# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

**(A Constituent College of JKUAT)**
***Faculty of Engineering and Technology***

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**DIPLOMA IN BUILDING & CIVIL ENGINEERING**

EBC 2128: WORKSHOP TECHNOLOGY II

**END OF SEMESTER EXAMINATION**

SERIES: DECEMBER 2011

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Scientific calculator*

This paper consists of **FIVE** questions
Answer question **ONE (COMPULSORY)** from **SECTION A** and any other **TWO** questions from **SECTION B**
Maximum marks for each part of a question are clearly shown
This paper consists of **THREE** printed pages

**SECTION A (COMPULSORY)**

**Question 1(20 marks)**

a) State **THREE** responsibilities of all employees under Health and Safety at work. Act. 1974 (3 marks)

b) Explain **THREE** safety precautions that you take when using hand grinder (3 marks)

c) State **THREE** safety precautions that you observe when filing (3 marks)

d) Explain **FOUR** measures taken to ensure proper care of hand cutting tools (4 marks)

e) The major cause of accidents in the electrical workshop is through the worker. Explain. (3 marks)

f) Explain the role of priming in pump technology (4 marks)

**SECTION B (Answer any TWO questions from this section)**

**Question 2 (20 marks)**

a) Explain the difference between a reamer and a drill

b) Explain **THREE** types of hacksaws brades

c) State **TWO** applications of screw threads in engineering

d) Explain using diagrams four types of files and their applications

e) State **FOUR** factors to consider in proper use of hacksaws

**Question 3 (20 marks)**

a) Discuss briefly how a four stroke petrol engine operates

b) An engine with a mechanical problem was found to exclude black exhaust and had pitted cylinder head. What could have been the problem?

c) Explain the role of camshaft in the engine

**Question 4 (20 marks)**

a) Explain a Grid System (2 marks)

b) With a well labeled diagram, describe a single phase electrical supply system (6 marks)

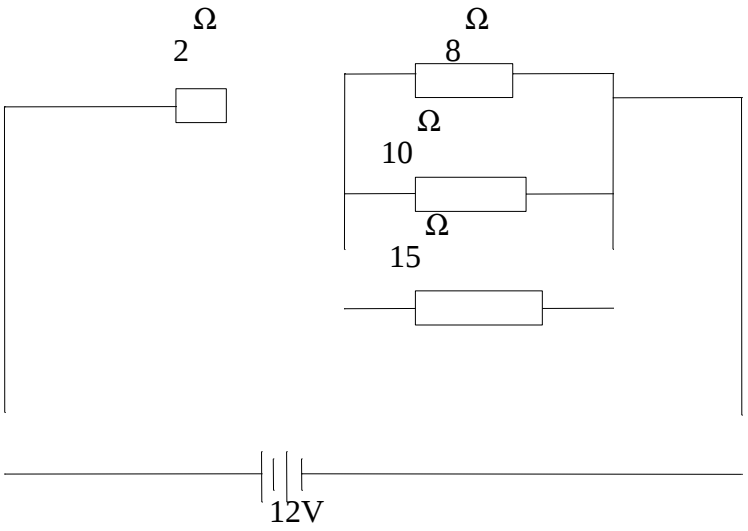
c) Using a well labeled circuit diagram, explain a 3-phase 4 wire system for AC supplies (3 marks)

d) List **THREE** major types of consumer's circuits and state the cable sixe for each circuit and current rating for protective device of each circuit (5 marks)

e) Explain 'Earthing' and how it is achieved in Electrical Installations (4 marks)

**Question 5 (20 marks)**

a) Explain the difference between parallel and series circuits as used in electrical connections (6 marks)




Determine:

(i) The equivalent resistance of the circuit

(ii) The current passing through the 2 Ω resistor and 15 Ω resistor (5 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)