

Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, March 2021

Career Related First Degree Programme Under CBCSS

**Group 2 (a) Botany and Biotechnology and Group 2 (b) Biotechnology
Multimajor**

BB 1641/BV 1641.1 – GENETICS

(2018 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in **one** word to maximum of **2** sentences.

1. Define epistasis
2. What are multiple alleles?
3. What is test cross?
4. What are barr bodies?
5. How do you identify the progenies with double cross overs in a three point test cross?
6. What causes Turner's syndrome?
7. What is pitch of helix in the structure of DNA?
8. What are Transposons?

9. What is meant by disruptive selection?
10. Comment on Hardy Weinberg law.

(10 × 1 = 10 Marks)

PART – B

Answer any **eight** questions in not more than **one** paragraph.

11. Point out the driving forces of evolution.
12. What is a gene pool?
13. What is dihybrid cross?
14. What are polygenic traits?
15. Explain complementary gene action in *Lathyrus*.
16. Comment on aneuploidy in humans citing one example.
17. Explain the inheritance of haemophilia.
18. Comment on XX-XO mechanism of sex determination.
19. Write a note on extra nuclear inheritance.
20. How do linkage and crossovers help in mapping genes?
21. Point out the role of topoisomerase in DNA replication.
22. What are proto oncogenes?
23. What is Central dogma?
24. Comment on house keeping genes.

25. What are introns?
26. What are okazaki fragments?

(8 × 2 = 16 Marks)

PART – C

Answer any **six** questions in not more than **120** words.

27. Explain the role of mutation in evolution.
28. What is hardy Weinberg law? How is it helpful population genetic studies?
29. Write an account on transposons.
30. Write a note on DNA polymerase and DNA ligase.
31. What is reverse transcription?
32. Explain the role of tRNA in protein synthesis.
33. Briefly explain rho dependent and rho independent termination of transcription
34. Explain the reasons behind Mendel's success.
35. Explain maternal effect with an example.
36. Explain Genic balance theory of Sex determination in *Drosophila*.
37. In a breeding experiment in summer squashes, the fruit colour in F₂ generation appeared in the ratio 12:3:1. Explain the genetic mechanism involved in the cross.
38. Comment on DNA repairing mechanisms.

(6 × 4 = 24 Marks)

PART – D

Answer any **two** questions. **Each** question carries **15** marks.

39. Explain the structure of B-DNA with suitable diagram.
40. Explain the genetic interactions of comb pattern in poultry.
41. Write an essay on the semi-conservative model of DNA replication.
42. Explain the various steps involved in prokaryotic transcription.
43. Briefly explain the genetics of sex determination in higher plants with reference to *Melandrium album*.
44. Explain the structure of tRNA with suitable diagram.

(2 × 15 = 30 Marks)
