



UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

Department of Environmental Health Science

Main Examination 2012

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 in a separate sheet of paper**

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

QUESTION 1

- a) Infrared radiation has been captured in the atmosphere with very unwelcome effects in the environment. Outline the possible effects that have been observed due to this phenomenon (8)
- b) What are the potential impacts that can be attributed to CO₂ dissolving into the oceans? (4)
- c) Briefly describe on the different uses of the following air quality models (12)
 - i. Dispersion model
 - ii. Photochemical model
 - iii. Receptor model
- d) What has been the increase in atmospheric temperature that scientists have observed in the past 100 years? (1)

QUESTION 2

- a) What is an Air Quality Index and what lessons can one learn from it? (3)
- b) Outline with examples, the internal organs associated with exposure and bio-accumulation to Lead (Pb) (6)
- c) Define the following terms (10)
 - i. Airshed
 - ii. Temperature inversion
 - iii. Aerosols
 - iv. Immission
 - v. Non – attainment
- d) What are the possible causes of visibility (6)

QUESTION 3

- a) Differentiate between the following, emission rate, emission standard and emission factor (9)
- b) Name the 6 levels of health concerns that the AQI is divided into (6)
- c) Define particulate matter and its possible sources (6)
- d) Just list the 4 gases that are responsible for photochemical smog (4)

QUESTION 4

- a) What are the advantages of the Gaussian plume model (10)
- b) You are to give a presentation to the year 1s in your faculty about an air pollution plume. How will you define pollution and emission to them? (4)
- c) The Environmental Protection Agency defines Environmental justice in different legal taxonomy, in not more than 3 sentences briefly outline these taxonomies (8)
- d) Provide examples of natural sources of air pollution (3)

QUESTION 5

- a) Name the 5 key principles of the Kyoto Protocol (5)
- b) What is the basic principle of air pollution monitoring? (4)
- c) How much has the sea level risen in the 20th century and outline how this increase is a threat to coastal communities? (4)
- d) Write briefly on the best conditions that can support ozone concentration (12)