



**FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT**

**DEPARTMENT OF MINING ENGINEERING**

**INTRODUCTION TO MINERALS INDUSTRY**

**EMI 1207**

**Final Examination Paper**

**JULY/AUGUST 2022**

This examination paper consists of 3 pages

**Time Allowed: 3 hours**

**Total Marks: 100**

**Examiner's Name: Mr B MLAMBO**

**INSTRUCTIONS**

- 1. Answer any TWO (2) questions from section A**
- 2. Answer question ONE (1) and any other TWO (2) questions from section B**
- 3. The number of marks is given in brackets at the end of each question or part question**

**Additional Requirements**

None

**MARK ALLOCATION**

<b>Question 1 to 3</b>	<b>Total 25 marks each</b>
<b>Question 4</b>	<b>10 marks</b>
<b>Question 5 to 7</b>	<b>Total 20 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 ANY TWO QUESTIONS**

**QUESTION 1**

Define the following terms for both underground and surface mining methods:

(a) Haulage drift (b) Draw point (c) Raise (d) Shaft footwall (e) Hanging wall (f) Stope  
(g) Man way (h) Ore pass (i) Waste pass (j) Shaft Loading pocket (k) Bench (l) Bench  
slope (m) Overburden (n) Sump (o) Adit portal (p) Sub-level (q) Winze (r) Dilution (s) Skip  
(t) Gangue (u) Ore (v) [25]

**QUESTION 2**

(a) Historical development of mining has followed mankind's quest to satisfy needs or wants. Indicate how development of mining in Zimbabwe has followed trends in international human development. [5]

(b) How has development in mining in Zimbabwe facilitated and mirrored technology development? [5]

(c) Outline the advantages and disadvantages of development of the minerals industry to specifically the mining field in Zimbabwe by considering the following areas of interest

(i) Mining law

(ii) Technology

(iii) Royalties/taxes

(iv) Environment [15]

**QUESTION 3**

(a) Outline the Quebec 5 point safety system [5]

(b) GSU Resources has been prospecting for platinum along the Great Dyke of Zimbabwe for the past 2 years. Recently they discovered a possible mineral occurrence. Briefly describe how a mineral deposit can be identified and then converted into monetary value. In your answer include all the processes that are involved throughout the entire life cycle of a mining project

[20]

**SECTION B: ANSWER QUESTION 1 AND ANY OTHER TWO QUESTIONS**

**QUESTION 4**

a) Define Metallurgy

b) Can you briefly describe any two main groups of metallurgy

**[10]**

**QUESTION 5**

Describe briefly the main unit operations involved in pyro-metallurgy

**[20]**

**QUESTION 6**

Can you name and describe the main processes involved in hydrometallurgy

**[20]**

**QUESTION 7**

Define mineral ore processing and briefly describe the unit operations involved

**[20]**

**END OF EXAMINATION**