

[64]

SEAT No. \_\_\_\_\_

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**SARDAR PATEL UNIVERSITY**  
**TY.B.Sc EXAMINATION, VI<sup>th</sup> Semester**  
**Wednesday, 27<sup>th</sup> March 2019, 10.00a.m to 01.00p.m**  
**Genetics: US06CGEN02; [Recombinant DNA Technology]**

NOTE- Figures in the right indicate full marks.

Maximum Marks-70

Q.1. Multiple Choice Questions (10 marks- One Mark for Each MCQ)

[10]

1. PCR is used for

- A) Disease diagnosis    B) Criminal identify    C) Study gene function    D) All the above

2. In a polymerase chain reaction, a synthetic sequence of nucleotides are involved in

- A) Denaturing    B) copying    C) priming    D) all of the above

3. Which polymerase are suitable to use for PCR

- A) DNA polymerase I    B) *Pfu* Polymerase  
C) DNA polymerase III    D) none of the above

4. The samples in Maxam-Gilbert method after reaction are separated on

- A) MAGE    B) PAGE    C) PFGE    D) 2-D gel electrophoresis

5. The enzyme used in Maxam's method for <sup>32</sup>P Labelling of DNA at the end is

- A). Alkaline Phosphatase    B). Polynucleotide Kinase  
C) Terminal Nucleotidyl Transferase    D) Exonuclease

6. Molecular markers are used to construct

- A) Chromosome maps    B) Cytogenetic maps    C) Physical maps    D) All of these

7. The set of DNA generated by using random primers in a PCR reaction is called

- A) RAPD    B) RFLP    C) AFLP    D) in situ hybridization

8. Knockout Mice are animals that have:

- A) Both copies of a particular gene inactivated  
B) Two copies of the Y chromosome but no X chromosome  
C) The genes for reproduction inactivated so that they are sterile  
D) Mice with genetically engineered extra muscle development

9. In Site-directed mutagenesis technique mutation is created at a defined site by

- A) RNA    B) Plasmid    C) DNA    D) All the Above

10. Gene silencing is used for

- A) Disease diagnosis    B) Breed identify    C) Study gene function    D) All the Above

(1)

[P.T.O.]

**Q.2. Short Question (any 10 question X 2 marks each)**

[20]

1. Discuss the reverse transcriptase enzyme with its function?
2. Discuss the difference between random and specific primer.
3. Enlist any four factor with its significant important for PCR reaction.
4. What is the function of Apyrase enzyme?
5. Discuss the sequencing gel with its significance.
6. What is the principle of Sanger method for DNA sequencing?
7. Discuss the advantage of molecular marker over biochemical marker.
8. Discuss the application and advantage of RAPD.
9. Discuss about morphological marker with its limitation.
10. Discuss the limitation of random mutagenesis techniques.
11. Discuss about Dicer enzyme with its function.
12. What is the limitation in modification of endogenous gene?

Q.3.a. Discuss Real time PCR with its advantage. [5]

Q.3.b. Describe any one method for the chemical synthesis of oligonucleotide. [5]

OR

Q.3.a. Discuss Primer designing with the help of software. [5]

Q.3.b. Describe the various steps of standard PCR. [5]

Q.4.a. Discuss the principal of ion torrent sequencing. [5]

Q.4.b. Describe the principle of protein sequencing. [5]

OR

Q.4.a. Describe the microarray technology with its application. [5]

Q.4.b. Describe the chemical cleavage method for DNA sequencing. [5]

Q.5.a. Describe the finger printing technology with its application in forensic. [5]

Q.5.b. Describe the SNP techniques with its advantage. [5]

OR

Q.5.a. Discuss RFLP technique with its advantage. [5]

Q.5.b. Describe the AFLP techniques with its advantage. [5]

Q.6.a. Describe the Ribozyme techniques with its advantage. [5]

Q.6.b. Describe overlapping primer extension techniques for site directed mutagenesis. [5]

OR

Q.6.a. Describe the techniques for gene knockout with its advantage [5]

Q.6.b. Discuss the function and importance of micro RNA. [5]

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