

Time allowed: 3 Hours

Max. Marks: 67

NOTE: Attempt five questions in all, including Question No. IX (Unit-III) which is compulsory and selecting two questions each from Unit I - II.

x-x-x

UNIT - I

- I. a) Discuss the role of any two in field of microbiology:-
- Joseph Lister
 - Leewenhoek
 - Pasteur
 - Alexander Fleming
- b) Explain the theory of spontaneous generation of life? Who contradicts this theory and how it was proved? (6,7)
- II. a) Describe the functioning and principle of a compound microscope? How does it differ from a Phase contrast microscope?
- b) What is the difference between the resolution and resolving power of a microscope? How resolution is related to the wavelength of light used? (6,7)
- III. a) Why classification of microbes is important? What are the different methods of microbial classification?
- b) What is so special about the cell wall of Gram-positive bacteria? How is it different from gram-negative bacteria? (6,7)
- IV. a) What are endospores? What factors initiates the formation of endospores? How are they formed?
- b) What are the factors on which fungi have been classified into different groups? Give an example of each group. (6,7)

UNIT - II

- V. a) What are the different stages of the bacterial growth curve? Discuss important features of each phase.
- b) Which method will be used for sterilizing the following:-
- Vitamin A solution
 - Nutrient Medium
 - Steel scalpel
 - Laminar hood Surface
 - Petriplates
 - Antibiotic solution
 - Distilled water
- (6,7)

(2)

- VI. a) What is antibiosis? Where do we find this phenomenon? Give its clinical significance?
b) What are the different methods of sterilization used in the Microbiology lab? (6,7)
- VII. a) In which type of growth system, culture can be maintained at the exponential phase? How can we maintain it in the lab?
b) How do you define the generation time of bacteria? Give the mathematical expression for it. (6,7)
- VIII. a) What are extremophiles? How do they adapt themselves in an extreme environment?
b) What are heterotrophs? Give their significance in microbiology. (6,7)

UNIT - III

IX. Attempt the following:-

- What are facultative aerobes? How do they differ from obligate anaerobe?
- What is the magnification power of the microscope?
- What is synchronous growth? How it can be achieved in bacteria?
- Mention the name of any two Gram-Positive and Gram-negative bacteria?
- What is the inflammation process? How do they protect humans from infection?
- What is the difference between T cell and B cell-mediated immune responses?
- Mention the name of any two dyes used for staining bacteria?
- Give the name of the disease caused by *Mycobacterium*?
- Which dye is used in fluorescent microscope?
- What is the significance of GC content in microbial classification? (10x1½)