

Sr. No. of Question Paper : 13615

Unique paper code : 2164003008

Name of the Paper : Genetic Engineering Technologies and Applications

Name of the Course : Botany-GE

Semester : V

Duration: 2 Hours

Maximum Marks: 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any four questions in all.
3. Question number one is compulsory
4. Attempt all parts of a question together

Q1. Answer the following questions

15

(a) Fill in the blanks (any five): ($1 \times 5 = 5$)

- (i) _____ is a thermostable polymerase used in PCR.
- (ii) Class of enzyme _____, is used for joining two molecules which is essential for DNA replication, repair, and building larger molecules
- (iii) Co-integrate vectors are also called as _____ vectors.
- (iv) _____ are the signalling proteins that the body makes to fight infections and diseases.
- (v) The restriction fragments present in gel are denatured with _____.
- (vi) Reporter gene is also called as _____.

(b) Match the following: ($1 \times 1 = 5$)

(i) Hind III	A. Human Insulin
(ii) Electroporation	B. Bolivar and Rodriguez
(iv) SyBR Green	C. Staggered ends
(ii) pBR322	D. High Voltage
(vi) rDNA	E. Fluorescence marker

(c) Expand (any five): ($1 \times 5 = 5$)

- (i) HEPA
- (ii) SDS
- (iii) RT-PCR
- (iv) YAC's
- (v) hGH
- (vi) vir

Q2. Differentiate between following (any five)

($3 \times 5 = 15$)

- (i) YAC's and BAC's

- (ii) Reporter gene and selectable marker gene
- (iii) Southern blotting and Northern blotting
- (iv) Endonucleases and exonucleases
- (v) Replica plating and complementation screening
- (vi) Bt Cotton and Golden Rice

Q3. Write short note on (any three):

(5 × 3 = 15)

- (i) Safety and ethical issues related to rDNA research
- (ii) PCR and its types
- (iii) *Arabidopsis* as a model organism
- (iv) Plasmid vector and their uses

Q4. (a.) What is rDNA technology? Discuss in detail citing examples the role of in human health and therapeutics.

7.5

(b.) Write the Principle for Sanger's method of sequencing. What are its different type?

7.5

Q5. (a.) What is the difference between direct and indirect methods of gene transfer? Discuss in detail one direct method and one indirect method for gene transfer.

7.5

(b) What do you understand by genomic and cDNA libraries? What is the application of such libraries?

7.5