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**P – 2571**

**Reg. No. :** .....

**Name :** .....

**Fifth Semester B.Sc. Degree Examination, December 2022**

**First Degree Programme Under CBCSS**

**Zoology**

**Core Course**

**ZO 1542 : GENETICS AND BIOTECHNOLOGY**

**(2019 Admission Onwards)**

Time : 3 Hours

Max. Marks : 80

I. Answer the following questions (In one or Two sentences. **1** mark each)

1. What is allele?
2. What is codominance?
3. What is holandric gene?
4. Define lyon hypothesis.
5. What is euploidy?
6. Comment on karyotype.
7. What is Recombinant DNA technology?
8. What are linkers?
9. What is genomic library?
10. Mention Southern blotting.

**(10 × 1 = 10 Marks)**

P.T.O.

II. Answer **any eight** of the following (Not to exceed **one** paragraph. **Each** carries **2** mark)

11. Differentiate test cross and backcross
12. Briefly explain complementary gene action.
13. Briefly explain the factors affecting linkage.
14. Write short notes on crossing over.
15. Comment on the chromosome mapping technique.
16. What is pleiotropism?
17. Write an account on autosomal and allosomal mutation.
18. Give an account on polygenic inheritance.
19. Write an account on cloning vectors used in Recombinant DNA technology.
20. What are the scopes of biotechnology?
21. What are the properties of an ideal vector?
22. Briefly explain bacterial transformation in Recombinant DNA technology.
23. Write an account on transgenic techniques.
24. What is gene therapy technique?
25. Comment on DNA vaccines.
26. Give an account on the application of biotechnology in medicine.

**(8 × 2 = 16 Marks)**

III. Answer **any six** of the following. (Not to exceed **one** paragraph **120** words). **Each** question carries **4** marks.

27. Briefly explain Rh group and its significance in transfusion reaction.
28. What is multiple allelism? and elaborate ABO blood group system.
29. What is sex linked inheritance and explain human sex-linked inheritance.

30. Briefly explain numerical and structural chromosomal aberrations.
31. Write an account on molecular basis of mutation.
32. Explain inborn errors of metabolism.
33. What are the tools used in Recombinant DNA technology.
34. Briefly explain patenting DNA sequences and add notes on advantages and disadvantages of DNA patenting.
35. Give an account on hybridoma technology.
36. Briefly explain blotting techniques.
37. Write notes on human cloning.
38. Elaborate on the ethical and social issues of biotechnology.

**(6 × 4 = 24 Marks)**

IV. Answer **any two** of the following. (**Each** carries **15** marks)

39. Write an essay on interaction of genes.
40. Write an essay on various methods of sex determination.
41. Write an essay on cytoplasmic inheritance.
42. What is PCR? Briefly explain steps and applications of PCR.
43. Write an essay on transfection methods of gene transfer techniques.
44. Write an account on practical applications of biotechnology.

**(2 × 15 = 30 Marks)**

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