Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Science and Technology Degree Programme
300 Level 2nd Semester Examination –Dec/Jan 2018
SCT 336-2 In vitro Culture Techniques

Instructions to candidates
Total number of questions four (04)
Answer all the questions
Total time allocated: Two (02) hours
Total marks allocated: 100

1.

Because the apical meristems of plants have no vascular supply, systemic viruses could not infect the apical meristem. Answer section (**a**) and (**b**) based on this information.

a. You are provided with a tobacco plant of an elite cultivar. However, this plant is infected with a tobacco mosaic virus. Explain a tissue culture based phytosanitation protocol to develop virus free tobacco plants using this virus infected mother plants. Your answer should cover all the important steps of the protocol.

(20 marks)

b. Suggest a suitable test (with all important steps) to determine that the plants you produced in (**a**) are truly free of virus.

(05 marks)

2. Write short notes on the importance of the following in plant breeding.

a. Di-Haplods

b. Embryo culture and embryo rescue

(25 marks)

(90)

3.

a. Name the two (02) major types of callus cultures and briefly describe them.

(02 marks)

b. Compare and contrast the differences of the two (02) callus types you name in (**a**) using a table.

(04 marks)

c. Name the callus type that is more suitable for initiation of a callus culture.

(01 marks)

d. Draw the typical growth curve of a callus culture until six weeks from culture initiation. Label the five phases of growth. Indicate with an arrow on the curve you draw, the ideal time to change the culture medium.

(14 marks)

e. Give two applications of callus cultures.

(04 marks)

4. Give scientific explanations for incorporating following substances in a plant tissue culture medium.

   a. Sucrose

   b. Activated charcoal

   c. Fe-EDTA

   d. Ascorbic acid

   e. Phytagel

(25 marks)