



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

AUGUST – DECEMBER 2015 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF CHEMISTRY

SCHOOL FOCUSED PROGRAMME

CHEM 310: ENVIRONMENTAL CHEMISTRY

Date: DECEMBER 2015

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) Explain green house effect causes global environmental impact and how it can be minimized. **(8 marks)**
- b) Explain why supersonic jets are a threat to the environment. **(3 marks)**
- c) Define the following and give examples where applicable.
- i Dissolved oxygen
 - ii Environmental pollution
 - iii Hydrosphere
 - iv Waste management
 - v Chemical Oxygen Demand **(5 marks)**
- d) Write short notes on the following
- i Global warming **(4 marks)**
 - ii Environmental impacts of acid rain. **(5 marks)**
 - iii Emission from automobiles and their effects. **(5 marks)**
- Q2. a) Sulphur dioxide (SO_x) are serious pollutants to the environment. Discuss. **(15 marks)**
- b) Define entrophication and show how it arises. **(5 marks)**

- Q3. a) Explain the environmental impact of solid wastes and ways of removing solid waste from the environment. **(3 marks)**
- b) Why is excessive use of fertilizers an environmental hazard. **(3 marks)**
- c) State THREE classes of pesticides. **(3 marks)**
- d) Give an example of polyaromatic hydrocarbons PAHs and explain how environmental pollution from these compounds can be minimized. **(4 marks)**
- Q4. a) Lead and Cadmium are toxic heavy metals. Explain their sources in the environment, effect on human health and ways of reducing their environmental impact. **(10 marks)**
- b) Ozone is an important component of the stratosphere whose levels keep fluctuating due to anthropogenic activities. Discuss ozone in terms of
- i Formation mechanism
 - ii Depletion mechanism
 - iii Effects depletion
- (10 marks)**
- Q5. a) Acid rain is mainly formed from NO_x and SO_x describe how levels of NO_x and SO_x can be determined in the environment. **(10 marks)**
- b) Whereas N_2O is essentially inert in the troposphere it is a major pollutant in the stratosphere. Discuss this observation. **(3 marks)**
- c) Discuss various control measures of SO_x in the atmosphere. **(4 marks)**
- d) Briefly explain why the stratosphere is more susceptible chemical pollution than the troposphere. **(3 marks)**

END