UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
PROGRESSIVE ASSESSMENT EXAMINATIONS

ACADEMIC YEAR 2025/2026

PROGRAMME(S): DIPLOMA IN COMPUTER SCIENCE (DCS)

YEAR OF STUDY: TWO SEMESTER TWO

COURSE: SURVEY OF EMERGING TECHNOLOGIES

COURSE CODE : CSC2205

DATE: FRIDAY 26TH, JUNE 2026

TIME: 2:00 PM – 5:00 PM

DURATION: 3 HOURS

VENUE: RM 2.5, RM 2.6, RM 2.8, RM 2.9, RM 2.10

INSTRUCTIONS:

(a) This paper consists of two sections A and B
(b) Section A carry 40 marks and is compulsory
(d) Attempt any THREE questions from section B
(e) Any number in section B carry equal marks
(f) Credit will be given for use of relevant examples and illustrations
(g) Begin each number on a new page of the answer sheet

SECTION A: (40 Marks)
This section is compulsory, answer all questions

1. A small bookstore wants to stay competitive over the next five years. They hear about “emerging technologies” but aren’t sure what that means. If you had to give them one simple example of an emerging technology today, what would it be? **(04 marks)**
2. What is the fundamental difference between Augmented Reality (AR) and Virtual Reality (VR) in terms of user immersion? **(04 marks)**
3. List the four (4) core components typically found in an Internet of Things (IoT) ecosystem. **(04 marks)**
4. Briefly explain the concept of "Edge Computing" and state its primary advantage over Cloud Computing in data processing. **(04 marks)**
5. What is a "Smart Contract" in the context of Blockchain technology? **(04 marks)**
6. Two friends want to trade digital trading cards without using a bank or a central company to verify the trade. What features of blockchain could help them? **(04 marks)**
7. Name the three (3) main types of Machine Learning algorithms based on how they learn from data. **(04 marks)**
8. What is the "Digital Divide" and why is it a significant ethical concern regarding emerging technologies? **(04 marks)**
9. What is "Autonomous Things (AoA)" and give one real-world example beyond self-driving cars. **(04 marks)**
10. State two (2) major challenges facing the widespread adoption of Satellite (Starlink technology in Uganda. **(04 marks)**

SECTION B: (60 Marks)

Each question in this section is worth **20 marks**; answer any ***three*** questions.

Question 11:

a) Discuss four (4) ways in which Artificial Intelligence (AI) and automation are likely to influence the future of work. *(08 marks)*

b) Explain how AI and automation may result in job displacement in some industries while creating new employment opportunities in others. Support your answer with relevant examples. (04 marks)

c) Recommend two (2) strategies that governments or educational institutions can implement to prepare the workforce for the impact of AI and automation. For each strategy, explain how it would help workers adapt to changing job market demands. (04 marks)

d) Identify two (02) difficulties workers are likely to experience when transitioning to AI-driven work processes. (02 marks)

Question 12:

The Internet of Things (IoT) has led to the widespread use of smart home devices such as smart speakers, security cameras, thermostats, and connected door locks. While these devices improve convenience and automation, many users have reported incidents of hacking, unauthorized surveillance, and data misuse within smart home environments.

a) Identify and explain three (3) specific security risks associated with smart home IoT devices. (06 marks)

b) For each risk stated in (a) above, suggest a practical measure that users can apply to mitigate or prevent it. (03 marks)

c) Analyze two (02) advantages and two (02) disadvantages of using IoT in healthcare systems (08 marks)

d) Describe three (3) ways in which the Internet of Things (IoT) can be applied within a UICT learning environment to enhance teaching and learning. (03 marks)

Question 13:

A vocational training institute has installed a digital Learning Management System (LMS) and several IoT-enabled devices across campus, including smart attendance scanners, classroom temperature sensors, and online learning platforms. The system continuously collects large volumes of data such as student attendance records, exam scores, classroom conditions, and student interactions on the LMS.

a) Differentiate between ***data*** and ***information*** using an example from the scenario (04 marks)

b) Explain two (02) challenges the institute may face if the collected data is not properly organized or analyzed. (04 marks)

c) Propose two (02) ways the institute can convert the collected raw data into useful information for improving learning outcomes. (04 marks)

d) Classify the following items from the scenario into appropriate data types: (04 marks)

   i. Student exam scores
   ii. Classroom temperature readings
   iii. LMS chat messages
   iv. CCTV camera footage

e) Define the term **big data** and outline two (02) sources of big data (04 marks)

Question 14:

A TVET students studied how technology has changed over time. They learnt about the First Industrial Revolution, where machines like the steam engine replaced hand production, and they compared it with modern technological systems used in Uganda today, such as automated manufacturing and digital communication systems. They noticed how early industrial changes affected work, transport, and society in East Africa.

a) List two key inventions of the First Industrial Revolution (02 marks)
b) Explain three (03) points how the steam engine supported the expansion of factories during the First Industrial Revolution in Uganda (06 marks)
c) Compare working conditions in First Industrial Revolution factories with modern workplaces in Uganda's industrial sector. Identify two differences. (04 marks)
d) Based on your observations,
   i. Identify the current industrial revolution and give one reason to support your answer. (02 marks)
   ii. Using evidence, explain three societal risks associated with the current Industrial Revolution. (06 marks)

Question 15:

At Nansana Technical Institute, the administration introduced a new online learning management system (LMS) to support teaching and learning. The system allowed students to access notes, submit assignments, and communicate with lecturers using computers and mobile devices.

After two weeks of use, several problems were reported:

- Some students found the interface confusing and struggled to locate assignment submission tabs.
- Others complained that the system was slow and unresponsive, causing delays during tests.
- A few users abandoned the system and returned to handwritten submissions.
- Lecturers observed that students were making frequent errors when navigating the system.
- However, students who understood the system reported that it saves time and improves access to learning materials.

a) From a design expert's point of view, explain why students found the system difficult to use, giving two (02) reasons. **(04 marks)**
b) Evaluate and state two (02) effects of a poorly designed system on the institute's business profitability, and two (02) effects on students' learning outcomes. **(04 marks)**
c) If you were hired as a Design Expert, give four (04) HCI principles that you can apply to improve the e-learning platform. **(08 marks)**
d) State four (04) reasons why design experts still produce poor designs even after learning HCI design principles. **(04 marks)**

END

EXAMINER'S NOTE TO FINALISTS:

"As final-year students, you are not merely expected to regurgitate definitions. You are now the bridge between academia and industry. This examination assesses your ability to critically analyze, synthesize converging technologies, and evaluate their ethical and societal impacts. We are looking for the depth of thought befitting a graduating computer scientist."