



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2011/2012
FIRST SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF EDUCATION AND BACHELOR OF SCIENCE

SBT 330: MICROBIAL PHYSIOLOGY

DATE: **Wednesday 30th November 2011**

TIME: 2.00p.m – 4.00p.m

INSTRUCTIONS: *Answer all questions in Section A and any one question in Section B. Answers to Section A should be concise and written in the spaces provided on the question paper.*

SECTION A. Short Answer Questions (5 marks each).

1. What is methanogenesis? Explain why it is beneficial and non beneficial to man.
2. How do bacteria fix carbon dioxide using reverse Tricarboxylic Acid cycle (rTCA cycle)?

3. Briefly discuss the electron transport chains in bacteria.

4. Distinguish between the following terms:

(a) Photophosphorylation and Substrate-level phosphorylation

(b) Methylotrophs and Methanotrophs

(c) Constitutive enzymes and Inducible enzymes

5. Give schematic diagrams for the synthesis of the nucleotides, purines and pyrimidines

7. What is phosphorylation? Comment on the ATP generation during cellular respiration involving one molecule of glucose.

8. Briefly describe an experiment that can be used to illustrate the hydrolysis of starch by exoenzymes secreted by microorganisms.

SECTION B. Essays (30 marks each).

1. Write an essay on denitrification.
2. Describe a laboratory experiment used to study the carbohydrate utilization patterns by members of Enterobacteriaceae.
3. Discuss metabolic pathways used by various types of bacteria to obtain energy.