



**FACULTY OF ENGINEERING AND THE ENVIRONMENT**

**DEPARTMENT OF METALLURGICAL ENGINEERING**

**DEPARTMENT OF MINING ENGINEERING**

**WORKSHOP PRACTICE**

**EMR/EMI 1206**

**Final Examination Paper**

**July 2022**

This examination paper consists of 3 pages

**Time Allowed: 3 hours**

**Total Marks: 100**

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

**INSTRUCTIONS**

1. This question paper consists of 5 questions, answer ANY **FOUR QUESTIONS**
2. Each question carries 25 marks
3. Answer each question on a new page and write as eligible as possible

**Additional Requirements**

**None**

**MARK ALLOCATION**

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

### Question 1

- 1.1. Name five (5) metal joining methods you know. [5]
- 1.2. With aid of sketches show five (5) basic types of weld joint designs. [5]
- 1.3. With the aid of sketches name and explain three types of flames in oxyacetylene welding. [9]
- 1.4. State one part of the oxyacetylene welding equipment and its safety requirement. [1]
- 1.5. Explain the concept of weldability. [5]

### Question 2

- 2.1. You are an engineer responsible for construction of a classroom block at Gwanda State University. You are required to conduct a safety engineering exercise, citing the potential hazards, possible causes and what could be done to avoid accidents. [25]

### Question 3

- 3.1. What is the responsibility of a safety department? [10]
- 3.2. You are an employer. Form your safety team and outline your role and your team members' role. How do you think these roles affect the concept of safety in a workplace? [15]

### Question 4

- 4.1. Name and explain the five (5) types of iron and steel produced as a result of the steel making process. [10]
- 4.2. Differentiate between ferrous and non-ferrous metals, giving examples of each? [5]
- 4.3. Differentiate between computer numerical control and numerical control and state their application in both machine-tool and non-machine-tool applications. [10]

### Question 5

- 5.1. Mining and metallurgy practices are time demanding and production is always the target, at times at the expense of safety. Which type of maintenance would you implement and why? [15]
- 5.2. In relation to 5.1, you are also required to come up with a maintenance schedule technique that would be best suited for the type of maintenance you have selected. [10]