

(3 Hours)

(Total marks: 80)

- N.B:** (1) Question no. 1 is compulsory.
(2) Attempt any 3 out of remaining questions.
(3) Draw diagrams wherever necessary.

1. WRITE SHORT NOTE ON: (ANY 4)

(20)

- a) Cosmids b) RFLP c) Super helical & Relaxed molecules d) PCR
e) RNA interference technology

2. a) What are plasmids? Discuss their size, conjugation & compatibility.

(10)

b) What are lambda insertional and replacement vectors? Give examples

(10)

3. a) Explain the structure of Ti plasmid and its use as a cloning vector?

(10)

b) Explain the steps of making cDNA library? How will you screen for your clone of interest from cDNA library.

(10)

4. a) Describe in detail the enzyme Restriction Endonucleases .

(10)

b) State and explain any **two** methods of transfer of DNA into cells .

(10)

5. a) Explain the role of following enzymes in genetic engineering

(20)

(i) Terminal nucleotidyl transferase

(ii) DNA ligase

(iii) Polynucleotide kinase

(iv) Reverse transcriptase

(v) Alkaline phosphatase

6. a) Compare the following

(10)

(i) Southern and Northern blotting

(ii) Automated sequencing and conventional Sanger's method of sequencing

b) What is Insulin ? How recombinant insulin is produced in bacteria ? Why is recombinant human insulin better for diabetic patients than pig or cow insulin?

(10)