

KERALA AGRICULTURAL UNIVERSITY

B.Sc Hons (Ag) 2011 Admission
IVth Semester Final Examination- August-2013

Time: 3 hours

Marks: 80

Cat. No: Biot.2201

Title: Principles of plant biotechnology, bio-safety rules & Intellectual property rights (2+1)

I. Fill up the blanks

(10 x1=10)

1. Okazaki fragments are seen during _____
2. Histones are _____
3. _____ molecular marker is used for DNA fingerprinting.
4. Plant protoplasts lack _____
5. Totipotency is the ability of the plant cell to develop into _____
6. Poly ethylene glycol induces _____
7. Northern blotting is carried out for _____
8. In Nick translation the enzyme used is _____
9. cDNA is obtained from _____
10. The D-arm of tRNA has _____

II. Write short notes/answers on any ten

(10x 3=30)

1. Totipotency and morphogenesis.
2. AFLP and RFLP.
3. Restriction Endonucleases and RNA Polymerases
4. steps involved in gene cloning
5. Direct Method of Gene Transfer
6. GM crops
7. Gene Patenting
8. Protoplast fusion
9. Somatic Embryogenesis
10. Somaclonal variation
11. Micropropagation
12. Southern Blotting

III. Write short essays on **any six** of the following

(6 x 5=30)

1. Write in detail about Golden rice.
2. Give details about *Agrobacterium* mediated gene transformation in plants.
3. Describe in detail the principle of Map based gene cloning.
4. What is RNAi? Describe the various mechanisms of gene silencing and its significance in crop improvement.
5. What is somatic hybridization? Discuss different methods of isolation of Protoplasts and their fusion techniques.
6. Briefly describe the salient features of an ideal cloning vector. List the various types of cloning vectors and discuss their specific uses.
7. Describe in detail IPR and international trade. Describe the rules related to GM Crops research
8. What are QTLs? Explain how they are identified and used in crop improvement Programme.

IV. Write essay on **Any one**

(1 x 10=10)

1. a) Give details about Gene gun mediated transformation in plants.
b) What are molecular markers? How do they differ from biochemical markers?
Discuss their utility in plant biotechnology.
2. a) Discuss about Transgenic plants and their applications.
b) Biotechnology related IPR issues.