



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
(MMUST)
MAIN CAMPUS**

**UNIVERSITY REGULAR EXAMINATIONS
2021/2022 ACADEMIC YEAR**

THIRD YEAR SECOND SEMESTER EXAMS

FOR THE DEGREES OF

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE
BACHELOR OF EDUCATION (TECHNICAL EDUCATION)
BACHELOR OF INFORMATION TECHNOLOGY
BACHELOR OF INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT**

**COURSE CODE: BCS 323/BIT323/BIK323
COURSE TITLE: HUMAN COMPUTER INTERFACE**

DATE: 19/04/2022 TIME: 8:00A.M-10:00A.M

**INSTRUCTIONS: Please attempt question one and any other two questions
TIME: 2 Hours**

**MMUST observes ZERO tolerance to examination cheating
Paper Consists of 2 Printed Pages. Please Turn Over**

1) Question one [30 MARKS]

- a) Distinguish between the following concepts in HCI (8MKS)
 - i) Perceived affordances and Real affordances
 - ii) Formative and summative evaluation
 - iii) User analysis and task analysis
 - iv) Interface design and interaction design
- b) Consistency is an important concept in HCI.
 - i) Distinguish between 'internal consistency' and external consistency [4MKS]
 - ii) What is the relationship between internal consistency and mental models [4MKS]
- c) Cognitive psychology is a sub-discipline of psychology exploring internal mental processes. It is the study of how people perceive, remember, think, speak, and solve problems. Briefly, explain its relevance to user interface design [8MKS]
- d) Visible language refers to all of the graphical techniques used to communicate the message or context and the three fundamental principles involved in the use of the visible language are Organize, Economize and Communicate. Briefly discuss any ONE of the three principles [6MKS]

2) Question Two [20 MARKS]

The cognitive load is the amount of mental processing power needed to use your software and it affects how easily users find content and complete tasks.

- a) Distinguish between memory load and cognitive load. [4MKS]
- b) In the context of cognitive load, outline the key features you need to include or avoid in your interface design and briefly explain how you would ensure that you build quality in your interface [8 MKS]
- c) Interaction design (IxD) focusses on the functions and behaviour of the system, and the final presentation. State any four of the factors to consider in IxD [8MKS]

3) Question three [20 MARKS]

Schneiderman proposed five principles of Direct Manipulation. Briefly discuss [20MKS]

4) Question four [20 MARKS]

Constantine and Lockwood describe a collection of **six principles for improving the quality** of your user interface design, i.e. Structure, Simplicity, Visibility, Feedback, Tolerance and Reuse Principles.

- a) Briefly, describe any **TWO** of the principles [6MKS]
- b) Rule #3 of Schneiderman's **golden rules of interface design** requires that an interface should Offer the user informative feedback. Briefly, explain why using suitable examples [6MKS]
- c) Schneiderman's golden rules are closely related. Briefly describe the relationship between rules #3 and #4, i.e. Design dialogs to yield closure [8MKS]

5) Question Five [20 MARKS]

- a) A fundamental reality of application development is that the user interface is the system to the users. Briefly explain why? [4MKS]
- b) Evaluation metrics specify the goals of human computer interaction. Most commonly considered aspects include user task-related aspects such as **learnability, effectiveness, efficiency, and satisfaction** that are regular usability dimensions, and user experiences. Briefly, explain how you can apply any **TWO** of the aspects for your interface evaluation [8MKS]
- c) The age of potential end users is important and needs to be considered during interface and interaction design. discuss [8MKS]