

M.Sc. Semester—I (CBCS Scheme) Examination
BIOTECHNOLOGY
Paper—III (1BTB 3)
(Microbes : Physiology and Genetics)

Time : Three Hours]

[Maximum Marks : 100

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw suitable diagrams wherever necessary.

1. Describe in detail the characteristics, basic-morphology, their four groups and ecological importance of protozoa with suitable examples. 20

OR

What are plant viruses ? Describe its discovery, structures, classification and ecological importance with suitable examples in brief. 20

2. Describe in detail the isolation, collection, selection, maintenance and preservation of pure culture. 20

OR

Describe in brief about various new approaches of bacterial taxonomy classification. Explain the importance of Bergey's manual in bacterial taxonomy. 20

3. Attempt the following :

- (a) Physical, chemical and biological function of carotenoids. 5
- (b) Describe methanogenesis with suitable examples. 5
- (c) Describe the energetics of chemolithotrophy. 5
- (d) Microbial diversity in fermentation process. 5

OR

- (p) Metabolic diversity of Microorganism. 5
- (q) Physical, chemical and biological function of phycobilins. 5
- (r) Different steps of the Calvin-cycle in photosynthesis. 5
- (s) Role of nitrate and sulfate oxidizing bacteria in microbial corrosion. 5

4. Attempt the following :

- (a) General symptoms of Dermatophytosis. 5
- (b) Describe the pathological problems of multi-drug resistance microbes. 5
- (c) Production of antibiotics from prokaryotes. 5
- (d) Opportunistic fungal infection in Cancer patients. 5

OR

- (p) Biophysical properties of broad spectrum antibiotics. 5
 - (q) Mode of action of sulfa drugs. 5
 - (r) Secondary infection in AIDS. 5
 - (s) General symptoms and treatment of Cryptococcosis. 5
5. Attempt the following :
- (a) Advantages and disadvantages with transposable elements. 5
 - (b) Neurospora as model genetic organism. 5
 - (c) General characteristics of Retroviruses with suitable examples. 5
 - (d) Types of Extra-chromosomal inheritance. 5

OR

- (p) General features of transposable elements in eukaryotes. 5
- (q) General characteristics of RNA Viruses 5
- (r) How is bacterial transformation different from conjugation and transduction ? 5
- (s) Properties of plasmids. 5