

BOT - 554

Plant Molecular Biology and Biotechnology

M.Sc Botany (MSCBOT-12/13/16/17)

Second Year Examination, 2019

Time: 3 Hours

Max. Marks: 80

Note:- This paper is of Eighty (80) marks containing three(03) Section A, B and C. Learners are required to attempt the questions contained in these Sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Question)

Note:- Section 'A' contains four (04) long-answer-type questions of nineteen (19) marks each. Learners are required to answer any two (02) questions only.

(2×19=38)

1. What are restriction enzymes or restriction endonucleases? Describe in detail their role in recombinant DNA technology.
2. Describe the origin, organization, and functions of mitochondrial and chloroplastic genomes why they are semiautonomous in nature.
3. What do you mean by Protoplast culture? Write about its importance and major steps involved in protoplast isolations, culture and regeneration of plant.
4. Write a detailed account on IPR. How do patents differ from other intellectual property rights (IPR)?

Section-B

(Short Answer Type Question)

Note:- Section 'B' contains eight (08) short answer type questions of eight (08) marks each. Learners are required to answer any four (04) questions only.

(4×8=32)

1. What do you mean by C-value paradox?
2. What is cryopreservation? Describe its various applications in Biotechnology.
3. What are Okazaki fragments? Differentiate between leading and lagging strand.
4. Write down briefly on the basic principles of plant tissue culture.
5. What is a cloning vector? Why plasmids are used as cloning vectors?
6. Write short note on any two of the following.
 - (a) Somatic hybridisation
 - (b) RFLP
 - (c) Trade Marks
 - (d) SSRs
7. Write a brief note on transgenic plants.
8. Discuss Cot curve and its significance.

Section-C

(Objective Type Questions)

Note:- Section 'C' contains Ten (10) objective type questions of one (01) mark each. All the questions of this section are compulsory. (10×1=10)

Choose the correct option for each of the following questions:

1. The genetically modified (GM) brinjal in India has been developed for.
 - (a) Enhancing shelf life
 - (b) Insect resistance
 - (c) Drought resistance
 - (d) Enhancing mineral content
2. In Plant tissue culture, which of the following shows totipotency?
 - (a) Meristem
 - (b) Sieve tube
 - (c) Xylem vessel
 - (d) Collenchyma
3. Which of the following is not an example of inducible operon?
 - (a) Lactose operon
 - (b) Galactose operon
 - (c) Galactose operon
 - (e) Tryptophan operon
4. Which of the following increases gene expression as much as 200-fold?
 - (a) TATA Box
 - (a) Insulator
 - (c) Enhancer
 - (d) CAAT Box

5. The name Kary Mullis is associated with:
 - (a) Gel Retardation Assay
 - (b) Chain Termination Reaction
 - (c) RFLP
 - (d) PCR
6. Where does a repressor bind an operon?
 - (a) Operator
 - (b) Promotor
 - (c) Inducer
 - (d) Catabolite activator site
7. Variable number of tandem repeats (VMTR) in the DNA molecule are highly useful in.
 - (a) Monoclonal antibody production
 - (b) DNA fingerprinting
 - (c) Recombinant DNA technology
 - (d) Stem cell culture
8. A CDNA library:
 - (a) Can also be called an expressed sequence tag (EST) library
 - (b) Consists of coding sequences from genes that are expressed.
 - (c) Specific to the set of conditions under which the original mRNA was generated
 - (d) All of these
9. In cryopreservation the following is used:
 - (a) Liquid carbon dioxide
 - (b) Liquid oxygen
 - (c) Liquid nitrogen
 - (d) Liquid hydrogen
10. Ri plasmid occurs in:
 - (a) Agrobacterium
 - (b) Rhizobium
 - (c) Bacteriophage
 - (d) Bacillus
