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

SUBJECT CODE: 19BT/MC/GP64

B. Sc. DEGREE EXAMINATION, APRIL 2023
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

COURSE : MAJOR – CORE
PAPER : GENETICS, PLANT BREEDING AND EVOLUTION
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION - A

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

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

1. Which of the following characteristics of pea plants was not used by Mendel in his experiments?
   (a) seed colour (b) seed shape (c) pod length (d) flower position
2. Muscular dystrophy can affect
   (a) Only humans (b) Only animals (c) Both animals and humans (d) Only plants
3. Genotype of dominant plant can be determined by
   (a) pedigree analysis (b) back cross (c) test cross (d) dihybrid cross
4. Polyploidy is induced through
   (a) Irradiation (b) Ethylene (c) Mutagenic Chemicals (d) Colchicine
5. On the Origin of Species was written by _____
   (a) Charles Darwin (b) Ludmila Kuprianova
   (c) Mikhail A. Fedonkin (d) None of the above

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

6. Self crossing of white flower of sweet pea would give a _____.
7. Repulsion and Coupling are two faces of _____.
8. The different versions of genes are called _____.
9. Gene Mutation occurs at the time of _____.
10. Genotype and phenotype shows the same ratios of 1:2:1 in the F_2 generation in _____ .

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

11. Two different strains of white flower are crossed, it results in purple flower in sweet pea plants.
12. Klinefelter's syndrome involves having two or more X chromosomes and one Y chromosome.
13. The quickest method of Plant Breeding is Hybridization .

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

14. Inhibitory - Neo- Darwinian
15. Sickle Cell Anaemia - Charles Darwin
16. Clonal Selection - 13:3
17. Synthetic theory - Inherited disorder
18. Natural Selection - Antigen

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

19. Complementary Factor.
20. Back cross
21. Sickle Cell Anaemia
22. Pure line selection
23. Emasculation
24. Mutation
25. Hybridization
26. Chemosynthetic
27. Inheritance

SECTION – B

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

28. Explain Incomplete dominance with suitable example.
29. Write about Sex Determination in *Melandrium*
30. Describe the cause, symptoms and management of Klinefelter's Syndrome.
31. Highlight about the Objectives of Plant Breeding.
32. Write down the selection methods followed in pure line selection.
33. Discuss on Mutation theory of De Vries.

SECTION – C

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

34. Write in detail on the Theories of Crossing Over.
35. Describe the sex linkage in man with reference to colour blindness.
36. Explain the Induced Polyploidy in Plant Breeding.
37. Elaborate the theories of Origin of life in Natural selection.

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