



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

SECOND YEAR FIRST SEMESTER EXAMINATION DIPLOMA IN ELECTRICAL
ENGINEERING

EED 209: ELECTRICAL MEASUREMENTS AND TESTING (EMT)II

DATE: 15/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

1. Question 1 compulsory

2. Do any other TWO questions .

QUESTION ONE (30 MARKS)

- (a) Define the process of measurement of a system (3 marks)
- (b) State Two requirements of a measurement system (2 marks)
- (c) Explain the significance of measurement (4 marks)
- (d) Describe the following instruments
 - i. Mechanical instruments
 - ii. Electrical instruments
 - iii. Electronic instruments (12 marks)
- (e) With an aid of labeled block diagrams explain the functions of an instrumentation system (9 marks)

QUESTION TWO (20 MARKS)

- (a) With an aid of labeled diagram explain
 - (i) An ammeter

- (ii) Voltmeter instruments (10 marks)
- (b) A meter of internal resistance 6Ω is supposed to measure 20V. If the full scale deflection current is 10mA , find the p.d across the millimeter and the multiplier required to be connected in order to meet the conditions. (10 marks)

QUESTION THREE (20MARKS)

- (a) Define
- (i) LED
 - (ii) Photo Diode
 - (iii) Amplifier
 - (iv) Oscillator
 - (v) Thermometer (8 marks)
- (b) With an aid of labeled diagrams explain how a signal is modulated and transmitted to far off distances. (7 marks)
- (c) Describe a kicking wire experiment. (5 marks)

QUESTION FOUR (20 MARKS)

- (a) What is an Aerial? (2 marks)
- (b) Briefly explain how radio waves are propagated into the space (5 marks)
- (c) Describe the radiation pattern of an aerial (8 marks)
- (d) Differentiate between indoor antenna and built in antenna (5 marks)

QUESTION FIVE (20 MARKS)

- (a) Explain the process of installing a television Antenna (5 marks)
- (b) With an aid of labeled diagrams, explain the operation of a multi-channel Aerial (8 marks)
- (c) Explain the following
- (i) Aerial Gain
 - (ii) Beam width
 - (iii) Front to Back Ratio (7 marks)