

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5293

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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.
3. Question No. 1 compulsory.
4. Attempt Four questions in all.

Q1. a) Write the use of the following enzymes

5 marks

i) Restriction Endonuclease

ii) DNA Ligase

iii) *Taq* Polymerase

iv) Kinase

v) Reverse Transcriptase

b) State True or False:

5 marks

i) YACs are derived from bacterial chromosomes.

ii) PEG-mediated transformation is used only in animals.

iii) A genomic library contains all the DNA sequences of an organism.

iv) Automated sequencing uses capillary electrophoresis.

v) Recombinant insulin is produced using rDNA technology.

P.T.O.

c) Match the following:

5 marks

- | | |
|------------------------|-------------------------|
| i) Gene cloning | PCR |
| ii) Kary Mullis | Electric pulse |
| iii) Northern Blotting | rDNA Technology |
| iv) Paul Berg | Multiple copies of gene |
| v) Electroporation | RNA |

Q2. Differentiate between (any three):

3 X 5= 15 marks

- i) RT- PCR and Q-PCR
- ii) Selectable marker genes and reporter genes
- iii) YAC and BAC
- iv) Genomic Library and cDNA Library

Q3. Write short notes (any three):

3 X 5= 15 marks

- i) Human Genome Project
- ii) Particle bombardment
- iii) Screening of DNA Library
- iv) Sanger sequencing method

Q4. a) Describe plasmids as vectors in genetic engineering.

5 marks

b) Explain in details *Agrobacterium* mediated transformation.

10 marks

Q5. a) Discuss the gel based electrophoresis (semi- automated) sequencing method. Explain how it is different from Capillary based electrophoresis (automated) sequencing method. 8 marks

b) Discuss applications of rDNA technology in human health, including insulin, interferons, and vaccines. 7 marks

Q6. a) Describe the construction of a cDNA library. 7 marks

b) Explain the methods used for screening and identification of desired clones from a DNA library. 8 marks