



UNIVERSITY OF SWAZILAND
Faculty of Health Science

Department of Environmental Health
Sciences

Main Examination 2010

Title of paper: AIR SAMPLING AND ANALYSIS 1

Course code: EHS 564

Time allowed: 2 hours

Marks allocation: 100 Marks

Instructions:

- 1) Read the questions and Instructions carefully
- 2) Answer ANY FOUR (4) questions
- 3) Each question is weighted 25 marks
- 4) Write neatly and clearly
- 5) 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) Discuss what you understand by workplace characterization? (15)
- b) In order for one to pin down a certain pollutant as the one that is causing a negative health impact to workers, one should have concrete basis on such. What would be the key considerations that have to be met for such a classification to be authentic? (10)

QUESTION 2

- a) You are an OHS Officer and you have just finished auditing your workplace, how are you expected to communicate the recommendations and results? (6)
- b) Define a Sampling Train and discuss its importance in maintaining the ambient air as safe as possible (9)
- c) What is the main objective of air sampling? (2)
- d) Define the following terms (8)
 - i. Adsorbent
 - ii. Adsorbate
 - iii. Interface
 - iv. Positive adsorption

QUESTION 3

- a) Give a detailed procedure that you can undertake in order to take a sample from an engine exhaust (10)
- b) What would be the key indicators that a worker is a maximum risk worker with regard to air sampling? (8)
- c) $PM_{2.5}$ and PM_{10} are types of pollutants found in the workplace. What is the difference between these two pollutants? (7)

QUESTION 4

- a) Name the factors that determine the absorption and dissipation of PM (5)
- b) What would be the most cost-effective way of reducing NO_x emissions? Inform your answer with statistical information (6)
- c) Describe the purpose of a sampling strategy, and discuss its components (14).

QUESTION 5

- a) Briefly discuss the four primary errors in respirable dust sampling (8)
- b) What is the method used in sampling air-borne dust? (2)
- c) Using the diagram below briefly explain how you will carry out the following procedures (15)
 - i. Preparing the Detector Tube
 - ii. Setting Up the Sampling Train
 - iii. After Sampling

