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SEAT No. \_\_\_\_\_

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[768A-52]

**Sardar Patel University**

B.Sc. Biotechnology Fifth Semester

Wednesday, 11<sup>th</sup> April, 2016

2:00 p.m to 5:00 p.m

US05CBIT03 (Plant Biotechnology)

Total Marks: 70

Note: Figures to the right indicates marks.

**Q.I Multiple Choice Questions**

[10]

- 1) Gene auxA encodes for \_\_\_\_\_ enzyme
  - a) Indole acetamide hydrolase
  - b) Tryptophan monooxygenase
  - c) Isopentenyl transferase
  - d) None of these
- 2) 6-hydroxybenzothiazole is the chemical name for \_\_\_\_\_
  - a) Luciferin
  - b) Paraluciferin
  - c) Oxyluciferin
  - d) Both (a) & (b)
- 3) Which of the following is not correctly matched?
  - a) Cry protein—Insecticidal activity
  - b) Glyphosate — Herbicide
  - c) Golden rice—Vitamin D
  - d) Phytoalexins—Metabolites
- 4) \_\_\_\_\_ production has been reduced in tomato fruit by the overexpression of gene for SAM hydrolase.
  - a) Ethylene
  - b) Auxin
  - c) Cytokinins
  - d) Gibberellin
- 5) Gene conferring insect resistance to plants is/are \_\_\_\_\_.
  - a) Bt genes
  - b) ipt
  - c) Pht
  - d) All of these
- 6) A high auxin to cytokinin ratio induces \_\_\_\_\_ initiation in the callus.
  - a) Root
  - b) Shoot
  - c) Fruit
  - d) Leaves
- 7) Which of the following is an excellent cryoprotectant?
  - a) Glucose
  - b) DMSO
  - c) Proline
  - d) Diethylene
- 8) Virus free plants can be obtained by \_\_\_\_\_ culture.
  - a) Meristem
  - b) Anther
  - c) Leaf
  - d) Stem
- 9) Which of the following is/are bioactive compound?
  - a) Flavonoids
  - b) Phenolic compound
  - c) Alkaloids
  - d) All of these
- 10) Hairy root culture is induced by infection with \_\_\_\_\_.
  - a) *Agrobacterium tumefaciens*
  - b) *Agrobacterium vitis*
  - c) *Agrobacterium rubi*
  - d) *Agrobacterium rhizogenes*

P.T.O

- Q.II** Answer the following questions in short. (Attempt any 10) [20]
- Which are the two types of marker genes? Give its advantages.
  - Define Co-integrate vector alongwith its diagram.
  - Give full form of the following: ocs, cat, gfp & hpt
  - Give the scopes of Agriculture Biotechnology.
  - What are edible vaccines? Write its advantages.
  - Write about Bt toxins.
  - Mention the major stages of micropropagation.
  - What are Cryoprotectants?
  - Which are the potential sources of cell damage during freeze preservation?
  - Define the term Somaclonal variation.
  - What are bioactive compounds? Give its application.
  - Write in brief about Hairy root culture.
- Q.III a)** Enlist the various gene transfer methods & explain microprojectile technique. [06]  
**b)** Write about the following: nptII & bar genes. [04]
- OR**
- Q.III** Give the features of Ti plasmid & explain the process of T-DNA transfer & its integration in plants. [10]
- Q.IV a)** Explain in detail the strategies for engineering herbicide resistant plants. [06]  
**b)** Write a brief note on Golden rice. [04]
- OR**
- Q.IV a)** Discuss in detail the development of disease resistant plant. [06]  
**b)** Write about production of Flavr Savr tomato using antisense RNA technology. [04]
- Q.V a)** Enlist the hormones used in plant tissue culture and explain the roles of each hormone. [06]  
**b)** What is Micropropagation? Give the advantages of clonal propogation. [04]
- OR**
- Q.V** Define Cryopreservation. Explain in detail technique/steps involved in cryopreservation. [10]
- Q.VI a)** Give an account on scheme for obtaining Somaclonal variation. [06]  
**b)** Define the terms: Calliclones & Protoclones. [04]
- OR**
- Q.VI a)** Describe the molecular basis of Somaclonal variation. [05]  
**b)** Explain in detail the production of Secondary metabolites. [05]

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