

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATION  
RESIT/SUPPLEMENTARY / SPECIAL EXAMINATIONS  
EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN  
COMPUTER SCIENCE**

**COSC 435: USER INTERFACE DESIGN**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 04/11/2021**

**11.30 A.M - 1.30 P.M.**

**INSTRUCTIONS**

- Attempt **Question 1** and any other **TWO** from **SECTION B**

**SECTION A- Compulsory**

**Question ONE [30 Marks]**

(a) Explain prototyping in the context of UI design **[4 Marks]**

(b) While explaining what usability inspection is, give **TWO** characteristics of usability criteria/guideline **[4 Marks]**

(c) In the context of Graphical User Interfaces (GUIs), describe what is meant by the following terms

(i) Windows **[2 Marks]**

(ii) Icons **[2 Marks]**

(iii) Menus **[2 Marks]**

(d) Differentiate between the following concepts in relation to user interface design:

(i) Gulf of evaluation and gulf of execution **[4 Marks]**

(ii) User model and design model **[4 Marks]**

(e) Give **ONE** advantage of using each of the following user interface interaction styles:

- (i) Direct Manipulation [2 Marks]
- (ii) Command line interface [2 Marks]
- (iii) Natural language [2 Marks]
- (iv) Question/answer [2 Marks]

**SECTION B-** Attempt any **TWO** questions from this **SECTION**

**Question TWO [20 Marks]**

(a) Outline 10 usability guidelines you would consider while evaluating an interface using Usability inspection evaluation method [10 Marks]

(b) Show the relationship between user/mental model, system image and design model concepts [10 Marks]

**Question THREE [20 Marks]**

You have been hired to design a web based application that searches for and displays journal articles. Describe the following in the context of this scenario:

(a) **FOUR** principles you would follow in determining the organization of the presentation/display of the searched journals [8 Marks]

(b) Describe **THREE** Prototyping techniques you could employ for this application [6 Marks]

(c) How you would conduct a cognitive walkthrough of the GUI using a fully-functional prototype of the activity monitoring app [6 Marks]

**Question FOUR [20 Marks]**

The characteristics of human memory have implications on how user interfaces are designed.

(a) Illustrate the main components of human memory as described by information processing models [6 Marks]

(b) Explain **TWO** Short-Term Memory bottlenecks that impact on user interface design (4 marks)

- (c)How can the designers of user interfaces overcome the problems of Short-Term Memory **[6 Marks]**
- (d)Describe TWO characteristics of long term memory **[4 Marks]**

**Question FIVE [20 Marks]**

(a)You are tasked with developing and deploy a web based application for use in a small company.

(i)Describe what an **ethnographic approach** is in the context of User Interface Design**[4 marks]**

(ii) Describe **TWO advantages** of using an ethnographic approach in this task **[4 marks]**

(b)Traditionally ,system-centered design where emphasis was on the functionality and correctness of the software rather than on ease of use was the approach preferred in the design of systems.Today, user-centered design where emphasis is on end-user tasks with an aim of developing usable user interfaces is the preferred approach.Briefly argue in support/benefits of usable user interfaces **[6 Marks]**

(c)You have been hired to design a Graphical User Interface (GUI) for a new app for mobile platforms which monitors and records exercise activities such as walking, running and cycling in real time. Describe **THREE** principles you would follow in determining a logical placement of the controls for the user interface of this app to help avoid user error **[6 Marks]**

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