



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

CERTIFICATE IN ELECTRICAL AND ELECTRONIC ENGINEERING

EPC 213 ELECTRICAL MEASUREMENT AND FAULT DIAGNOSIS

DATE: 3/5/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS:

This paper consist of Two sections A and B

Answer Question ONE and any other Two in section B

SECTION A

QUESTION ONE (30 MARKS)

- a) Explain how stroboscopic effects occurs in fluorescent lamps
- b) explain how stroboscopic effects can be controlled (10 marks)
- c) with an aid of a diagram explain how low pressure mercury vapour lamp operate (10 marks)

SECTION B

QUESTION TWO (20 MARKS)

- a) With an aid of a diagram explain how fluorescent lamps works on dc supply (15 marks)
- b) Explain two advantages of trunking wiring system as compared to conduit wiring system (5 marks)

QUESTION THREE (20 MARKS)

- a) Open circuit
 - i. Short circuit

- ii. Earth or ground fault (6 marks)
- b) Explain the common type of faults in the following electronics materials
 - i. Resistors
 - ii. Variable resistors
 - iii. Capacitors
 - iv. Inductors including transformers
 - v. Semiconductors devices (diodes, transistors) (14 marks)

QUESTION FOUR (20 MARKS)

With respect to fluorescent lamp, explain THREE possible fault, the test to be carried and the corrective action when the following symptoms are observed;

- a) Lamp fail to start-bright glow from one end
- b) Lamp does not attempt to start- both ends glow brightly
- c) Lamp flashes on and off -fail to maintain discharge (20 marks)

QUESTION FIVE (20 MARKS)

With respect to motors explain, four possible causes and corrective action when the following faults are observed

- a) Vibration
- b) Frame heating
- c) No rotation
- d) Brushes heating
- e) Mechanical noise