MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN

ELECTRICAL AND ELECTRONICS ENGINEERING

SUPPLEMENTARY EXAMINATION

EED 109: ELECTRICAL INSTALLATION TECHNOLOGY II

DATE: 1/9/2017 **TIME: 2:00 – 4:00 PM**

INSTRUCTIONS:

Answer Question One and Any Other Two Questions

SECTION A: COMPULSORY QUESTION

1. a) State at least 5 energy players in Kenya and briefly explain the roles played by each. (5 marks)

   b) With the aid of a diagram, explain a 3-phase, 4 wire distribution system showing all the voltage levels. (5 marks)

   c) With the aid of a diagram, explain the term "Protective multiple earthing" (5 marks)

   d) i) With the aid of a labeled wiring diagram, show the sequence of control equipment at the consumer's intake point for single phase supply.

   ii) State the IEE regulations governing the intake point. (10 marks)

   e) With aid of a diagram, explain Radial and Ring final sub circuits (5 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

2. a) Define the following terms:

-Accessory

-Wiring system (2 marks)

b) List any 5 types of accessories used in Electrical Installation (2½mks)

c) Draw B53939 Electrical symbols for the following:

-switched socket outlet

-One way switch

-intermediate switch

-distribution board

-isolator (2½mks)

d) With the aid of a wiring circuit diagram, show how two lamps in parallel can be controlled from 3 different positions. (3 marks)

e) A 7KW, 240V electric cooker is fed from a 240V, single phase AC supply positioned 38meters away. Find a suitable size of cable PVC sheathed, twin and earth to satisfy the load-current and volt-drop requirements. The cable is to be enclosed in conduit and the ambient temperature is 40^{o} C coarse excess-current protection is provided. (10 marks)

3. a) Define the following terms:

i. Earth,
ii. earthed,
iii. earthed electrode,
iv. earth continuity conductor,
v. earthing lead (5 marks)

b) Explain what live metal work is (2 marks)

c) Highlight the main functions of earthing (3 marks)

d) Explain the main earthing tests stating the instrument and reading expected (10 marks)

4. a) Explain the purpose of testing and inspection (2 marks)

b) State the sequence of testing and inspection as recommended in the IEE regulations. (4 marks)

c) Explain, if possible with the aid of sketch: the aim, procedure, instrument and reading expected of the following tests.

1. Verification of polarity
2. Insulation resistance test (14 marks)