Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
B.PHARM – SEMESTER – 8- EXAMINATION –WINTER - 2018

Subject Code: 2280015   **Date: 28/11/2018**
Subject Name: Genetic engineering and gene therapy
Time: 02:30 PM TO 05:30 PM   **Total Marks: 80**
Instructions:
      1. Attempt any five questions.
      2. Make Suitable assumptions wherever necessary.
      3. Figures to the right indicate full marks.

Q.1	**(a)**	Explain Gene Cloning with neat and labelled diagram.	**06**
	(b)	Write a note on applications of genetic engineering.	**05**
	(c)	What is central dogma of life? Explain the process of translation with diagram.	**05**
Q.2	**(a)**	What are vectors in genetic engineering? Enumerate the types of vectors. Explain plasmid PBR322 as a vector in detail with diagram.	**06**
	(b)	What is RNA? Write a note on types of RNAs.	**05**
	(c)	What is PCR explain the cycle and write applications of PCR.	**05**
Q.3	**(a)**	What do you mean by Antisense oligo nucleotide therapy?	**06**
	(b)	What are monoclonal antibodies? How they are produced? Write the applications of Monoclonal Anti bodies.	**05**
	(c)	What is blotting? Explain southern blotting with suitable diagram.	**05**
Q.4	**(a)**	What are transgenic plants? How they are produces? Write the applications of transgenic plants.	**06**
	(b)	What is Humulin? Explain the production using recombinant DNA technology.	**05**
	(c)	What do you mean by gene therapy? Explain the types with suitable example.	**05**
Q.5	**(a)**	Explain DNA delivery methods in detail.	**06**
	(b)	Write a note on Quantification of Nucleic acids.	**05**
	(c)	Explain in detail about transgenic animals.	**05**
Q. 6	**(a)**	Write in detail about DNA sequencing techniques. Explain any one technique using suitable diagram.	**06**
	(b)	Write a note on transformation with diagram.	**05**
	(c)	Explain about DNA vaccine in detail.	**05**
Q.7	**(a)**	Explain the application of gene therapy in Hematopoietic disorders.	**06**
	(b)	What are restriction enzymes? Explain the types and applications in detail.	**05**
	(c)	Explain about bacteriophage with suitable diagram.	**05**

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