



UNIVERSITY OF SWAZILAND

Faculty of Health Science

Department of Environmental Health Sciences

Main Examination 2011

Title of paper: INTRODUCTION TO AIR POLLUTION

Course code: EHS 314

Time allowed: 2 HOURS

Marks allocation: 100 Marks

Instructions:

- 1) Answer ANY FOUR (4) questions**
- 2) Each question is weighted 25 marks**
- 3) Write neatly and clearly**
- 4) Begin each question on a separate sheet of paper**

This paper is not to be opened until the invigilator has granted permission

QUESTION 1

- a) It's been said that vegetation has had a positive contribution in maintaining the global temperature over the years, however this has changed. Write briefly how deforestation has contributed to global warming (5)
- b) What are the health effects associated with sulfur dioxide? (4)
- c) Relate how population growth is believed to have been a critical player in global warming (4)
- d) Name the two nitrogen pollutants responsible for eutrophication (4)
- e) What are the effects of having higher availability of nutrients in water bodies? (6)
- f) Name the gas that was involved in the Bhopal gas tragedy in 1984 in India (2)

QUESTION 2

- a) Define the following terms (10)
 - i. Intermittent short term sources
 - ii. Dry deposition of pollutants
 - iii. Air Facility System
 - iv. COPD
 - v. Fair treatment in environmental justice
- b) What are the human activities in an urban setting that can compromise the urban air quality? (5)
- c) People living in rural areas are assumed to be advantaged over urbanites in the quality of air that they breathe due to many factors. Carbon monoxide is one gas that has caused health effects to people living in urban areas. What are the health effects that can be attributed to this gas? (6)
- d) Differentiate between these 2 as they relate to ozone concentration, summer and winter smog (4)

QUESTION 3

- a) Write short notes on the components that can influence visibility (8)
- b) Name the 3 factors that can contribute to poor indoor air quality (6)
- c) You are to set up an air monitoring station in your campus. What are the 4 pieces of equipment that you will need for such an assignment? (8)
- d) Name the major pollutant that is emitted from agricultural processes and what is its chemical formula? (3)

QUESTION 4

- a) What are the several forms of damage that may be attributed to phytotoxicants which is due to air pollution? (8)
- b) Give 2 reasons why scientists use dispersion modeling in air pollution control and monitoring (2)
- c) What is the Kyoto Protocol about and why is it so controversial in the USA? (5)



- d) What are the short term health effects that may be experienced by these children on this picture? (5)
- e) How has/will global warming affect survival of certain species and give an example of a species that seems to be affected already by this phenomenon? (5)

QUESTION 5

- a) What are the contributing factors that have led to changes to lead (Pb) exposures in the past decade in Swaziland? (10)
- b) Define a "Sick Building Syndrome" (3)
- c) Primary pollutants are pollutants that are directly emitted from sources, yet secondary pollutants undergo certain reactions in the atmosphere. Name these chemical reactions that are undergone by secondary pollutants (6)
- d) Simplify the geometry of the Gaussian plume equation (6)