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 2010
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. The smallest recombinable unit within a gene is called_____.
2. A protein which prevents transcription of genes is called _____.
3. Ti plasmids refer to _____ inducing plasmids.
4. _____ _____ made the remarkable discovery of transposans in corns.

II. MATCH THE FOLLOWING: (5 marks)

5. ECoRI	a. Attenuator
6. Microprojectile	b. cDNA
7. Operon	c. Transposan
8. Plasmid	d. Endonuclease
9. IS element	e. Gene gun
	f. copy number

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

10. Northern blotting is a technique used to analyze the total cellular RNAs.
11. Cell wall of Agrobacterium is very much used in gene transfer technique.
12. The ara Operon of E.coli consists of five structural genes.
13. R plasmids confer drug resistance on some bacterial pathogens.
14. Transposable elements are abnormal components of the genomes of prokaryotes and eukaryotes.

IV. CHOOSE THE CORRECT ANSWER: (4 marks)

15. Western blotting is associated with:
    a) DNA b) RNA c) aminmoacids d) proteins
16. The region found near a promoter region which enhances the RNA-promoter interaction is called:
    a) Activator b) repressor c) operator d) inducer
17. Which of the following part is involved in the transfer of plasmids:
    a) Mesosome b) Pili c) Capsule d) Ribosome
18. IS element was first identified in:
    a) Zea mays b) Drosophila c) E.coli d) T4 phage

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

19. Octopine
20. Expression plasmid
21. Electroporation
22. Edible vaccine
23. Muton
24. Positive regulation
25. F plasmid
26. Composite transposons
27. Marker genes

SECTION –B

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

28. Expand the following, with a footnote on each:
    i) PEG ii) IS element iii) cDNA
    iv) YAC v) ECoRI vi) T-DNA
29. Discuss the eukaryotic regulation using Britten Davidson model.
30. Give a brief account of tryptophan Operon.
31. Discuss the mechanism of transposition.
32. Outline the steps involved in Southern blotting. Why it is named so?
33. Write about gene transfer technique using *Agrobacterium*

SECTION –C

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

34. Give a brief account of tryptophan Operon.
35. What are plasmids? Write about the different types of plasmids. Add a note on plasmid replication.
36. What are the features of a useful cloning vector? Write about any two types of cloning vectors and their importance.
37. Discuss any four applications of genetic engineering.

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