



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2013/2014

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN  
ELECTRICAL INSTALLATION

**EEE 0125: ELECTRICAL MAINTENANCE AND FAULT DIAGNOSIS**

**DATE: APRIL 2014**

**TIME:1 ½ HOURS**

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**INSTRUCTIONS:** Answer question *one* and any other *two* questions

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### QUESTION ONE – (30 MARKS)

- (a) Define the following terms as used in measurement systems:
- (i) Shunt
  - (ii) Multiplier (4 Marks)
- (b) A moving coil instrument gives a full scale deflection when a current of 40mA flows through it if the internal resistance is  $20\Omega$ , determine the value of the shunt resistance to be connected in parallel with the instrument to enable it measure up to 30A. (4 Marks)
- (c) Distinguish between ‘fault’ and ‘overload’ currents. (4 Marks)
- (d) State three ways of detecting faults in electric circuits. (3 Marks)
- (e) State three possible causes of a motor failing to start. (3 Marks)
- (f) State four reasons of why a motor overheats. (4 Marks)
- (g) State three symptoms of a high resistance fault in an electric circuit. (3 Marks)
- (h) State any two circuit protection devices. (2 Marks)
- (i) Highlight three causes of high resistance connections. (3 Marks)

**QUESTION TWO – (15 MARKS)**

- (a) State any three equipments required for carrying out test on electrical installations. (3 Marks)
- (b) Describe the procedure for repairing a disconnected live wire. (2 Marks)
- (c) State five reasons why a motor vibrates and describe how each cause can be corrected. (10 Marks)

**QUESTION THREE – (15 MARKS)**

- (a) Explain the term “earth loop impedance test? (2 Marks)
- (b) Explain the need for earth loop impedance test. (2 Marks)
- (c) With the aid of a diagram, explain the construction and operation of a megger. (11 Marks)

**QUESTION FOUR – (15 MARKS)**

- (a) State three advantages and three disadvantages of moving iron instruments. (6 Marks)
- (b) Describe the causes and effects of broken and disconnected conductors in a circuit. (6 Marks)
- (c) State three methods used to achieve damping in measuring instruments. (3 Marks)