

BACHELOR OF SCIENCE (BIOTECHNOLOGY) (CBCS - 2015 COURSE)

T.Y.B.Sc. (Biotech) Sem-V : WINTER :- 2021

SUBJECT: RECOMBINANT DNA TECHNOLOGY

Day : Thursday

Time : 10:00 AM-01:00 PM

Date 3/2/2022

W-13256-2021

Max. Marks: 60

N.B.:

- 1) Q1 and Q5 are compulsory.
 - 2) Answer ANY TWO questions from Q 2, 3, 4 in Section I.
 - 3) Answer ANY TWO questions from Q 6, 7, 8 in Section II.
 - 4) Answers to Both the sections to be written in SEPARATE answer books.
 - 5) Draw a labeled diagram WHEREVER necessary.
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SECTION - I

Q.1) Answer the following: (ANY FIVE) (2 Marks X 5 = 10)

- a) Enlist various DNA modifying enzyme used in gene manipulation.
- b) What are the factors affecting the PCR technique?
- c) State two differences between Gel electrophoresis and Pulsed field gel electrophoresis.
- d) What is Long accurate PCR?
- e) What is the action of enzyme S1 nuclease and DNase?
- f) What is action of enzyme Exonuclease III and Bal31?

Q.2) Answer the following: (5 Marks X 2 = 10)

- a) Mention the characteristics of the different types of restriction endonuclease.
- b) Full length cDNA cloning by oligo capping method.

Q.3) Explain the following: (5 Marks X 2 = 10)

- a) Draw a diagram representing the gene cloning process.
- b) pBR 322 as cloning vector

Q.4) Write short notes on the following: (5 Marks X 2 = 10)

- a) *In vitro* packaging of λ phage
- b) Cosmids as vector

SECTION - II

Q.5) Answer the following: (ANY FIVE) (2 Marks X 5 = 10)

- a) What is role of polynucleotide kinase? Mention its significance.
- b) What is replacement vector?
- c) What are genomic libraries?
- d) What is transformation?
- e) What is homopolymer tailing?
- f) What is expression vector?

Q.6) Answer the following: (5 Marks X 2 = 10)

- a) What are Linker and Adaptors? Mention their role in ligation.
- b) Explain the process of selection for transformed cells using lambda phage as vector.

Q.7) Explain the following: (5 Marks X 2 = 10)

- a) Blue white screening
- b) Discuss the application of gene therapy in cancer

Q.8) Write short notes on the following: (5 Marks X 2 = 10)

- a) YACs as vector
- b) Gene therapy for inherited diseases
