Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech(BT)/SEM-1/MBT-101/2012-13

2012

GENETIC ENGINEERING

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 : $10 \times 1 = 10$

   i) Most of the restriction enzymes are isolated from ..... (fill the blank)

   ii) Genetically identical copy of individual cell or gene is called

      a) plasmid

      b) clone

      c) cosmid.

   iii) Cell in which chimeric DNA multiplies is

      a) E.coli

      b) Bacillus

      c) Yeast.

iv) The radioactive labeled form used in DNA probe is

a) H^3

b) P^{32}

c) N^{15} .

v) Nitrogen fixing genes are called

a) cos

b) leg

c) nif genes.

vi) Colony hybridization procedure for identification of plasmid clone is called

a) molecular assay

b) grunstein - hogness assay

c) southern blotting.

vii) Which of the following DNA sequences can be cut by restriction enzymes

a) GGTTCC/CCAACC

b) AATG/TTAC

c) CTGCAG/GACGTCC.

viii) Flavr Savr transgenic

a) potato

b) tomato

c) brinjal.

ix) Two bacteria are most important in RDT

a) E.coli & Agotobactor

b) Bacillus & Rhizobium

c) Nitrosomenus & Diplococcus.

x) STRs are valuable tool in

a) RDT

b) PCR

c) DNA finger printing.

xi) Humilin is

a) an antibiotic

b) Hydrolytic enzyme

c) human insulin.

xii) The known sequence of DNA used to find c-DNA is called

a) DNA probe

b) Chimeric DNA

c) λ-DNA.

xiii) Which is not a vector

a) cosmid

b) virusoid

c) plasmid.

xiv) Taq Polymerase has its optimum activity at ..... (fill this blank).

GROUP – B
(Short Answer Type Questions)

Write short notes on any *three* of the following. 3 × 5 = 15

2. pUC 19

3. Fosmid

4. Synthetic linkers

5. Transfection
6. Gene Gun method
7. LINE
8. RDT in human welfare.

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

9. Name the steps followed to isolate a desired gene. Given the name, source and recognition sequence of Not I, EcoRI and the HaeIII. Distinguish between ended DNA, sticky ended DNA with diagrams. 6 + 2 × 3 + 3

10. What do you mean by cloning vector ? Name the feature of E.coli Plasmid as cloning vector with suitable illustration. What are the advantages of YAC as vector ? What are the steps followed in cloning by Ti plasmid. 3 + 6 + 6

11. What is DNA ligase ? Describe in detail the mechanism of action of DNA ligases isolated from E.coli and T4 phage. What is the role of vaccinia topoisomerase in DNA ligation ?

12. What is RFLP analysis ? Explain the DNA molecular testing using RFLP technique taking β^s (sickle cell mutant allete) as exmaple. Comment on edible vaccines. 3 + 8 + 4

13. What are the basic requirements of PCR ? How DNA polymerases ar used in PCR technique ? Compare between PCR and cell based cloning. What is RT-PCR ? Comment on TAIL-PCR ? 3 + 3 × 2 + 3 + 1 + 2