

UNIVERSITY OF RUHUNA

BACHELOR OF SCIENCE (SPECIAL DEGREE) LEVEL I & II (SEMESTER I)  
EXAMINATION – July 2016

SUBJECT: BOTANY

COURSE UNIT: BOT4032 Microbial Ecology

Time: 2 hrs

Question No.	Marks
Q <sub>1</sub>	
Q <sub>2</sub>	
Q <sub>3</sub>	
Q <sub>4</sub>	
Total	

Answer **three (03)** questions including question No 1

(1)

A) Name three basic methods used for enumerating microorganisms?

1. ....
2. ....
3. ....

B) What are the three distinct phases of the enumeration process?

1. ....
2. ....
3. ....

C) What do you understand by the term "representative sample"?

.....

.....

.....

D) What are the two important steps in the sampling process of assessing the number of microorganisms in a soil sample?

1. ....
2. ....

E) For enumeration of anaerobes the media must be free of oxygen, name a chemical which can be incorporated to the media to scavenge oxygen.

.....

F) Selective media are important for enumeration of particular groups of bacteria, name three such selective media.

1. ....
2. ....
3. ....

G) Name three disadvantages of the plate count technique.

1. ....
2. ....
3. ....

H) What is the term used to name indigenous members of a microbial community?

.....

L) Some microorganisms have a wide tolerance range for a given factor while others survive only in a narrow range of that factor. Indicate the suitable "prefix" for followings and give an example for each.

1. Wide tolerance range -

2. Narrow tolerance range -
3. Optimum for any given condition -

M) What are the categories of microorganisms that are classified based on optimum growth temperature?

1. ....
2. ....
3. ....

N) Fill the blanks in the following table by adding the appropriate interaction;

(0 = no effect, + = positive effect, - = negative effect) Provide one example for each.

Name of Interaction	Effect of Interaction		Example
	Population A	Population B	
Commensalism			
Mutualism			
Competition			
Amensalism			
Parasitism			

P) Name three molecular-based microbial community analysis methods.

1. ....
2. ....
3. ....

2) Write notes on followings;

- a) Winogradsky column in microbial ecology studies
- b) Effects of mycorrhizae on plant growth

3)

- a) "Rhizobacteria play a role as plant growth promoting agents" Discuss this statement.
- b) Explain constraints that you would face when formulation of biopesticides?

4) Briefly explain how microorganisms are adapted for different levels of;

- a) Radiation
- b) Osmotic pressure
- c) Redox potential

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