

B.Sc. DEGREE END SEMESTER EXAMINATION OCTOBER/NOVEMBER 2018**SEMESTER –5: BOTANY (CORE COURSE)****COURSE: 15U5CRBOT07: GENETICS AND PLANT BREEDING***(Common for Regular 2016 admission & Supplementary 2015 admission)*

Time: Three Hours

Max. Marks: 60

I. Answer **ALL** questions; each question carries **1** mark.

1. Give the name of one plant introduction agency in India.
2. Y-linked genes can only be transmitted from father to son. Explain why.
3. What is the karyotype found in Down syndrome?
4. What is the Mendelian phenotypic and genotypic ratio in the offspring of a monohybrid cross when there is complete dominance?
5. Differentiate between genes and alleles.
6. What is polygenic inheritance?
7. What are Bt crops?
8. Mention the significance of two point test cross. (1 x 8 = 8)

PART BII. Answer **ANY SIX** questions; each question carries **2** marks.

9. Write a brief note on back cross breeding.
10. What is acclimatization? Comment on the importance of acclimatization in plant introduction.
11. Differentiate between pureline selection and mass selection.
12. What is epistasis? What is the difference between dominant epistasis and recessive epistasis?
13. What is sex-linked inheritance? Give an example for a sex-linked character in humans.
14. 'Linked genes violate the law of independent assortment.' Substantiate the statement.
15. Explain the cause and symptoms of Klinefelter's syndrome
16. Explain how polyploidy is exploited in plant breeding.
17. What is apomixis? Comment on the role of apomixis in plant breeding.
18. What are the genetic principles based on which linkage maps of chromosomes are constructed? (2 x 6 = 12)

PART CIII. Answer **ANY FOUR** questions; each question carries **4** marks.

19. What is heterosis? How does heterosis manifested in plants? How is it exploited in plant improvement?
20. What is emasculation? What is it done to? Describe the methods used for emasculation.
21. Describe multiple allelism by quoting one example.

22. Differentiate between complementary genes and codominant genes.
23. State Hardy-Weinberg law. What are the conditions for the existence of Hardy-Weinberg equilibrium?
24. Explain the pattern of inheritance of hemophilia in man. (4 x 4 = 16)

PART D

IV. Answer **ANY TWO** questions; each question carries **12** marks.

25. Most sexual organisms have two sexes, male and female, determined by a diversity of mechanisms. Explain.

OR

26. Write an essay on extranuclear inheritance, quoting suitable examples.
27. Describe the different methods used in mutation breeding. Add a note on the major achievements of mutation breeding in India.

OR

28. Write an essay on the modern strategies in plant breeding. (12 x 2 = 24)
