

Registration No.

--	--	--	--	--	--	--	--	--	--

M.E./M.Tech. Degree Examinations, January 2017

First Semester

BIOTECHNOLOGY

BY16103 – ADVANCED GENETIC ENGINEERING

(Regulation 2016)

QP Code: 940381

Time: Three hours

Maximum : 100 marks

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. State the significance of single stranded vector like M13.
2. What is plasmid compatibility?
3. Compare genomic and cDNA library.
4. What is “CAPture” method of cDNA synthesis?
5. Draw the structure of ddNTP and analyse its role in DNA sequencing.
6. What is pyrosequencing?
7. Suggest a PCR method with its principle to amplify more than one gene in a single PCR reaction.
8. Draw the structure of “TagMan” primer and mention its role in real time PCR.
9. State the advantages of using binary vector for plant transformation.
10. Why are embryonic stem cells preferred for animal transformation?

PART B - (5 X16 = 80 Marks)

11. (a) Analyse the mechanism of action of various DNA modifying enzymes and (16) their relevant role in gene cloning.

(OR)

- (b) Describe the essential features of bacterial expression vector for successful (16) expression and purification of recombinant proteins.
12. (a) Discuss the fabrication of oligonucleotide based microarray and its (16) application in analyzing expression status of a sample.

(OR)

(b) Explain the method of cloning a gene using differential display method. (16)

13. (a) Describe the steps involved in enzymatic method of DNA sequencing and compare it with chemical method of sequencing. (16)

(OR)

(b) Explain the “Top-Down method” of genome sequencing with suitable examples. (16)

14. (a) Describe the important components in PCR mixture with their role and discuss the applications of any “TWO” PCR types with suitable example. (16)

(OR)

(b) How is thermostable recombinant protein engineered using site-directed mutagenesis? (16)

15. (a) Describe the method of introducing foreign DNA into animal cell to develop a transgenic animal. (16)

(OR)

(b) Write an overview on Gene Therapy. (16)