

**SECOND SEMESTER M.Sc. (BIOTECHNOLOGY) [NATIONAL STREAM]  
DEGREE EXAMINATION, JUNE 2020**

(CCSS)

M.Sc. Biotechnology (National Stream)

BT 206 CC—GENETICS

(2019 Admissions)

Time : Three Hours

Maximum : 50 Marks

**Part A**

*Answer any one question in about 600 words.  
The question carries 10 marks.*

1. Give an overview of the various gene transfer mechanisms in bacteria.
2. Explain three-point test cross and how it is used to construct a linkage map.

(1 × 10 = 10 marks)

**Part B**

*Answer any three of the following, each in about 250 words.  
Each question carries 5 marks.*

3. Describe chromosome theory of inheritance.
4. QTL mapping.
5. Polyploidy.
6. Explain Point mutation.
7. Describe maternal effect.

(3 × 5 = 15 marks)

**Part C**

*Answer all five questions, each in about 100 words.  
Each question carries 3 marks.*

8. Explain transposon mutagenesis.
9. Explain the term molecular evolution.
10. Explain the effect of genetic drift on allele frequencies.
11. What is linkage disequilibrium.
12. Explain dominant epistasis.

(5 × 3 = 15 marks)

**Turn over**

**Part D**

*Write notes on each of the following in 50 words.  
Each question carries 2 marks.*

13. Multiple alleles.
14. 1:1 ratio.
15. Interference.
16. Transposon mutagenesis.
17. Balancing selection.

(5 × 2 = 10 marks)

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**SECOND SEMESTER M.Sc. BIOTECHNOLOGY (NATIONAL STREAM)  
DEGREE EXAMINATION, JUNE 2020**

(CCSS)

M.Sc. Biotechnology (National Stream)

BT 205 CC—INTELLECTUAL PROPERTY RIGHT AND BIOETHICS

(2019 Admissions)

Time : Three Hours

Maximum : 50 Marks

**Part A**

*Answer any one question in about 600 words.*

*The question carries 10 marks.*

1. Write in detail about the features and provisions of PPVFR act 2001 ? How does this act protect the interest of farmers ?
2. What are the different risk groups and biosafety levels ? Comment on the process of risk assessment of GMO and transgenic plants ?

(1 × 10 = 10 marks)

**Part B**

*Answer any three of the following, each in about 250 words.*

*Each question carries 5 marks.*

3. What are the potential problems associated with the release of GMO ?
4. What is the significance of geographical indications in protecting traditional knowledge ?
5. What are the ethical concerns associated with animal cloning ?
6. What is the procedure for patent application in India ?
7. What are copyrights? What are the exclusions under Copyright Act 1957 ?

(3 × 5 = 15 marks)

**Part C**

*Answer all five questions, each in about 100 words.*

*Each question carries 3 marks.*

8. Comment on design patents ?
9. What is meant by complete and provisional specification of a patent ?

**Turn over**

10. Comment on PCT and Budapest Treaty ?
11. What is meant by benefit sharing ? On what grounds, Texmati patent is a violation of benefit sharing ?
12. Comment on Cartagena protocol of biosafety ?

(5 × 3 = 15 marks)

#### Part D

*Write notes on each of the following in 50 words.*

*Each question carries 2 marks.*

13. WIPO
14. Convention on Biodiversity.
15. Plant Breeders' Right.
16. Transgenic Hevea.
17. Genetic Use Restriction Technologies.

(5 × 2 = 10 marks)

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DEGREE EXAMINATION, JUNE 2020**

(CCSS)

M.Sc. Biotechnology (National Stream)

BT 202 CC—MOLECULAR BIOLOGY AND DIAGNOSTICS

(2019 Admissions)

Time : Three Hours

Maximum : 50 Marks

**Part A**

*Answer any one question in about 600 words.  
Each question carries 10 marks.*

1. Explain the different kinds of gene mutations.
2. Describe the OPERON model of gene regulation.

(1 × 10 = 10 marks)

**Part B**

*Answer any three of the following, each in about 250 words.  
Each question carries 5 marks.*

3. Molecular methods of virus detection.
4. Different kinds of PCR.
5. RNA polymerases.
6. Oncogenes.
7. Role of accessory factors in initiation of eukaryotic transcription.

(3 × 5 = 15 marks)

**Part C**

*Answer all five questions, each in about 100 words.  
Each question carries 3 marks.*

8. Containment.
9. Intrinsic terminator.
10. Spliceosome.
11. Gal Operon.
12. DNA sequencing.

(5 × 3 = 15 marks)

**Turn over**

**Part D**

*Write notes on each of the following in 50 words.  
Each question carries 2 marks.*

13. Enhancers.
14. Z DNA.
15. Spliceosome.
16. CSGE.
17. IS elements.

(5 × 2 = 10 marks)

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DEGREE EXAMINATION, JUNE 2020**

(CCSS)

M.Sc. Biotechnology (National Stream)

BT 201 CC—IMMUNOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 50 Marks

**Part A**

*Answer any **one** question in about 600 words.*

*Each question carries 10 marks.*

1. Describe the different types of antigen-antibody reactions.
2. Discuss autoimmunity.

(1 × 10 = 10 marks)

**Part B**

*Answer any **three** of the following, each in about 250 words.*

*Each question carries 5 marks.*

3. Describe the structure and functions of thymus.
4. Explain type 1 hypersensitivity.
5. Compare the properties of different classes of immunoglobulins.
6. How does the immune system respond to tumors ?
7. How is HLA typing done ?

(3 × 5 = 15 marks)

**Part C**

*Answer all **five** questions, each in about 100 words.*

*Each question carries 3 marks.*

8. Explain the process of phagocytosis.
9. What are the functional subsets of T cells ?

**Turn over**

10. Outline the methodology of western blotting.
11. What are adjuvants ? How do they work ?
12. Explain immune tolerance.

(5 × 3 = 15 marks)

### Part D

*Write notes on each of the following in 50 words.  
Each question carries 2 marks.*

13. Mucosal immunity.
14. Memory B-cells.
15. Immunoelectron microscopy.
16. Reverse vaccinology.
17. Natural Killer cells.

(5 × 2 = 10 marks)

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