



Registration No:

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AR-2017

B.Sc (Ag)

3rd SEMESTER REGULAR EXAMINATIONS, SEPT/OCT 2019-20

BT-233

FUNDAMENTALS OF PLANT BIOTECHNOLOGY

Time : 2 Hours

Maximum : 50 Marks

(Answer **all** questions of Section – A)

SECTION – A

10 × 0.5 = 5

Q.1 Fill up the Blanks with suitable and meaningful word(s):

- a A mass of undifferentiated cells is called _____
- b A part of the plant used for culturing is called _____
- c The term “Biotechnology” was first coined By _____
- d The term DNA-fingerprinting was introduced for the first time by _____
- e Western blot is a method used to check for the presence of _____
- f _____ metal is used in particle bombardment method.
- g _____ can be produced by fusion of protoplasts from two diverse species
- h To raise plants from a small tissue in culture is known as _____
- i Bt gene is isolated from _____
- j The molecular scissor used in genetic engineering for cutting DNA molecules is _____

Q.2. Define or Explain the following in one or two sentences [5 × 1 = 5]

- a) Ovary culture b) Marker Assisted Selection c) Plasmid d) DNA marker e) Somaclonal variation

Q.3. Match the following [10 × 0.5 = 5]

Column A	Column B	Answer
1. Concept of totipotency	A. Tomato	
2. Virus free plant	B. Soybean	
3. Anther culture	C. Gordon and Ruddle	
4. Growth regulator	D. G. Haberlandt	
5. Largest area under transgenic crop	E. Paul Berg	
6. Flavr-Savr transgenic variety	F. Shoot tip culture	
7. Term transgenic	G. Polymerase chain reaction	
8. Father of Genetic engineering	H. Amplified Fragment Length Polymorphism	
9. Amplification of DNA	I. Guha and Maheswari	
10. DNA marker	J. Phytohormones	



Q.4. Write **TRUE** or **FALSE** against the following statements [10 × 0.5 = 5]

1. In general, callus cultures are sub-culture often every 4-6 weeks.
2. RAPD is a codominant type of marker.
3. Generally binucleate stage is suitable for pollen culture.
4. Hybrids cells involving protoplast of two different species are known as homokaryons.
5. Northern blot technique would show the size of DNA.
6. Marker Assisted Selection is very effective for quantitative character with low heritability.
7. The process of differentiation of roots and shoots from the somatic embryos in culture medium is known as embryogenesis.
8. Type II restriction enzymes are commonly used in gene cloning.
9. DNA Polymerase is used to join the segments of DNA during genetic engineering.
10. Multiple identical copies of genes can be obtained by gene sequencing.

SECTION – B

(Attempt any **five** questions. Each question carries equal marks) 5x6=30

- Q.5 What is Plant Tissue culture? Write the scope and application of biotechnology in crop improvement ?
- Q.6 Define Micropropagation and discuss various application and limitation of micropropagation with examples ?
- Q.7 What is somaclonal variation ? Describe about the methods of somaclonal variation?
- Q.8 Define recombinant DNA technology and describe about the vector less or direct DNA transfer methods ?
- Q.9 Define vector, write about the features of vectors and describe about the Plasmid vector?
- Q.10 What is embryo culture, describe about the types of embryo culture and mention the application of embryo culture?