# TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

## UNIVERSITY EXAMINATION 2017/2018

BACHELOR OF SCIENCE (ELECTRICAL & ELECTRONIC ENGINEERING)

EEE 2418: VISUAL DISPLAY SYSTEMS I

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: SEPTEMBER 2018**

**TIME: 2** HOURS

**DATE: SEPTEMBER 2018**

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of FIVE questions. Attempt **Question ONE (Compulsory)** and any other **TWO Questions**

**Do not write on the question paper.**

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**Question ONE (Compulsory)**

a. With the aid of a diagram, describe the operation of a transmitter monochrome picture tube. **(10 marks)**

b. Explain why TV transmission is limited to about 100 km **(2 marks)**

c. Discuss the influence of the following on TV bandwidth

   i. Colour resolution

   ii. Number of scanned lines

   iii. Field frequency **(6 marks)**

d. Describe the factors listed below which the television system must deal with for successful transmission and reception of pictures:

   i. Number of scanning lines

   ii. Flicker

   iii. Fine structure **(12 marks)**

**Question TWO**

a. Describe the advantages, disadvantages and applications of the following scanning sequence:

   i. Progressive scanning

   ii. Interlace scanning **(6 marks)**

b. With the aid of a diagram that shows the horizontal line, sync details, horizontal blanking periods and picture space on the raster, describe the following:

   i. Front porch

   ii. Line sync pulse

   iii. Back porch **(14 marks)**

**Question THREE**

a. i. Describe briefly co-channel and adjacent channel interference effects.

   ii. Discuss the techniques employed to eliminate such interference in fringe areas. **(9 marks)**

b. Sketch composite video signal waveform for at least three successive lines and indicate:

   i. Extreme white level

   ii. Blanking level

   iii. Pedestal height **(3 marks)**

c. i. Show that a total channel bandwidth of 7 MHz is necessary for successful transmission of both picture and sound signals in the 625 line TV system.

   ii. Sketch frequency distribution of the channel and mark the location of picture and sound signal carrier frequencies.

   iii. Explain why the sound carrier is located 5.5 MHz away from the picture carrier.

**(8 marks)**

**Question FOUR**

a. Describe the facilities for program production and editing in a modern TV studio complex

**(10 marks)**

b. Describe with the aid of a diagram the basic principle of operation of a television camera tube.

**(10 marks)**

**Question FIVE**

a. Briefly describe **FIVE** application areas of TV systems **(5 marks)**

b. Describe **THREE** types of video switchers **(6 marks)**

c. i. Discuss the merits of electromagnetic deflection over electrostatic deflection in television picture tubes.

ii. Explain why ‘cosine winding’ is used for deflection coils.

iii. Sketch the cross-sectional view of a yoke showing location of vertical and horizontal deflection windings about the neck of the picture tube.

**(9 marks)**