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

Total number of printed pages – 2

B. Tech

PCBT 4302

Fifth Semester Examination – 2013

GENETIC ENGINEERING AND R-DNA TECHNOLOGY

BRANCH : BIOTECH

QUESTION CODE : C-372

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) What is the difference between linker and adapter ?
   (b) What is restriction modification system ?
   (c) Give two advantages of using YAC as a vector.
   (d) What are differentially expressed genes ?
   (e) Write down the principle behind RAPD.
   (f) What is RNA interference ?
   (g) Beginning with 600 template DNA molecules, after 25 cycles of PCR, how many amplicons will be produced ?
   (h) What is a quantitative trait locus ?
   (i) What are the differences between phagemid and cosmid ?
   (j) What do you mean by DNA microarray ?

2. Describe the construction of a cDNA library. What are its advantages over genomic DNA library ? 5+5
3. Write the process of AFLP along with advantages and disadvantages. 10
4. What are the desirable characteristics of a vector ? λ-EMBL 3 is used as a vector to clone 20,000 bp fragments generated from a partial Sau 3A 1 digest of the human genome (3×10^9 bp). We wish to isolate a gene contained completely

on a 20,000 bp fragment. To have a 99% chance of isolating this gene in the λ-EMBL 3 recombinant genomic library, how many independent clones must be examined ? 3+7

5. Define DNA fingerprinting. Describe any one technique of DNA fingerprinting. What is its difference from DNA foot printing ? 2+5+3

6. What is a two hybrid assay ? Describe its methodology and two major applications. 3+7

7. (a) What are the main points and findings of the rice genome project ? 5

   (b) What are ESTs ? What is the importance of studying ESTs ? 5

8. Write short notes on : 5×2

   (a) Applications of molecular markers in diagnostics

   (b) Physical mapping of genome.