

**2009****3rd Semester Examination****MICROBIOLOGY****PAPER—XIII****Full Marks : 40****Time : 2 Hours**

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

**Answer any two questions from each group.**

**Group—A****[Marks : 20]**

1. (a) What do you mean by Southern and Northern Blot?  
(b) What kind of information can be obtained about a gene using above two techniques?  
(c) How PCR can substitute Northern blot. 4+3+3
  
2. (a) What is plasmid vector?  
(b) What is the difference between PUC and PBR 322 vector?  
(c) Draw the bacterial expression vector and label all the essential components of bacterial expression vector. 2+4+4

(Turn Over)

3. Write notes (any four) :

$4 \times 2\frac{1}{2}$

- (a) Shuttle vector;
- (b) Chromosome walking;
- (c) Transposon;
- (d) SDS-PAGE;
- (e) Mutant complementation.

**Group—B**

[Marks : 20]

4. (a) Discuss the role of restriction endonuclease, terminal transferase and DNA ligase to construct chimeric DNA molecules.
- (b) Mention the use of restriction enzyme linkers in gene cloning. 8+2
5. (a) Draw the map of T-DNA and label the major genetic loci.
- (b) Discuss briefly the role of *vir* genes in T-DNA transfer.
- (c) What is Ri-plasmid? 3+5+2
6. (a) Illustrate the mechanism of direct gene transfer using particle gun. Comment on the utility of this method over other techniques of direct gene transfer.
- (b) Mention the use of transgenic animals and plants as bioreactors for the production of recombinant proteins. (4+2)+4