

**NRT/KS/19/2034**

**Bachelor of Science (B.Sc.) Semester—I Examination**

**BIO-TECHNOLOGY (Microbiology)**

**Optional Paper—1**

Time : Three Hours]

[Maximum Marks : 50

- N.B. :—** (1) All questions are compulsory and carry equal marks.  
(2) Draw well labelled diagram wherever necessary.

1. (a) Describe the contribution of Robert Koch in microbiology. 5  
(b) Describe the principle and application of TEM. 5
- OR**
- (c) What is a stain ? Describe the acidic, basic and neutral stains with suitable example. 5
  - (d) Describe the principle and procedure of Gram Staining. 5
2. (a) Draw a well labelled diagram of fluid mosaic model of cell membrane. 2½  
(b) Write the functions of mesosomes. 2½  
(c) Describe the various cell arrangements in cocci with examples. 2½  
(d) Differentiate Capsule and Slime Layer. 2½
- OR**
- (e) Draw a well labelled diagram of a typical bacterial cell. 2½
  - (f) Give a brief account on structure of flagella. 2½
  - (g) Describe the structure of Endospore. 2½
  - (h) Explain R-Plasmid. 2½
3. (a) Differentiate bacterial and archaeal cell membrane. 5  
(b) Write the general characteristics of viruses. 5
- OR**
- Describe the Lytic cycle of viruses. 10
4. (a) Classify the microorganism on the basis of nutritional requirements. 5  
(b) Describe the synthetic media with examples. 5
- OR**
- (c) Explain the selective media with suitable examples. 5
  - (d) Describe the basic nutritional requirements of microorganism. 5
5. Solve any **TEN** :
    - (i) What is pasteurization ? 1
    - (ii) What is Abiogenesis ? 1
    - (iii) Name one Acid-Fast Bacteria. 1
    - (iv) Which part of bacterial spore contains calcium dipicolinate ? 1
    - (v) What are peritrichous flagella ? 1
    - (vi) What is a conjugative plasmid ? 1
    - (vii) Name a virus having icosahedral symmetry. 1
    - (viii) Give one difference between virus and bacteria. 1
    - (ix) Give any one example of an RNA-Virus. 1
    - (x) What are photoautotrophs ? 1
    - (xi) Write the example of Chemolithoautotrophs. 1
    - (xii) What is the chemical nature of Agar Agar ? 1