

**M. SC. (BIOTECHNOLOGY) SEM-II (2012
COURSE)(CHOICE BASED CREDIT SYSTEM) : SUMMER
2018**

SUBJECT : GENETIC ENGINEERING & APPLICATIONS

Day : **Monday**
Date : **09/04/2018**

Time : **02.00 PM TO 05.00 PM**
Max. Marks : **60**

S-2018-1084

N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.

SECTION – I

- Q.1** Explain in detail: [10]
- a) Different techniques of DNA labelling. Add a note on non-radioactive labelling.
 - b) What is the importance of cDNA library in higher organisms? What are different methods to construct cDNA library?
- Q.2** Write short notes on the following: [10]
- a) Principle of PCR
 - b) In vitro transcription
 - c) Vectors for protein solubilization
 - d) Strong promoters in *E.coli* vectors
- Q.3** a) What are cosmids? Explain selectable markers in λ based vectors. [05]
b) What are different methods for DNA transfer to higher plants? [05]
- Q.4** Explain in brief: [10]
- a) DNA polymerase
 - b) Methylases
 - c) Sequence based methods for library screening
 - d) Cloning in insect cells

SECTION – II

- Q.5** a) Compare and contrast Sanger's method of sequencing and automated sequencing. [05]
b) Explain production of recombinant proteins from yeast and fungi. [05]
- Q.6** Write short notes on the following: [10]
- a) Reporter genes
 - b) Restriction mapping
 - c) YAC vectors
 - d) Applications of rDNA techniques in forensic science
- Q.7** Explain in detail: [10]
- a) Different methods of site directed mutagenesis (SDM). Add a note on applications of SDM.
 - d) Different methods of transcript analysis.
- Q.8** Explain in brief: [10]
- a) 2μ plasmid and vectors based on 2μ plasmid.
 - b) Applications of rDNA techniques in agriculture.
 - c) Class II restriction endonucleases and their applications in genetic engineering.
 - d) Ti plasmid based plant vectors.

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