

SUBJECT:- Genetic Engineering.

Day: Tuesday  
Date: 09/04/2019

S-2019-1427

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

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to the both sections should be written in **SAME** answer book.
- 4) Draw well labelled diagrams **WHEREVER** necessary.

**SECTION-I**

- Q.1** Do as directed **ANY FIVE** of the following: (10)
- a) Briefly explain cloning vectors for insect cells. Draw neat labelled diagram.
  - b) What are cosmids and phagemids?
  - c) State the application of "tag vectors". Give example.
  - d) State the principle of "real time PCR".
  - e) Briefly explain "physical mapping techniques".
  - f) State the principle of "pyrosequencing" technique with suitable diagram.
- Q.2** Attempt **ANY TWO** of the following: (10)
- a) With the help of suitable diagrams explain different methods for blunt end ligation.
  - b) With the help of suitable diagrams explain different methods for DNA labelling. Add a note on non-radioactive probes.
  - c) Explain the reactions catalyzed by following enzymes:
    - i) Phosphatase
    - ii) Kinase
    - iii) Klenow
    - iv) Exonuclease
    - v) Dam and Dcm methylase
- Q.3** Attempt **ANY TWO** of the following: (10)
- a) Compare and contrast genomic library and cDNA library.
  - b) Explain in detail different factors affecting PCR.
  - c) Compare and contrast Maxam-Gilbert method and Sanger's method of DNA sequencing.

**SECTION-II**

- Q.4** Do as directed **ANY FIVE** of the following: (10)
- a) State the importance of "reporter genes". Give examples.
  - b) Briefly explain the technique of "Hybrid arrest translation". Draw well labelled diagram.
  - c) Briefly explain the "yeast two hybrid system".
  - d) Give four limitations of *E.coli* as a host to produce recombinant proteins.
  - e) Briefly explain two examples of industrially important enzymes produced by site directed mutagenesis.
  - f) State the principle of "PTT" technique.
- Q.5** With the help of suitable diagram explain **ANY TWO** of the following: (10)
- a)
    - i) Foot printing with DNase I
    - ii) Modification interference assay.
  - b) Two techniques of site directed mutagenesis.
  - c) Micro RNA and RNA silencing.
- Q.6** Attempt **ANY TWO** of the following: (10)
- a) Explain in detail the technique of ex-vivo gene therapy with suitable examples. Explain non-viral genes delivery systems.
  - b) With the help of suitable diagram explain the principle of SSCP and DGGE techniques.
  - c) What are bioreactors? Explain with the help of transgenic plants.