

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATION

RESIT /SPECIAL EXAMINATION

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
COMPUTER SCIENCE AND BACHELOR OF SCIENCE IN APPLIED COMPUTER
SCIENCE**

COSC 435/COMP 409: USER INTERFACE DESIGN

ACSC 435 /ACMP 446: HUMAN COMPUTER INTERFACE

STREAMS:

TIME: 2 HOURS

DAY/DATE: MONDAY 01/11/2021

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]**
