STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted from the academic year 2008 – 09 & thereafter)
SUBJECT CODE: BI/PC/BT25
M. Sc. DEGREE EXAMINATION, APRIL 2009
BIOINFORMATICS
SECOND SEMESTER

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

SECTION – A

I. CHOOSE THE CORRECT ANSWER: (5 x 1 = 5)

1. Match A) Arber B) Southern C) Temin D) Mullis with
   i) Reverse transcriptase ii) DNA iii) PCR iv) restriction enzyme

   a) A-iv, B-ii, C-iii, D-i
   b) A-iv, B-i, C-iii, D-ii
   c) A-iv, B-ii, C-I, D-iii
   d) A-iv, B-iii, C-ii, D-I

2. Plasmids that contain lambda phage cos sites and can be packed into phage capsids are called:
   a) Chimeras b) Cosmids c) episomes d) Vectors
3. Find out the correct sequence of events in PCR:

   a) Denaturation, annealing, synthesis
   b) Renaturation, denaturation, synthesis
   c) synthesis, denaturation, renaturation
   d) Annealing, denaturation, synthesis

4. The larger fragement of polymerase of E.*coli* is referred as:
   a) klenow subunit b) TATAbox c) prinow box d) template
5. Insecticidal crystalline protein is associated with:
   a) B.amylovorus b) B.cereus c) B. anthracis d) B.thuringienis

II. FILL IN THE BLANKS: (5 x 1 = 5)

6. The most popular and widely used plasmid vector is _____ obtained from _____.
7. In RT-PCR, _____ is first converted to _____ by the enzyme reverse transcriptase.
8. _____ is a DNA base sequencing method in which the chromosome is analysed by extending one tip to the other.
9. Treatement of disease by use of genes or DNA sequences is called _____.
10. _____ are short repeat units usually composed of dinucleotide or _____units.

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III. ANSWER THE FOLLOWING EACH WITHIN 50 WORDS ONLY **(5 x 2 = 10)**

11. What are expression vectors? Give one example.
12. Define the term transformation. Mention one use.
13. What is VNTR?
14. What do you mean by the term "gene subtraction"?
15. Enlist any two problems associated with genetically modified plants.

SECTION - B

Answer any FOUR of the following; each answers not exceeding 500 words. Draw diagram wherever necessary. **(4x10=40)**

16. Discuss the steps involved in preparation of plasmid DNA.
17. Write about M_{13} cloning vector.
18. Give an account of anchored PCR. Mention its application.
19. Explain the procedure for Sanger – Coulson method of DNA sequencing.
20. Write about gene addition approach to plant genetic engineering.
21. Discuss the application of DNA analysis in sex identification.
22. Expand the following with foot note each:
    a) EcoRI b) RFLP c) RTPCR d) RAPD e) GMO

SECTION - C

Answer any TWO of the following, each answer not exceeding 1200 words. Draw diagram wherever necessary. **(2x20=40)**

23. Give an account of cloning vectors for eukaryotes.
24. Discuss the principle, procedure and applications of basic PCR techniques.
25. Explain the applications of gene cloning and DNA analysis in forensic science.
26. Write notes on
    a) Gene Library b) Yeast Artificial Chromosome
    c) Restriction Endonucleases d) DNA finger printing.

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