STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2004-05 & thereafter)

SUBJECT CODE: BT/MC/GN54

B. Sc. DEGREE EXAMINATION, NOVEMBER 2007
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
FIFTH SEMESTER

COURSE : MAJOR – CORE
PAPER : GENETICS
TIME : 3 HOURS MAX.MARKS:100

SECTION – A

ANSWER ALL QUESTIONS (18 marks)

I CHOOSE THE CORRECT ANSWER:

1. Mendel started his famous experiments with garden pea in the year
   a. 1902 b. 1853 c. 1875 d. 1889
2. Persons having ……. blood group are called universal donors.
   a. A b. B c. AB d. O
3. Genes that act together to produce an effect that neither of them can produce separately are called …….. genes.
   a. Supplementary b. Complementary c. Epistatic d. Interactive
4. Crossing over takes place during …….. stage of Prophase I of Meiosis.
   a. Leptotene b. Zygotene c. Pachytene d. Diplotene
5. One of the following is an example for male haploidy
   a. Bonelia b. Drosophila c. Melandrium d. None of these
6. When the position of a gene in a chromosome is changed its functioning is altered. This is called
   a. Frame Shift mutation b. Transition c. Position effect d. Deletion.

II. State whether true or false:

7. Recessive alleles arise from the wild type due to mutation.
8. Antibody is a proteinaceous substance present in the RBC of the blood.
9. The distance between two genes in a chromosome is measured in millimeter.
10. Colchicine prevents the duplication of the chromosome.
11. The phenomenon of single gene influencing more than one trait is known as Pleiotropism.
12. Sex index refers to the ratio of the number of autosomal sets to the number of X-chromosomes.

III. Match the following:

13.	Self sterility	-	CLB method
14.	Duplicate genes	-	Drosophila
15.	ABO blood grouping	-	XY- method
16.	Genic balance mechanism	-	Mangelsdorf
17.	Melandrium	-	Multiple alleles
18.	Mutation	-	Shepherd's purse

IV. Answer any six questions. Each answer not to exceed 50 words: (6x3=18)

19. Test cross
20. Self sterility in *Nicotiana*
21. Interference and coincidence
22. Gynandromorphs

23. Holandric genes
24. Applications of polyploidy
25. Eugenics
26. Plasmogene
27. Alkylating agents

SECTION – B

Answer any four questions. Each answer not to exceed 50 words: (6x4=24)

28. With a suitable example comment on "External environmental condition rather than the chromosomes play a vital role in the differentiation of sex".
29. Give a brief account on the different types of syndromes studied.
30. Explain law of independent assortment with a suitable example.
31. Differentiate multiple gene interaction from multiple alleles.
32. Write notes on Genetic counselling.
33. With a suitable example describe how cytoplasm influences plastid inheritance in plants.

SECTION – C

Answer any two questions. Each answer not to exceed 1000 words:
Draw diagrams wherever necessary. (2x20=40)

34. Define epistasis. Explain with suitable example how the recessive epistatic genes interact to produce a phenotype. Discuss the biochemical basis of the same.
35. What is Criss-cross inheritance? Explain the mechanism of sex linked inheritance with any two examples.
36. Give an elaborate account on the inheritance of quantitative character with two examples.
37. Give a detailed account of polyploidy.

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