

341

M.Sc. Semester II Examination (2022)
Biotechnology
Course/Paper – VI (Microbiology)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin

Answer any four questions

1. a) What are the main features of the subclass, Basidiomycota? What are the economic importances of these groups of organisms?
b) Describe some of the unique features of *Dictyostelium* spp. (2+3)+5 = 10
2. What are the basic differences between purple sulfur bacteria and purple non-sulphur bacteria? How do purple bacteria differ from green bacteria? What are the basic differences between bacterial photosynthesis and photosynthesis in a higher group of plants? Give a brief account of photosynthetic prokaryotes with special reference to photosynthetic machineries and pigment systems. Briefly describe the role of Nif and Nod factors in symbiotic nitrogen fixation of Bacterial system. 2+2+1+2+3=10
3. a) What are the main types of archaebacteria? Why one particular type is high salt tolerant while the other type is heat tolerant?
b) What is pathogenesis? Briefly discuss the parasitic strategies for transmission and establishment with suitable examples 1.5+2+ (1.5+5) =10
4. Discuss the different Methods of measuring bacterial growth in a batch culture. Describe the Helmstetter-Cummings method for obtaining synchronous culture of bacteria for a long time. What is diauxic growth? 4+4+2=10
5. a) Why Carl Woese used 16S rRNA gene as "Chronometer" for classifying the three domains of living system?
b) What is Bergey's manual?
c) State two important differences between Archaea and Bacteria.
d) State the three purposes of fixation before staining of microbial cells.
e) State in bulleted form two advantages and uses of ribotyping method. 2+1.5+1+1.5+ (2+2) =10
6. Write short notes on any four of the following: 2.5 X 4=10
 - a) ATP synthesis in anaerobic condition by *Halobacterium* sp.
 - b) Mode of action of sulfa-drugs as antibacterial agents.
 - c) Antifungal antibiotic
 - d) Exotoxins
 - e) Endemic, Epidemic and Pandemic
 - f) Antibiotic grouping by mechanism