



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF
SCIENCE IN BIOCHEMISTRY

SBC 545: ENVIRONMENTAL MICROBIAL BIOTECHNOLOGY

DATE: Monday, 26th March, 2012

TIME: 2.00 p.m. – 5.00 p.m.

INSTRUCTIONS:

Section A: Answer ALL the Questions (5 marks each)

1. Describe the degradation of wood by fungi.
2. Describe the degradation of cellulose by *Trichoderma* cellulases.
3. Explain the various methods used in direct introduction of DNA fragments in plant cells.
4. Explain the classification of *B.thuringiensis* strains.
5. Explain the disadvantages associated with the use of Baculoviruses as insecticides.
6. Define the meaning of the terms used to describe the behavior of organic compounds in the environment.
7. Write briefly on environmental hormones.

8. Explain the various ways leading to the entry of xenobiotics into the environment.

Section B: Answer any THREE Questions (20 marks each)

1. (a) What are Polychlorobiphenyls?

(b) The fate of organic compounds introduced into the soil is determined by a combination of physical, chemical and biological factors. Explain this statement.

(c) Organic compounds are more effectively degraded in environments containing many microorganisms than in a pure culture of a single organism. Explain this statement.

2. Discuss the use of a ubiquitous marine γ -proteobacterium in the bioremediation of oil-contaminated marine environments.

3. Under the subheadings: primary substrate, plasmid, plasmid size and bacterial host strain, describe the naturally occurring transmissible catabolic plasmids.

4. Describe indirect leaching of mineral ores by microorganisms.