Printed Pages : 2 EBT012

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2439 Roll No. | | | | | | | | | | |

B.Tech.

(SEMESTER-VI) THEORY EXAMINATION, 2012-13

PLANT BIOTECHNOLOGY

Time : 3 Hours] *[Total Marks : 100*

SECTION – A

1. Attempt **all** question parts : **10 × 2 = 20**

   (a) Differentiate organogenesis and embryogenesis methods of Tissue culture plant regeneration.

   (b) Define totipotency.

   (c) What is somaclonal variation ?

   (d) What are the most defining benefits of anther culture ?

   (e) Illustrate meristem culture.

   (f) How tissue culture is applied in crop improvement in horticulture ?

   (g) What are the significances of viral vectors ?

   (h) Write notes on particle gun bombardment.

   (i) Give examples for modifications of plants for taste and appearance.

   (j) Give an account on Genome mapping.

SECTION – B

2. Attempt any **three** question parts. **3 × 10 = 30**

   (a) Explain the strategies involved in the production of transgenic plant with Bt toxin gene

      (i) Serine transgenic inhibitor

      (ii) Cowpea trypsin inhibitor

   (b) Discuss the factors affecting pollen cultures.

(c) Describe with some examples where in vitro cell and tissue culture systems are exploited commercially for the production of secondary metabolites.

(d) What are haploids ? Discuss their significance in plant improvement.

(e) What is oxidative stress ? Discuss how superoxide dismutase gene helps to produce transgenic plants resistant to oxidative stress.

SECTION – C

Attempt **all** questions. **5 × 10 = 50**

3. Attempt any **two** parts : **2 × 5 = 10**

(a) Name the source used for protoplast isolation ? What is the role of cell wall degrading enzymes during protoplast isolation ?

(b) Name the scientists who first reported the production of haploid plant through another culture. List out their contributions.

(c) What are the various steps involved in micropropagation of a plant species ?

4. Attempt any **one** part : **1 × 10 = 10**

(a) Write the need for crop plant genome sequencing and syngeny and colinearity analysis and its application.

(b) Explain the role of *Bacillus thuringienis* in the development of pest resistant plants.

5. Attempt any **one** part : **1 × 10 = 10**

(a) What do you understand by molecular farming ? Explain with few examples.

(b) Discuss how overproduction of Petunia chalcone isomerase in tomato results in fruit with increased levels of flavnols.

6. Attempt any **one** part : **1 × 10 = 10**

(a) Explain the role of genetic engineering in confirming resistance to herbicides.

(b) Discuss show plants can be used as bioreactors for the production of foreign proteins.

7. Attempt any **two** parts : **2 × 5 = 10**

(a) Write notes on the role of *Agrobacterium* in gene transfer.

(b) Elaborate the technique of electroporation in gene transfer.

(c) How marker free transgenic plants are produced ? Explain.