Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PCBT 4302

Fifth Semester (Back/Special) Examination – 2013

GENETIC ENGINEERING AND R-DNA TECHNOLOGY

BRANCH : BIOTECH

QUESTION CODE : D 281

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) Define 'cloning'.

   (b) What is a cDNA ?

   (c) Give two advantages of using YAC as a vector.

   (d) What is the need of a DNA marker ?

   (e) Write down the principle behind PFGE.

   (f) What is a phagemid ?

   (g) What is a transgenic organism ?

   (h) What is a multiple cloning site ?

   (i) What are the differences between plasmid and cosmid ?

   (j) What do you mean by PCR ?

2. (a) Describe the construction of a genomic DNA library. 5

   (b) What are the desirable characteristics of a vector ? 5

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3. (a) What is restriction modification system ? Why is it necessary in bacteria ? 5

(b) Differentiate between the 3 different types of restriction enzymes. 5

4. Describe the principle and procedure for Southern hybridization. Support your answer with labelled diagrams. 10

5. (a) Beginning with 600 template DNA molecules, after 25 cycles of PCR, how many amplicons will be produced ? 5

(b) How can lambda-phage be used as a vector in rDNA technology ? 5

6. (a) Explain two hybrid assay in yeast system. Why is it done ? 5

(b) Write down the steps of producing any recombinant product for human use (e.g., recombinant insulin). 5

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7. (a) What do you mean by 'mutagenesis' ? Describe site directed mutagenesis. 5

(b) Differentiate between linkers and adapters. 5

8. Write short notes on any **two** of the following : 5×2

(a) Molecular markers

(b) DNA fingerprinting

(c) Plasmids as cloning vectors

(d) DNA vaccines.