April-2026

# BLDE (DEEMED TO BE UNIVERSITY)

## Master of Science in Microbiology

[Time: 3 Hours] [Max. Marks: 80]

### III SEMESTER

### PAPER – I (Microbial Diversity and Taxonomy)

### QP CODE: 7631

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

**Long Question (Any – 3)** **10 X 3= 30 Marks**

1. Discuss the principles and rules of microbial nomenclature and their importance in taxonomy.
2. Explain chemotaxonomic markers used in bacterial systematics.
3. Describe the distribution and ecological significance of viruses and fungi.
4. Discuss biotechnological innovations derived from microbial diversity.

**Short Essays: (Any – 7)** **5 X 7 = 35 Marks**

5. Bergey's Manual – structure and importance
6. Amino acid sequence analysis in taxonomy
7. Community ecology of microorganisms
8. Microbial succession
9. Molecular phylogeny
10. Ecological roles of bacteria in nutrient cycling
11. Culture-independent methods
12. Microbial consortia

**Short Answers: (Any – 5)** **3 X 5 = 15 Marks**

13. Polyphasic taxonomy
14. Horizontal gene transfer
15. Commensalism
16. Restriction Fragment Length Polymorphism (RFLP)
17. Rare biosphere
18. Metagenomics

April - 2026

# BLDE (DEEMED TO BE UNIVERSITY)

## Master of Science in Microbiology

[Time: 3 Hours] [Max. Marks: 80]

### III SEMESTER

### PAPER – II (Bacteriology and Mycology)

### QP CODE: 7632

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

**Long Questions (Any – 3)** **10 X 3= 30 Marks**

1. Describe bacterial flagella, pili, capsule and inclusion bodies with their functions.
2. Explain phenetic, phylogenetic and genotypic approaches in bacterial taxonomy and techniques used in microbial phylogeny.
3. Discuss major fungal groups: Ascomycota, Basidiomycota and Deuteromycota with salient features.
4. Explain the economic importance of fungi in agriculture, industry and medicine.

**Short Essays (Any – 7)** **5 X 7 = 35 Marks**

5. Acid-fast bacteria
6. Batch culture
7. Reserve food materials in bacteria
8. Labyrinthulomycota and Hypochytriomycota
9. Fungi as insect symbionts
10. T-2 toxin
11. Single cell protein (SCP)
12. Physical methods of microbial control

**Short Answers (Any – 5)** **3 X 5 = 15 Marks**

13. Transposons
14. Thermophiles
15. Synchronous culture
16. Plasmids
17. Vesicular Arbuscular Mycorrhiza (VAM)
18. Bioluminescence mechanism

April-2026

# BLDE (DEEMED TO BE UNIVERSITY)

## Master of Science in Microbiology & Biotechnology

**[Time: 3 Hours]** **[Max. Marks: 80]**

### III SEMESTER

### PAPER – III (Drug Design)

### QP CODE: 7633/7833

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

**Long Question (Any – 3)** **10 X 3= 30 Marks**

1. Discuss the concept of Structure–Activity Relationship (SAR) and its role in drug optimization.
2. Explain signal amplification in second messenger systems.
3. Describe various forces responsible for ligand–receptor binding.
4. Explain the strategies used in analogue synthesis for drug development.

**Short Essays: (Any – 7)** **5 X 7 = 35 Marks**

5. Write a note on acid–base properties and their influence on drug action.
6. Discuss the role of membrane permeability in bioavailability.
7. Explain Hill plot and its significance in receptor pharmacology.
8. Describe the concept of receptor selectivity.
9. Write a note on limitations of combinatorial chemistry.
10. Discuss drug metabolism and its impact on biological activity.
11. Write identification tests for phytosterols.
12. Explain the concept of lead optimization.

**Short Answers: (Any – 5)** **3 X 5 = 15 Marks**

13. Define potency.
14. What is receptor up-regulation?
15. Significance of stereoisomerism in drug action.
16. Add a note on guanylate cyclase linked receptors.
17. Name the types of enzyme inhibitors.
18. What are DNA alkylating agents?