



Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH (BT)/SEM-6/BT-601/2012

2012

PLANT BIOTECHNOLOGY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Different forms of Rubisco Activase gene is produced by
 - a) alternative splicing
 - b) transsplicing
 - c) spliceosomal splicing
 - d) none of these.
- ii) Pathogenesis resistant proteins are
 - a) expressed when a plant is attacked by a pathogen
 - b) expressed only at the site of infection
 - c) expressed only in plants that are resistant to the pathogen
 - d) only expressed away from the infection site in the SAR response.



iii) Plant homeodomain proteins are

- a) Leucine Zipper transcription factor
- b) Zn-finger transcription factor
- c) Developmental transcription factor
- d) Basal transcription factor.

iv) Digitoxin is an/a

- a) drug for heart disease
- b) anticancer drug
- c) antifertility compound.

v) Histone acetylation results in

- a) transcription induction
- b) transcription inhibition
- c) genome replication
- d) none of these.



vi) Rhizogenesis means generation of

- a) Root
- b) Shoot
- c) Embryo
- d) None of these.

vii) Which of the following is not a plant tissue culture medium ?

- a) MS media
- b) White's media
- c) Blood agar media
- d) None of these.

viii) *Agrobacterium tumifaciens* is a..... bacteria.

- a) Gram positive
- b) Gram negative
- c) Acid fast
- d) None of these.

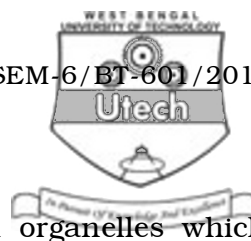
ix) is an example of alkaloid.

- a) Morphine
- b) Menthol
- c) Diosgenin
- d) Anthocyanin.

- ### GROUP – B

Answer any *three* of the following. $3 \times 5 = 15$

- 4



5. What are transposons ? Name two cell organelles which have their own genome. 3 + 2

6. Write short notes on any *two* of the following : $2 \times 2 \frac{1}{2}$

a) Absciscic acid

b) Liposome mediated gene transfer

c) Gibberellins.

7. What are principal components of a binary plant transformation vector ? Illustrate.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. a) What is somatic embryo ? How does it differ from the zygotic embryo ?

b) What is artificial seed ? Give a flow diagram showing the method for making artificial seed.

c) Describe schematically how protoplast is isolated enzymatically from the leaf. $2 + 1 + 2 + 5 + 5$



9. a) What are the different families of plant transcription factors ?
- b) Give one example from each family.
- c) Describe the structure of Zn-finger class of transcription factor with a diagram.
- d) What is the size of Arabidopsis genome ? What is understood by C-value paradox ?
- e) How does mRNA turnover influence plant functional protein production ? $4 + 2 + 3 + 1 + 2 + 3$
10. a) What is herbicide ?
- b) Mention any two reasons for developing herbicide-resistant crops.
- c) Mention the mode of action of glyphosate.
- d) Mention different strategies followed for engineering glyphosate herbicide resistant plants with suitable example. $2 + 2 + 3 + 8$



11. What is somaclonal variation ? How is it tested in the field ?
Give its biological significance and application.

2 + 8 + 3 + 2

12. What is plantibody ? Critically analyze its advantages and disadvantages. Throw light on the structure and organization of the plant genome.

3 + 4 + 8

13. Write short notes on any *three* of the following :

3 × 5

- a) Super weed
- b) Cre-lox system
- c) Molecular farming
- d) Reporter gene.

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