

Roll No. ....

Total Pages : 4

**CMDQ/M-20**

**2466**

**GENETIC ENGINEERING**

Paper–BCH-403

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note :** Attempt **five** questions in all, selecting at least **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) What do you understand by star activity of restriction enzyme? 1½
- (b) What is a restriction site? 1
- (c) Define adapters used in ligation. 1
- (d) Which enzyme is used in Homopolymer tailing? 1
- (e) What are shuttle vectors? Give an example. 1½
- (f) Define DNA Polymerase. 1
- (g) What is particle bombardment in transgenic development? 2
- (h) What do you understand by herbicide resistance in transgenics? 2
- (i) Write the importance of gene cloning in medicine. 2

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**P. T. O.**

- (j) What technology is used for delayed ripening?  
Give example. 2
- (k) Define tissue culture. 1

### UNIT-I

2. Write short notes on any four of the following :  
4×4=16

- (a) Isoschizomers
- (b) YAC
- (c)  $\lambda$  (lambda) phage vectors
- (d) Alkaline phosphatase
- (e) Preparation of bacteriophage DNA.

3. (a) Write the structural features of Puc 18/19 and  
bacterial artificial chromosome (BAC) vector.  
4+4=8
- (b) Define vectors. What are the properties of  
a good cloning vector? 2+6=8

### UNIT-II

4. (a) How will you construct subtracted cDNA library?  
8
- (b) Explain P elements as cloning vectors of  
Drosophila. 4

- (c) Explain Bovine Papillomavirus (BPV) as vectors. 4
- 5. (a) Explain the direct microinjection method of transfection in generating Transgenic animal. 4
- (b) Explain the embryonic cell mediated gene transfer technique. 4
- (c) Explain the nucleic acid hybridization technique for screening and selection of recombinants from a Gene library. 8

### UNIT-III

- 6. (a) Write short notes on any two of the following : 4×2=8
  - (i) Somatic embryogenesis
  - (ii) Scorable markers
  - (iii) Cytoplasmic hybrids
  - (iv) Physical DNA delivery method.
- (b) Explain the applications of Plant genetic engineering in developing plant transgenics. 8
- 7. (a) Explain the termination seed technology and its applications. 10

- (b) Enlist different types of Gene transfer techniques and explain any one technique.

6

#### UNIT-IV

8. (a) Write short notes on any one of the following :

4×2=8

(i) HRT

(ii) Lac promoter

(iii)  $\lambda$  (Lambda) P<sub>L</sub> Promoter

(iv) Phase display system.

- (b) Explain the limitations of recombinant Protein production in *E.coli*.

8

9. (a) Describe the various strategies for maximizing transgene expression in Mammalian cell.

10

- (b) How do you identify protein binding sites on a DNA molecule?

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