FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF MINING ENGINEERING

ATMOSPHERIC ENVIRONMENTAL CONTROL AND MINING

EMI 3205

Final Examination Paper

July 2022

This examination paper consists of 2 pages

Time Allowed: **3 hours**

Total Marks: **100**

Examiner's Name: **Eng. M. Kanganga**

<u>INSTRUCTIONS</u>

1. This question paper consists of 5 questions, **Answer any other FOUR**
2. Questions 1 to 5 carry 25 marks each
3. Answer each question on a new page and write as eligible as possible

Additional Requirements

None

Question 1

a) Using dust management systems, develop a control strategy for minimizing dust production and worker exposure to dust. [25]

Question 2

a) Differentiate between particulate matter, fugitive dust and gaseous waste and explain how the standards TSP and PM_{10} affect their control. [10]

b) State the five typical dust producing areas and explain their dust production mechanism.

[15]

Question 3

a) Explain;
   a) How to perform dust source sampling? [10]
   b) Two kinds of instruments for measuring dust that are available and discusses their limitations. [5]
   c) How and which environmental variables can impact dust measurements. [5]
   d) Practical ways to improve the validity of dust source measurements under adverse conditions. [5]

Question 4

a) Explain the maintenance practices on drill dust collection systems that can be effectively used to control the exposure to respirable silica dust at surface mines. [15]
b) What is the impact of off-road haul trucks on dust production? What methods could be used to control haulage road dust? [10]

Question 5

a) Compare the characteristics of blowing versus exhausting air from a duct and determine the limitations of exhausting systems. [10]
b) There are ventilation principles that underscore how critical it is for an effective hood design to be very close to the dust generation source. Outline those principles. [15]

End of Exam

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