CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

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

COMP 409: USER INTERFACE DESIGN

ACMP 446: HUMAN COMPUTER INTERFACE

STREAMS: BSC (COMP. SCI.)&BSC (APPLIED COMP.SCI.) Y4S1 TIME: 2 HOURS

DAY/DATE: TUESDAY 11/12/2018   **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

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You..... 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 prefereed 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]**