

2031

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) Acidophiles
- b) Dark reaction
- c) Endogenous toxins
- d) Turbidostat
- e) Dipicolinic acid
- f) ATCC and MTCC
- g) Sulfate reduction
- h) Green Sulphur bacteria

(8x2)

UNIT – I

- II. a) Explain the Characteristics of primary domains. What are the approaches to bacterial taxonomy?
- b) What are the principles of microbial nutrition .How will you formulate media for bacterial growth in laboratory? (2x8)
- III. a) Explain the theory and practice of sterilization. Also explain the enrichment culture technique.
- b) How DNA hybridization and RNA sequencing is performed for identification and classification of bacteria. (2x8)

UNIT – II

- IV. a) Define Synchronous growth and growth curve. Discuss the methods for bacterial growth measurement.
- b) Discuss the methods of cryopreservation for bacterial cultures. (2x8)
- V. a) Explain the process of photosynthesis in bacteria and the nature of pigments involved in it.
- b) Write the process of glucose utilization as energy source in aerobes and anaerobes.

(2x8)

P.T.O.

(2)

UNIT – III

- VI. a) How Cell wall synthesis take place in bacteria? What are the main constituents present in Gram+ve bacterial cell wall which are absent in Gram-ve bacterial cell wall.
- b) Classify DNA viruses on the basis of their genetic material and host specificity. Discuss the lytic cycle in any of the virus you have studied. (2x8)
- VII. a) Describe the various cell organelle of a typical bacterial cell and also give their functions.
- b) How lytic vs lysogenic cycle is regulated? What are prions -Name the diseases caused by them. (2x8)

UNIT – IV

- VIII. a) Define antimicrobial agents? What are their types? Explain the mechanism of action of Macrolides an-d Beta-Lactam antibiotics.
- b) Explain the pathogenesis and virulence of *Clostridium botulinum* in humans . How it is transmitted ? Name the disease caused by it and its symptoms. (2x8)
- IX. a) Write about the microbial flora of skin and oral cavity of humans. What are the advantages and disadvantages of these inhabitants?
- b) Classify antibiotics on the basis of their mode of action with suitable examples. (2x8)

x-x-x