

Exam.Code:0910  
Sub. Code: 6714

1058

B.E. (Bio-Technology)  
Sixth Semester

BIO-611: Recombinant DNA Technology

Time allowed: 3 Hours

Max. Marks: 50

*NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*

x-x-x

- I. Write a short note on following:-
- Application of gene cloning
  - Role of terminal deoxynucleotidyl transferase (TdT)
  - Characteristic features of an expression vector
  - Advantage of multiplex PCR
  - Role of CTAB in DNA isolation
  - Importance of  $A_{260}/A_{280}$  ratio for DNA sample
  - Principle of Sanger sequencing method
  - Application of siRNA technology
  - Function of Ti plasmid
  - Importance of gene therapy (10x2)

**UNIT - I**

- II. a) Define plasmid. How cosmid differ from plasmids in structure and function.  
b) Give a detailed account of application, advantages, limitation and types of PCR. (4,6)
- III. a) Define gDNA library. How genomic DNA library differ from cDNA library. Which of the library should be preferred for hunting a new gene in eukaryotes and why?  
b) Write a note on characteristics features of YAC vectors. How YAC vectors differ from vectors based on  $2\mu\text{m}$  circle. (5,5)
- IV. a) Describe in detail types of restriction enzymes available with one example each. Which of the type is frequently used in recombinant DNA technology and why.  
b) Describe in detail different vectors used for transfecting animal tissues. (2x5)

P.T.O.

(2)

UNIT - II

- V. a) Write a detailed note on cry genes. What type of genetic manipulations has been done in Flavr-savr Tomato and Bt-brinjal to achieve the observed phenotype?
- b) Describe in detail the methodology and application of gel retardation procedure. How DNA as I footprinting differs from method of modification interference assay; (2x5)
- VI. a) Explain in detail methodology of Sanger-Coulson procedure of DNA sequencing. How Solexa technology is improved version of DNA sequencing than 454 sequencing.
- b) Give account of advantages and disadvantages of animal and fungal expression system. (2x5)
- VII. a) Providing one example each, describe role of RDT in the field of medicine and forensics sciences. What are general ethical concerns related to recombinant work.
- b) Write a note on:-
- i) Restriction mapping
- ii) Phage display method (6,4)