STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2004-05 & thereafter)
SUBJECT CODE: BT/MC/GE64

B.Sc. DEGREE EXAMINATION, APRIL 2009
BRANCH V(A) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

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

SECTION –A
ANSWER ALL THE QUESTIONS

I. FILL IN THE BLANKS: (4 marks)

1. Enzyme _____ is involved in the development of cDNA.
2. Bacteria with sex plasmid is indicated as _____.
3. GF proteins are used as _____ markers.
4. Chemical commonly used to deliver DNA in plant cell is _____.

II. MATCH THE FOLLOWING: (5 marks)

5.	Cistron	-	DNA ligase
6.	Transposon	-	Binary vector
7.	Amp^R	-	Functional gene
8.	Ti plasmid	-	DNA rearrangement
9.	T_4 phage	-	Selectable marker

III. STATE WHETHER TRUE OR FALSE: (5 marks)

10. In crown gall disease, phytohormones are secreted by *Agrobacterium* spp.
11. Jumping genes were first discovered in *E.coli*.
12. Vector with characters of both plasmid and bacteiophage is known as BacterialArtificial Chromosome (BACs).
13. Edible vaccines are produced from transgenic plants.
14. Staggered cut ends of DNA requires DNA ligase for joining.

IV. CHOOSE THE CORRECT ANSWER: (4 marks)

15. Which one of the following related with western blotting?
    a. DNA/DNA b. RNA/RNA c. DNA/RNA d. Protein/Protein
16. Which one of the following not related with lac operon?
    a. β - galactosidase b. Permease c. Acetylase d. Sucrase
17. The product of Type – II restriction enzymes has _____.
    a. Cohesive ends b. Blunt ends c. Staggered ends d. Linkers & adapters
18. Molecule that induce *Agrobacterium* to infect dicot plant particularly is by
    a. Acetosyringone b. Nopaline c. Opine d. Octopine

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

19. Stringent and relaxed plasmids.
20. Disarmed plasmid.
21. Polycistronic mRNA.
22. Catabolite Gene Activator Protein (CAP)
23. IS elements.
24. Gene library.
25. Colony Hybridization
26. Hairy root disease.
27. Competent Cell.

SECTION –B

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

28. Briefly explain about the fine structure of a gene.
29. With suitable illustration give details on the Trp operon.
30. Write detailed notes on replication methods of plasmids.
31. Describe the mechanism of transposition in plants.
32. Write about various enzymes involved in the genetic engineering process.
33. Illustrate and explain the organization of Ti plasmid.

SECTION –C

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

34. Describe in detail on various methods of vectorless DNA transfer in plants.
35. Compare and contrast the techniques of Southern and Western blotting techniques.
36. Elaborate notes on different cloning vehicles used in genetic engineering.
37. Give an account on gene regulation in eukaryotes.

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