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 is a promiscuous plasmid?

1.2 Primer extension method for Site Directed Mutagenesis was developed in which year and by whom?

1.3 What is the cloning capacity of PAC and BAC?

1.4 What is a Cosmid?

1.5 Name two species of Agrobacterium which are commonly used for creating transgenic plants.

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

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

2.1 Draw a structure of typical yeast promoter.

2.2 Chloroplast transformation

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 How you can construct a c-DNA library?

3.2 Explain four major strategies for gene transfer to plant cells?

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

Section-II

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

1.1 Name two promoters that can induce glucocorticoid hormone in mammals.

1.2 Name steroid hormone associated with molting in insects.

1.3 What is Exon shuffling?

1.4 What are positional orthologs?

1.5 Give genome size of *Pseudomonas aeruginosa* and E. *coli* in Mb

1.6 Give two examples of Site specific recombination systems

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

2.1 What are the three limitations associated with the use of endogenous inducible promoters?

2.2 Differentiate between orthologs and paralogs.

2.3 Explain about *Deinococcus radiodurans* remarkable ability.

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

3.1 Explain in detail lac and tet repressor systems in bacteria.

3.2 How site specific recombination facilitates precise transgene integration?

3.3 Explain in detail comparative genomics of bacteria.