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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(BT) (2011 Onwards) (Sem.–5)

GENETIC ENGINEERING

Subject Code : BTBT-503

Paper ID : [A2075]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) What is the role of exonucleases?

b) Explain the technique of site directed mutageneis.

c) What is a phagemid?

d) What is a cDNA library?

e) Explain what is *in-vitro* Transcription?

f) What is sticky end cloning?

g) Explain the technique of PCR.

h) Explain the technique of primer extension.

i) Explain Restriction Mapping.

j) What do you understand by codon optimization?

SECTION-B

2. Explain the construction of cDNA Library versus Genomic DNA Library.

3. Discuss about Sanger's method of DNA sequencing and its importance.

4. Write a note on restriction enzymes, their source, mode of action and production of cleavage sites.

5. What are shuttle vectors? Discuss Bacterial artificial chromosomal vectors.

6. Describe how you can use PCR based method for site-directed mutagenesis.

SECTION-C

7. In a real time PCR experiment no up regulation of signal was seen although the gene was supposed to be upregulated in microarray experimentation. What could be problems in the components of the Real time PCR reaction?

8. In an experiment involving cloning and expression of an eukaryotic gene in a prokaryotic vector system on signal was seen on Western blot. What are the steps you would take as an experimentalist to trouble shoot this problem?

9. What are Bacteriophages? Explain how the Bacteriophage lambda genome has been modified and re-arranged so to produce the right combination of features for a cloning vector.