



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. in Applied Sciences
Third Year – Semester II Examination - July 2020**

BOT 3201 – PLANT TISSUE CULTURE

Time: Two (02) hours

Answer FOUR (04) questions.

1. a) Describe the role of Plant Growth Regulators in basal tissue culture media. **(40 marks)**
 b) Define the following terms with respect to *in-vitro* propagation.
 - i. Totipotency
 - ii. Germplasm preservation
 - iii. Hairy root cultures
 - iv. Dihaploid plants **(60marks)**
2. Discuss the following with respect to *in-vitro* propagation.
 - a) Use of protoplast culture to produce “man desired” plants. **(50 marks)**
 - b) Elicitors in secondary metabolite production in cell cultures. **(50 marks)**
3. Discuss the importance of each step starting from selection of mother plant to acclimatization of plantlets in the field in relation to tissue culture **(100 marks)**
4. “*In-vitro* propagation is a useful tool in agriculture”. Citing examples, discuss the above statement. **(100 marks)**
5. Precursors of anticancer drugs such as Vincitrine and Vinblastine are extracted from *Catharanthus roseus* plants. However, with the high demand for land and rapidly increasing wages of field staff, traditional method of obtaining the drug has become very expensive. Synthesis of these precursors in the laboratory is also not economical. Using your knowledge in plant taxonomy and *in-vitro* propagation, suggest /describe possible cost-effective avenues for the production of Vincitrine and Vinblastine. **(100 marks)**

END