

**10206**

**LMDE/M-24**  
**GENETIC ENGINEERING**  
**Paper–BT-201**

Time : Three Hours]

[Maximum Marks : 80

**Note :** There are nine questions in all. Question No. 1 is compulsory. Candidates are required to attempt Question No. 1 and *four* others selecting *one* question from each unit. All questions carry equal marks.

**Compulsory Question**

1. (a) What is homopolymer tailing?  
(b) What are cosmids?  
(c) What is Gel Retardation assay?  
(d) What is nucleic acid blotting?  
(e) What are fusion proteins?  
(f) What is cDNA library?  
(g) Differentiate between transformants and recombinants.  
(h) What is codon usage? (8×2=16)

**UNIT-I**

2. (a) Discuss in detail the purification of plasmid DNA using different techniques. (8)

- (b) What are the different enzymes used in manipulation of DNA? (8)
3. (a) What are BACs? Discuss them in detail. (6)  
(b) Discuss different types of PUC vectors. What are their applications? (5)  
(c) What are phagemids? (5)

## UNIT-II

4. Discuss different screening strategies used for clone identification : (16)  
(a) Abundancy probing.  
(b) Colony hybridization.  
(c) Immunological screening.  
(d) Subtractive hybridization.
5. (a) What are the different techniques for identification of recombinants in case of plasmids as well as phages? (6)  
(b) What is phage display? (5)  
(c) What is genomic library? How is it created? (5)

## UNIT-III

6. Write notes on the following :  
(a) Chain termination method of DNA sequencing.  
(b) PCR amplified oligonucleotide directed mutagenesis.  
(c) Thermal cycle sequencing.  
(d) Pyrosequencing. (16)

7. Who discovered PCR? What are the factors affecting it?  
Discuss in detail different types of PCR reactions. (16)

#### UNIT-IV

8. (a) Discuss expression system in *Saccharomyces cerevisiae* and *Pistia pastoris*. (10)  
(b) What is the difference between HRT and HART? (6)
9. Write short notes on the following :  
(a) RNase protection assay. (5)  
(b) Primer extension and S1 mapping. (5)  
(c) Optimizing expression of foreign genes in *E.coli*. (6)
-

