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 216: POWER ELECTRONICS

DATE: 13/12/2017 **TIME: 8.30-10.30 AM**

INSTRUCTIONS

1. **Question 1 is compulsory**
   Do any other TWO Questions
2. **Neat weak required**

QUESTION ONE (30 MARKS)

(a) Define the following Electronic Components

(i) Power Diode

(ii) Photo Diode

(iii) Light Emitting Diode (LED)

(iv) Varactor Diode

(v) Pin Diode (10 marks)

(b) In any THREE of the diodes in Q1(a) explain their respective operations (9 marks)

(c) Optic fibre cable Technology is the most advanced system all over world today. Describe its operations (11 marks)

QUESTION TWO (20 MARKS)

(a) Differentiate between Silicon controlled rectifiers (SCRs) and power diodes (4 marks)

(b) With an aid of characteristics curves, explain the operation of an SCR (10 marks)

(c) Define the following

i. Modulation

ii. Demodulation in communication electronics (6 marks)

QUESTION THREE (20 MARKS)

(a) Explain briefly an operational Amplifier (OPAMP)

(b) Show how an OPAMP is connected in an electronic circuit (10 marks)

(c) Describe a cyclo converter in A.C Circuit (10 marks)

QUESTION FOUR (20 MARKS)

(a) Briefly explain the following circuits

(i) Analogue circuits

(ii) Digital circuits (8 marks)

(b) Analyze how a signal is processed in a Digital/Analogue and vice –versa (10 marks)

(c) State any TWO applications of analogue to digital converters (A/D) (2 marks)

QUESTION FIVE (20 MARKS)

(a) Filters are divided into two types. Name them (4 marks)

(b) Explain any two other types of filters applied in the electrical Engineering Industry (9 marks)

(c) State any FOUR advantages of using optic fibres in communication Engineering (7 marks)