

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2010 - 11)
SUBJECT CODE: BT/MC/GG64
B.Sc. DEGREE EXAMINATION, APRIL 2013
BRANCH V(A) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

COURSE : MAJOR – CORE
PAPER : GENETICS AND GENETIC ENGINEERING
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION –A

ANSWER ALL THE QUESTIONS

I. CHOOSE THE CORRECT ANSWER: (5 marks)

1. The phenotypic ratio of F₂ generation in Incomplete Dominance is
(a) 3 : 1 (b) 9 : 3 : 4 (c) 1 : 2 : 1
2. 9 : 7 is the phenotypic ratio obtained due to the interaction of
(a) Complementary genes (b) Inhibitory genes (c) Duplicate genes
3. The unit used for indicating map distance is called
(a) Rad (b) Morgan (c) Curie
4. Western blotting technique is used to study
(a) Proteins (b) RNA (c) DNA
5. Ti plasmid is the responsible for
(a) Crown gall disease (b) Hairy root disease (c) Citrus canker

II. FILL IN THE BLANKS: (5 marks)

6. The genes found on the Y chromosome in man are called _____ genes.
7. A phenotypic ratio of 15 : 1 in F₂ generation is seen in the case of _____ genes.
8. Making pores on the cell wall for physical delivery of DNA is called _____.
9. The example for a sex linked disease in Man is _____.
10. The dominant character for pod colour in garden pea is _____.

III. STATE WHETHER TRUE OR FALSE: (4 marks)

11. EcoRI is a restriction endonuclease
12. In a three point test cross the frequency of double crossovers is the highest
13. The ligation of donor DNA and vector DNA is called splicing
14. Tissues made of dead cells are ideal target cells for transformation

IV. MATCH THE FOLLOWING: (4 marks)

- | | | |
|----------------------------|---|--------------------------|
| 15. YAC | - | Universal donor |
| 16. Silicon carbide fibres | - | Paramecium |
| 17. O group | - | Cloning vector |
| 18. Kappa particles | - | Physical delivery of DNA |

V. ANSWER ANY SIX OF THE FOLLOWING, EACH ANSWER NOT EXCEEDING 50 WORDS: (6 x 3 =18)

19. Blending inheritance
20. Alleles
21. Coupling and repulsion
22. Allosomes
23. Linkers
24. Dosage compensation
25. Microinjection
26. c-DNA library
27. Patents

SECTION –B

VI. ANSWER ANY FOUR OF THE FOLLOWING, EACH ANSWER NOT EXCEEDING 200 WORDS: (4 x 6 =24)

28. Write notes on Skin colour inheritance in Man.
29. Explain inhibitory and Duplicate genes with suitable examples.
30. Give an account of Extra- chromosomal inheritance.
31. What are restriction endonucleases? Explain their role in Genetic engineering.
32. Describe the Particle gun method of gene transfer.
33. Explain the ethical issues relating to GM plants.

SECTION –C

VII. ANSWER ANY TWO OF THE FOLLOWING, EACH ANSWER NOT EXCEEDING 1000 WORDS: (2 x 20 =40)

34. Explain the phenomenon of Multiple allelism.
35. What is linkage? Explain sex-linkage in Man with suitable examples.
36. Describe the Southern Blotting technique. Add a note on its applications.
37. Write an essay on gene transfer technique using Agrobacterium.
