April-2016

BLDE (DEEMED TO BE UNIVERSITY)

Master of Science in Microbiology/ Biotechnology

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

I SEMESTER

PAPER – I (Bioanalytical Techniques)

QP CODE: 7611/7811

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. Explain Beer–Lambert's law and discuss its applications in spectroscopic analysis of biomolecules.
2. Describe the principle, instrumentation and applications of UV–Visible spectroscopy.
3. Explain SDS–PAGE technique and its applications in protein analysis.
4. Discuss the principle and applications of chromatography with special reference to TLC.

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

5. Explain hydrodynamic properties of biomolecules.
6. Describe fluorescence microscopy and its applications.
7. Write a note on gel filtration chromatography.
8. Explain ion-exchange chromatography.
9. Discuss PAGE technique and its applications.
10. Write short essay on Raman spectroscopy.
11. Explain GM counter and its applications.
12. Describe affinity chromatography.

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

13. Define viscosity.
14. What is diffusion?
15. Define osmosis.
16. What is TLC?
17. Define electrophoresis.
18. What is radioactivity?

BLDE (DEEMED TO BE UNIVERSITY)

April-2026

Master of Science in Microbiology/ Biotechnology

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

I SEMESTER

PAPER – II (Bioinorganic and Biomolecules)

QP CODE: 7612/7812

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. Explain classification and biological functions of lipids.
2. Describe the structure and properties of amino acids.
3. Discuss TCA cycle and its significance.
4. Explain biosynthesis of purines and pyrimidines.

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

5. Explain hydrophobic interactions.
6. Describe cyclic structure of glucose.
7. Write a note on disaccharides with examples.
8. Explain peptide bond formation.
9. Discuss cholesterol and its functions.
10. Explain RNA types and functions.
11. Write short essay on glycogenolysis.
12. Explain reaction kinetics.

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

13. Define lipid.
14. What is maltose?
15. What is entropy?
16. Define nucleotide.
17. What is gluconeogenesis?
18. What is buffer?

BLDE (DEEMED TO BE UNIVERSITY)

April-2024.

Master of Science in Microbiology/ Biotechnology

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

I SEMESTER

PAPER – III (Cell Biology and Genetics)

QP CODE: 7613/7813

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. Describe the structure and functions of plasma membrane and discuss different membrane models.
2. Explain mitosis and meiosis highlighting their stages and significance.
3. Discuss Mendel's laws of inheritance with suitable examples.
4. Explain chromosome mutations and chromosomal aberrations in human beings

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

5. Explain cell theory and diversity of cell size and shape.
6. Describe structure and functions of mitochondria.
7. Write a note on Golgi complex.
8. Explain nucleosome model of chromosome organization.
9. Discuss apoptosis and necrosis.
10. Explain incomplete dominance and codominance with examples.
11. Write short essay on Barr bodies.
12. Explain lampbrush chromosomes

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

13. Define cell theory.
14. What is plasma membrane?
15. Define heterochromatin.
16. What is karyotyping?
17. Define allele.
18. What is mutation?

April - 2026

BLDE (DEEMED TO BE UNIVERSITY)

Master of Science in Microbiology/ Biotechnology

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

I SEMESTER

PAPER – IV (Biostatistics and Bioinformatics)

QP CODE: 7614/7814

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. Explain computer organization and different generations of computers.
2. Describe sequence alignment methods including Needleman–Wunsch and Smith–Waterman algorithms.
3. Discuss normal distribution and its applications in biological data.
4. Explain hypothesis testing and significance tests (Z test, t test, Chi-square test).

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

5. Explain advantages and limitations of computers.
6. Describe structure databases such as PDB and MMDB.
7. Write a note on scoring matrices PAM and BLOSUM.
8. Explain cumulative frequency curves.
9. Discuss Poisson distribution and its applications.
10. Explain sampling concepts such as population and sample.
11. Write short essay on networking (LAN, WAN, MAN).
12. Explain coefficient of variation.

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

13. Define database.
14. What is MAN network?
15. Define median.
16. What is FASTA?
17. What is regression?
18. Define hypothesis.