**Exam.Code:0435**
**Sub. Code: 3467**

**1129**

**M. Sc. (Biotechnology) First Semester**

**MBIO-103: Microbial Diversity and Metabolism**

**Time allowed: 3 Hours** **Max. Marks: 80**

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

*x-x-x*

I. Write short answers:-

a) Chemoheterotrophs

b) Any four characteristics of primary domains

c) Synchronous growth

d) Continuous culture

e) Characteristic of mycoplasma

f) Discuss any four difference between cellular and acellular slime moulds

g) Prions

h) Virulence and pathogenesis (8x2)

**UNIT – I**

II. a) Discuss the postulates of Robert Koch? What is the role of Pasteur in resolving controversy over spontaneous generation?

b) Discuss the culture enrichment techniques for isolation of chemoautotrophs? Discuss the significance of media formulation (6,10)

III. a) Define sterilization and its types?

b) Discuss the process of ribosomal RNA sequencing and its significance in bacterial classification?

c) Write a short note on Bergey's manual? (6,6,4)

**UNIT – II**

IV. a) Discuss the concept of microbial growth and phases of growth in batch culture? Give mathematical equation for estimation of growth.

b) What is the role of environmental factors on the growth of microbes? (10,6)

V. a) Discuss the process of dissimilation of glucose in aerobes? What is the net gain of ATP in glycolysis.

P.T.O.

b) What are the important characteristics of Fungi? Discuss the features of halpohiles which help them survive in extreme conditions. (2x8)

## UNIT – III

VI. a) Discuss the structure and function of prokaryotic cell?

b) Describe the outer membrane of gram negative bacteria in detail? Write any five differences between gram positive and gram negative bacteria? (2x8)

VII. a) Describe the life cycle of retrovirus in detail.

b) Briefly describe the life cycle of T2 phage (2x8)

## UNIT – IV

VIII. a) What are endotoxins? Describe its structure and function in detail

b) What is the mechanism of sulpha drugs? How they function as anti-metabolites? (2x8)

IX. a) Discuss nucleic acid targeting antibiotics along with example

b) Discuss in detail microflora of gastrointestinal tract? (2x8)

*x-x-x*