



**PS-003-1134004**

Seat No. \_\_\_\_\_

**M. Sc. (Biotechnology) (Sem. IV) Examination**

**August - 2020**

**BT-421 : Agricultural Biotechnology**

*(Elective)*

**Faculty Code : 003**

**Subject Code : 1134004**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**1 Attempt any seven out of ten : 7×2=14**

- (i) Which group of plants has the greatest diversity (i.e. the most species) living today?
- (ii) What is the use of Auxanometer.
- (iii) What is the ploidy state of the endosperm in angiosperm?
- (iv) Which of the following metabolites are implicated in stress tolerance?
- (v) Plants containing genes encoding cytokines and blood clotting factors are used in which field?
- (vi) The first transgenic plants expressing engineered foreign genes were tobacco plants produced by the use of which organism?
- (vii) Which plant dies from Ti plasmid infection?
- (viii) Which genes can be used for making resistances against viral infection
- (ix) Which of the following compounds has been produced in transgenic plants to improve tolerance to salt stress and water deficit?
- (x) Write the characteristic of a transgenic crop.

**2 Attempt any two out of three : 7×2=14**

- (a) What are the subkingdoms into which the plant kingdom is divided?
- (b) What is plant transpiration? What are the main types of plant transpiration process? How do plants control the opening and the closing of the stomata?
- (c) Describe different types of plant growth regulators and their functional role in plant tissue culture.

**3** Answer the following : **7×2=14**

- (a) What do you understand by abiotic stress, discuss various abiotic stresses and their effect on plants.
- (b) There is great success for transgenic plant production for biotic stress, however there is a lacuna which needs to be unplugged for abiotic stress, justify with example.

**OR**

- (c) How many environmental factors can limit photosynthesis at one time? Explain the concept of limiting factor using as an example conditions under which photosynthesis is light-limited or CO<sub>2</sub>-limited.
- (d) Describe about the strategies employed for genetically engineered plants for herbicide resistance.

**4** Answer the following : **7×2=14**

- (a) Give a detailed note on plant transformation vectors.
- (b) Discuss how plants can be used as bioreactors for the production of foreign proteins.

**5** Answer any **two** out of four : **7×2=14**

- (a) A decrease or cessation of leaf expansion is an early response to water stress. Provide a mechanism for this response.
- (b) Give an account of the genetic engineering of plants for production of industrial enzymes
- (c) "Agrobacterium is nature's way of genetic transformation." Explain.
- (d) What are heat shock proteins? Do they provide thermotolerance? How is the synthesis of heat shock proteins regulated?

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