



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Sc(H)(BT/GE/MICRO/MOL-BIO)/SEM-5/RDT-502/2011-12**

**2011**

**RECOMBINANT DNA TECHNOLOGY**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

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

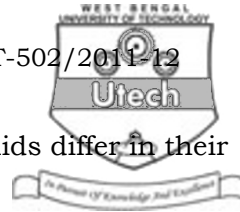
**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) The term 'Hfr' stands for
  - a) High Fidelity of Recombination
  - b) High Fertility Rate
  - c) High Frequency of Recombination
  - d) none of these.
- ii) *t*-DNA is
  - a) DNA of plasmid origin which is transferred to the *Agrobacterium* chromosome
  - b) DNA from the chromosome of *Agrobacterium* species which is transferred to the plant genome
  - c) DNA of plasmid origin which is transferred to the plant genome
  - d) both (b) & (c).



- iii) Octopine and Nopaline types of plasmids differ in their
  - a) organization of Vir region
  - b) organization of T-DNA and vir region
  - c) organization of T-DNA
  - d) all of these.
- iv) Which method is suitable for inserting plasmids into the plants with cell wall ?
  - a) short gun method      b) electroporation
  - c) sonication              d) all of these.
- v) *Agrobacterium* is a soil-borne
  - a) virus
  - b) gram-positive bacterium
  - c) gram-negative bacterium
  - d) bacteriophage.
- vi) Tissue plasminogen activator (*t* PA) plays a key role in
  - a) wound healing              b) curing pain
  - c) treating diabetes          d) none of these.
- vii) Prototroph
  - a) cannot grow and develop in the minimal media
  - b) can grow and develop in the minimal media
  - c) grows depending on the particular prototroph and media of choice
  - d) cannot grow and develop unless the media contains some special nutrients.
- viii) Bacterial conjugation was first demonstrated by
  - a) Griffith                      b) Harshlay and Chase
  - c) Lederberg and Tatum      d) Mendel and Hige.



- ix) The process in which bacterial DNA is transferred from one bacterial strain to another mediated by phage is known as
- a) Transformation                      b) Conjugation  
c) Transduction                        d) None of these.
- x) Spider silk fibres have been first produced in the milk of transgenic
- a) cow                                        b) pig  
c) goat                                        d) mice.
- xi) Nonglycosylated, transgenic mice milk-derived vaccine MSP142 confers resistance against
- a) Malaria                                b) Filaria  
c) Smallpox                                d) none of these.
- xii) Herpes Simplex Virus Thymidine Kinase is sensitive to the nucleoside analogue
- a) Zidovirdine                            b) Trifluridine  
c) Cytarabine                            d) Gancyclovir.

**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.                      3 × 5 = 15

2. What is high frequency lysate ? Write a short note on specialized transduction.
3. How is PCR technique used in site directed Mutagenesis ?
4. How genes can be transferred to plants ? What is the role of PEG in gene transfer ?
5. Write a short note on transgenic malarial vaccine.
6. Explain the role of genetic engineering for livestock improvement.



**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. What is competence ? How is competence generated in a bacterial cell ? Differentiate between gram +ve and gram – ve transformations. Differentiate between generalized and specialized transductions.  $2 + 3 + 5 + 5$
8. What is Gene Shuffling ? Describe gene shuffling methods applied in Protein engineering ? How chimeric protein can be produced in the absence of gene homology ? What are the disadvantages of primer extension method ? What are the advantages of Cell surface display over Phage display ?  $2 + 6 + 4 + 3$
9. What is Crown-gall disease ? What are the features of Ti-plasmid ? Describe the process of T-DNA transfer and integration in plant genome. What are Co-integrated and Binary vectors ?  $2 + 3 + 6 + 4$
10. a) Briefly explain the technique of oligonucleotide directed mutagenesis. State the strategy which is used to suppress the growth of non-mutants.  
b) Write the applications of site directed mutagenesis.  $(5 + 5) + 5$
11. Write short notes on the following :  $5 + 5 + 5$
- i) Shot gun method
  - ii) Plasmid copy number
  - iii) Episomes.