MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

FIRST YEAR **SECOND** SEMESTER EXAMINATION FOR, DIPLOMA ELECTRICAL AND ELECTRONICS ENGINEERING

EEE 052 - ELECTRICAL INSTALLATION TECHNOLOGY I

DURATION: 2 HOURS

DATE: 14/12/208

TIME: 9 – 11 A.M.

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

a. Define the following terms;
   i. Conductor
   ii. Domestic ring circuit (4 Marks)

b. State THREE important characteristics of a conductor (3 Marks)

c. State two types of electrical indicator (2 marks)

d. Explain the main test carried out on an electrical installation (3 Marks)

e. State and explain FOUR properties of an insulator (8 Marks)

f. Calculate the resistance of a copper cable 1000m long if it has a cross-sectional area of $50mm^2$. The resistivity of copper is 1.7μΩ cm. (4 Marks)

g. Describe the procedure for making a married through joint using seven stranded cable (6 Marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a. Define the following terms as used in installation;
   i. Ambient temperature
   ii. Rating factor (4 Marks)

b. With the aid of a sketch, describe the construction of the following cables
   i. PVC cable
   ii. Tough rubber sheathed cable (6 Marks)

c. With the aid of a diagram, describe the construction of a P.I.L.C.S.W.A cable (7 Marks)

d. Calculate the current - carrying capacity of 0.1 cm^2 conductor if the current density of the conductor is 400 A/cm^2 (3 Marks)

QUESTION THREE (20 MARKS)

a. Explain any TWO purposes of testing an installation (4 Marks)

b. Outline requirements the preparation for verification of polarity test (3 Marks)

c. With the aid of a diagram, describe the construction of high breaking capacity fuse (5 Marks)

d. With aid of a diagram, describe the testing of current operated earth leakage circuit breaker (8 Marks)

QUESTION FOUR (20 MARKS)

a. State THREE types of visual electrical indicator element (3 Marks)

b. State any THREE IEEE Regulations requirement regarding bell transformer (3 Marks)

c. With the aid of a diagram, describe the construction and operation of Class- B type bell transformer (5 Marks)

d. With the diagram, describe the operation of a relay which would be incorporated in a trembler bell in order to provide a continuous ringing bell (9 Marks)