



**UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
END OF SEMESTER TWO EXAMINATIONS
ACADEMIC YEAR 2025/2026**

PROGRAMMES : DIPLOMA IN COMPUTER SCIENCE (DCS)

YEAR OF STUDY TWO SEMESTER TWO

COURSE: GRAPHICAL USER INTERFACE

COURSE CODE: CSC 2203

DATE: THURSDAY, 25th/JUNE/2026

TIME: 2:00PM – 5:00PM

DURATION: 3 HOURS

VENUE: RM 2.5, RM 2.8, RM 2.9, RM 2.10, LAB 3

INSTRUCTIONS:

- i) Section A is compulsory**
- ii) Attempt Any three (3) questions in section B**
- iii) All questions carry equal marks**
- iv) Credit will be given for use of relevant examples**
- v) Begin each section b number on a new page of the answer sheet**

SECTION A

1. What is the primary goal of Human-Computer Interaction (HCI)?
 - A) To design faster processors for computers
 - B) To study and improve interaction between humans and computer systems
 - C) To eliminate the need for user testing
 - D) To develop operating systems only
2. Which statement best describes task-centered design?
 - A) Designing systems based on available technology features
 - B) Designing interfaces based on how users perform real tasks
 - C) Designing systems without involving users
 - D) Creating interfaces based on developer preferences
3. What is the first activity in task-centered design?
 - A) Building a working prototype
 - B) Identifying representative user tasks
 - C) Writing system code
 - D) Performing usability testing
4. Why is paper prototyping useful in early design?
 - A) It produces final system designs
 - B) It allows quick and low-cost exploration of ideas
 - C) It removes the need for user feedback
 - D) It ensures perfect interface design
5. What best describes a Wizard of Oz prototype?
 - A) A fully automated intelligent system
 - B) A system where a human simulates system responses behind the scenes
 - C) A system that uses artificial intelligence for decisions
 - D) A fully coded and deployed application
6. Which approach involves users directly in designing the system?
 - A) Expert evaluation
 - B) Participatory design
 - C) System simulation
 - D) Heuristic inspection

7. What is the main purpose of usability evaluation?

- A) To measure system processing speed
- B) To identify usability problems affecting user interaction
- C) To train developers in coding
- D) To improve database performance

8. Which of the following is a qualitative usability evaluation method?

- A) Task completion time measurement
- B) Error rate counting
- C) User interviews
- D) System response benchmarking

9. Which method involves observing users performing tasks in real-time?

- A) Survey analysis
- B) Direct observation
- C) System logging
- D) Interface simulation

10. Constructive interaction is best described as:

- A) One user testing a system alone
- B) Two users working together while discussing tasks
- C) Developers reviewing code
- D) Users filling in questionnaires

11. A process-oriented HCI standard focuses on:

- A) Visual appearance of interfaces
- B) Steps followed during system development and design
- C) Hardware requirements of a system
- D) Programming language rules

12. In a command-line interface, which command changes directory?

- A) move
- B) cd
- C) open
- D) dir

13. A good representation in interface design should be:

- A) Visually appealing but complex
- B) Easy to interpret and directly related to the task
- C) Highly abstract for flexibility
- D) Independent of user tasks

14. Which interface relies mainly on typed commands?

- A) Graphical User Interface
- B) Voice User Interface
- C) Command-Line Interface
- D) Touch Interface

15. What is the main purpose of a grid in GUI design?

- A) To improve system security
- B) To structure and align interface elements
- C) To increase processing speed
- D) To reduce memory usage

16. Which is NOT part of visible language in interface design?

- A) Layout
- B) Typography
- C) Programming logic
- D) Colour

17. Which principle reduces user memory load?

- A) Feedback consistency
- B) Recognition rather than recall
- C) Error recovery
- D) System flexibility

18. Usability heuristics and golden rules are mainly used to:

- A) Improve database performance
- B) Guide interface design and usability decisions
- C) Define hardware requirements
- D) Create system backups

19. Which heuristic ensures users are always aware of progress?

- A) Error prevention
- B) Visibility of system status

- C) Aesthetic and minimalist design
- D) Flexibility and efficiency

20. In HCI, a design pattern is:

- A) A programming algorithm used in system logic
- B) A reusable solution to a common interface design problem
- C) A hardware configuration standard
- D) A testing method for software speed

SECTION B [60 MARKS]

Attempt **ONLY THREE** Questions in this Section.

Question 21

A startup is developing a mobile food delivery application where users can browse restaurants, order food, and track delivery.

- a) Differentiate between qualitative and quantitative usability testing. (4 marks)
- b) Explain A/B testing and how it can be used to test two different checkout pages. (4 marks)
- c) Describe the Design Thinking process and explain how each stage helps improve the food ordering app. (12 marks)

Question 22

20 marks

A public safety agency is developing a mobile application that allows citizens to report emergencies such as robberies, violence, and break-ins. The system must support **fast, simple, and stress-free interaction**, especially in dangerous situations.

A user opens the application during a home invasion at night. They quickly bypass authentication, select an emergency type, capture location using GPS, attach evidence, and submit the report. The system responds with confirmation and shows response progress.

Design a **complete end-to-end user flow using low-fidelity paper mockups** showing how a user moves through the system from incident reporting to response tracking.

Your design should include all necessary screens required to complete the task, such as:

- Entry or quick access screen
- Emergency selection interface
- Location capture or confirmation
- Incident reporting form (photo and description)
- Submission confirmation
- Response tracking interface

Question 23

A financial institution is developing a mobile banking application for rural communities in Uganda where users may have limited digital literacy and low-end mobile devices.

- a) Explain the concept of User-Centered Design (UCD) (4 marks)
- b) Compare low-fidelity, medium-fidelity, and high-fidelity prototypes, giving examples of how each could be used in the development of this banking app. (9 marks)
- c) Describe how real users from rural communities would be involved in testing and improving the design. (7 marks)

Question 24

20 marks

You have been approached to develop a mobile application that allows Ugandan citizens to report infrastructure problems such as potholes, broken streetlights, and blocked drainage systems.

Design a **complete set of low-fidelity paper mockup screens** showing how a citizen would report an infrastructure issue from start to submission.

Your design should include:

- Access to the system (login or guest access if needed)
- Issue selection or reporting category
- Location capture (GPS or map selection)
- Photo upload and description entry
- Review and submission confirmation

Your design should clearly demonstrate the full user journey from identifying a problem to submitting a report.

Question 25

A certain company has launched an online citizen service portal where users can apply for services such as National IDs, driving permits, and business registration.

However, citizens have reported that the system is difficult to use. They complain that important information is hard to find, pages are cluttered, and users often make mistakes during applications.

A review of the interface shows:

- Pages contain too much text with little structure
- Important buttons (e.g. “Submit Application”) are not clearly visible
- Multiple fonts and inconsistent spacing are used
- Users receive unclear error messages when they make mistakes
- Navigation menus are inconsistent across pages

a) Using **Edward Tufte’s principles of information design**, identify **four problems** in the interface and explain why each reduces clarity or effectiveness. (8 marks)

b) Using **Jakob Nielsen’s usability heuristics**, identify **four usability problems in the system** and explain their impact on users. (8 marks)

c) Propose **four improvements** that would enhance both visual clarity and usability of the portal. (4 marks)

END