



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Sc. (Genetic)/SEM-4/MSGEN (PBT)-403/2010**

**2010**

**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 )**

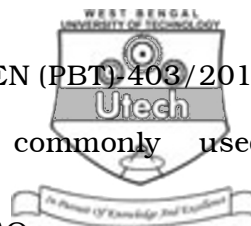
1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Recently Government of India has restricted the cultivation of which crop ?
  - a) Bt cotton
  - b) Bt brinjal
  - c) Bt soybean
  - d) Golden rice.
- ii) To use potato starch in paper and textile industry the scientists switched off the gene of
  - a) Amylopectin
  - b) Amylase
  - c) both of these
  - d) None of these.
- iii) Paclitaxel, an anticancerous agent, collected from *Taxus brevifolia*, is a
  - a) Phenolic compound
  - b) Diterpenoid alkaloid
  - c) Flavonoid
  - d) Polymer.



- iv) Transgenic oil yielding plants were engineered for
- a) Phytoene desaturase      b) Phytoene synthase
  - c) Acyl-ACP thioesterase      d) none of these.
- v) Soybean oil can be used for industrial purpose for the presence of
- a) Polyol esters                      b) Fatty acid amines
  - c) Methyl esters                      d) all of these.
- vi) The glycosylation process is known as the covalent addition of
- a) Carbon                              b) Fatty acids
  - c) Sugar                                d) none of these.
- vii) Hirudin was produced in transgenic
- a) Banana                              b) *Brassica napus*
  - c) Rice                                 d) Tobacco.
- viii) The proportion of total phenotypic variance that is due to genotype is called
- a) Heterocaryosis                      b) Heritability
  - c) Genetic variance                      d) Genetic erosion.
- ix) Agency responsible for quarantine of horticultural crops in India is
- a) Botanical Survey of India (BSI), Kolkata
  - b) NBPGR, New Delhi
  - c) Forest Research Institute, Dehradun
  - d) none of these.



- x) Which of the following is a commonly used Cryoprotectant ?
- Liquid Nitrogen
  - DMSO
  - Alcohol
  - Glycerin.
- xi) *Chemical hybridizing agents (CHA)*
- cause germination of pollen grains
  - are agents used for hybridization
  - act as male gametocytes
  - cause cell fusion.
- xii) Maize is an example of
- Self pollinated crop
  - Cross pollinated crop
  - Often cross pollinated crop
  - none of these.

**GROUP – B**  
**( Short Answer Type Questions )**

Answer any *three* of the following.

$$3 \times 5 = 15$$

- What are the priorities and strategies for India regarding transgenic crops ?
- Why are drought tolerant plants necessary ? What is the principal method behind the technology ? 1 + 4
- What is sustainable agriculture ? Do you think this kind of agriculture is sufficient to feed the world ? Give reason. 1 + 4
- What are the salient steps taken for cryopreservation of plant material ? What is Vitrification ? 3 + 2
- Discuss briefly with suitable examples the use of plants in phytoremediation purpose.



**GROUP – C**  
**( Long Answer Type Questions )**

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

7. Define Photoautotrophic Micropropagation. Give an account of achievement of cost effective tissue culture technology with special reference to acclimatization of tissue cultured plants.  $4 + 11$
8. Describe the transgenic technology used to alter the nature or increase the levels of vitamins.
9. Write short notes on any *two* of the following :  $2 \times 7\frac{1}{2}$ 
  - a) Potato starch for industry
  - b) Soybean oil for industrial use
  - c) Edible vaccine.
10. Write a short note on alkaloids found in Solanaceae plants.
11. What is Transgenic Male sterility ? How is Barnase and Barstar system utilized for plant improvement ? What are PGMS and TGMS lines in genetic male sterility ? Name two chemical mutagens to induce polyploidization.  $2 + 6 + 5 + 2$

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