



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

**FIRST YEAR SECOND SEMESTER EXAMINATION DIPLOMA IN ELECTRICAL
ENGINEERING**

EED 114/MEDPR 203: ELECTRICAL MEASUREMENTS AND TESTING (EMT) I

DATE: 11/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (30 MARKS)

- (a) Define the following Electronic Devices:
- (i) Power Diode
 - (ii) LED
 - (iii) Photo Diode
 - (iv) PIN Diode
 - (v) Photo Transistor
 - (vi) Laser Diode
 - (vii) Transducer (14 marks)
- (b) In any TWO Electronic devices mentioned in Q1 (a) explain how they works (6 marks)
- (c) With an aid of labeled diagrams, Explain
- i. Half wave rectification
 - ii. Full wave Rectification (8 marks)

- (d) Give Two applications rectifier diodes (2 marks)

QUESTION TWO (20 MARKS)

- (a) Show how a transistor is used as an amplifier (4 marks)
- (b) Give THREE advantages of Transistors as compared to thermionic valves (6 marks)
- (c) In a certain Transistor, a change in Emitter of 1mA produces a change in collector current of 0.98mA . Determine the short circuit current gain of the transistor. (3 marks)
- (d) State TWO types of field effect transistors (FETS) (2 marks)
- (e) With aid of labeled diagrams, explain JFET characteristics (5 marks)

QUESTION THREE (20 MARKS)

- (a) Briefly explain how an amplifier is operated (4 marks)
- (b) Describe THREE major classes of operation in amplifiers (12 marks)
- (c) Show how amplifiers are connected in cascade (4 marks)

QUESTION FOUR (20 MARKS)

- (a) Explain briefly a moving coil Galvanometer (5 marks)
- (b) Differentiate between Ammeters and voltmeters (5 marks)
- (c) A meter is supposed to measure a potential different (p.d) up to 20V . The millimeter has a full – scale deflection of 10mA and has an internal resistance of 6Ω . Find:-
- (i) The p.d across the milliammeter at full scale deflection
- (ii) The multiplier required to be connected in series. (10 marks)

QUESTION FIVE (20 MARKS)

- (a) State FIVE techniques applied in Transistor biasing (10 marks)
- (b) Describe the variations of output current with input signal for the transistor (8 marks)
- (c) Explain briefly superimposed signals (2 marks)