NRT/KS/19/2112

Bachelor of Science (B.Sc.) Semester—IV Examination

(New and Old)

BOTANY (Genetics and Molecular Biology)

Optional Paper—II

(New Course)

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **All** questions are compulsory and carry equal marks.
(2) Write your answers with suitable diagrams and examples.

1. Write on :
   (a) Complementary genes 5
   (b) Dominant epistasis. 5

OR

Write short notes on :
(c) Law of segregation
(d) Complete linkage
(e) Coupling and repulsion theory
(f) Law of independent assortment. 2.5×4

2. Write on :
   (a) Allopolyploidy 5
   (b) Translocation. 5

OR

Write short notes on :
(c) Breakage and reunion theory
(d) Monosomics
(e) Duplication
(f) Autopolyploidy. 2.5×4

3. Write on :
   (a) Semiconservative method of DNA-replication 5
   (b) Jumping genes. 5

OR

Write short notes on :
(c) Physical mutagens
(d) Watson and Crick’s model of DNA (Diagram only)
(e) Chemical mutagens
(f) Photoreactivation. 2.5×4

4. Write on :
   (a) Lac-operon model 5
   (b) Clover leaf model of t-RNA. 5

OR

Write short notes on :

(c) Satellite DNA

(d) Wobble Hypothesis

(e) Transcription

(f) Initiation of Polypeptide chain. 2.5×4

5. Write in **2** to **3** lines only (any **TEN**). Diagrams are not necessary :

(a) Dihybrid cross

(b) Test cross

(c) Phenotype

(d) Chiasmata

(e) Tetrasomy

(f) Inversions

(g) Recon

(h) Mutation breeding

(i) DNA damage

(j) Termination codon

(k) Triplet codon

(l) 'P'-Site 1×10

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Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **All** questions are compulsory and carry equal marks.
(2) Illustrate your answers with suitable examples.

1. Write on :
   (a) Dominant epistasis
   (b) Law of Independent assortment. 5×2

OR

Write short notes on :
   (c) Incomplete linkage
   (d) Law of segregation
   (e) Incomplete dominance
   (f) Coupling and repulsion theory. 2.5×4

2. Write on :
   (a) Monosomics and Trisomics
   (b) Breakage and reunion theory of crossing over. 5×2

OR

Write short notes on :
   (c) Deletion
   (d) Autopolyploidy
   (e) Copy choice theory of crossing over
   (f) Inversion. 2.5×4

3. Write on :
   (a) Watson and Crick’s model of DNA
   (b) Application of induced mutation in crop improvement. 5×2

OR

Write short notes on :
   (c) Frame shift mutation
   (d) Overlapping genes
   (e) Photoreactivation
   (f) Chemical mutagens. 2.5×4

4. Write on :
   (a) Transcription
   (b) Lac-operon model. 5×2

OR

Write short notes on :

(c) Split genes

(d) Satellite DNA

(e) tRNA

(f) Initiation and termination codons. 2.5×4

5. Write in **2** or **3** lines only (any **TEN**). Diagrams are not necessary.

(a) Homozygous

(b) Genotype

(c) Complementary genes

(d) Duplication

(e) Nullisomics

(f) Allopolyploids

(g) Spontaneous mutation

(h) Leading strand

(i) Substitution mutation

(j) Triplet codon

(k) P-site

(l) Wobble hypothesis. 1×10