



FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF MINING ENGINEERING

SAFETY, HEALTH AND ENVIRONMENT

EMI 3203

Final Examination Paper

June 2020

This examination paper consists of 3 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Mr D. Chawira

INSTRUCTIONS

1. This paper contains One section with Five questions
2. Answer Question One (25 marks) and any other **Three** questions (25 marks each)
3. Where a question contains subdivisions, the mark value of each subdivision is shown in brackets.
4. Start each question on a new page

NB: DO NOT TURN OVER THE QUESTION PAPER OR COMMENCE WRITING UNTIL INSTRUCTED TO DO SO

Additional Requirements

Non-Programmable Calculator

MARK ALLOCATION

Question 1 to 5	25Marks
Part Questions	As shown in each part question
Total Attainable	100

Question 1 (25 marks)

- a. Discuss the most common hazards in mining and the control measures for these hazards. [14marks]
- b. Discuss the role of the National Social Security Authority (NSSA) to occupational safety and health in the Zimbabwean mining industry. [11marks]

Question 2 (25 marks)

- a. State **five** sources of heat in underground mining operations. [5marks]
- b. Explain ergonomic risk factors found in mining operations and the ways to mitigate them. [12marks]
- c. "Most accidents do not just occur they are caused."
Discuss this statement. [8marks]

Question 3 (25 marks)

- a. In underground mines raises are used for various purposes such as ventilation, ore-passes, travelling ways etc. The common way of developing or constructing a raise is drill and blast; from a safety and health point of view, analyze this construction method outlining how it is carried out, hazards associated and controls that can be put in place. [16marks]
- b. Describe any **three** types of fire extinguishers used in the mining industry. [9marks]

Question 4 (25 marks)

- a. State the negative social impacts associated with gold mining in Zimbabwe [5marks]
- b. Explain **five** factors that you consider when selecting a site for mine waste disposal. [10marks]
- c. After assessing a site for mine waste disposal, as a Mine Planner you are required to support and discuss the merits of the site selection in an area with a foundation of low permeability. [10marks]

Question 5 (25 marks)

a. What do you understand by the term ‘impact’ as applied in the mining environment?

[5marks]

b. Mining projects are mandated to do an Environmental Impact Assessment (EIA) prior to development and production mining. As an operations manager, is it essential to do an EIA?

Explain your answer.

[10marks]

c. Briefly describe Acid Mine Drainage (AMD) and explain how it affects the environment.

[10marks]