

2021

BOTANY — HONOURS

Paper : DSE-B-5

(Plant Biotechnology)

Full Marks : 50

The figures in the margin indicate full marks.

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

1. Answer **any five** questions : 2×5
- (a) What is suspension culture?
 - (b) State the role of osmoticum with an example.
 - (c) Give two examples of reporter genes.
 - (d) Differentiate between artificial seed and natural seed.
 - (e) What are vir-genes and where are they located?
 - (f) Name two macroelements and two microelements present in plant tissue culture media.
 - (g) Name the oncogenes present in the Ti Plasmid of *Agrobacterium tumefaciens*.
 - (h) What is somaclonal variation?
2. Answer **any two** questions :
- (a) Discuss in brief the different sterilization techniques in plant cell culture. 5
 - (b) Write short notes on – (i) Golden rice (ii) Flavr Savr tomato. 2½+2½
 - (c) Differentiate between organogenesis and somatic embryogenesis stating advantages of each. 4+1
 - (d) What is androgenesis? Briefly discuss pollen culture technique and state its advantages. 1+4
3. Answer **any three** questions :
- (a) What is somatic embryogenesis? Briefly discuss the induction and development of somatic embryos in culture. 2+8
 - (b) Describe the particle gun technique for transgenic plant development. Explain briefly one more technique for direct gene transfer in plants. 6+4
 - (c) What is somatic hybridization? State the genetic consequences of somatic hybridization with the help of a flowchart and suitable diagram. Define fusogen. 2+7+1
 - (d) What is a synthetic seed? Discuss briefly how the different types of synthetic seeds are produced in culture. 2+8
 - (e) What do you mean by callus culture? How callus culture is developed from an explant? State briefly the applications of callus culture. 2+6+2
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