

**UNIVERSITY OF SWAZILAND**  
**FINAL EXAMINATION – 2017**

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**TITLE OF PAPER** : Environmental Pollution

**COURSE NUMBER** : CHE 613

**TIME** : Three Hours

**INSTRUCTIONS:**

**Answer any four (4) questions of the six (6) questions and every question holds 25 marks.**

**NB: All questions are to be answered in a separate answer sheet. The points for every question are indicated within brackets.**

*The paper has six (6) questions and you are required to do any four (4) of the six questions.*

**Question (1)**

- i) What are the criteria pollutants in the atmosphere and how do they contribute to pollution? (10)
- ii) Discuss four of the above pollutants including the mechanism of action and the impact to human life. (10)
- iii) What are the compounds of lead that are health hazards and why is lead considered as health risk? (5)

**Question (2)**

- i) It is commonly said that carbon Monoxide (CO) and Hydrogen Cyanide (HCN) are poisonous for human and animals. Explain how these chemicals are produced and the mechanism of action that eventually makes them poisonous. (7)
- ii) Analyze and indicate the impact of the criteria pollutants on human health taking the relation below. Arrange them in the order of their impact  
$$\text{Risk} = \text{Hazard} \times \text{Exposure} \quad (8)$$
- iii) Through what environmental media can humans and animals be exposed to pesticides? Explain how each exposure could occur. (10)

**Question (3)**

- i) Differentiate between point source and non-point source pollution of water. How can we prevent non-point source pollution of water? Give examples of both sources of water pollution. (8)
- ii) What do we understand by the phrase that mining can be a grace or a disgrace to a given country or society? Explain the impact of mining on the water resources of a given environment. (7)
- iii) What are the two water-pollution issues that are worsened, or made more difficult to deal with, because of population growth? Explain. (10)

**Question (4)**

- i) In a country that is less developed like Swaziland waste treatment is costly. How can we prevent pollution from waste and give examples to support your choice? Explain. (10)
- ii) What are the adverse effects of excess nutrients? Explain taking the case of nitrogen and phosphorus? (8)
- iii) Population growth has an effect on resources such as land and water. How does population growth contribute to pollution of land and water resources? (7)

**Question (5)**

- i) What is greenhouse gases effect and how does it contribute to global warming? (6)
- ii) What is the role of carbon dioxide in the atmosphere? Explain. (7)
- iii) What does half-life of greenhouse gases in the atmosphere indicate? (5)
- iv) Which of the greenhouse gases contribute to negative ecological effects? (7)

**Question (6)**

- i) Explain the toxicological effects of Mercury, Lead, Chromium and Arsenic. (8)
- ii) What do you understand by the short hand PBT chemicals? Explain. (5)
- iii) What steps, if any, would you take to reduce the impact of waste? (6)
- iv) What management practices would you recommend that makes ecological resources sustainable? (6)