

**BACHELOR OF SCIENCE (BIOTECHNOLOGY) (2010 COURSE)**  
**T.Y.B.Sc. (Biotechnology) Sem-V : WINTER :- 2021**  
**SUBJECT: RECOMBINANT DNA TECHNOLOGY (RDT)**

Day : Thursday  
Date 3/2/2022

W-6284-2021

Time : 10:00 AM-01:00 PM  
Max. Marks: 80

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**N.B:**

- 1) All questions are **COMPULSORY**.
  - 2) Both the sections to be written in **SEPARATE** answer sheets.
  - 3) Figures to the right indicate **FULL** marks.
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**SECTION-I**

**Q.1 A)** Answer **ANY ONE** of the following: **(06)**

- i) What is Lambda phage? Describe insertional and replacement vectors of  $\lambda$  phage.
- ii) Discuss applications of single stranded cloning vectors.

**B)** Answer **ANY TWO** of the following: **(10)**

- i) What are polymerases? Discuss function of any two polymerases.
- ii) Explain role of type -II Restriction endonuclease in genetic engineering.
- iii) Explain the roles of adaptors and Linkers in ligation.

**Q.2** Attempt the following questions: **(16)**

- a) State the name of any two types of plasmid.
- b) What do mean by plasmid incompatibility?
- c) Enumerate the steps in purification of plasmid DNA.
- d) Give any two names of DNA manipulative enzymes.
- e) How GC content affect the activity of restriction enzymes?
- f) Mention any two key features of nomenclature of RE.
- g) What are cosmids?
- h) Define YAC

**P.T.O.**

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**SECTION-II**

**Q.3** A) Answer **ANY ONE** of the following: **(06)**

- i) Explain transformation in *E-coli*.
- ii) What are recombinant vaccines? Explain any one in brief.

**B)** Answer **ANY TWO** of the following: **(10)**

- i) What are c-DNA libraries? How they are constructed?
- ii) Describe Northern blotting technique. State its applications.
- iii) Describe synthesis of human growth hormone using *E-coli*.

**Q.4** Attempt **ANY FOUR** of the following: **(16)**

- a) Describe plaque lift technique for screening of library.
- b) Explain the process of selection of transformants by *spi* phenotype technique.
- c) Explain Sanger's method of DNA sequencing.
- d) What are transgenic plants? Explain transgenic plant as bioreactor.
- e) What is real time quantitative PCR technique?

**Q.5** Write short notes on **ANY FOUR** of the following: **(16)**

- a) Oligocapping
- b) Immunological screening
- c) Pulsed field gel electrophoresis
- d) Automated DNA sequencing
- e) Gene therapy

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