

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5026

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Unique Paper Code : 2164003008

Name of the Paper : Genetic Engineering Technologies and applications

Name of the Course : Botany-GE

Semester : VIII

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. Question No. 1 is compulsory.
3. Attempt FOUR questions in all.

Q1. a) Expand the following:

5 marks

i) r DNA

ii) PCR

iii) GFP

iv) BAC

v) Ti plasmid

b) Fill in the blanks:

5 marks

i) The enzyme used to join DNA fragments is

ii) DNA transfer using high voltage pulses is called

iii) A DNA library prepared from mRNA is called a library.

P.T.O.

iv)is used to quantify DNA in real time.

v) Arabidopsis is used as a model organism for genome sequencing.

c) Match the following:

5 marks

- | | |
|-------------------------|------------------------|
| i) Kary Mullis | a) Sequencing |
| ii) Replica Plating | b) PCR |
| iii) Werner Arber | c) Gene gun |
| iv) Frederick Sanger | d) Colony screening |
| v) Particle bombardment | e) Restriction enzymes |

Q2. Write short notes (*any three*):

3 X 5= 15 marks

- i) Applications of rDNA in human health
- ii) Sanger DNA sequencing
- iii) *Agrobacterium* mediated transformation
- iv) cDNA Library

Q3. Differentiate between (*any three*):

3 X 5= 15 marks

- i) YAC and BAC
- ii) Microinjection and particle bombardment
- iii) Genomic DNA and cDNA
- iv) PCR and RT- PCR

Q4. (a) Describe the principle and steps of PCR.

5 marks

(b) Describe various direct gene transfer methods.

10 marks

Q5. a) Explain in details the Human Genome Project?

5 marks

(b) Discuss applications of rDNA technology in agriculture, including stress tolerance and nitrogen fixation.

10 marks

Q6. a) Explain the different screening methods for identifying recombinant clones, including complementation screening and probe-based hybridization techniques.

8 marks

b) Differentiate between Southern blotting and Northern blotting, highlighting their applications.

7 marks