

NS-3459(N)

B.Sc. (Bio-tech.) Examination,

June-2022

Genetics

(B-105)

(New)

(B.Sc. Biotech.)

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt any five questions. All questions carry equal marks.

1. Why Mendel selected pea plant for his study? Discuss the law of independent assortment in detail. 10

P.T.O.

2. Write detailed note on the following:

5 each

- (a) Classical and modern concept of gene
(b) Mitochondrial and chloroplast genetic systems

3. What are chromosomal aberrations?

Discuss the meiosis in a translocation heterozygote and write the different types of gametes expected. Also give suitable sketches. 10

4. Write short note on the following: 3+4+3

- (a) Paracentric and pericentric inversion
(b) Klinefelter and Turner syndrome
(c) Position effect

5. What are transformation and transduction? Discuss how these are used in genetic mapping. 10

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6. What do you understand by extra-nuclear inheritance. Discuss the cytoplasmic inheritance giving the example of kappa particles in paramecium and plastid inheritance in Mirabilis. 10

7. Differentiate between the following:

2½ each

- (a) Autopolyploidy and allopolyploidy
- (b) Euchromatin and heterochromatin
- (c) Spontaneous and induced mutations
- (d) Test cross and back cross

8. Give in brief the classification of numerical changes in chromosome.

Discuss aneuploidy in detail. 10

9. Write in detail about: 5 each

- (a) Evolution of wheat
- (b) Structural organization of chromosome

10. Define sex differentiation and sex determination. Discuss the genic balance theory of sex determination in Drosophila. 10