



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. State 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 neat 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)**