



**FACULTY OF ENGINEERING AND ENVIRONMENT**  
**DEPARTMENT OF MINING ENGINEERING**  
**SAFETY, HEALTH AND THE ENVIRONMENT FOR MINING**

**EMI 3203**

**Final Examination Paper**

**MAY/JUNE 2023**

This examination paper consists of 3 pages

**Time Allowed: 3 hours**

**Total Marks: 100**

**Examiner's Name: MS C MACHADU**

**INSTRUCTIONS**

1. Answer **ALL TWO (2)** questions from section A and any **TWO (2)** questions from section B
2. Each question carries **25** marks

**Additional Requirements**

None

**MARK ALLOCATION**

<b>Question 1 to 5</b>	<b>Total 25 marks each</b>
<b>Part Questions</b>	<b>As shown in each part question</b>
<b>Total Attainable</b>	<b>100 marks</b>

**SECTION A: ANSWER ALL TWO QUESTIONS**

**QUESTION 1**

- a) Explain how and why safety has improved since the last 2 decades. [4]
- b) Outline the reasons why accidents have to be prevented. [3]
- c) Give 4 examples of positive outcomes of accidents. [4]
- d) State 2 ways how change can be managed in the mining industry? [2]
- e) State 2 ways how change can be managed in the mining industry? [2]
- f) Define the following terms:
  - i. Accident
  - ii. Incident
  - iii. Hazard
  - iv. Risk
  - v. Safety [10]

**QUESTION 2**

- a) What is ISO? [2]
- b) State the 3 ISO management systems predominantly used in mining. [3]
- c) Give 4 benefits of ISO management systems. [4]
- d) What are the 3 major components of a quality management? [3]
- e) Why is customer satisfaction important? [2]
- f) What are the fundamental requirements for an environmental management system? [4]
- g) Give 4 adverse impacts of surface mining during mine closure. [4]
- h) Give 3 examples of negative social impacts from mining. [3]

**SECTION B: ANSWER ANY TWO QUESTIONS**

**QUESTION 3**

- a) What is social corporate responsibility (CSR) and why is it done? [4]
- b) List the 4 types of CSRs [4]
- c) What are the advantages\benefits as a result of CSRs undertaken by mining organisations?  
[4]
- d) What are the 4 disadvantages of CSRs undertaken by mining firms? [4]
- e) What are the 4 positive impacts of uranium mining? [4]
- f) What are the 4 negative impacts of coal mining? [4]
- g) What is an ergonomic hazard? [1]

**QUESTION 4**

- a) What is acid mine drainage, what are its impacts and how can it be managed. [10]
- b) What are the 3 stages undertaken prior to rehabilitation and state the importance of each stage. [6]
- c) What are the 3 objectives of rehabilitation? [3]
- d) What is a thickener used for? [1]
- e) Give 3 reasons why effluent treatment or water management is of paramount importance. [3]
- f) What is the difference between active and passive treatment? [2]

**QUESTION 5**

- a) List the hazard controls in hierarchical order. [6]
- b) Why is hazard control important? [2]
- c) What does HIRA stand for and why is it important? [4]
- d) List any 4 classes of hazards. [5]
- e) List the 5 steps in order of the Quebec safety system/Five point system and discuss how it minimises accidents? [8]

**END OF EXAMINATION**