

### Long Answer Questions

1. Write about contributions of Louis Pasteur and Robert Koch
2. Discuss the importance and applications of microbiology in detail.
3. Give a suitable illustration of a bright field microscope and discuss the functioning of its essential parts.
4. Write an essay on fluorescent microscopy
5. Explain specimen preparation for electron microscopy
6. What is phase contrast microscopy? Write the principle and construction of phase contrast microscopy.
7. Describe TEM in detail.

48

### Unit-I : Introduction to Microbiology

8. Define SEM. Explain construction and working of SEM.
9. Write an essay on differential staining techniques.
10. Describe different types of staining techniques used for visualizing various structures of bacterial cell.
11. Explain the principles behind staining a cell and explain different types of staining techniques.

### Short Answer Questions

- 1) Louis Pasteur
- 2) Robert Koch
- 3) Microbes in Food industry
- 4) Microbes in medicine
- 5) Biofertilizers
- 6) Abbe condenser
- 7) Simple microscope
- 8) Dark field microscope.
- 9) Endospore staining method
- 10) Capsule staining method
- 11) Simple staining
- 12) Flagellar staining

48 of 50

### **Long Answer Questions**

1. Write a brief note on ultra structure of bacteria.
2. Write an essay on general characteristics of virus.
3. Describe classification of virus
4. Explain structure and multiplication of lambda phage.
5. Write an essay on isolation of pure cultures.
6. Explain how microbial cultures can be preserved using different methods.

### **Short Answer Questions**

- 1) TMV
- 2) HIV
- 3) Enrichment culture
- 4) Lyophilization
- 5) Overlaying culture with mineral oil.
- 6) Lambda phage
- 7) T2 phage
- 8) Cell wall
- 9) Flagella
- 10) Ribosomes

### Long Answer Questions

1. Define microbial growth media. Classify and explain various types of growth media.
2. Explain various nutritional methods in bacteria.
3. Describe various nutritional groups in bacteria.
4. Explain aerobic respiration in *E.coli*.
5. Describe oxidative and substrate level phosphorylation.
6. Explain nitrate and sulphate pathways in microorganisms.
7. Describe the metabolism of alcohol fermentation.
8. Write an essay on lactic acid fermentation.
9. Describe oxidative and substrate level phosphorylation.

### Short Answer Questions

- 1) Explain various nutritional uptake methods in bacteria.
- 2) Electron transport in prokaryotes.
- 3) Describe glyoxylate pathway.
- 4) Siderophores

### **Long Answer Questions**

1. Explain microbial growth curve in batch culture and explain the factors influencing growth curve.
2. Explain various methods of measuring microbial growth.
3. Define sterilization. Explain different types of physical methods of sterilization.
4. Write an essay on chemical methods of sterilization.
5. Explain various factors influencing bacterial growth.

### **Short Answer Questions**

- 1) Continuous culturing method
- 2) Synchronous culture
- 3) Viable count
- 4) Phenol coefficient.
- 5) Hot air oven
- 6) Membrane filters
- 7) Thermal death time
- 8) Autoclave
- 9) Radiation methods