

MICROBIOLOGY
(BIOT 2104)

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

*Candidates are required to give answer in their own words as far as
practicable.*

Group - A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**
- | | | |
|-------|--|----------------------------|
| (i) | Microbes utilize inorganic compound as source of electron known as | |
| | (a) Prototroph | (b) Auxotroph |
| | (c) Autotroph | (d) Lithotroph. |
| (ii) | Cholera toxin is | |
| | (a) Enterotoxin | (b) Neurotoxin |
| | (c) Cytotoxin | (d) None of these. |
| (iii) | Main source of non ionizing radiation is | |
| | (a) X-ray | (b) UV-ray |
| | (c) Gamma ray | (d) None of these. |
| (iv) | Oligodynamic action is the inhibitory effect of | |
| | (a) Heavy metals | (b) Aldehydes |
| | (c) Alcohols | (d) None of these. |
| (v) | Pseudomurein is present in | |
| | (a) Mould | (b) Archaeobacterium |
| | (c) Protozoa | (d) Sea algae. |
| (vi) | Teichoic acid is present in : | |
| | (a) Gram positive | (b) Gram negative |
| | (c) Acid fast Bacteria | (d) Yeast. |
| (vii) | Braun's lipoprotein is found in the cell wall of | |
| | (a) Gram Negative bacteria | (b) Gram positive bacteria |
| | (c) Fungi | (d) Algae |

- (viii) Spheroplast is a cell of
 (a) Gram positive bacteria (b) Gram negative bacteria
 (c) Fungi (d) Algae.
- (ix) Which of the following organisms belongs to archaeobacteria?
 (a) Nitrosomona, (b) Streptomyces
 (c) Thermoplasma (d) None of these.
- (x) Which one among the following is an obligate intracellular parasite?
 (a) Bacteria (b) Algae
 (c) Virus (d) Fungi.

Group - B

2. (a) Describe how the bacteria moves with the help of flagella?
 (b) Write notes on Lichens.
 (c) Briefly classify algae. Mention the criteria for algal classification.
 $4 + 4 + 4 = 12$
3. (a) Write notes on Carl Woese classification.
 (b) What advantages does a high surface area/volume ratio of bacteria offer?
 (c) Give schematic diagram to show the integration point of lambda phage DNA into host genome.
 $5 + 3 + 4 = 12$

Group - C

4. (a) What are different macroelements present in media and write their mode of actions.
 (b) Explain with a schematic diagram the working principle of Transmission Electron Microscope.
 $6 + 6 = 12$
5. (a) Explain any one technique for pure culture isolation .
 (b) What is Gas pak jar and why it is important?
 (c) What is Oligodynamic action ?
 (d) Name one gaseous chemical sterilizing agent.
 $3 + 5 + 3 + 1 = 12$

Group - D

6. (a) What are diazotrophs ? Give example.
 (b) Briefly describe lactic acid fermentation.
 (c) What is Stickland reaction and why it is important?
 $2 + 6 + 4 = 12$
7. (a) Write notes on nitrogenase enzyme complex.
 (b) Describe the photophosphorylation process that occurs in bacteria .
 (c) Define anoxygenic photosynthesis.
 $4 + 6 + 2 = 12$

Group - E

8. (a) Discuss the role of biofertilizer on soil.
 (b) Explain any one mutualistic association in which one of the partner is fungi.
 (c) What is indole production test?
 $6 + 4 + 2 = 12$
9. (a) What are actinomycetes and why they are important ?
 (b) Briefly explain rhizosphere effect.
 (c) What are coliforms and how coliforms are detected in water?
 $4 + 4 + 4 = 12$