MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR CERTIFICATE IN ELECTRICAL ENGINEERING

EPC 117: DIGITAL ELECTRONICS

DATE: 20/12/2017 **TIME: 8.30-10.30 AM**

INSTRUCTIONS

1. Question 1compulsory
2. Do any other TWO Questions
3. Neat work recommended :

QUESTION ONE (COMPULSORY) (30 MARKS)

(a) Define the term resolution of a D/A converter (3 marks)

(b) What is meant by the

i. linearity of a D/A converter

ii. A/D Converter

iii. Meant by temperature sensitivity of D/A converter

iv. Meant by the range of input of D/A converter (10 marks)

(c) What happens to the information stored in a memory location after it has been read? (3 marks)

(d) Differentiate between the random – access memory and sequential memory from the point of view of speed of operation (4 marks)

(e) Explain what happens when there is no provision for information in the read only memory. If yes , then why is it called read only memory (ROM) (5 marks)

(f) State any THREE examples of Random Access memory (RAM) (3 marks)

(g) Differentiate between PROM and EPROM (2 marks)

QUESTION TWO (20MARKS)

(a) Define an optic fibre cable (2 marks)

(b) Explain how the fibre cable operates in transmission of signals inform of light (10 marks)

(c) Describe how a photo transistor is used with a logic circuit in the industry (10 marks)

QUESTION THREE (20MARKS)

(a) Mention any TWO principles applied in optical Transducers (4 marks)

(b) Explain a shaft Encorder (6 marks)

(c) With aid of labeled diagram(s) explain a data acquisition conversation system (10 marks)

QUESTION FOUR (20 MARKS)

(a) List any FOUR advantages of digital instruments (8 marks)

(b) With an aid of a block diagram explain a multiple digital systems (4 marks)

(c) Differentiate between digital – Analogue systems (4 marks)

QUESTION FIVE (20 MARKS)

(a) State any ONE method of security offered to optical fibre communication during transmission of signals (2 marks)

(b) Define (i) Photo diode

(ii) LED (4 marks)

(c) Describe how the light emitted by LED or laser diode is modulated by the applied signal (10 marks)

(d) With an aid of labeled diagram(s) explain how an analogue input electrical signal produces an output light signal (4 marks)