P. P. SAVANI UNIVERSITY

Third Semester of M.Sc. Examination

December-2021

SSBT8090– Genetic Engineering: Theory and Application

09.12.2021, Thursday Time: 09:00 a.m. to 11:30 a.m. Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.

Section-I

Q.1 Very Short Questions (Attempt any five) **[10]**

1.1 What are the criteria's for an ideal cloning vector?

1.2 Name two methods which can be used for Site Directed Mutagenesis.

1.3 What is the cloning capacity of BAC and YAC?

1.4 What is a phasmid?

1.5 Name two polyplexes which can be used for transfection.

1.6 What are the four major steps in genomic library preparation?

Q.2 Write Short Notes (Attempt any two) **[06]**

2.1 What are the three characteristics of Yeast centromere plasmids which resemble chromosomes in yeast cells?

2.2 Draw Ti plasmid pGV3850.

2.3 Name three commonly used selectable marker genes in animals along with principle of selection.

Q.3 Detail questions (Attempt any two) **[14]**

3.1 Explain four major strategies for gene transfer to animal cells?

3.2 Draw structure of YAC? Explain working, advantages and disadvantages of YAC vector?

3.3 Explain in detail two modes of replication in circular DNA molecules.

Section-II

Q.1 Very Short Questions (Attempt any five) **[10]**

1.1 Give example of physically inducible system in plant.

1.2 Give two examples of Site specific recombination systems.

1.3 What are phenocopies?

1.4 What is a Ribozyme?

1.5 Name bacteria which grow in oligotropic environments?

1.6 Name two serovars of *Salmonella*.

Q.2 Write Short Notes (Attempt any two) **[06]**

2.1 How ancestral mt-DNA and Derived mt-DNA differs?

2.2 Differentiate between homologous recombination and site specific recombination

2.3 Differentiate between orthologs and paralogs

Q.3 Detail questions (Attempt any two) **[14]**

3.1 Explain in detail Cre-Lox system of site specific recombination?

3.2 Explain in detail comparative genomics of bacteria.

3.3 Describe in detail about viral delivery system in reference to transgenic