UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

FINAL EXAMINATION FOR 2025/2026

DEPARTMENT: ICT

SEMESTER: TWO

PROGRAMME(S): ELECTRONIC & COMMUNICATION ENGINEERING (DECE)

YEAR OF STUDY: TWO

COURSE: RADIO & TV MAINTENANCE

COURSE CODE: ECE224

DATE: WEDNESDAY, 24/06/2026

TIME: 2:00 PM – 5:00 PM

ROOM: TENT B

DURATION: 3 HOURS

INSTRUCTIONS:

(i) This paper contains two Sections: A (40 marks) & B (60 marks).

(ii) **Attempt ALL** questions in **Section A, and ONLY THREE** questions in **Section B**.

(iii) Credit will be given for use of relevant examples and illustrations.

(iv) Begin each number in Section B on a new page of the answer sheet.

(v) **DO NOT** write on this question paper.

Section A (40 marks)

Part I: OBJECTIVE QUESTIONS

(@1marks)

1. A device that processes digital broadcast or internet signals and converts them into video and audio formats that the television can display is called _____ .
   A. Yagi antenna
   B. Tuner
   C. Set top box
   D. Digital colour processor

2. Aspect ratio for CRT television receivers is_____.
   A. ⅜
   B. $\frac{4}{3}$
   C. $\frac{16}{9}$
   D. $\frac{9}{16}$

3. What is HDMI input?
   A. High Density Main Input
   B. Horizontal Digital Main Input
   C. High Definition Multimedia Interface
   D. Highly Defined Multiple Inputs

4. The four main parts of the Switched Mode Power Supply are:
   A. Diodes, Capacitors, Rectifiers,
   B. Filter capacitor, MOSFET, Resistor, ICs
   C. Rectifiers, MOSFET, Switching Transformer, Oscillator
   D. Optocoupler, Diodes, ICs, Input transformer

5. What is the scanning type for an LCD resolution of 480p has:
   A. Interlace
   B. Odd and Even
   C. 720 horizontal pixels
   D. Progressive

6. Scanning is a fundamental principle in Television technology, which of the following is a scanning technique;
   A. NETFIX
   B. PALS
   C. ATL
   D. SECAM

7. Start of the vertical scan in an LCD TV is_____.
   A. Electron beam start up and down
   B. T-Con
   C. GHL
   D. STV

8. Acronym for terrestrial digital television broadcasting system used in Uganda is;
   A. DVD-T
   B. DVB-T
   C. TDBS
   D. DVB-C

9. The Intermediate Frequency of the FM receiver is_____ .
   E. 72dB
   F. 10kHz
   G. 10.7GHz
   H. 10.7MHz

10. The T-con unit of the LCD TV is responsible for:_____.
   A. Controlling TV
   B. Timing the alarm
   C. Timing the TV to sleep
   D. Scanning, decoding video high beat-streams

11. If an FM receiver is tuned to 88.2MHz, its image channel frequency is _____ .
   A. 98.2MHz
   B. 10.7MHz
   C. 98.9MHz
   D. 109.6MHz

12. How many horizontal pixels are contained in one line of an LCD resolution of 3840x2160
   A. 3840x2160
   B. 2160
   C. 3860p
   D. 3840

13. In a colour TV, all different colours can be obtained by_____.
   A. combining the various colours
   B. Mixing Red with Yellow
   C. Mixing Red, Green and Yellow
   D. Mixing Red, Green Blue

14. Which of the following **DOES NOT** find application of radio wave at a general perspective?
   A. Sky wave
   B. Ground wave
   C. Photography
   D. Space application

15. Which of the following is **NOT** a component section in an AM superheterodyne receiver?
   A. RF
   B. Mixer
   C. Loud speaker
   D. CRT

16. The mixer stage of the radio receiver receives signals from _____.
   E. The IF signal stage
   F. The rf and local oscillator stages
   G. Mixed IF signal stage
   H. Amplified radio signal stage

17. Which is the purpose of degaussing in a TV
   A. Create a visible sight
   B. Remove unwanted colors
   C. Demagnetize the electromagnetic signals
   D. Persistent viewership

18. Which is one of the fundamental components of a CRT

   A. Electron

   B. Limiter

   C. Plasma

   D. Gun

19. Amongst the most recent technology in the advancement of TV screen, which is most absolute, oldest in modernity;

   A. LCD

   B. LED

   C. CRT

   D. Plasma

20. What are the key building blocks of a linear voltage power supply?

A. Transformers and Batteries

B. Transformers, Rectifiers and Batteries

C. Rectifiers

D. Transformers, Rectifiers, Filters, Regulators

Part II: SHORT ANSWER QUESTIONS (20 marks)

a) Broadly articulate the concept of scanning, citing its types, the standards involved to the most recent technology used today? (6 Marks)
b) Explaining the different basic components of a basic AM superheterodyne receiver, describing each functionality distinctively. (6 Marks)
c) Draw a block diagram of a typical TV PAL encoder receiver (6 Marks)
d) Exhaustively elaborate the term "Degaussing" as a technician and its failure to function well? (2 Marks)

SECTION B: ATTEMPT ANY THREE(3) (60MARKS)

Question 2

a) A former student at UICT, a workshop requested you to explain the concept of Radio to a certain investor; how would you go about it, elaborate its components, and define polarization of radio waves (5 Marks)
b) Proceeding from the presentation, illustrate the classifications of the Radio waves (6 Marks)
c) With real-life examples, define the basic applications of radio wave technology (9 Marks)

Question 3

a) LCD displays are widely used in displaying adverts outdoor, calculators, computer and television monitors. With the aid of clear sketch diagrams explain how the TV LCD panel is able to display TV video pictures. **(10marks)**
b) List four differences between LCD and plasma TVs. **(4marks)**
c) With the use of sketch diagram explain the significance of the set top box in television signal reception. **(6marks)**

Question 4

a) With the aid of clear sketch diagrams describe the five main building blocks of the LCD TV. **(10marks)**
b) Electronic equipment performance depends mainly on its maintenance. Explain four types of maintenance that can be performed on the TV receiver. **(4marks)**
c) The historical match between PSG and Arsenal was to be telecast live that evening and student fans were already very excited and eager to watch the match on the 46-inch LCD TV in the student's recreation room, however, when the hour came to switch ON the TV set, it could not respond. No indicator lights, no sound came on, only silence and disappointment.
You happened to be with the students, apply systematic troubleshooting procedures to bring the TV to life. **(6marks)**

Question 5

a) You are required describe an antenna, highlighting its types and characteristics. Having acquired radio & tv technological knowledge, derive a concept to answer the above task. **(8 Marks)**

b) Explain at least two common faults that are mostly experienced in a color picture tube section of a TV **(4 Marks)**

c) As Analogue technology transitioned to Digital, a set top box (STB) was inverted. Briefly explain what it is, and describes at least four categories? **(5 Marks)**

d) Explain three purposes of AGC circuitry in a TV set (3 Marks)

END