



**UNIVERSITY OF SWAZILAND**  
**Faculty of Health Sciences**

**DEGREE IN ENVIRONMENTAL HEALTH**

**SUPPLEMENTARY EXAMINATION PAPER 2007/2008**

<b>TITLE OF PAPER</b>	<b>:</b>	<b>ENVIRONMENTAL CHEMISTRY I</b>
<b>COURSE CODE</b>	<b>:</b>	<b>EHS 413</b>
<b>DURATION</b>	<b>:</b>	<b>2 HOURS</b>
<b>MARKS</b>	<b>:</b>	<b>100</b>
<b>INSTRUCTIONS</b>	<b>:</b>	<b>READ THE QUESTIONS &amp; INSTRUCTIONS CAREFULLY</b>
	<b>:</b>	<b>ANSWER ONLY FOUR QUESTIONS</b>
	<b>:</b>	<b>QUESTION ONE AND TWO ARE COMPULSORY</b>
	<b>:</b>	<b>EACH QUESTION CARRIES 25 MARKS</b>
	<b>:</b>	<b>WRITE NEATLY &amp; CLEARLY</b>
	<b>:</b>	<b>NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM</b>
	<b>:</b>	<b>BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER</b>

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

### QUESTION ONE

Describe the structure of the atmosphere under the following themes:

- a. Troposphere (5 marks).
- b. Stratosphere (5 marks).
- c. Mesosphere (5 marks).
- d. The boundaries between each set of layers in (a-c) above (5 marks).
- e. Explain how our activities influence the layers in (a-b) above (5 marks).

**Total 25 Marks.**

### QUESTION TWO

1. Describe
  - a. Texture (5 marks).
  - b. Porosity (5 marks)
2. Draw and compare soil profiles of the following climatic areas
  - a. Desert (5 marks).
  - b. Grassland (5 marks).
  - c. Tropical forest (5 marks).

**Total 25 Marks.**

### QUESTION THREE

1. Explain how Acid-Base reactions influence the chemistry of water bodies (10 marks).
2. Discuss the importance of the surface tension of water (8 marks)
3. Describe how the heat capacity of water influence the weather conditions of a coastal area (7 marks)

**Total 25 Marks.**

### QUESTION FOUR

1. Summarize the chemical reactions of chlorofluorocarbons (CFCs) involved in the destruction of the ozone layer (11 marks)
2. List other seven chemical substances (apart from CFCs) involved ozone depletion and indicate the use of each (14 marks).

**Total 25 Marks.**

### QUESTION FIVE

1. Define temperature inversion (2 marks) and explain the conditions necessary for the occurrence of
  - a. Subsidence inversion (5 marks).
  - b. Radiation inversion (5 marks).
2. List for factors that influence the frequency and severity of smog in an area (4 marks)
3. Describe how nitrogen oxides can affect the chemistry of the atmosphere. Do not forget to include how they can affect human health (9 marks).

**Total 25 Marks.**

**GOOD LUCK!!!!**