



# 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 0123: ELECTRICAL INSTALLATION TECHNOLOGY III**

**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 a special installation giving any four types. (5 Marks)
- (b) Describe the conditions required for corrosion to occur stating at least two methods to eliminate it. (5 Marks)
- (c) Define flame-proof enclosure for an electrical apparatus. (2 Marks)
- (d) List any three divisions of safety hazardous areas with reference to flammability of each. (3 Marks)
- (e) Distinguish between a temporary and flame proof installations and list at least two types of each. (6 Marks)
- (f) Define electrical tariff. (1 Mark)
- (g) Explain the two part tariff as a method of charging electricity consumption and state two advantages of the methods. (5 Marks)

### QUESTION TWO – (15 MARKS)

- (a) Describe the following types of special installations stating any special requirements of each in accordance to I.E.E regulations and Health safety Act 2009.
  - (i) Petroleum and chemical plants. (3 Marks)
  - (ii) Caravan sites (3 Marks)
  - (iii) Hospital theatres (3 Marks)

- (b) State any two sources of emergency power stand-by supply. (2 Marks)
- (c) Distinguish between constant-voltage and current basic battery charging methods. (4 Marks)

**QUESTION THREE – (15 MARKS)**

- (a) State any three factors that affect cable rating in an electrical installation work. (3 Marks)
- (b) Explain the functions of instrument transformers as applied to measurements. (4 Marks)
- (c) With the aid of a labelled circuit explain the principles of operation of a bar-type current instrument transformer and list two applications of the instrument. (8 Marks)

**QUESTION FOUR – (15 MARKS)**

- (a) Distinguish using suitable sketches the main differences between a series and shunt d.c motors. (4 Marks)
- (b) Draw a wiring circuit of a voltage operated earth leakage circuit breaker and describe its operations. (6 Marks)
- (c) Define power factor. (1 Mark)
- (d) Explain any one method of power factor correction in an electrical installation. (4 Marks)