



**UNIVERSITY OF SWAZILAND**

**Faculty of Health Sciences**

**Department of Environmental Health Science**

**Supplementary Examination**

**July 2015**

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**Title of paper: AIR SAMPLING AND ANALYSIS I**

**Course code: EHS 564**

**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**
- 5) Numbering within a chosen question should be in a sequential order**

**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 sample from an engine exhaust (10)
- b) What would be the key indicators that a worker is 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 types of pollutants? (7)

### QUESTION 4

- a) Name the factors that determine the absorption and dissipation of particulate matter (5)
- b) What would be the most cost-effective way of reducing  $NO_x$  emissions and motivate your answer with statistical information? (6)
- c) How could you describe the purpose of a sampling strategy, and discuss its components? (14)

## QUESTION 5

- a) What are the 4 primary errors in respirable silica dust sampling and briefly discuss them (8)
- b) What is the method used in sampling air-borne dust? (2)
- c) Using the diagram below take us through how you will do the following (15)
  - i. Preparing the Detector Tube
  - ii. Setting Up the Sampling Train
  - iii. After Sampling

