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Reg. No. :

Name :

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme under CBCSS

Botany

Core Course

BO 1543 : CELL BIOLOGY, GENETICS AND EVOLUTIONARY BIOLOGY

(2019 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

(Draw diagrams wherever necessary)

SECTION – A

- I. Answer **all** questions in **one** or **two** sentences. Each question carries **1** mark.
1. What are B chromosomes?
 2. What are peroxisomes?
 3. What are cisternae?
 4. What are thylakoids?
 5. What is a test cross?
 6. What are complementary genes?
 7. What is the significance of 12:3:1?

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8. What is a tonoplast?
9. What is speciation?
10. What is convergent evolution?

(10 × 1 = 10 Marks)

SECTION – B

II. Answer any **eight** of the following. Each question carries **2** marks.

11. Differentiate between heterochromatin and euchromatin.
12. What are chromosome puffs?
13. What is aneuploidy? Mention its significance.
14. What is deletion?
15. List the significance of mitosis.
16. Mention any two functions of ribosomes.
17. Why lysosomes are known as suicidal bags?
18. What is incomplete dominance? Give an example.
19. Mention the significance of the ratio 15:1.
20. Compare linkage and independent assortment.
21. What is coefficient of coincidence?
22. What is XX-XO mechanism?
23. What is haemophilia? Why does it happen?

24. What are kappa particles? Mention its importance in *Paramecium*.
25. Comment on Neo-Darwinism.
26. Differentiate between progressive and retrogressive evolution.

(8 × 2 = 16 Marks)

SECTION – C

III. Answer any **six** of the following. Each question carries **4** marks.

27. Describe the features of lamp brush chromosomes.
28. Write a brief account on functions of endoplasmic reticulum.
29. Give a brief account on nucleosome model of DNA.
30. With a labelled diagram explain structure of mitochondria.
31. What is duplication? Mention different types of it.
32. Compare anaphase I and anaphase II of meiosis.
33. Explain the genetic mechanism underlying ABO blood group in man.
34. Briefly describe the sex determination in higher plants.
35. Explain the genetic reason and symptoms of Klinefelter's syndrome.
36. Critically evaluate the mechanism of plastid inheritance in *Mirabilis*.
37. Mention the role of genetic drift in evolution.
38. Explain the postulates of Darwinism.

(6 × 4 = 24 Marks)

SECTION – D

- IV. Write essay on any **two** of the following. Each question carries **15** marks.
39. With labelled diagrams explain various types of translocations in chromosomes. Add a note on its significance.
 40. With labeled diagrams explain structure and function of nucleus.
 41. Write a checker board explain the recessive epistasis in mice.
 42. Explain the features of a polygenic inheritance. Give an example.
 43. Describe the role of genetic variation in evolution.
 44. Illustrate the major events occur during Prophase I of Meiosis I.

(2 × 15 = 30 Marks)
