TECHNICAL UNIVERSITY OF MOMBASA

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN TELECOMMUNICATION ENGINEERING

ETI 2201: TELECOMMUNICATION PRINCIPLES.

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2016

TIME: 2HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates
You should have the following for this examination
-Answer Booklet, examination pass and student ID
This paper consists of Choose No questions. Attempt Choose instruction.
Do not write on the question paper.

Question ONE

a) i. Define the two primary resources employed in a Communication system.

   ii.   Draw the block diagram of the Telecommunication system and state the function of each block

   (12marks)

b) Explain the function of the following bodies

   i.   ITU

   ii.   ETSI

   iii.   CCK   (6marks)

c) State any Two applications of the   Very high frequency band and the super high frequency band.

   (3marks)

Question TWO

a) With the aid of appropriate waveforms differentiate between AM and FM types of modulation.

(10marks)

b) Show from the basics that a modulated waveform will consist of the carrier, lower and upper sidebands. (5marks)

A 1Kw carrier is amplitude modulated by a sinusoidal signal to a depth of 50%. Calculate
  (i) the power at the lower side frequency
  (ii) total power
  (iii) the percentage of the lower side frequency power to the total power

(5marks)

Question THREE

a) With the aid of diagrams describe the operation of the following microphones:

  i. Condenser

  ii. Crystal (12marks)

b) Using appropriate sketches explain the effect of a microphone which is:

  i. Omnidirectional
  ii. Cardioid

  Stating two applications in each case. (8marks)

Question FOUR

a) (i) With the aid of sketches explain the process of frequency modulation
(ii) State two advantages and two disadvantages of using FM over AM.A

(14marks)

b) Differentiate between

  i. Narrowband FM, NBFM,
  ii. Wideband FM, WBFM (6marks)

Question FIVE

a) With the aid of a diagram describe the operation of a horn loudspeaker (4 marks)

b) Differentiate between the analogue and digital signals :

(4 marks)

c) Describe the foolowing terms as applied in measurement.

  i. Decibel

  ii. Nepers (8 marks)

d) A loudspeaker generates 60dB SPL at 1meter with 2watts of power. Determine the required power to produce 98dB SPL at 1meter from the loudspeaker (4marks)