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**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Applied Sciences
First Year – Semester II Examination –October/November 2017**

BOT 1203/ BIO 1203- GENERAL MICROBIOLOGY

Time: Two (02) hours

Answer any four (04) questions.

1. What are the key features, staining procedures and biochemical tests that could be used to differentiate the following genera of bacteria: *Bacillus*, *Escherichia* and *Mycobacterium*?
(100 marks)
2. Discuss the role of microorganisms in geochemical cycles.
(100 marks)
3.
 - a) Describe the mode of action that characterize β lactam antibiotics. Why are these antibiotics generally more effective against Gram positive bacteria than against Gram negative bacteria?
(25 marks)
 - b) Why is it important to determine the susceptibility of an infectious microorganism to particular antibiotic before the antibiotic is used?
(25 marks)
 - c) Why are antibiotics generally not used in food preservation practices?
(25 marks)
 - d) Membrane filtration is an acceptable mean of sterilization for some liquids. Describe the advantages and disadvantages of membrane filtration over heat sterilization.
(25 marks)
4.
 - a) Describe the properties of an indicator microorganisms.
(25 marks)
 - b) How is a coliform defined? How does this definition relate to presumptive, confirmed and completed tests?
(25 marks)
 - c) How do you differentiate between total coliforms and fecal coliforms in the laboratory?
(25 marks)
 - d) Outline general procedures ~~are~~ used to reduce microbial populations in drinking water supplies.
(25 marks)

5. a) Contrast the key enzymes in obligate aerobe and an obligate anaerobe in relation to their ability to tolerate oxygen.

(25 marks)

- b) Explain why a facultative anaerobe has survival advantage over an obligate anaerobe.

(25 marks)

- c) How are anaerobic bacteria cultured under laboratory conditions? (25 marks)

- d) Explain the microbial fermentation processes. (25 marks)

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