



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

*Faculty of Engineering and Technology*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

INSTITUTIONAL BASED PROGRAMME

DIPLOMA IN CIVIL ENGINEERING WITH COMPUTER AIDED DESIGN  
DIPLOMA IN BUILDING & CIVIL ENGINEERING

**EBC 2304: WORKSHOP TECHNOLOGY II**

END OF SEMESTER EXAMINATION

**SERIES: DECEMBER 2011**

**TIME: 2 HOURS**

**Instructions to Candidates:**

This paper consists of **FIVE** questions

- *Answer Booklet*
- *Scientific Calculator*
- *A set of drawing instruments*

Answer question **ONE (COMPULSORY)** in **SECTION A** and any other **TWO** questions in **SECTION B**

Marks are indicated for each part of the question

This paper consists of **THREE** printed pages

**SECTION A (Answer all questions in this section – 30 marks)**

**Question One**

- a) State **FOUR** measures that are considered in the use of a hacksaw tool (4 marks)
- b) Briefly explain **FIVE** precautions considered in safety of machine tools (10 marks)
- c) State the employers obligations based on Health and safety act (2 marks)
- d) Sketch a well labeled illustration of a 3-phase 4 wire system for AC suppliers as a domestic supply distribution (6 marks)
- e) Define the following terms as used in electrical technology
  - (i) Armour
  - (ii) Sheath
  - (iii) Insulator(6 marks)
- f) A worker in an electrical workshop could be a major cause of accidents. Explain your opinion. (2 marks)

**SECTION A (Answer all questions in this section - 20 Marks each)**

**Question Two**

- a) (i) Explain the difference between parallel and series types of electrical circuits
- (ii) Consider the following circuit (fig.1)

**Fig. 1**

Determine:

- (i) The Total capacitance of the circuit above (4 marks)
- (ii) The charge (Q) passing through the 5  $\mu F$  capacitor (3 marks)

- b) Write down the procedure for giving First Aid to a person Receiving Electric shock (4 marks)
- c) (i) Define 'Earthing' a used in Electrical Installations (1 marks)
- (ii) Give **TWO** reasons for the importance of Earthing engineering structures (2 marks)

### Question Three

- a) Define any **FOUR** Electrical Quantities and state their SI units of measurements (5 marks)
- b) Describe an Electrical supply system stating voltages at each stage (4 marks)
- c) State the importance of the Neutral Conductor in electrical circuits (1 mark)
- d) Describe an Electrical circuit using a well labeled diagram (3 marks)
- e) Define the following Electrical terms:
- (i) Earth fault
  - (ii) Short circuit
  - (iii) Open circuit
- (3 marks)
- f) Illustrate using a well labeled diagram, the sequence of control equipment starting from intake point for a single phase supply for Domestic Installation (4 marks)

### Question Four

- a) Explain **THREE** methods of priming a pump (6 marks)
- b) Briefly explain the operation of compression ignition engine operating on four strokes (14 marks)

### Question Five

- a) Explain the procedure of finishing operation used during filing stating the suitable file for the purpose (10 marks)
- b) Explain the production of screw threads on the bench using hand tools (11 marks)
- c) Explain the setting of a hacksaw blade (2 marks)
- d) Stat the difference between a reamer and a drill (3 marks)