TECHNICAL UNIVERSITY OF MOMBASA

DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION

FOR

DIPLOMA IN MECHANICAL ENGINEERING

EME 2103: WORKSHOP TECHNOLOGY AND PRACTICE

END OF SEMESTER EXAMINATION

SERIES: APRIL

TIME: 2HOURS

DATE: APRIL 2016

Instructions to candidates

You should have the following for this examination

- **Answer booklet, examination pass and student ID**
- **This paper consist of five questions**
- **Attempt any three questions**
- **All questions carry equal marks**
- **Do not write on the question paper.**

QUESTION ONE

a) i. Discuss how grinders are classified and state any four types of grinders in common use.

ii. Explain any three important applications and uses of grinders.

iii. State and explain any three important specifications details to be provided when ordering grinding wheels discuss. **(9marks)**

b) i. with the aid of suitable illustration describe
   i) the Huntington dressing operation
   ii) the diamond dressing operation
   ii. Differentiate between "loading" and "wheel glazing"
   iii. State any three safety precautions to be observed when tool grinding.
   iv. Sate and describe the two types of abrasive particles used for grinding wheels.
(11marks)

QUESTION TWO

a) i. Describe the two main methods of material removal giving two examples for each method.
   ii. With aid of suitable sketches describe any four main important tool profiles and angle for effecting cutting. **(8marks)**

b) i. Differentiate clearly between "cutting speed" and 'feed"
   ii. State any four factors upon which the above parameters in (bi) depends upon during cutting operations. **(6marks)**

c) i. Distinguish clearly between the two groups of cutting solutions
   ii. State four main purposes of using cutting fluids. **(5marks)**

QUESTION THREE

a) i. Define the lathe machine
   ii. Describe clearly stating the operations of any TWO types of lathe machines fluid in most engineering workshops. **(6marks)**

b) i. With the aid of a near labelled sketch illustrate any four main parts of a lathe machine. **(6marks)**

c) i. State any four lathe operations and describe any two such operations.
   ii. Using illustrations differentiate between any three tool types commonly used to remove metal on a lathe machine. **(10marks)**
   iii. Describe any two work-holding methods during turning on the lathe. **(8marks)**

QUESTION FOUR

a) i. Describe the principle operation of the shaping machine. (**4marks)**
   ii. Explain any four main reasons why the shaping machine is preferred rather than the milling machine. **(3marks**)

b) i. With the aid of a suitable sketch illustrate any four important parts of the shaping machine. **(3marks)**

ii. Describe any two methods of work holding during the shaping operation.

(8marks)

c) i. Describe any four safety precautions to be observed during shaping operations.
ii. With the aid of sketches explain any two types of shaping tools. **(6 marks)**

QUESTION FIVE

a) i. Explain why milling machines are referred to as versatile machines and state two reasons why they are extensively used for production work.
ii. Differentiate clearly between any two types of milling machines. **(10marks)**
iii. State any four milling machine cutters and their operations

b) i. Define corrosion and describe the two main mechanism of corrosion.
ii. State any four methods of surface preparation prior to putting a preservative coat.

(6marks)

c) State any four methods of corrosion protection commonly use on metallic material.

(4marks)