

2015

(5th Semester)

BIOTECHNOLOGY

Paper : BT-VI

(Recombinant DNA Technology)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. (a) Write an account on the history of recombinant DNA technology. 7

Or

- (b) What is polymerase chain reaction (PCR)? Describe the principle and applications of polymerase chain reaction. 1+3+3=7

2. (a) What is cloning vector? Explain the construction of lambda-based cloning vector. 1+6=7

G16/161a

(Turn Over)

Or

(b) Write short notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

- (i) Cosmid as vector
- (ii) Reverse transcriptase

3. (a) Describe in detail the *Agrobacterium* mediated transformation system with suitable diagrams. 7

Or

(b) Write short notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

- (i) Gene gun
- (ii) Adenoviral vector system

4. (a) What is DNA library? Explain the mechanism of creation of gene library by shotgun method. 1+6=7

Or

(b) Write notes on screening of Genomic library and Northern blotting. $3\frac{1}{2}+3\frac{1}{2}=7$

5. (a) Describe Maxam-Gilbert method of DNA sequencing. 7

Or

(b) What is DNA fingerprinting? Explain the techniques involved in RAPD-PCR approach of DNA fingerprinting. 1+6=7

2015

(5th Semester)

BIOTECHNOLOGY

Paper : BT-VI

(Recombinant DNA Technology)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. What key feature of taq polymerase allows PCR to be conveniently performed?

- (a) Taq polymerase is not damaged by heating ()
- (b) Taq polymerase does not require primers ()
- (c) Taq polymerase does not require template ()
- (d) All of the above ()

2. Expression vector differs from cloning vector in having

- (a) an origin of replication ()
- (b) suitable markers ()
- (c) unique restriction sites ()
- (d) control elements ()

3. Ti plasmid that is used as a plant vector is obtained from

- (a) *Agrobacterium rhizogenes* ()
- (b) *Agrobacterium tumefaciens* ()
- (c) *Agrobacterium radiobactor* ()
- (d) *Thermus aquaticus* ()

4. During DNA fingerprinting, DNA nucleotides hybridized with probe can be detected through

- (a) electrophoresis ()
- (b) polymerase chain reaction ()
- (c) autoradiography ()
- (d) hybridoma ()

5. Which of the following DNA sequencing techniques uses fluorescent labelled primers?

(a) Automated DNA sequencing ()

(b) Multiplex DNA sequencing ()

(c) Sanger-Coulson chain termination method ()

(d) Maxam-Gilbert chemical cleavage method ()

SECTION—II

(Marks : 15)

Write short notes on the following : $3 \times 5 = 15$

1. Nested PCR

2. Type II restriction enzymes

(a) Automated DNA sequencing

(b) Multiplex DNA sequencing

(c) Sanger-Coulson method

chain

termination

(d) Maxam-Gilbert method

chemical

cleavage

3. Liposome in gene delivery

4. Oligonucleotide probe

Advantages of human Genome
(10 Marks)

BIOTECHNOLOGY

Paper: BT-VI

[Recombinant DNA Technology]

(PART: A - OBJECTIVE)

(Mark: 20)

The figures in the margin indicate full marks for the questions.

SECTION - I

(10 Marks)

Put a Tick (✓) mark against the correct answer in the brackets provided:

10-5-01

1. What key feature of the polymerase allows PCR to be automated?

- (A) The polymerase is not damaged by heat
- (B) The polymerase does not require a primer
- (C) The polymerase does not require a template
- (D) All of the above

5. Advantages of human genome project

- (a) origin of replication
- (b) suitable markers
- (c) unique restriction sites
- (d) control elements

3. Ti plasmid that is used as a plant vector is obtained from

- (a) *Agrobacterium rhizogenes*
- (b) *Agrobacterium tumefaciens*
- (c) *Agrobacterium rubro-aurantiacum*
- (d) *Thiobacillus thiooxidans*

4. During DNA fingerprinting, DNA nucleotides hybridized with probe can be detected through

- (a) electrophoresis
- (b) polymerase chain reaction
- (c) autoradiography
- (d) hybridization
