

S-799

Roll No. ....

## **BOT-554**

### **Plant Molecular Biology and Biotechnology**

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

Second Year, Examination, 2018

**Time : 3 Hours**

**Max. Marks : 80**

**Note :** This paper is of **eighty (80)** marks containing **three (03)** Sections A, B and C. Attempt the questions contained in these Sections according to the detailed instructions given therein.

#### **Section-A**

##### **(Long Answer Type Questions)**

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

1. Describe in detail about regulation of gene expression in plants.
2. Give a brief account of any *two* of the following :
  - (i) Restriction Endonucleases
  - (ii) PCR
  - (iii) Cloning Vectors
3. Describe the basic steps in plant tissue culture technique. Discuss the role of chemicals in this technique.
4. Write an essay on different methods used in production of transgenic plants.

**Section–B****(Short Answer Type Questions)**

**Note :** Section ‘B’ contains eight (08) short answer type questions of eight (8) marks each. Learners are required to answer *four* (04) questions only.

1. Write about the structure and function of transposable elements.
2. Explain the regulation of gene expression in mitochondria.
3. What is Biotechnology ? Write a brief account of its scope and importance.
4. What are the purposes of somatic hybridization ?
5. What do you understand by plant metabolomics ? Explain.
6. Write about the mode of action of cry protein.
7. Discuss the basic principles and steps employed in developing RAPD markers.
8. Give a brief account of patent and copyright.

**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.

Fill in the blanks :

1. Satellites, Lines and Sines are the examples of .....
2. Tools to detect polymorphism in plants are by ..... map.
3. .... culture method is best suited for production of virus free plants.

4. Haploid plants are produced in large number by ..... culture.
5. Proteomics is the study of :
  - (i) All proteins in an organism
  - (ii) Gene transcribing protein
  - (iii) Structural proteins of a cell
  - (iv) Regulating proteins in humans
6. Pores in protoplasts may be opened to DNA by the application of :
  - (i) Magnetism
  - (ii) Light
  - (iii) Enzymes
  - (iv) Electricity
7. Most plant tissue cultures are initiated from :
  - (i) Calluses
  - (ii) Explants
  - (iii) Plantlets
  - (iv) Protoplast
8. Pfu and Vent polymerases are more efficient than Taq polymerase because :
  - (i) of more efficient polymerase activity
  - (ii) of proofreading activity
  - (iii) Both (i) and (ii)
  - (iv) None of these

9. What is the appropriate size (in Kb) of the melon mitochondrial genome ?
- (i) 600 Kb
  - (ii) 1200 Kb
  - (iii) 2400 Kb
  - (iv) 3000 Kb
10. A chromosome with a very short arm and a very long arm is termed as :
- (i) Acrocentric
  - (ii) Teloscentric
  - (iii) Metacentric
  - (iv) Subcentric