Reg. No…….. Name……

B.Sc. DEGREE END SEMESTER EXAMINATION OCTOBER 2017

SEMESTER **–5: BOTANY (CORE COURSE)**

COURSE: **15U5CRBOT07: GENETICS AND PLANT BREEDING**

(For Regular 2015 admission)

Time: Three Hours Max. Marks: 60

PART A

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

1. What is a genetic map?
2. What are holandric genes?
3. What is the significance of male sterility in plant breeding?
4. What is genetic linkage?
5. State Hardy Weinberg law.
6. Give the name of a GM crop commercially cultivated in India.
7. What is plant introduction?
8. What is the cross between the progeny F1 and the homozygous recessive parent called? How is it useful? (1 x 8 = 8)

PART B

II. Answer **ANY SIX** questions; each question carries TWO marks.

9. Explain how inbreeding through many generations changes genotype frequencies.
10. Concerning the sex chromosomes of the XY system, which type of gamete do male and female individuals respectively produce?
11. What are complementary genes? Does this inheritance pattern obey Mendel's second law?
12. Explain why hemophilia is rare in females than in males.
13. 'If double crossover occurs at the expected frequency, then coincidence would be 100%, and if double crossover does not occur at all, then coincidence would be 0%.' Explain.
14. What are the major objectives of plant breeding?
15. What is quarantine in plants? What is its significance?
16. What are the advantages of semi-dwarf wheat over normal wheat?
17. Explain hormonal theory of sex determination
18. State Mendel's law of segregation. How does Mendel give confirmation to the law?

(2 x 6 = 12)

PART C

III. Answer **ANY FOUR** questions; each question carries FOUR marks.

19. Describe any two diseases caused by errors in the number of sex chromosomes in humans.
20. How polyploidy is induced. What are the applications of polyploidy in plant breeding.

21. What is linkage map? Explain how linkage maps are constructed.
22. Explain incomplete dominance quoting a suitable example.
23. Describe the methods of breeding used for the development of disease resistance in plants.
24. Explain comb pattern in poultry as an example for nonallelic genes that affect the same characteristic. (4 x 4 = 16)

PART D

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

25. What is extrachromosomal inheritance? Explain quoting suitable examples

OR

26. Compare and contrast multiple allelism and polygenic inheritance, citing suitable examples.
27. Describe the steps involved in plant hybridization. Add a note on the applications of plant hybridization.

OR

28. Write an essay on the methods and underlying theoretical foundations used for selection in plant breeding programmes. (12 x 2 = 24)

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