MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SECOND SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

EED 213: ELECTRICAL MEASUREMENTS AND TESTING III

DATE: 3/8/2016 **TIME: 11:00 – 1:00 PM**

INSTRUCTIONS

1. **Question one Compulsory**

2. Do any other TWO Questions

QUESTION ONE: (COMPULSORY)(30 MARKS)

a) Define the following electronic components
   i) Transducer
   ii) Decoder
   iii) Encoder
   iv) Receiver (8 marks)

b) A decoder is also referred to as demodulator. Briefly explain how it is applied in Telecommunication engineering (6 marks)

c) Explain the term modulation as used in telecommunication Engineering. (5 marks)

d) With the aid of wave forms explain
   i) Amplitude modulation (AM)
   ii) Frequency modulation (FM) (8 marks)

e) State any THREE applications of frequency modulation (3 marks)

QUESTION TWO (20 MARKS)

a) Explain the following terms as applied in transmission of signals

i) Carrier frequency

ii) Modulating signal

iii) Angular velocity (6 marks)

b) Show the following wave forms as applied in amplitude modulation

(i) Un- modulated carrier voltage

(ii) Modulating voltage

(iii) Amplitude modulated voltage (6 marks)

c) With an aid of a frequency spectrum explain upper and lower side bands method of transmission (5 marks)

d) Mention THREE quantities involved in varying modulation process (3 marks)

QUESTION THREE (20 MARKS)

a) A superheterodyne Radio receiver has an intermediate frequency (I.F) of 465 KHZ and is turned to 1065 KHZ . Calculate

i) The frequency of local oscillator

ii) The frequency of the image signal (8 marks)

b) Define Demodulation (2 marks)

c) Calculate the noise voltage produced in a 10Ω resistor in a 1 MHZ band width if the temperature is 20^0c. (4 marks)

d) Explain any FOUR components of a tape recorder (6 marks)

QUESTION FOUR (20 MARKS)

a) State TWO methods applied in measurement of quantities (2 marks)

b) Explain how direct method measurement is done (4 marks)

c) Describe the translational encoder (14 marks)

QUESTION FIVE (20 MARKS)

a) A tape receives 12,000 numbers per second . The tape speed is 1.5m/ls . Determine the no. density of the tape (8 marks)

b) With aid of labelled diagrams explain liquid crystal displays (LCDs) (12 marks)