MODEL QUESTION PAPER

V SEMESTER B.TECH DEGREE EXAMINATION
BRANCH: BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING

13.506: GENETIC ENGINEERING (B)

Time: 3 Hours   **Marks: 100**

PART A
*(Answer **all** questions, each question carries 2 marks)*

1. What are restriction enzymes?
2. Mention the function of alkaline phosphatases.
3. Why plasmids are good cloning vectors?
4. Differentiate between jumping and cloning libraries.
5. What is cDNA library?
6. What is meant by expression cloning?
7. Write any two applications of PCR.
8. Which are the key features required for a DNA polymerase for polymerase chain reaction?
9. What is meant by knock out mouse?
10. What is gene therapy?

PART B
*(Answer any **one** question from each module, carries **20** marks.)*

MODULE I

11. Differentiate between the following
   a) Ti vectors and Ri vectors
   b) Cosmids and phagemids
   c) Insertion vectors and replacement vectors
   d) YACs and BACs   (20 marks)

12. a) Explain fluorescence insitu hybridization
    b) Explain chromatin immunoprecipitation.   (20 marks)

MODULE II

13. Describe the construction of a genomic library. What are the applications?

(20 marks)

14. a) Discuss c DNA cloning.
    b) Explain the insertion of foreign DNA in to host cells.   (20 marks)

MODULE III

15. Write short notes on the following
    a) Reverse transcriptase PCR
    b) Nested PCR
    c) Real time PCR
    d) Touch down PCR   (20 marks)

16. a) Explain the design of primers for PCR.
    b) Explain site specific mutagenesis.   (20 marks)

MODULE IV

17. Explain the chemical sequencing of DNA, its applications, advantages and
    disadvantages.   (20 marks)

18. Explain gene silencing techniques, principle and applications of gene silencing.

(20 marks)