April – 2026

BLDE (DEEMED TO BE UNIVERSITY)

Master of Science in Biotechnology

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

III SEMESTER

PAPER – I (Plant Biotechnology)

QP CODE: 7831

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. Discuss the process of organogenesis and factors influencing shoot and root regeneration in vitro.
2. Explain vector-less (direct) DNA transfer methods and compare them with Agrobacterium-mediated transformation.
3. Describe QTL & RFLP analysis and its role in molecular breeding.
4. Give a detailed account of comparative genomics and its application in crop selection

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

5. Single cell cloning technique
6. Cryoprotectants and their role in cryopreservation
7. Binary vector components and organization
8. Engineering plants for abiotic stress tolerance
9. PR proteins and antifungal defense
10. RFLP technique
11. Rice genome sequencing strategy
12. Transformation efficiency in monocots

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

13. Polyethylene glycol (PEG) method
14. 35S promoter
15. Phylogenetic analysis
16. Chitinase
17. DNA electroporation
18. Glyphosate resistance

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Master of Science in Biotechnology

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

III SEMESTER

PAPER – II (Animal Biotechnology)

QP CODE: 7832

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. Discuss in detail the role of Antibiotics in Tissue Culture and the importance of maintaining Sterility.
2. Explain the Applications of Stem Cell therapy in treating Neurodegenerative Diseases.
3. Explain the role of Antibody Gene Cloning and Recombinant Expression in Modern Biotechnology
4. How do Biosafety regulations impact the Research and Commercialization of Transgenic Organisms?

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

5. Explain the Process of Sterilization in Animal Cell Culture
6. Describe the steps involved in establishing a continuous Cell line.
7. Explain the concept of in-vitro Cell Culture
8. Describe the basic characteristics of Stem Cells
9. How are Cone and Liver Tissues Engineered?
10. Describe hormonal regulation of growth in mammals
11. What are the steps involved in embryo transfer technology?
12. How are recombinant antibody genes expressed?

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

13. Define tissue culture and mention its significance
14. Differentiate between self-renewal and trans-differentiation in stem cells.
15. What is the role of hormones in insect reproduction?
16. What is hybridoma technology?
17. Name any two types of monoclonal antibodies.
18. What are biodegradable polymers?

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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?