

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc. (Hons.) Agriculture supplementary summer 2018 - 19 Examination

Semester: 5

Date: 19/04/2019

Subject Code: 20102301

Time: 2:00pm to 4:30pm

Subject Name: Principles of Plant Biotechnology

Total Marks: 60

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A. Fill in the blanks. (Each of 1.00 marks)****(10)**

1. _____ type of plasmid carry genes for resistance to antibiotic drugs.
2. Culture of apical dome with / without one leaf primordial is known as _____ culture.
3. RAPD is _____ type of marker.
4. _____ is a small DNA molecule capable of self-replication inside the host cell
5. _____ act as a chelating agent in nucleic acid isolation.
6. PCR invented by _____.
7. Compounds directly involve in normal development and reproduction of plant is known as _____
8. *Taq polymerase*, an enzyme isolated from the bacterium _____.
9. _____ element component of proteins, nucleic acids and some coenzymes element required in greatest amount
10. _____ is preferred for making artificial seed.

B. Multiple choice type questions. (Each of 1.00 mark)**(10)**

1. _____ crop has first successful *Agrobacterium* mediated transformation system in plants.

a) Tomato	c) Tobacco
b) Potato	d) Rice
2. _____ is the best cryo-protectant.

a) Glycerol	c) Alcohol
b) Dimethyl sulfoxide	d) Ethanol
3. Development of plants from the male gametophyte by the culture of anthers or microspores is known as _____.

a) Embryogenesis	c) Friability
b) Morphogenesis	d) Androgenesis
4. Callus formation from root is known as _____.

a) De-differentiation	c) Differentiation
b) Re-differentiation	d) Cell autonomy
5. First successful test tube fertilization in papaver was given by _____.

a) Kanta	c) Gautheret
b) Power	d) Takebe
6. Formation of macromolecule from smaller molecule is known as _____.

a) Metabolism	c) Catabolism
b) Anabolism	d) microorganism
7. The plasmid native to *A. Rhizogenes* is _____.

a) Rhizobium	c) Ri Plasmid
b) Plasmid	d) Ti Plasmid
8. Regeneration of a plant from a single cell in nutrient medium is known as _____.

a) Pollen culture	c) Cell culture
b) Embryo culture	d) Seed culture
9. The term _____ describes the migration of charged particle under the influence of an electric field.

a) Comb	c) Gel
b) Electrophoresis	d) Electrophoresis Unit

10. Detoxification of waste, Industrial effluents, treatment of sewage water.
- a) Animal Biotechnology
 - b) Industrial Biotechnology
 - c) Plant Biotechnology
 - d) Environmental Biotechnology

Q.2 Do as Directed.

A. Define the following. (Any five)

(05)

- 1) Virus indexing
- 2) Star activity
- 3) Binary vector
- 4) Isoschizomers
- 5) Somaclonal variations
- 6) Sterilization

B. Answer the following. (Any Five)

(05)

- 1) Give the difference between qualitative trait and quantitative trait.
- 2) Write down main features of Biotechnology.
- 3) Explain: RFLP
- 4) Write down the gene manipulation Techniques
- 5) Explain: Chemotherapy for virus elimination
- 6) Explain: RAPD

Q.3 Write short notes. (Any Five)

(15)

- 1) Write down the Protocol for Plant Tissue Culture
- 2) Explain: pBR322.
- 3) Write down the Procedure for isolation of DNA.
- 4) Write down the Methods for isolation of single cells.
- 5) Explain somatic (asexual) embryogenesis.
- 6) Explain biochemical markers and give limitations of biochemical markers.

Q.4 Attempt any Three/Long Questions/Example

(15)

- 1) Explain PCR in detail.
- 2) Describe Restriction modification system.
- 3) Explain Somaclonal Variation.
- 4) Explain the direct gene transfer techniques.