



## KENYATTA UNIVERSITY

### UNIVERSITY EXAMINATIONS 2011/2012

#### SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (ENVIRONMENTAL HEALTH)

#### HEH 208: ENVIRONMENTAL BIOCHEMISTRY TWO

DATE: Friday 30<sup>th</sup> March 2012

TIME: 2.00p.m-4.00p.m

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#### INSTRUCTIONS

#### SECTION I: (20 MARKS)

#### ANSWER ALL QUESTIONS

1. a) Explain four advantages of biodegradation process over either chemical or physical processes of waste management. [4marks]
- b) Explain the advantages of biosensors over the current analytical methods of environmental monitoring. [4marks]
- c) Outline the factors that affect the disappearance and fate of a pesticide in the soil. [5marks]
- d) Using an example describe the hydrolysis reaction of biotransformation of xenobiotics. [5marks]
- e) List down 8 factors that affect Biodegradation of a given compound. [4marks]

#### SECTION II

This has two parts. Answer all questions in part I, and any 2 in part II

#### PART 1 (20 MARKS)

2. a) As the director incharge of Environmental Health Department in KENYA county,

how would you advise your members of staff on the use the following bioindicators to monitor environmental pollution in their areas of jurisdiction.

- a) Plants [4marks]
  - b) Animal [4marks]
  - c) Microorganisms [3marks]
  - d) Macroinvertebrates [2marks]
- b) Discuss the optimal Environmental requirements for bioremediation. [7marks]

**PART II (30MARKS)**

3. a) Remediation can be defined as any process that returns the environment altered by contaminants to its original condition. Discuss the advantages of bioremediation over conventional or traditional methods of remediation. [10marks]
- b) Using an example explain the concept of bio-magnification. [5marks]
4. a) Giving examples, discuss the following topics involved in the bioaccumulation Process.
- a) Uptake [3marks]
  - b) Storage [3marks]
  - c) Elimination [3marks]
- b) Describe how the Phytostabilization can be used as a phytoremediation technique. [4marks]
5. a) You are the Environmental Health Officer in charge of solid waste management in KENYATTA Municipal Council. The Municipal Council is planning to build a landfill to cope with the rapidly expanding tonnes of solid waste produced every day by the residents of the municipal. What advice would you give for them to set up a bioreactor landfill as opposed to a conventional one? [10marks]
- b) Describe the Trickling filters system, stating their advantages and disadvantages. [5marks]