

UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER: 2008 - 2009

TITLE OF PAPER: MICROBES AS A RESOURCE

COURSE CODE: ERM 613

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:

- 1. ANSWER ANY THREE QUESTIONS.**
- 2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS.**

SPECIAL REQUIREMENTS:

NONE

**THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS
SPECIAL INSTRUCTIONS
BEEN GRANTED BY THE INVIGILATORS**

QUESTION 1

Use the concepts behind microbes-metal interactions to explain how microorganisms degrade toxic metallic elements.

[TOTAL MARKS = 25]

QUESTION 2

(a) The fate of pathogenic microorganisms in soils and aquifer material is primarily governed by their transport and persistence in these environments. Discuss. (12.5 marks)

(b) Write short notes on the following:

(i) Microbial desulfurization of coal. (6.5 marks)

(ii) Composting as a spontaneous process. (6 marks)

[TOTAL MARKS = 25]

QUESTION 3

Discuss the role of microbes and microbial process in various phases of the water cycle.

[TOTAL MARKS = 25]

QUESTION 4

Discuss innovations in biological processes for pollution control.

[TOTAL MARKS = 25]