



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

First YEAR second SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL
AND ELECTRONICS ENGINEERING

MED-PR 214: ELECTRICAL MEASUREMENTS AND TESTING I

DATE: 2/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTIONS ONE (COMPULSORY) (30 MARKS)

- (a) Differentiate intrinsic and extrinsic semi- conductors. (2 marks)
- (b) With an aid of labeled diagrams, explain a P-N junction. (6 marks)
- (c) Briefly explain
 - i. Forward biased junction
 - ii. Reverse biased junction (8 marks)
- (d) By showing recommended symbols for both NPN and PNP transistors, explain their operations. (6 marks)
- (e) How is a transistor used as an Amplifier ? (4 marks)
- (f) Explain a single – transistor Amplifier (4 marks)

QUESTION TWO (20 MARKS)

- a) Explain the following components
- (i) Diode
 - (ii) Capacitor
 - (iii) Inductor
 - (iv) Optic fibre
 - (v) LED
- b) In any THREE components /devices in Q2 (a) give two applications. (6 marks)
- c) With an aid of a diagram, explain briefly a single – stage transformer (4 marks)

QUESTION THREE (20 MARKS)

- a) List any TWO types capacitors (2 marks)
- b) Show how capacitors are connected in
- i. Series
 - ii. Parallel (4 marks)
- c) State any TWO applications of capacitors. (2 marks)
- d) Describe THREE classes of amplifier operations (12 marks)

QUESTION FOUR (20 MARKS)

- a) What is a feedback circuit (2 marks)
- b) With an aid of a labeled diagram, explain an Oscillator circuit? (8 marks)
- c) State any FOUR requirements of Oscillator circuits (6 marks)
- d) Explain a Colpitts oscillator circuit (4 marks)

QUESTION FIVE (20 MARKS)

- a) What is a transducer? (3 marks)
- b) Name any TWO Transducers (2 marks)
- c) With an aid of a construction diagram explain a moving coil– microphone. (10 marks)
- d) Explain the following
 - (i) Amplitude
 - (ii) Frequency
 - (iii) Periodic Time
 - (iv) Wave length
 - (v) Angular velocity (5 marks)