

UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

(BSC) IN ENVIRONMENTAL HEALTH

SECOND SEMESTER SUPPLEMENTARY EXAMINATION PAPER JULY 2012

TITLE OF PAPER : ENVIRONMENTAL CHEMISTRY

COURSE CODE : EHM 104

DURATION : TWO HOURS

MARKS : 100

INSTRUCTIONS : ANSWER ONLY FOUR QUESTIONS

: EACH QUESTION CARRIES 25 MARKS

: QUESTIONS ONE AND TWO ARE
COMPULSARY

: NO QUESTION PAPER SHOULD BE BROUGHT INTO
NOR OUT OF THE EXAMINATION ROOM

: BEGIN EACH QUESTION ON A SEPARATE SHEET
OF PAPER

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED
BY THE INVIGILATOR**

QUESTION ONE

- A. Describe the role played by Oxidation-Reduction reactions in the chemistry of dissolved species in water. (13 marks)
- B. Briefly describe the importance of the first two layers (from the earth surface) of the atmosphere in supporting life on earth. (12 marks)

TOTAL 25 MARKS

QUESTION TWO

- A. Why is there concern regarding the use and misuse of chemistry as far as the environment is concerned? (14 marks)
- B. Water has a higher surface tension than any other liquid. Explain how this surface tension comes about and how it influences water chemistry. (11 marks)

TOTAL 25 MARKS

QUESTION THREE

- A. Describe how biological, chemical and physical weathering contribute to the formation of soil. (12 marks)
- B. With the help of a chemical equation, show how pyrite oxidation contribute to soil acidity. (6 marks)
- C. Briefly explain how nitrification and denitrification processes are brought about in soil chemistry. Include chemical equations where necessary. (7 marks)

TOTAL 25 MARKS

QUESTION FOUR

- A. Water supports all forms of life. It would be a grave mistake to temper with its chemistry. Support this argument. (8 marks)
- B. Discuss the role of Oxidation-Reduction reactions in the chemistry of dissolved chemical species in water. (8 marks)
- C. Briefly explain how climatic and topographic factors may affect the intensity and dispersion of air pollution in a city. (9 marks)

TOTAL 25 MARKS

QUESTION FIVE

- a. List *five* physical and *three* chemical properties of soil. (8 marks)

- b. There are several ways that can contribute to soil degradation. Briefly describe how chemical degradation can contribute to the degradation of soils. (12 marks)
- c. How can these problems of chemical degradation of soil be corrected? (5 marks)

TOTAL 25 MARKS