

Total number of printed pages – 4

B. Tech  
CPBT 8308

## Sixth Semester Examination – 2008

### PLANT BIOTECHNOLOGY

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) What are the phenolic signals required for the activation of *vir* genes of Ti Plasmid? How they activate the *vir* genes?
- (b) What is C-value paradox?
- (c) Define Molecular farming. Name two recombinant vaccines produced through plant systems?

- (d) Name two chemicals used to determine cell viability and describe their mode of action.
- (e) Why nitrogen is supplemented as a mixture of nitrate ions and ammonium ions in plant cell culture medium?
- (f) Differentiate between de-differentiation and re-differentiation.
- (g) Why vector induced transformation is more advantageous than protoplast fusion in plant biotechnology?
- (h) Match Column “A” with Column “B” :
- | <u>“A”</u>            | <u>“B”</u>            |
|-----------------------|-----------------------|
| (i) Cry 1 Ac          | (a) Liberty-Aventis   |
| (ii) Cry 9 c          | (b) Starlink-Aventis  |
| (iii) Glyphosate      | (c) Bollgard-Monsanto |
| (iv) Phosphinothricin | (d) Round up-Monsanto |
- (i) What do you mean by transient gene expression? Name two marker system(s) used to study transient gene expression during transgenesis.
- (j) What is Golden rice? Name transgene used in the development of golden rice.

P.T.O.

CPBT 8308

2

Contd.

2. What are Secondary metabolites ? Describe the various strategies followed for the production of secondary metabolites with special reference to elicitors and hairy root culture. 2+8
3. Discuss about the gene content, structure and organization of mitochondrial genome. Briefly explain the role mitochondrial genome on male sterility. 6+4
4. (a) Give a brief account on the methods and strategies used for development of genetically modified herbicide resistant plants with suitable examples. 3+4  
(b) Explain the ethical concerns over Bt Crops with a note on Monarch Butterfly affairs at North America. 3
5. (a) What is immobilization ? With suitable examples discuss the techniques and agents used for immobilizing plant cells. 1+5  
(b) Discuss about the role of biotransformation for product development in medicinal plant species. 4

6. Write short notes on any *two* of the following : 5×2
  - (a) Particle gun bombardment as versatile tool for gene transformation
  - (b) Plant gene structure
  - (c) Reporter gene in plant genetic transformation.
7. What is Ti Plasmid ? Why Ti Plasmid is used as plant transformation vector ? Discuss the mechanism of T-DNA transfer from *Agrobacterium tumefaciens* to the plant cell with reference to organization of T-DNA. 2+2+6
8. (a) What are selectable markers ? Why there is ethical concern of the use of selectable markers in the development of transgenic plants ? 4  
(b) What is in-vitro plant regeneration ? What are the different approaches of in-vitro regeneration used for extinct plant species ? 6