

UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE (SPECIAL DEGREE) LEVEL I (SEMESTER II)
EXAMINATION – DECEMBER 2016

SUBJECT: BOTANY

COURSE UNIT: BOT4102 (Plant Cell and Tissue culture)

Time: **Two hrs**

Index No:

Answer Four questions including question No. 1

1.

i) Define *in vitro* culture of plants.

(15 marks)

ii) Which property of the plant cell is exploited to culture plant cells?

(5 marks)

iii) Name three heat labile chemicals used in tissue culture. Mention how these chemicals are sterilized.

(8 marks)

iv) Giving 2 examples of each mention the importance of using auxins and cytokinins in tissue culture.

(20 marks)

v) Mention the complex natural ingredients that could be added to a tissue culture medium.

(10 marks)

vi) How does *in vitro* propagation of plants differ from traditional plant propagation? **(22marks)**

vii) 'Somaclonal variation has advantages as well as disadvantages in plant tissue culture'.
Discuss the statement. **(20 marks)**

- 2.
- i) What are the potential health hazards associated with plant tissue culture procedures?
(10 marks)
 - ii) Why browning and necrotic occur in callus cultures if they are left too long on the same medium?
(5 marks)
 - iii) What are the advantages of using an aqueous medium in comparison with an agar-solidified medium?
(10 marks)
 - iv) Mention the importance of having haploid plants to the plant breeder?
(15 marks)
 - v) Giving examples classify the different sterilization techniques used in *in vitro* plant propagation.
(60 marks)
3. What are the difficulties/problems to be encountered in plant tissue culture and give the remedial measures?
(100 marks)
4. Categorize and explain the different types of *in vitro* plant tissue culture techniques based on the structures formed?
(100 marks)
5. Briefly discuss the
(100 marks)
- i) Importance of induced mutations in plant tissue culture
 - ii) Importance of embryo culture as a plant propagation method
 - iii) Major steps in producing artificial seeds