

SSR DEGREE COLLEGE, NIZAMABAD (5029)

DEPARTMENT OF MICROBIOLOGY

SEMESTER – I, Descriptive questions

Subject: Microbiology

UNIT – I: Introduction to Microbiology

Short Questions (4 Marks)

1. Define microbiology.
2. Write the contributions of Antony van Leeuwenhoek to microbiology.
3. Mention the role of Louis Pasteur in the development of microbiology.
4. Who discovered penicillin and when?
5. Write a short note on Robert Koch's postulates.
6. Mention the importance of microorganisms mentioned in ancient Vedas.
7. Differentiate between bright-field and dark-field microscopy.
8. What is phase-contrast microscopy?
9. Write short notes on fluorescent microscopy.
10. What is electron microscopy? Mention its types.
11. Write short notes on Gram staining.
12. Differentiate between Gram-positive and Gram-negative bacteria.
13. What is acid-fast staining? Give examples.
14. What is a capsule? Mention its function.
15. Define bacterial motility and name its types.

Essay Questions (10 Marks)

1. Describe the historical development of microbiology with the contributions of major scientists.
2. Explain the principle and working of bright-field, dark-field, phase-contrast, and electron microscopes.
3. Discuss the principle, procedure, and importance of Gram staining and acid-fast staining techniques.
4. Write an essay on the structure and function of bacterial flagella, capsule, and spores.

UNIT – II: Microorganisms – Classification and Structural Features

Short Questions (4 Marks)

1. Define taxonomy and classification.
2. What are the general characteristics of viruses?
3. Differentiate between TMV and HIV based on structure.
4. What is a bacteriophage? Give an example.
5. Differentiate between prokaryotic and eukaryotic cells.
6. Write the ultrastructure of a bacterial cell.
7. What are inclusion bodies?
8. What are plasmids? Mention their functions.
9. What are archaebacteria? Give examples.
10. What is cyanobacteria?
11. Write short notes on fungi.
12. Write short notes on algae.
13. Mention the features of Mycoplasma.
14. What is Chlamydia?
15. What is Rickettsia?

Essay Questions (10 Marks)

1. Explain the classification of microorganisms and write the structural features of prokaryotes and eukaryotes.
2. Describe the structure and multiplication of bacteriophages.
3. Discuss the morphology and structural characteristics of viruses, bacteria, algae, and fungi.
4. Describe the classification and general features of typical eubacteria and cyanobacteria.

UNIT – III: Microbial Diversity, Nutrition and Growth

Short Questions (4 Marks)

1. Define microbial diversity.
2. What is biodiversity conservation?
3. Mention the role of the National Biodiversity Authority (NBA).
4. What are autotrophs?
5. Define heterotrophs and give examples.
6. What are mixotrophs?
7. Differentiate between simple and complex media.
8. What are the major components of culture media?

9. Define microbial growth.
10. What are the phases of bacterial growth curve?
11. What is synchronous growth?
12. What is continuous growth culture?
13. Mention factors affecting microbial growth.
14. What is turbidity measurement?
15. Write short notes on viable count method.

Essay Questions (10 Marks)

1. Explain the nutritional classification of microorganisms with examples.
2. Discuss the types and components of bacterial growth media.
3. Describe the bacterial growth curve and the different phases involved.
4. Explain the various methods used for measuring microbial growth.

UNIT – IV: Sterilization and Pure Culture Techniques

Short Questions (4 Marks)

1. Define sterilization and disinfection.
2. Differentiate between sterilization and disinfection.
3. Write short notes on autoclave.
4. What is hot air oven sterilization?
5. What are the uses of laminar airflow?
6. What is filter sterilization?
7. Mention the principle of UV sterilization.
8. Write short notes on chemical disinfectants.
9. What are aldehydes and phenols used for in sterilization?
10. What is a biosafety cabinet? Mention its types.
11. Define biosafety levels (BSL).
12. What is enrichment culture?
13. What is streak plate method?
14. What is lyophilization?
15. Write short notes on preservation of pure cultures.

Essay Questions (10 Marks)

1. Describe various physical and chemical methods of sterilization with examples.
2. Explain the working and uses of an autoclave, hot air oven, and laminar airflow.
3. Discuss the different methods of isolation of pure cultures and their importance.
4. Explain the methods of preservation and maintenance of microbial cultures.