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TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

ELECTRICAL AND ELECTRONICS ENGINEERING DEPARTMENT

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN TELECOMMUNICATION ENGINEERING

ETI 2201: TELECOMMUNICATION PRINCIPLES.

SPECIAL/SUPPLEMENTARY EXAMINATION~~END OF SEMESTER EXAMINATION~~

SERIES: ~~DECEMBER~~ SEPTEMBER 201~~7~~8

TIME: 2HOURS

DATE: ~~Pick Date Select Month Pick Year~~Sep 2018

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 term telecommunication

ii. Explain the functions of the transmission and reception sections in a Communication system

[12marks]

b) Differentiate between simplex and duplex modes of communication sitting two examples in each case.   [8marks]

Question TWO

a) i. Outline the radio waves classification of an RF signal in terms of frequencies.

ii. Explain the function of the following bodies: ITU, ETSI, CCK   [14marks]

b) Compare between the analogue and digital signals in terms of:

i.   Signal and its wave

ii.   Representation

iii.   Response to noise and

iv.   Bandwidth   [6marks]

Question THREE

a)   Explain the requirements of the following characteristics when selecting a microphone:

    i.   Directionality

    ii.   Frequency response

    iii. Impedance   [6marks]

b)   With the aid of a diagram explain the operation of a dynamic type of microphone.   [8marks]

Question FOUR

a)   (i) Explain how an AM modulation sidebands are generated hence sketch the frequency spectrum of the
    side frequencies of 1Mhz carrier modulated by 1Khz tone.   [6marks]

b)   i. Define modulation index

    ii. Use waveform sketches to show how modulation index affects the modulated signals for:

     I.   m= 50%
    II.   m = 100%
    III.   m = over 100%,   [8marks]

c)   A carrier wave is to be modulated to 80% level. Determine the total power transmitted.   [2marks]

d)   State two advantages and two disadvantages of using Amplitude modulation.   [4marks]

Question FIVE

a)   I. Explain the following terms as applied to FM signal.

  i.   Frequency deviation

  ii. Modulation index   [4marks]

  II.   State the effect of modulation index on an FM signal.   [4marks]

  III.   A transmitter has a modulation signal of 10 KHz and a maximum deviation of 20 KHz. Determine
    the modulation index.

b)   With the aid of a diagram explain the operation of a moving coil loudspeaker   [7 marks]

c)   Differentiate between the analogue and digital signals: [5 marks]