

Reg. No. :

Name :

Fourth Semester B.Sc. Degree Examination, May 2021
(Career Related First Degree Programme under CBCSS)

2(a) Botany and Biotechnology

Core Course

BB 1442 : CELL BIOLOGY, PLANT BREEDING AND EVOLUTIONARY BIOLOGY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a word or **one** or **two** sentences. **Each** question carries **1** mark.

1. What is the use of gamma garden?
2. What is plasmodesmata?
3. List any two functions of cell wall.
4. What are 'B' chromosomes?
5. Who proposed mutation theory in evolution?
6. What are microsomes?
7. Define Chiasma.
8. Who proposed centre of origin of cultivated crops?

9. Define kinetochore.
10. What is meant by macro evolution?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. **Each** question carries **2** marks. Answer not to exceed **one** paragraph.

11. List any four objectives of plant breeding.
12. What is meant by clonal selection?
13. What is genetic drift?
14. In what way prokaryotic cell ribosomes differ from eukaryotic cell ribosomes?
15. How chromosomes classified based on the position of centromere?
16. What is retrogressive evolution?
17. Distinguish inversion from translocation.
18. What are golgi bodies? Mention any two functions of it.
19. Explain the chemical composition of ribosomes.
20. Differentiate between inter-generic and inter-specific hybridization.
21. Define cell cycle. What are its different phases?
22. What are the functions of plasma membrane?
23. Differentiate heterochromatin from euchromatin.
24. Explain mutation theory by De vries.
25. Mention any two significance of mitosis.
26. Write a note on agencies of plant introduction in India.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks. (Answer should not exceed **120** words)

27. Explain Neo- Darwinism.
28. Describe the structure and function of chloroplast.
29. Comment on nucleoproteins.
30. Explain the procedure of hybridization practiced in plants.
31. Brief a note on salivary gland chromosomes of *Drosophila*.
32. Describe various types of cell cycle check points.
33. Explain the chemical nature of cell membrane.
34. Define polyploidy. Mention its significance.
35. Explain the steps in breeding for disease resistance.
36. Discuss various types of speciation seen among organisms.
37. Comment on convergent and parallel evolution.
38. Explain nucleolar organizer.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks. (Answers not to exceed **3** pages)

39. Write an essay on various structural and numerical aberrations seen in chromosomes.
40. Describe various selection methods used in plant breeding. Add a note on their advantages and limitations.

41. Write an essay on the role of mutation in evolution. How polyploidy contribute to evolutionary process?
42. Explain the scope and importance of mutation in plant breeding. Explain the sequential steps in irradiation breeding.
43. With the help of a labelled diagram explain the nucleosome model of organization of chromatin.
44. Describe the details of meiosis with particular emphasis on prophase I. Compare and contrast mitotic cell division with meiosis.

(2 × 15 = 30 Marks)