



**TECHNICAL UNIVERSITY OF MOMBASA**

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**FACULTY OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF MEDICAL ENGINEERING**

**UNIVERSITY EXAMINATION FOR:**

**DIPLOMA IN MEDICAL ENGINEERING**

**(DME 115 Y1 SII)**

**EHL 2105: WORKSHOP TECHNOLOGY & PRACTICE II**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date May 2016**

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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## Question ONE

- a) With the aid of neat sketch(s), describe the up-right/column drilling machine **16 Marks**
- b) A 20 mm diameter hole has to be drilled on a mild steel workpiece using a high speed steel (HSS) drill bit. Taking the cutting speed of mild steel to be 30 m/min,
- i Calculate the theoretical drill bit speed for this operation **7 Marks**
  - ii The available spindle speeds on the drilling machine for the above operation (1 (a)) are as follows:  
340, 530, 650, 900, 1530 and 2400 rpm. Which spindle speed is practically suitable for the given operation?  
Support your answer with reasons **2 Marks**
- c) List any **FIVE** hand bench tools **5 Marks**

## Question TWO

- a) Explain the following engineering material properties:-
- i Elasticity
  - ii Hardness
  - iii Tensile strength
  - iv Malleability
  - v Toughness **10 Marks**
- b) Describe the following terms as used in steel:-
- i Alloying
  - ii Heat treatment **10 Marks**

## Question THREE

- a) Describe any **FIVE** metal surface protection methods **10 Marks**
- b) Describe the following metal joints giving **THREE** examples in each case:-
- i Temporary
  - ii Permanent **10 Marks**

#### **Question FOUR**

a) Given is the thread configuration “M12X1.5”. Explain the meaning  
of this thread configuration

**10 Marks**

b) List and explain any **FIVE** operations which can be done using drilling machine **10 Marks**

#### **Question FIVE**

a) Describe corrosion effects on metals

**10 Marks**

b) Explain any **FIVE** Workshop Rules and Regulations

**10 Marks**