



**KERALA AGRICULTURAL UNIVERSITY**  
**B.Sc ( Hons.) Agriculture 2015 & Previous Admissions**  
**IV Semester Final Examination-August 2017**

**Biot.2201 Principles of Plant Biotechnology, Bio-safety Rules and Intellectual Property Rights (2+1)**

**Marks: 50**  
**Time: 2 hours**

**(10 x 1=10)**

**I Define:**

- 1 Totipotency.
- 2 Batch culture.
- 3 Embryo rescue.
- 4 Molecular markers.
- 5 Somatic hybrid.
- 6 Types of RNA.
- 7 Cloning vector.
- 8 Cybrid.
- 9 Trade secrets.
- 10 Bulbosum technique.

**II Write short notes on any FIVE:**

- 1 Write in brief about Embryo culture.
- 2 What is somatic embryogenesis and which are the different stages in it.
- 3 Growth regulators used in plant tissue culture.
- 4 Write in brief about DNA replication.
- 5 Write a short note on the different biosafety levels.
- 6 Write the role of enzymes in recombinant DNA technology.
- 7 Define explants and write about the selection criteria and source of explants.

**(5 x 2=10)**

**III Answer any FIVE:**

- 1 Briefly explain Agrobacterium mediated transformation.
- 2 What are Restriction enzymes, which are the types of restriction enzymes and what are its functions.
- 3 Give the importance of Biotechnology in agriculture.
- 4 Briefly explain molecular markers and different types of molecular markers.
- 5 Which are the different types of vectors used in gene cloning.
- 6 Write in brief the different indirect methods of gene transfer.
- 7 Write in brief about invitro Androgenesis and its application.

**(5 x 4=20)**

**V Write essay on any ONE:**

- 1 What is Micropropagation and explain the steps involved in Micropropagation.
- 2 What are the Biosafety guidelines for release of GM plants and briefly explain the different biosafety levels.

**(1 x 10=10)**

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