



RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES
B.Sc. (General) Degree in Applied Sciences
First Year – Semester II Examination – February/March 2019

BIO 1203- GENERAL MICROBIOLOGY

Time: Two (02) hours

Answer FOUR (4) questions only.

1. Describe the key features and specific microbiological tests which could be used to differentiate following genera of bacteria, *Bacillus*, *Escherichia* and *Mycobacterium*.

(100 marks)
2. a) Some believe that the archaea should not be separated from the bacteria as both groups are prokaryotic. Do you agree or disagree with this idea? Explain your answer.

(40 marks)

b) What is meant by the term extremophile? Describe some archaeal adaptations to extreme habitats.

(10 marks)

c) Discuss briefly how bacteria are medically and ecologically important.

(50 marks)
3. a) Compare symbiotic nitrogen fixation and root rhizosphere associative nitrogen fixation using examples.

(40 marks)

b) Describe how the process of organic matter decomposition is assisted by soil microbes.

(20 marks)

c) Explain how mycorrhizae enhance soil nutrient availability.

(40 marks)

4. a) Assuming that you are going to start a factory to process fruits, describe the possible preservation methods that could be used for fruit processing.
(40 marks)
- b) What are the characteristics of good indicator organisms in the context of water quality and state why they are preferred in preliminary testing.
(40 marks)
- c) A patient who has been taking broad spectrum antibiotics for a prolonged time experienced gastrointestinal problems. What might be the reason for this side effect?
(20 marks)
5. a) Explain the stages in the microbial population growth curve and its practical importance.
(40 marks)
- b) Discuss why anaerobic bacteria do not possess aerobic cellular respiration.
(20 marks)
- c) Facultative anaerobes are shown to have a survival advantage than obligate anaerobes. Critically evaluate this statement.
(40 marks)

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