



**FACULTY OF ENGINEERING AND ENVIRONMENT**  
**DEPARTMENT OF METALLURGICAL ENGINEERING**  
**DEPARTMENT OF MINING ENGINEERING**  
**WORKSHOP PRACTICE**  
**EMR/EMI 1206**  
**Final Examination Paper**  
**June 2020**

This examination paper consists of 3 pages

**Time Allowed: 3 hours**

**Total Marks: 100**

**Examiner's Name: Miss 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**

Calculator

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 From your understanding of a workshop, explain using realistic examples of how the following challenges can be addressed?

- a) Uninterrupted flow of movement [5]
- b) Ensuring appropriate dress and behavior code [5]
- c) Accountability of machine and general tool accessories [5]
- d) Prompt reaction to an emergency involving power machines [5]
- e) Avoidance of distraction while on different and or unrelated activities [5]

**Question 2**

2.1 State the types of datum as used in measuring and dimensioning purposes [13]

2.2 Explain fully and give examples of the meaning of the following terms as relating to measurement in engineering:

- a) Precision [3]
- b) Accuracy [3]
- c) Reliability [3]
- d) Repeatability [3]

**Question 3**

3.1 In addition to residual stresses and distortion in the final assembly, other defects can occur in welding. Describe the five (5) major categories of defects in welding. [10]

3.2 A variety of inspection and testing methods are available to check the quality of the welded joint. With the aid of examples, explain the 3 categories of testing methods. [10]

3.3 Explain the term weldability. [2]

3.4 Outline any 3 factors that determine the weldability of a material. [3]

**Question 4**

4.1 Identify and describe the type of patterns shown in Figure 2. [8]

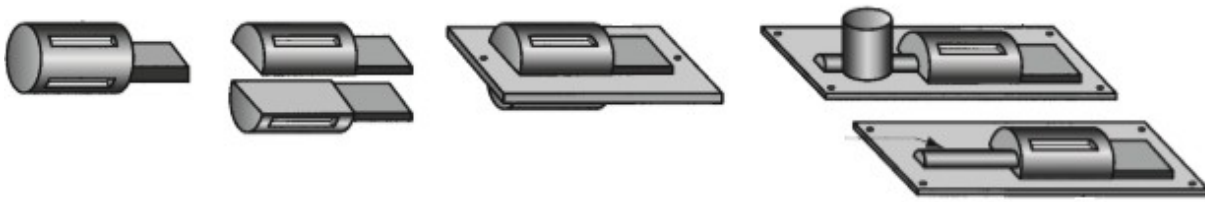


Figure 2

4.2 Explain the indicators used to determine the quality of the sand mold. [10]

4.3 With well labelled diagrams, differentiate between hot-chamber and cold-chamber die casting machines. [7]

### Question 5

5.1 Explain why work must be clamped when drilling or when machining. [5]

4.2 With the aid of a diagram show a screw cutting tool indicating the thread angle, explaining the reason for the angle and how it is achieved. [10]

5.3 With the aid of a diagram show a screw cutting operation on the lathe. [10]

**End of exam**