



TECHNICAL UNIVERISTRY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

CERTIFICATE IN ELECTRICAL & ELECTRONIC ENGINEERING  
(CEPE II)

**EEP 1105: ELECTRICAL INSTALLATION TECHNOLOGY II**

END OF SEMESTER EXAMINATION

**SERIES: DECEMBER 2014**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions  
Maximum marks for each part of a question are as shown  
This paper consists of **TWO** printed pages

### Question One (Compulsory)

- a) Describe the following THREE main features of indicating instruments:-  
(i) Deflecting torque  
(ii) Controlling torque  
(iii) Damping torque (9 marks)
- b) With the aid of a well labeled diagram, describe the attraction type moving iron instrument (7 marks)
- c) Two capacitors having capacitances of  $10\ \mu F$  and  $5\ \mu F$  respectively are connected in series across a 240V supply. Determine:  
(i) The P.D across each capacitor  
(ii) The charge on each capacitor (4 marks)

### Question Two

- a) (i) State THREE types of single phase motors and explain which type is best suited to be used when on load starting is required.  
(ii) State THREE applications for capacitor start single phase motor. (7 marks)
- b) (i) The magnetic field produced by single phase motor is pulsating.  
(ii) Show by sequence of two diagrams, how the rotating magnetic field is set up.
- c) State TWO methods of induction motor speed control. (13 marks)

### Question Three

- a) (i) State THREE types of D.C. motors  
(ii) With the aid of circuit diagram explain any TWO types of D.C machine field connections. (9 marks)
- b) (I) State the function of the back E.M.F in a D.C. motor.  
(i) Explain  
(ii) Commutation  
(II) The reason for excessive sparking at the brushes of a d.c. machine. (11 marks)

### Question Four

- a) (i) Explain using a diagram TWO methods by which transformer windings are wound around the iron core  
(ii) Name all the losses which occur in a transformer. Compare value of the losses when the transformer is (A) on no-load and (B) on full load (11 marks)
- b) (i) State the tests carried out on the transformer to determine its efficiency.  
(ii) Explain the conditions which must be fulfilled so that TWO three phase transformers operate in parallel (9 marks)

### Question Five

- a) (i) State THREE common faults in an electrical installation
- (ii) Explain briefly how autotransformer starting system operates **(8 marks)**
- b) Describe the following maintenance schemes:
- (i) Preventive
  - (ii) Corrective
  - (iii) Planned **(7 marks)**
- c) State the tests carried out when trouble shooting electrical installments. **(5 marks)**