16/08/24 A.N

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Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2024

Career Related First Degree Programme under CBCSS

Botany and Biotechnology

Core Course VII

BB 1442 : CELL BIOLOGY, PLANT BREEDING AND EVOLUTIONARY BIOLOGY

(2019 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in **one** or **two** words/sentences.

1. Who proposed the fluid mosaic model of plasma membrane?
2. Name an autonomous cell organelle.
3. Define acrocentric chromosome.
4. What is meant by aneuploidy? Give an example.
5. What is cell cycle checkpoint? What is its signifIcance?
6. What is meant by acclimatization?
7. Define hybrid.
8. What is clonal selection?

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9. Define retrogressive evolution.

10. What is macro evolution?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Short Answer (Not to exceed One paragraph).

11. Briefly explain the principles of cell theory.

12. Comment on the functions of endoplasmic reticulum.

13. Draw a labelled diagram of mitochondria.

14. What are Balbiani rings?

15. Give a brief note on B chromosomes.

16. Comment on karyokinesis and cytokinesis.

17. Differentiate between intergeneric and interspecific hybridization.

18. What is heterosis? What is its significance?

19. List any two achievements of mutation breeding in India.

20. What is meant by convergent evolution?

21. Discuss the role of mutation in evolution.

22. Explain Neo-Darwinism.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks. Answer not to exceed **120** words.

23. Explain the structure and functions of Golgi.

24. Describe the classification of chromosomes based on the position of centromere.

25. Differentiate between heterochromatin and euchromatin. Add a note on Baar body.

26. List the four phases of mitosis with a brief note.

27. Briefly describe the numerical aberrations of chromosomes.

28. Explain various steps of plant introduction.

29. Briefly describe the process of mutation breeding.

30. Comment on principles of Darwinism.

31. Briefly describe the mutation theory of evolution.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain meiosis with suitable sketches. Add note on its significance in producing genetic variations.

33. Discuss structural aberrations of chromosomes with suitable examples.

34. Write an essay on objectives of plant breeding with examples.

35. What is speciation? What are the different types of speciation? Add note on the role of isolation and mutations in speciation.

(2 × 15 = 30 Marks)
