

Reg. No. : .....

Name : .....

**Fifth Semester B.Sc. Degree Examination, December 2021**

**First Degree Programme Under CBCSS**

**Zoology**

**Core Course VI**

**ZO 1541 — GENETICS AND BIOTECHNOLOGY**

**(2018 Admission)**

Time : 3 Hours

Max. Marks : 80

I. Answer the following questions (in **one** or **two** sentences. **1** mark each)

1. What is Back cross?
2. Define Codominance.
3. What is sex mosaicism?
4. Write a note on polyploidy.
5. Give an example for a physical mutagen.
6. Write a note on Alkaptonuria.
7. Define cosmid.
8. Give the importance of autoradiography.

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9. Comment on hybridoma technology.

10. What is cDNA library?

(10 × 1 = 10 Marks)

II. Answer any **eight** questions of the following (Not to exceed **one** paragraph. Each carry **2** marks)

11. Comment on Holandric gene.

12. What are linked genes?

13. What is pedigree analysis?

14. Explain down syndrome.

15. Comment on restriction endonucleases.

16. List out the applications of southern blotting.

17. What are the basic requirements of PCR reaction?

18. What is lipofection?

19. Write down the significance of monoclonal antibodies.

20. Explain transfection.

21. What are GMO's?

22. Define DNA vaccine.

23. Comment somatic gene therapy.

24. What is Humulin?

25. List any two applications of Biotechnology in agriculture.

26. What are stem cell?

(8 × 2 = 16 Marks)

III. Answer any **six** of the following (Not to exceed **120** words. Each carry **4** marks)

27. Explain multiple alleles with example.
28. Describe the environmental factors in sex determination.
29. Briefly explain cytoplasmic inheritance.
30. Write an account on maternal effect in *Drosophila*.
31. Give a detailed account on any two allosomal anomalies.
32. Describe the enzymes involved in recombinant DNA technology.
33. Briefly describe the steps in PCR.
34. Explain various gene transfer techniques.
35. Differentiate between therapeutic and reproductive cloning.
36. Discuss the application of biotechnology in agriculture.
37. Discuss the issue of bioethics in detail.
38. Explain Northern blotting.

**(6 × 4 = 24 Marks)**

IV. Answer any **two** of the following

39. Elaborate the contribution of Gregor Mendel to the field of genetics.
40. Write an essay on linkage.
41. Explain the mechanism of sex determination in *Drosophila* and man

42. Write an essay on chromosomal mutation.
43. Give a detailed account on vectors used in Biotechnology.
44. Describe various gene sequencing methods.

**(2 × 15 = 30 Marks)**

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