



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
**DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE)
DIPLOMA IN ARCHITECTURE (DA)**

EBC 2205: WORKSHOP TECHNOLOGY III

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2013

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

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) State **THREE** specific objectives of the Health and Safety at Work Act 1974. **(6 marks)**
- b) State **TWO** safety precautions to be observed when dealing with:
- (i) Dust and fumes
 - (ii) Harmful materials which might damage the skin
 - (iii) Toxic substances
 - (iv) Noise **(8 marks)**
- c) State **THREE** safety precautions which should be observed when using hand tools. **(6 marks)**

Question Two

- a) Give **THREE** advantages and disadvantages of a **TWO** stroke petrol engine **(6 marks)**
- b) With well labeled diagrams, explain the operations of a four single stroke cycle petrol engine (show the direction of the piston and position of valves) **(14 marks)**

Question Three

- a) State the use of the following mechanical tools:
- (i) Taps
 - (ii) Dies
 - (iii) Scapers
 - (iv) Reamers
 - (v) Vee blocks **(10 marks)**
- b) With the aid of a diagram show the following features of a hacksaw blade:
- (i) Rake angle
 - (ii) Secondary clearance angle
 - (iii) Primary clearance angle **(10 marks)**

Question Four

- a) (i) State the main function of a switch gear **(3 marks)**
- (ii) Explain what an earth rod is and how it is used to protect the consumer **(6 marks)**
- b) Name **SIX** tools used in surface wiring installations **(6 marks)**
- c) State the size of cables and fuse rating for:
- (i) Lighting circuit
 - (ii) Cooker circuit **(4 marks)**
- d) State **ONE** test normally done on an installation **(1 mark)**

Question Five

a) Define the following terms as per the I.E.E regulations:

- (i) Duct
- (ii) Switch
- (iii) Circuit breaker

(6 marks)

b) (i) Draw a labeled circuit diagram for a staircase lamp controlled two switches independently with one switch on the ground floor and the other on the first floor.

(ii) Draw a labeled ring circuit for four 13Amp switched socket outlets and two 13Amp spur socket outlets supplied from a consumer's distribution board. Show the polarity of socket outlets and fuse rating for the circuit.

(6 marks)

c) (i) State reasons as to why a domestic installation should have more than one lighting circuit.

(2 marks)

(ii) Name a tool which is used to bend plastic conduits

(1 mark)