STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted during the academic year 2011 – 12)

SUBJECT CODE: 11BY/PC/VG24

M. Sc. DEGREE EXAMINATION, APRIL 2012
BIOTECHNOLOGY
SECOND SEMESTER

COURSE : CORE
PAPER : CLONING VECTORS AND GENETIC ENGINEERING
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A **(20 MARKS)**

ANSWER ALL THE QUESTIONS **(20 x 1 = 20)**

1. Clones are identified by hybridizing them with
   a. a vector
   b. an antibody
   c. a virus
   d. a probe
2. The first step in the polymerase chain reaction (PCR) is
   a. denaturation
   b. primer extension
   c. annealing
   d. cooling
3. In the discovery of introns, a DNA molecules called _____ was formed that had the same nucleotide sequence as the gene that produced the mRNA
   a. mDNA
   b. rDNA
   c. sDNA
   d. cDNA
4. Bacteria protect themselves from viruses by fragmenting viral DNA upon entry with
   a. ligases
   b. endonucleases
   c. methylases
   d. vectors
5. All fragments cut by most restriction endonucleases have
   a. complementary double-stranded ends
   b. supplementary single-stranded ends
   c. double-stranded “sticky”ends
   d. complementary single-stranded ends.
6. A successful vector in genetic engineering has been the
   a. TMV plasmid
   b. Ti plasmid
   c. HLF virus
   d. Retrovirus

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7. A powerful way to identify an individual using a particular gene as a marker is the analysis of
   a. RFLP's
   b. X-gal reaction
   c. PCR's
   d. ECORI's
8. A library of DNA fragment results from the use of
   a. restriction endonucleases
   b. viruses
   c. plasmids
   d. recombinant DNA
9. One of the most useful methods for identifying a specific gene is
   a. Thin layer chromatography
   b. The eastern blot
   c. The western blot
   d. The southern blot
10. A procedure called PCR is used to
   a. Cleave DNA
   b. produce recombinant DNA
   c. copy gene sequences
   d. clone cells
11. In genetic engineering, DNA ligase is used as
   a. a probe
   b. a sealing enzyme
   c. a restriction enzyme
   d. a mutagen
12. A probe is used in which stage of the gene transfer process?
   a. cleaving DNA
   b. recombining DNA
   c. cloning
   d. screening
13. The Polymerase Chain Reaction is used to
   a. amplify a small amount of DNA
   b. cleave bacterial plasmids
   c. seal sticky ends
   d. Identify target plasmids
14. Genetically identical organisms derived from a single genetic source are called
   a. populations
   b. varieties
   c. sibling species
   d. clones
15. Which of the following statements is true about developing cDNA?
   a. mature mRNA does not contain introns
   b. mature mRNA directs the formation of the DNA
   c. DNA taken from the nucleus is used to produce the cDNA
   d. both a and b are true

16. Supercoiling of DNA
    a. topoisomerase
    b. primase
    c. methylase
    d. histones

17. Ti plasmid is
    a. 180 to 250 Kb
    b. 90 to 120 Kb
    c. 450 to 600 Kb
    d. 200 to 300 Kb
18. EMBL is
    a. laboratory
    b. virus
    c. Environmental studies
    d. plasmid
19. Reverse transcription results in
    a. cDNA synthesis
    b. DNA synthesis
    c. mutation
    d. ds DNA synthesis
20. Bacterial DNA is not cleaved by their own restriction enzymes because bacteria add___to their own DNA
    a. nucleotides
    b. peptides
    c. methyl group
    d. glycophosphate

SECTION – B

ANSWER ANY FOUR QUESTIONS IN ABOUT 600 WORDS (4x 10 = 40)

21. Write an essay on DNA Sequencing

22. Write short notes on Molecular markers and its applications

23. Write about Viral based vectors

24. Explain probe construction methods

25. Describe DNA analysis in medicine

26. Describe cDNA Library construction

SECTION – C

ANSWER ANY TWO QUESTIONS IN ABOUT 1500 WORDS (2x 20 = 40)

27. Explain different techniques used in gene cloning
28. Write an essay on cloning vectors
29. Explain the principle and applications of PCR
30. Describe the following
    (i) Antisense RNA technology
    (ii) DNA foot printing
    (iii)Gene tagging

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