



Seat No. : _____

NG-139
November-2025
M.Sc., Sem.-III
BOT-502 : Botany
(Classical and Molecular Genetics)

Time : 2:30 Hours]

[Max. Marks : 70

Instructions : (1) All Questions carry equal marks.
(2) Attempt **all** Questions.

1. Describe Linkage and Crossing over. 14

OR

1. (A) Describe dihybrid cross and its resulting law as demonstrated by Mendel. 7

1. (B) State the maternal inheritance of chloroplast DNA. 7

2. Explain DNA and its Replication. 14

OR

2. (A) Describe transcription process. 7

2. (B) Describe three experiments on molecular genetics. 7

3. Explain Recombinant DNA technology. 14

OR

3. (A) Write a note on DNA barcoding. 7

3. (B) Explain about RNA interference. 7

4. What is containment ? Explain the different categories of biosafety levels in detail. 14

OR

4. (A) What is nanomedicine ? Explain it in detail. 7

4. (B) What is biosafety ? Explain it along with the importance of risk assessment. 7

5. Attempt any 7 out of 12 MCQs/Short questions : (One or Two line answer) /

Fill in the blanks/True or False etc.

14

- (1) Classify transposons.
 - (2) Define : Law of dominance and law of independent assortment.
 - (3) Which chromosomal aberration has been exploited by plant breeders for plant crops traits ?
 - (4) Give the structures of any two purines.
 - (5) Differentiate between gene and genome.
 - (6) Name any two journals in molecular genetics.
 - (7) Mention any two restriction enzymes.
 - (8) Give the significance of cDNA library.
 - (9) What is microRNA ?
 - (10) What is seed certification ?
 - (11) What is the Cartagena Protocol ?
 - (12) What is the importance of the WTO ?
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