STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2019 – 2020 & thereafter)

B. Sc. DEGREE EXAMINATION, APRIL 2024
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

COURSE	**:**	**MAJOR – CORE**
PAPER	**:**	**GENETICS, PLANT BREEDING AND EVOLUTION**
SUBJECT CODE	**:**	**19BT/MC/GP64**
TIME	**:**	**3 HOURS** **MAX. MARKS: 100**

SECTION - A

Answer all the questions. **(18 MARKS)**

I. Choose the correct answer: **(5 x 1 = 5)**

1. The genotypic ratio of a monohybrid cross is _____

   (a) 1:2:1 (b) 3:1 (c) 2:1:1 (d) 9:3:3:1

2. Crossing over takes place in the _____
   (a) Diakinesis stage (b) Anaphase stage (c) Pachytene stage (d) Leptotene stage

3. Define muscular dystrophy

   (a) Diseases which destruct the muscles of the body
   (b) diseases which cause the muscles to get disproportionate
   (c) born with too many or too little muscles
   (d) diseases which do not allow muscles to grow

4. Which of the following is not involved in classical plant breeding practices?

   a) The hybridisation of pure lines b) Artificial selection of plants
   c) Desirable traits of higher yield d) Molecular biology

5. Survival of the fittest is the concept of

   (a) Lamark (b) Darwin (c) Mendel (d) Hugo de vries

II. Fill in the blanks: **(5 x 1 = 5)**

6. The alternate form of a gene is _____
7. _____ coined the term crossing over.
8. Another name of Down syndrome is _____
9. A collection of all the alleles of all the genes of a crop plant is called _____
10. The process of formation of one or more new species from an existing species is called _____

III. State Whether True or False: **(3 x 1 = 3)**

11. Pure line selection results in heterozygosity
12. In sickle cell disease, red blood cells become crescent shaped.
13. The quickest method of Plant Breeding is Hybridization

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IV. Match the following: **(5 x 1 = 5)**

14. Pea Plant	–	M S Swaminathan
15. Linkage	–	G J Mendel
16. Green Revolution	–	Charles Darwin
17. Natural Selection	–	Hugo de Vries
18. Mutation	–	T H Morgan

V. Answer any <u>SIX</u> of the following. Each answer should not exceed 50 words: **(6 x 3 = 18)**

19. G J Mendel
20. Co-dominance
21. Duplication
22. Chiasma Theory
23. Genetic Counselling
24. Emasculation
25. Mutagens
26. Biogenesis
27. Evolution

SECTION – B

Answer any <u>FOUR</u> of the following. Each answer not exceeding 200 words. **(4 x 6 = 24)**

28. Write short notes on simple epistasis with suitable example.
29. Explain the classical theory of crossing over.
30. Comment on sex determination in *Melandrium album.*
31. Highlight about Klinefelter's Syndrome.
32. What are the basic techniques involved in plant hybridization?
33. Summarise the mutation theory.

SECTION – C

Answer any <u>TWO</u> of the following. Each answer not exceeding 1000 words. **(2 x 20 = 40)**

34. Explain the mendelian laws with monohybrid and dihybrid cross.
35. Given an account on Down's Syndrome and Sickle Cell Anaemia
36. Write an essay on induced mutation in plant breeding.
37. Elucidate the theories developed during Beagle voyage

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