

1059

B.Sc. (Hons.) Biotechnology

Second Semester

BIOT- Sem-II-VI-T: General Microbiology

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) Describe the contributions of A. Fleming, J. Lister and R. Koch to medical microbiology.
- b) How L. Pasteur disproved the theory of spontaneous generation? Discuss briefly his role in the fermentation and silk industry. (6,7)
- II. a) How can the internal structures of a living cell be observed through microscopy? What is the use of fluorescence microscopy in microbiology?
- b) Compare the cell wall of Gram positive and Gram negative bacteria. What are endotoxins? What is their effect on humans? (6,7)
- III. a) How is the Scanning Electron Microscopy different from Transmission Electron Microscopy? List their applications.
- b) Explain the principle and working of Dark field microscope. How will you differentiate between a bacterial and fungal cell? (7,6)
- IV. a) Describe the structure of a bacterial endospore with a labelled diagram. How it is different from a vegetative cell? Name two bacteria which form endospores.
- b) What is fungal dimorphism? What is the difference between mold and yeast? (7,6)

UNIT - II

- V. a) Explain the different phases of microbial growth. Compare direct and indirect methods used to measure growth.
- b) What is a chemostat? How it is different from a batch culture? Explain their advantages and disadvantages. (6,7)
- VI. a) Classify *E.coli*, *Mycobacterium tuberculosis* and *Cyanobacteria* based on their nutritional diversity and justify the classification.
- b) What are exotoxins? Explain the mode of action of toxin produced by *Clostridium* species and *Vibrio cholerae*. (6,7)

(2)

- VII. a) Describe the different types of cytopathic effects of viral infections.
b) Explain the physical methods of sterilization. Discuss the use of halogens as antiseptic and disinfectant. (6,7)
- VIII. a) What is antibiosis? Explain with suitable examples? Discuss the role of commensals in human body.
b) Explain how pathogens are able to establish infection in the body? How compliment system helps to control infection? (6,7)

UNIT – III

- IX. Attempt the following:-
- What are acid fast bacteria?
 - If *E.coli* is provided with glucose and lactose ,what type of growth curve will be observed and why?
 - Is Pasteurization different from sterilization?
 - Define generation time. What is the generation time of *E.coli*?
 - What is synchronous growth? How it can be achieved in bacteria?
 - What is phenol coefficient?
 - Name the diseases caused by *S.aureus*, *S.pyogens* and *Shigella flexneri*.
 - Define resolution. What is the resolution of a light microscope? How it can be enhanced.
 - What is the difference between food poisoning and food intoxication? Give one example of each.
 - What is the innate response of the body to viral infections? (10x1½)

x-x-x