

**III B.Tech. I Semester Supplementary Examinations, April/May -2005**  
**GENETIC ENGINEERING**  
**(Bio-Technology)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Explain the role of DNA binding proteins in Gene regulation.
2. Write notes on any two:
  - (a) Tissue specific enhancers
  - (b) Phosphorylated proteins
  - (c) TATA box
3. Write notes on any two:
  - (a) Relaxed plasmid
  - (b) PUC8
  - (c)  $\alpha$  - Complementation.
4. Write notes on any two:
  - (a) M13 vectors
  - (b) Cosmids
  - (c) PUC8
5. Discuss the immunological blotting techniques available for cloned gene detection.
6. (a) Explain the importance of particular temperature requirement in the basic steps in PCR .
  - (b) What do you mean by multiplex PCR
7. What are the various diseases which can be detected by RFLP and RAPD analysis?
8. Differentiate between In vivo and Ex vivo gene therapy.

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1. Compare the gene regulations of lac operon and trp.operon.
2. Explain the importance of steroid hormones in control of gene expression.
3. Describe methods of isolating plasmid DNA.
4. Describe the types of restriction enzymes and their functions.
5. Write short notes on any two:
  - (a) Restriction enzymes.
  - (b) Gel electrophoresis.
  - (c) Immunoflorescence
6. What is the basic principle of PCR? Write about the different types of PCR.
7. How is RAPD used in molecular diagnostics?
8. Give detailed information about any two protein products, which are produced through rDNA technology.

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1. Describe gene regulation in prokaryotes with a suitable examples.
2. What is signal transduction? How does it help in regulating gene expression?
3. Differentiate between IS elements and transposons.
4. Write C-DNA method of gene cloning
5. Explain the different types of probes and write about the steps involved in their synthesis.
6. Comment, "RT PCR is an extension of basic PCR".
7. What is Repetitive DNA? Discuss its significance in a genome.
8. Explain the importance of gene cloning in agriculture.

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1. Write notes on any two.
  - (a) Terminator loops
  - (b) Leader peptide
  - (c) Trp. Repressor
2. Explain the importance of steroid hormones in control of gene expression.
3. Describe methods of isolating plasmid DNA.
4. Write detailed account on restriction mapping and its importance.
5. Discuss detection of genes by insertional inactivation method.
6. Discuss about Multiplex PCR.
7. How are repeated sequences used as molecular markers?
8. Write about the non-viral methods used for DNA injection in gene therapy.

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