

Exam.Code:0907

Sub. Code: 6292

2122

**B.E. (Bio-Technology) Third Semester  
BIO-312: Microbiology**

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

**I. Answer the following:-**

- a) Define direct microscopic count.
- b) Name any two methods of bacterial preservation.
- c) Define synchronous growth?
- d) Define enriched medium.
- e) What do you understand by differential staining?
- f) Define frame shift mutation.
- g) Which microbes are primarily associated with sulphur cycle?
- h) Define transduction.
- i) What is the significance of Bergey's manual?
- j) Define commensalism?

(10x1)

**UNIT-I**

- II. a) With the help of a diagram explain the basic structure and function of bacterial cell.  
b) What are the various special stains available for staining of bacterial cells? (2x5)
- III. a) What are the various ways employed by the bacteria to uptake nutrients?  
b) What are the major milestones witnessed in the history of microbiology? How is microbiology related to food biotechnology? (2x5)
- IV. a) What are the various physical and chemical means of sterilization employed in microbiology?  
b) What are the various methods routinely used for enumeration of microorganisms? (2x 5)

**UNIT-II**

- V. a) What are the various steps involved in bacterial transformation?  
b) Describe in detail the various negative interactions existing among the microbes. (2 x5)
- VI. a) With the help of a diagram describe the carbon cycle and give its significance.  
b) What are the various approaches employed for the identification of bacteria. (2 x5)
- VII. a) Define mutation. What are the various factors leading to mutation in microbes?  
b) Write a short note on energy biosynthesis in prokaryotes. (2x5)

x-x-x