



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS / M.Sc. (GE) / SEM-4 / MSGEN (PBT)-403 / 2011**

**2011**

**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) Greenhouses are required to
    - a) carry out *in vitro* culture
    - b) grow regenerated plants before transferring them to field
    - c) maintaining *in vitro* plants for longer life
    - d) all of these.
  - ii) Insect resistance transgenic cotton has been produced by inserting a piece of DNA from
    - a) an insect
    - b) a bacterium
    - c) a wild relative of cotton
    - d) a virus.



- iii) The most important advantages of plant cells over whole plants is
- a) the much simpler procedure for product isolation and purification
  - b) lower cost
  - c) easy procedure
  - d) none of these.
- iv) The first person used the term edible vaccine
- a) Hugh Mason
  - b) Charles Arntzen
  - c) Hellwig
  - d) None of them.
- v) Microspore culture is a method to develop
- a) Triploid plants
  - b) Virus free plants
  - c) Haploid plants
  - d) all of these.
- vi) Vinblastine, an antineoplastic used to treat Hodgkin's disease and other lymphomas is an extract of
- a) *Papaver sp.*
  - b) *Nicotiana sp.*
  - c) *Catharanthus sp.*
  - d) *Strychnos sp.*
- vii) Example of plant originated insecticide is
- a) Colchicine
  - b) Pyrethrin
  - c) Rosemarinic acid
  - d) Vincristine.
- viii) Gene silencing involves the production of
- a) ds DNA
  - b) Antisense RNA
  - c) Plasmid
  - d) Secondary metabolites.
- ix) Food starch can be used industrially by engineering switching off the gene of
- a) amylopectin
  - b) amylase
  - c) both (a) and (b)
  - d) none of these.



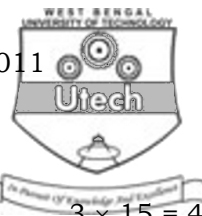
- x) Transgenic oil yielding plants were engineered for
- phytoene desaturase
  - phytoene synthase
  - acyl-ACP thio esterase
  - none of these.
- xi) The glycosylation process is known as the covalent addition of
- carbon
  - fatty acids
  - sugar
  - none of these.
- xii) Human developed genetically modified plant in the year of
- 1980
  - 1990
  - 2000
  - 2005.

#### GROUP – B

#### ( Short Answer Type Questions )

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

- Discuss about the basis requirements for photoautotrophic micropropagation.
  - Write a short note on the Engineering of medicinal plants.
  - What kind of improvement is needed for producing starch for industry ? Explain the procedure with a suitable example.
- 1 + 4
- Write a short note on different alkaloids, their types and functions.
  - Write short note on any *one* of the following :
    - reduction in the content of antinutritive factors in plants
    - production of therapeutic proteins in plants.



**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.

3 × 15 = 45

7. What are the types of plant N-glycans ? Discuss the strategies for humanization of plant N-glycosylation. 5 + 10
8. What do you mean by secondary metabolites ? Discuss the strategies for enhancing secondary metabolites. Describe camptothecin production. 3 + 8 + 4
9. How transgenic technology is used to alter the nature of biotic and abiotic stress in plants ? Discuss with suitable examples mentioning the controversies.
10. Write short notes on any *three* of the following : 3 × 5
  - a) Production of long chain polyunsaturated fatty acids
  - b) Soybean oil for industrial use
  - c) Edible vaccine
  - d) Simple moss performs complex glycosylation.
11. Comment on the following : 3 × 5
  - a) Edible vaccine
  - b) Induced Polyploidization
  - c) Vitrification.

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