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Total number of printed pages – 2

B. Tech  
PCBT 4305

**Sixth Semester Back Examination – 2015**

**PLANT BIOTECHNOLOGY**

**BRANCH : BIOTECH**

**QUESTION CODE : M 172**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

*The figures in the right-hand margin indicate marks.*



1. Answer the following questions :

2×10

- (a) Write the name of two secondary metabolites of plant origin that is having commercial importance.
- (b) Which essential component of Ti plasmid required for integration into plant genome ?
- (c) Some living plant cells have the capacity to give rise to whole organism. What is the term used to describe this property ?
- (d) Which hormone controls cell division and cell differentiation in plant cell ?
- (e) Which is the most commonly used culture medium for plant cells and tissues ?
- (f) "The Agrobacterium is considered as Natural Genetic engineer of plants." Comment.
- (g) What is Golden Rice ? In what way it is different from the normal rice ?
- (h) What is the name of the first genes available for genetic engineering of crop plants for pest resistance ?
- (i) What do you mean by Embryo rescue ?
- (j) Define Explant ? Write the criteria for selecting suitable explants for tissue culture.

P.T.O.

2. (a) What is somatic embryogenesis ? Describe various stages of somatic embryogenesis and factors influencing somatic embryo formation. 5  
(b) Describe the secondary metabolite of natural origin with special reference to alkaloids. 5
3. Write the various strategies used for the production of secondary metabolites, with special reference to elicitors and hairy root cultures. 10
4. Give an account of direct or vectorless gene transfer methods in plants for the production of transgenic plants. 10
5. (a) Describe different methods of micropropagation. 5  
(b) What are the different methods of protoplast fusion ? Explain the mechanism involved in PEG and High  $\text{Ca}^{++}$  method of fusion. 5
6. (a) Write short notes on Ti plasmid derived vector system. 5  
(b) What is synthetic seeds ? Describe the various methods of synthetic seed production and its implication. 5
7. Write short notes on : 5x2  
(a) Bioreactor based production of secondary metabolites  
(b) GURT.
8. Briefly explain any **two** of the following : 5x2  
(a) Edible vaccines  
(b) Flavr Savr tomato  
(c) Single cell culture  
(d) Disease resistance.

