

C 23306

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2017
(CUCBCSS-UG)**

BIOTECHNOLOGY

BTY 4B 05---GENETICS

Time: Three Hours

Maximum: 80 Marks

Section A

Answer **any two** out of four questions in about 1500 words each.
Each question carries 10 marks.

1. Briefly explain Mendel's Laws of inheritance.
2. What are nucleosomes? What is the role of nucleosomes in chromosome structure?
3. Compare bacterial conjugation, transformation and transduction.
4. What are the factors that influence the Hardy-Weinberg equilibrium ?

(2 x 10 = 20 marks)

Section B

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

5. Discuss how pedigree analysis was used to understand the inheritance of human genetic disorders.
6. Describe the inheritance of blood-type in man.
7. Discuss the inheritance of shell coiling in snails.
8. Cite an example and discuss the inheritance of sex linked characters.
9. What are polytene chromosomes ? With a diagram describe polytene chromosomes in *Drosophila*.
10. Compare sex determination in *Drosophila* with that in man.
11. Write a note on the organization of the human genome.

12. What are the structural and functional differences between eu- and heterochromatin?
13. What causes Down's syndrome?
14. What are specialized transducing phages?
15. Cite an example to illustrate polygenic inheritance.
17. How is white eye colour inherited in *Drosophila* ?
18. What are plasmids?

(7 x 5 = 35 marks)

Section C

Answer **all** questions in about 300 words each.
Each question carries 3 marks.

19. Distinguish between genetic and epigenetic inheritance.
20. What is a karyotype ?
21. How is replica plating done? What is its application ?
22. What is genetic drift?
23. What is a phylogenetic tree?

(5 x 3 = 15 marks)

Section D

Answer **all** questions in about 200 words each.
Each question carries 2 marks.

24. State the principle of dominance.
25. What is a hybrid?
26. What is crossing over?
27. Define 'mutation'.
28. Define 'gene'.

(5 x 2 = 10 marks)