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 2009
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)

CHOOSE THE CORRECT ANSWER:

1. All genes found on the same chromosome are said to be
   a) Linked genes b) Inhibitory genes
   c) Dominant genes d) Lethal genes

2. Sex determination in *Melandrium* is by
   a) XX-XY method b) XX-XO method
   c) ZO-ZZ method d) XX-XY1Y2 method

3. The unit to measure the distance in chromosome is
   a) base pair b) centimorgan
   c) Nanometer d) Angstrom

4. A man who carries an X-linked allele will pass it on to
   a) all of his daughters b) half of his daughters
   c) all of his sons d) half of his sons

5. A dihybrid cross between F_1,heterozygote and a double homozygous recessive would produce Phenotypic ratio of
   a) 9:3:3:1 b) 3:1 c) 1:1:1:1 d) 9:7

6. Complementary genes was first discovered by
   a) Bateson and Punnet b) Mendel
   c) Correns d) Hugo de vries

STATE WHETHER TRUE OR FALSE:

7. The ratio 12 : 3 : 1 is obtained due to the phenomenon called duplicate genes
8. Shell coiling in *Limnaea* is influenced by the maternal genotype
9. Klinefelter's syndromes have XO chromosomes
10. A child with blood group O can be born to a couple with A and B blood groups
11. Nullisomy is a kind of Euploidy
12. Haemophilia is a recessive sex-linked trait

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MATCH THE FOLLOWING

13. Colchicine	---	Sex-linked Inheritance
14. Skin colour in man	---	Multiple allele Inheritance
15. Coat colour in rabbit	---	Mutagen
16. Eye colour in Drosophila	---	Multiple Gene Inheritance
17. Petite Yeast	---	Dosage Compensation
18. X chromosome	---	Extra Chromosomal inheritance.

ANSWER ANY SIX QUESTIONS. EACH ANSWER NOT TO EXCEED 50 WORDS (6 x 3 = 18)

19. Test cross
20. Lethal genes
21. Coupling and repulsion hypothesis
22. Holandric genes
23. Extra Chromosomal inheritance
24. Barr Body
25. Phenylketonuria
26. Karyotyping
27. Universal Donor

SECTION – B

ANSWER ANY FOUR QUESTIONS. EACH ANSWER NOT TO EXCEED 200WORDS: (4 x 6 = 24)

28. Explain the Mendelian laws of inheritance
29. What is ploidy? Explain autopolyploidy with an example
30. How does genetic counseling contribute to the betterment of society
31. Illustrate and explain complementary genes
32. Explain cytoplasmic inheritance using killer particles in *Paramecium*
33. Give an account of the chiasma theory

SECTION – C

ANSWER ANY TWO QUESTIONS. EACH ANSWER NOT TO EXCEED 1000WORDS. DRAW DIAGRAMS WHEREVER NECESSARY (2 x 20 = 40)

34. Give an account of the molecular basis of mutations in detail.
35. Explain interaction of Genes in recessive epistasis using examples.
36. Write an essay on the human blood groups and the importance of Rh factor.
37. Elaborately explain the chromosomal mechanism of sex determination.

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