MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCD-CD-219 WORKSHOP TECHNOLOGY IV ELECTRICAL

Date: 9/12/2015 **Time: 8:30 -10:30 am**

INSTRUCTIONS:

- ***This paper comprises FIVE questions***
- ***Question one is compulsory and 30 marks***
- ***Answer any other two questions***

1.

(a) Define safety (3 marks)
(b) List ten general rules in electrical workshop (5 marks)
(c) Outline the order of action to save an electrocuted victim (7 marks)
(d) (i) List any five I.E.E regulations in electrical installations (5 marks)
(ii) List five sources of power supply in Kenya (10 marks)

2. (a) List the instruments needed to measure the following:

(i) Voltage

(ii) Current (3 marks)

(iii) Frequency

(b) Explain two advantages of:

(i) DC power

(ii) AC power (8 marks)

(c) Define the following materials used in electrical installation listing two examples in each case:

(i) Insulators

(ii) Conductors (9 marks)

3. (a) Briefly explain the following groups of cable used in electrical work:

(i) wiring capable

(ii) Communication cables (9 marks)

(iii) Heating cables

(b) (i) list five forms of trunking (5 marks)

(ii) Explain the catenary system of wiring stating two advantages of the system. (6 marks)

4. (a) Define the following terminologies:

(i) Transformation

(ii) Thermostat (6 marks)

(iii) Resistance

(b) With aid of sketches, explain the following types of circuits:

(i) Series

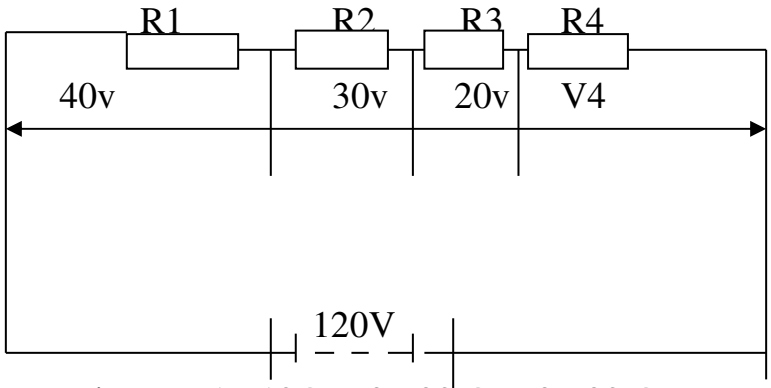
(ii) Parallel (6 marks)

(c) A water heater is rated at 2000 waltz on 240 volts. Supply: calculate:

(i)The total current drawn by the heater

(ii) Resistance of the heater element. (8 marks)

5. (a) In the figure below, determine the voltage across resister R3. If the total resistance of the circuit is 130 ohms, determine the current flowing through resistor R2. Find also the value of resistor R 3.



(12 marks)

(b) Three resistors R1= 10Ω, R2= 20 Ω, R3= 30 Ω are connected in parallel. The component current It= 12A.

(i) Calculate the current through R2 and R3.

(ii)Total voltage. (8 marks)