



**TECHNICAL UNIVERSITY OF MOMBASA**

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**DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING**

**UNIVERSITY EXAMINATION**

**FOR**

**DIPLOMA IN MARINE ENGINEERING**

**EMR 2115: WORKSHOP TECHNOLOGY AND PRACTICE II**

**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. Describe the grinding operation and state any **four** types of grinding machines.
- ii. State **three** purposes of grinding and any **three** advantages of grinding over other machining process **(10marks)**

- b) Define the term lathe and state any **two** types of lathes. **(3marks)**
- c) Explain the **two** types of a centre lathe beds and state any **two** lathe drive systems. **(3marks)**
- d) Describe any **two** common centre lathe operations **(4marks)**

### QUESTION TWO

- a) i. Define the shaping operation and state any **two** uses are application of the shaping machine.  
ii. With the aid of a suitable sketch describe the table feed mechanisms of the shapes **(10marks)**
- b) i. Describe the shaping tools construction and illustrate and **four** common shaping machine tools.  
ii. Describe how work is held for shaping and illustration any **two** clamping methods of the workpiece **(10marks)**
- iii. State any **two** important safety consideration when carrying our shaping operations **(10marks)**

### QUESTION THREE

- a) i. Define milling and explain any **two** types of milling machines  
ii. With the aid of suitable sketches describe the action of the vertical of milling machines in reference to the table movement for producing vertical and horizontal surfaces. **(12marks)**
- b) i. State any **four** milling cutters and explain their applications  
ii. State any **two** safety precautions to be observed when using the milling machine. **(8marks)**

### QUESTION FOUR

- a) i. Define corrosion and state any **two** main factors that govern the rate of corrosion  
ii. State and describe the **two** mechanism of corrosion. **(8marks)**
- b) With the aid of suitable sketches describe the protection offered by “zinc” and ‘tin’ to steels. **(6marks)**

- c) i. For corrosion prevention state **two** major reasons why oil or grease would not be appropriate.
- ii. Discuss any **four** methods of surface preparation and any **four** permanent methods of corrosion prevention employed to steels. **(6marks)**

#### **QUESTION FIVE**

- a) i. Describe 'Rig up' technique and describe the rigging of pilot ladder for embarking disembarking. **(6marks)**
- b) i. Name any **six** major items of standing and **six** items of running rigging fitted into a ship  
ii. List any **six** miscellaneous gears fluid in a commercial ship. **(9marks)**
- c) Differentiate between accommodation and gangway ladder. **(5marks)**