



TECHICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

CERTIFICATE IN CIVIL ENGINEERING

EBC 1205: WORKSHOP TECHNOLOGY II

END OF SEMESTER EXAMINATION

SERIES: APRIL 2013

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Drawing Instruments*
- *Scientific Calculator*

This paper consists of **FIVE** questions.

Answer any **THREE** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One

- a) Explain any **TEN** causes of accidents in the factory/workshop. **(10 marks)**
- b) According to Health and Safety at Work Act 1974, the employer is required to provide some working conditions. Explain what the employer should provide according to this Act. **(10 marks)**

Question Two

- a) Explain basic elements in the care of hand cutting tools. **(7 marks)**
- b) Illustrate the operation of draw filing. **(3 marks)**
- c) Provide the precautions that you take when carrying out filing operation. **(4 marks)**
- d) In most cutting operations such as drilling, tapping etc, we use cutting fluids. Explain why cutting fluids are useful. **(6 marks)**

Question Three

- a) Describe how a four stroke diesel engine compression ignition operates. **(12 marks)**
- b) Explain possible reasons for engine not burning fully. **(4 marks)**
- c) Explain the role of crankshaft in an engine. **(4 marks)**

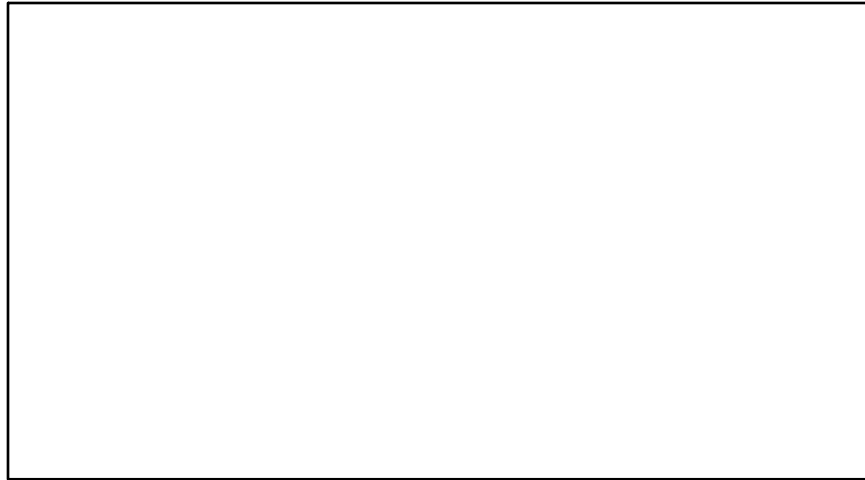
Question Four

- a) Hand filing can be separated into **TWO** distinct operations. Identify them and explain how they are accompanied using suitable files. **(8 marks)**
- b) Using suitable sketches, discuss how external threads are made on the bench. **(10 marks)**
- c) Explain the purpose of the taper on the first tap in cutting of internal threads. **(2 marks)**

Question Five

- a) Explain the difference between parallel and series circuits as used in electrical connections. **(6 marks)**
- b) Define the following terms and state the units used for their measurement:
- (i) Electric current
 - (ii) Electromotive force
 - (iii) Potential difference
 - (iv) Resistance
 - (v) Capacitance **(5 marks)**

c) Determine:



(i) The equivalent resistance of the circuit

(ii) The current passing through the 2Ω resistor and 15Ω

(9 marks)