Enrollment No. _____

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous), Rajkot

Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER - 2017

M.Sc. Biotechnology / M.Sc. Microbiology

16PBTDC09 / 16PMBDC09 – ADVANCED MOLECULAR TECHNIQUES

Duration of Exam – 3 hrs ***Semester – III*** ***Max. Marks – 70***

***Part A** (5x2= 10 marks)*

Answer **ALL** questions

1. What is Ct value? The Ct value of two samples in real time PCR differs by 3, the initial template concentration of the two samples differs by _____.
2. Expand the terms ChIP and CIP.
3. Give two examples of genes used as markers in plants for screening transformants.
4. HSP 70 and HSP 60 in E. coli is known as _____ and _____ respectively.
5. Name two irrational approaches used in protein engineering.

***Part B** (5x5= 25 marks)*

Answer **ALL** questions

6a. Describe the principle and procedure of Northern blotting.

OR

6b. Describe how subtractive hybridization is used to study differential gene expression?

7a. Describe the principle of Tandam affinity tagging method for studying protein protein interaction.

OR

7b. List out the uses of S1 nuclease mapping technique.

8a. Describe the characteristic of an ideal reporter gene.

OR

8b. Describe any two application of reporter genes in biotechnology.

9a. Describe the experiment that proved that information for protein folding is present in the primary sequence o f the protein itself? Why does protein always fold to acquire the native structure?

OR

9b. Why is *in vitro* protein folding different from *in vivo* protein folding?

10a. Describe the Kunkel method of mutagenesis.

OR

10b. Explain the mechanism of RNA silencing.

***Part C** (5x7= 35 marks)*

Answer **ALL** questions

11a. Describe different probes used in Real Time PCR.

OR

11b. Describe the principle, methodology of SAGE.

12a. Describe the principle and application of yeast two hybrid systems.

OR

12b. Describe the principle, methodology and application of EMSA.

13a. Describe GFP as reporter.

OR

13b. Describe luciferase as reporter.

14a. Describe the structure and mechanism of protein folding in GroEL-ES complex of *E.coli*.

OR

14b. Explain the biotechnological significance of studying protein folding.

15a. Give an overview of different strategies used in drug designing.

OR

15b. Give and overview of different approaches used in protein engineering.