TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIVERSITY EXAMINATIONS FOR DEGREE IN

BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC ENGINEERING

EEE 2418: VISUAL DISPLAYS I

END OF SEMESTER EXAMINATIONS
SERIES: APRIL 2014
TIME: 2 HOURS

INSTRUCTIONS:

- You should have the following for this examination:
  - Answer booklet
  - calculator
- Answer question **ONE (Compulsory)** and any other **TWO.**

This paper consists of Three printed pages

QUESTION 1 (Compulsory)

a) Explain the following terms used in Television:
   i. Critical flicker frequency
   ii. Vertical resolution **(4 marks)**

b) i) With the aid of a diagram, explain the principle of interface scanning.
   ii) A 625 – line TV system, has a picture scan rate of 50HZ and 2:1 interlace. The blanking time is 40 lines. Calculate the video bandwith of the system. **(10 marks)**

c) i) Sketch the CCIR β standard composite video wave form signal is from a grey scale generator.

ii) State constituent parts of the field synchronizing pulses and their role in interlaced scanning scheme. **(10 marks)**

d) i) Explain the difference between negative and positive modulation in TV transmission.
ii) Explain the vestigial sideband transmission of signals. Illustrate using diagram. **(6 marks)**

QUESTION 2

a) Explain the following as applied to television TX systems:
i. Pre-emphasis
ii. Intercarrier sound signal **(6 marks)**

b) Describe, giving block diagrams, the operation of a television transmitter using high level modulation. **(10 marks)**

c) i) State the signals transmitted in Digital Video Broadcasting –Terrestial (DVB-T)

ii) Explain briefly how coded orthogonal frequency division multiplexing (COFDM) Modulation works in Basic (DVB-T) **(4 marks)**

QUESTION 3

a) State the requirement of gain and passband response of Video IF amplifier. **(4 marks)**

b) Explain giving reasons why the r.f stage is most suited for AGL Control. **(4 marks)**

c) i) Draw a block diagram of a television receiver.
ii) Sketch the signal waveforms at various points and state the function of each block briefly.
(12 marks)

QUESTION 4

a) How are the following corrections applied to the video signal from the camera tuble.
i. Gamma correction
ii. Shading correction **(4 marks)**

b) Explain the charge coupling techniques used in CCD for generating the video signal. **(6 marks)**

c) Describe the construction and operation of a vidicon camera tube. Illustrate with a diagram.
(10 marks)

QUESTION 5

a) i) State the TWO methods of digitizing Television signals.
ii) Explain briefly the advantages of using digital techniques in Television systems. **(8 marks)**

b) Discuss the limitations of Twisted LCD and state how they are overcome. **(4 marks)**

c) Describe the construction and working of TFT LCD panel display. **(8 marks)**