



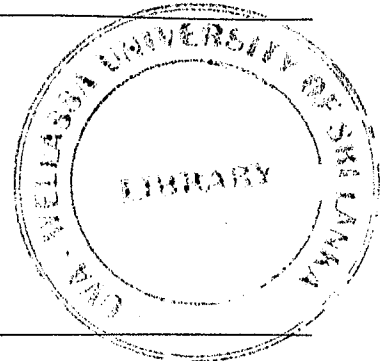
Instructions to candidates

Duration: 02 hours

Number of questions: 04 essay questions

Answer **all** questions

Mark allocation: 100 (All questions carry equal marks)



1.

- a. List the main constituents of a standard plant tissue culture medium.
(5 mark)
- b. Give four commercially available ready-to-use plant tissue culture medium other than MS.
(4 mark)
- c. Give the reasons/importance for incorporating the following components in a plant tissue culture medium
 - i. Sucrose
 - ii. FeNaEDTA Fe/Na
 - iii. Activated charcoal
 - iv. Ascorbic acid(16 mark)

2.

- a. What is phytosanitation?
(5 mark)
- b. Suppose that you are provided with a elite potato cultivar wich is infected with a systemic virus disease. Explain a tissue culture based protocol to develop virus free potato plants using this virus infected plant as the mother plant.
(20 mark)

3.

- a. List the two major types of callus cultures and briefly describe them. (5 mark)
- b. 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. (15 mark)
- c. Give two applications of callus cultures. (5 mark)

4. Write short notes on the following

- a. Anther culture. (12.5 mark)
- b. Embryo culture and embryo rescue. (12.5 mark)