method. 5+4+4=13

UNIT—II

4. (a) Draw a well-labeled diagram of a bacterial cell.
(b) Describe the pour plate method for the isolation of pure cultures.
(c) What are mesosomes? State their proposed function.

5+4+4=13

5. (a) Explain the structure and functions of the bacterial cell wall.
(b) Differentiate between capsules and slime layers. What is the significance of capsule staining?
(c) Write a brief note on the cultivation of anaerobic bacteria.

5+4+4=13

UNIT—III

6. (a) With the help of a labeled diagram, explain the different phases of a typical bacterial growth curve.
(b) Define generation time. How is it calculated?
(c) List any two physical factors that affect microbial growth.

5+4+4=13

7. (a) What is a chemostat? Explain its significance in continuous culture.
(b) Describe the process of endospore formation in bacteria.
(c) Compare the turbidometric method with the standard plate count method for measuring bacterial growth.

5+4+4=13

UNIT—IV

8. (a) Differentiate between sterilization and disinfection with suitable examples.
(b) What are Beta-lactam antibiotics? Explain their mode of action with an example.
(c) List the common physical methods used for sterilization.

5+4+4=13

9. (a) Define 'normal microbial flora'. Discuss the benefits of the normal flora of the human intestinal tract.
- (b) What are sulfa drugs? Provide a mechanism of their antimicrobial action.
- (c) Discuss the mode of action of any two chemical agents used for disinfection.

5+4+4=13