Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

COLLEGE OF AGRICULTURE

B.Sc.(Hons.)Agriculture Winter 2018-19 Examination

Semester: 5 **Date: 22/10/2018**
Subject Code: 20102301 **Time: 02:00 pm 04:30 pm**
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. _____ are the example of Type I restriction modification system.
2._____ act as a chelating agent in nucleic acid isolation.
3._____ obtain virus-free plants from infected individuals of Dahlia through shoot-tip cuttings.
4. A _____plant contains a gene or genes which have been artificially inserted instead of the plant acquiring them through pollination.
5. Compounds directly involve in normal development and reproduction of plant is known as _____.
6. RAPD is _____ type of marker.
7. _____ is preferred for making artificial seed.
8. Viruses are eliminated by thermotherapy of whole plants in which plants are exposed to temperatures between _____.
9. _____ element Component of proteins, nucleic acids and some coenzymes element required in greatest amount.
10. More recently, prolonged exposure to a low temperature _____followed by shoot tip culture has proved quite successful in virus elimination.

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

1. The plasmid native to *A. Rhizogenes* is _____.
   a) Rhizobium c) Ri Plasmid
   b) Plasmid d) Ti Plasmid
2. Formation of macromolecule from smaller molecule is known as _____.
   a) Metabolism c) Catabolism
   b) Anabolism d) Microorganism
3. Detoxification of waste, Industrial effluents, treatment of sewage water.
   a) Animal Biotechnology c) Plant Biotechnology
   b) Industrial Biotechnology d) Environmental Biotechnology
4. The term _____describes the migration of charged particle under the influence of an electric field.
   a) Comb c) Gel
   b) Electrophoresis d) Electrophoresis Unit
5. _____ crop has first successful *Agrobacterium* mediated transformation system in plants.
   a) Tomato c) Tobacco
   b) Potato d) Rice
6. _____ is the best cryo-protectant.
   a) Glycerol c) Alcohol
   b) Dimethyl sulfoxide d) Ethanol
7. First successful test tube fertilization in papaver was given by _____.
   a) Kanta c) Gautheret
   b) Power d) Takebe
8. Callus formation from root is known as _____.
   a) De-differentiation c) Differentiation
   b) Re-differentiation d) Cell autonomy
9. Development of plants from the male gametophyte by the culture of anthers or microspores is known as _____.

a) Embryogenesis
b) Morphogenesis
c) Friability
d) Androgenesis

10. Regeneration of a plant from a single cell in nutrient medium is known as _____.
a) Pollen culture
b) Embryo culture
c) Cell culture
d) Seed culture

Q.2 Do as Directed.

A. Define the following. (Any five) **(05)**

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

B. Answer the following. (Any Five) **(05)**

1) Give the different types of Electrophoresis.
2) Write down main features of biotechnology.
3) Explain: Tissue culture techniques.
4) Write down gene manipulation techniques.
5) Write down the basic requirements of tissue culture.
6) Give the three major stages of micropropagation.

Q.3 Write short notes. (Anyfive) **(15)**

1) Write down the Protocol for Plant Tissue Culture.
2) Explain the Protoplast isolation and fusion.
3) Write down the functions of chemicals used in isolation of DNA.
4) Explain 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 molecular genetic markers and their applications.
2) Explain Somaclonal Variation.
3) Describe the Restriction modification system.
4) Explain PCR in detail.