

**FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2022****(Regular/Improvement/Supplementary)****ZOOLOGY****GZOL5B06T: CELL BIOLOGY & GENETICS****Time: 2 ½ Hours****Maximum Marks: 80****SECTION A: Answer the following questions. Each carries two marks  
(Ceiling 25 Marks)**

1. Write a note on vital stains. Give two examples.
2. What is *erythroblastosis foetalis*?
3. Distinguish between tight junctions and gap junctions.
4. Write a short note on the genetic basis of inheritance of coat colour in rabbits.
5. Comment on proto-oncogenes.
6. Write a note on the concept of GERL.
7. What is an intersex? Give an example.
8. Define endomitosis. Comment on its significance.
9. What is Bombay blood group?
10. State Lyon hypothesis and its significance.
11. Write a note on the genetic basis and symptoms of phenylketonuria.
12. Comment on the concept of eugenics, signifying its positive and negative sides.
13. Give notes and suitable examples for environmental sex determination.
14. Explain the working principle of scanning electron microscope.
15. Write a note on apoptosis and its significance.

**SECTION B: Answer the following questions. Each carries five marks  
(Ceiling 35 Marks)**

16. Explain the cell cycle check points involved in the regulation of cell division.
17. Write a descriptive note on giant chromosomes, their formation and significance.
18. What is linkage? Distinguish between complete and incomplete linkage with examples.
19. Write a detailed note on the types of epistasis, with examples.
20. Detail the steps involved in preparation of specimens/materials for mounting before light microscopy.
21. Give a description on polygenic inheritance, with suitable examples.
22. Explain the Patau's scheme of classification of human chromosomes.
23. Give an account of the structure and important functions of mitochondria.

**SECTION C: Answer any two questions. Each carries ten marks.**

24. With illustrations, explain the different mechanisms of transmembrane transport.
25. What is sex linkage? What are the different types? Explain with examples from humans.
26. With labelled diagrams, explain the steps involved in meiosis. Add a note on the significance of meiosis.
27. Distinguish between chromosome mutations and gene mutations. Describe in detail, the types of chromosomal mutations. Include examples of disorders or syndromes resulting from chromosomal mutations.

**(2 × 10 = 20 Marks)**