

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2018**

(CUCBCSS-UG)

Biotechnology

BTY 4B 05—GENETICS

Time : Three Hours

Maximum : 80 Marks

**Section A***Answer any two out of four questions in about 1,500 words each.**Each question carries 10 marks.*

1. Briefly explain the laws of inheritance that emerged from Mendel's experiments in plant hybridization.
2. What is a 'karyotype'? Discuss numerical variations in chromosomes.
3. What are auxotrophs? How are auxotrophs isolated?
4. Write a note on the Hardy-Weinberg Equilibrium.

(2 × 10 = 20 marks)

**Section B***Answer any seven out of fourteen questions in about 750 words each.**Each question carries 5 marks.*

5. How was the inheritance of haemophilia in humans understood?
6. Discuss the inheritance of ABO blood groups in man.
7. What determines the dextral or sinistral shell coiling in snails?
8. Cite an example that illustrates epistatic inheritance pattern.
9. Compare the structure and organization of special chromosomes with normal ones.
10. What is the importance of the ratio of X-chromosomes to autosomes in *Drosophila*?
11. Distinguish between qualitative and quantitative inheritance.
12. How is colour blindness inherited in man?
13. What are the functions of plasmids in bacterial cells?
14. What is the role of nucleosomes in the structure of chromosomes?
15. What is genetic drift?
16. Discuss the C-value paradox.

**Turn over**

17. Distinguish between generalized and specialized transduction.
18. What is linkage?

(7 × 5 = 35 marks)

### Section C

*Answer all questions in about 300 words each.*

*Each question carries 3 marks.*

19. What is epigenetic inheritance?
20. What are Barr bodies?
21. What is conjugation?
22. What is genetic recombination?
23. What are the different stages in mitosis?

(5 × 3 = 15 marks)

### Section D

*Answer all questions in about 200 words each.*

*Each question carries 2 marks.*

24. Draw and label a lampbrush chromosome.
25. Define Epistasis.
26. Define Transformation.
27. Define point mutation.
28. What is euchromatin?

(5 × 2 = 10 marks)