MURANG'A UNIVERSITY COLLEGE

(A Constituent College of Jomo Kenyatta University of Agriculture and Technology)

DEPARTMENT: ELECTRICAL AND ELECTRONIC ENGINEERING

LEVEL: DIPLOMA (MRUC)

CLASS: EEP14DS

TERM/SEMESTER: II **YEAR OF STUDY**: I

ACADEMIC YEAR: 2014/2015

UNIT: ELECTRICAL INSTALLATION TECHNOLOGY

UNIT CODE: SEE 1104

TIME: 2 HOURS

EXAMINATION: MAIN (APR 2015)

Instructions to candidates

This paper contains **four** (**4**) questions

Answer question **ONE** in **section A** and any other two questions from **section B**

You should have the following for this examination;

- Drawing instruments
- Scientific calculator

Mobile phones are not allowed in the examination room

SECTION A: (COMULSARY)

1. a) Define a conductor 2mks
   b) Explain how copper conductors are formed 4mks
   c) State two reasons why in the formation of copper conductors the wire is dipped into a tank containing molten tin 2mks
   d) State the basic parts of a cable 2mks
   e) Differentiate between a flexible cable and a flexible cord 4mks
   f) Outline the factors that determine the resistance of a conductor 6mks
   g) Describe the procedure of making a straight-through joint using weak-backed ferrule 6mks
   h) Define a domestic ring circuit 2mks
   i) State two types of electrical indicator systems 2mks

SECTION B: ANSWER ANY TWO QUESTIONS

2. a) i) Explain three precautions that must be taken with open bus-bar systems (above extra-low voltage) 3mks
   ii) Define a cable 2mks
   b) Describe the construction of the following cables
      i. PVC cable
      ii. Tough rubber sheathed cable 6mks
   c) Define the following terms
      i. ambient temperature
      ii. rating factor 4mks
   d) i. Explain the term current density 2mks
      ii. Calculate the current-carrying capacity of a 0.2 cm^2 conductor if the current density of the conductor is 300A/cm^2. 3mks

3. a) i. State three factors that determine the resistance of a conductor 3mks
      ii A PVC twin copper cable 60m long has a total voltage drop of 12V when it is carrying a current of 40A. Calculate the cross-sectional area of the cable and the power lost in the cable when this current is flowing. Given that $\dot{\rho}=1.7x10^{-6}$ 6mks
   b) Explain why protective switchgear is fitted in an installation 7mks
   c) State three categories into which the types of protection fall 3mks
   d) Describe the construction of a rewirable fuse 4mks

4. a) With the aid of a line diagram of a typical layout show the sequence of supply controls in a domestic installation. 10mks
   b) Explain the purpose of testing an installation 4mks
   c) Describe the preparations required for verification of polarity test 3mks
   d) State three types of visual electrical indicator elements 3mks