



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN
INFORMATION SYSTEMS**

3RD YEAR 1ST SEMESTER 2024/2025 ACADEMIC YEAR

MAIN CAMPUS

COURSE CODE: ITB 2303

COURSE TITLE: HUMAN COMPUTER INTERACTION AND USABILITY

EXAM VENUE: LR 5

STREAM: BIS

DATE: 9/1/2025

EXAM SESSION: 9-11.00 AM

TIME: 2.00 HOURS

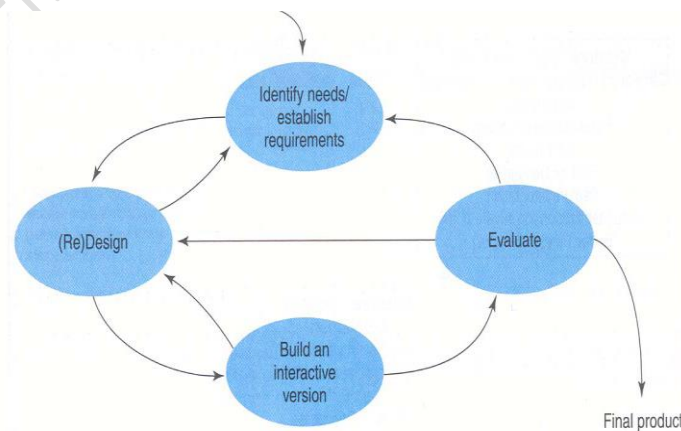
INSTRUCTIONS:

1. Answer Question 1 (Compulsory) and ANY other two questions
2. Candidates are advised not to write on the question paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room

QUESTION ONE

30 MARKS

- a) Define Usability in light of Human Computer Interaction 2 marks
- b) Define the following terminologies in HCI and usability 6 marks
- Ethnographic observation
 - Integration
 - Usability
- c) Apple In Company introduce iPhone 16.0 series and hard to conduct usability testing the device explain various of evaluations techniques and clearly explain each type which they ought to adopted valuation that enables designers understand the system usability 4 marks
- d) Explain the following Conceptual Frameworks for Cognition in Human Computer Interaction and Usability. 6 marks
- Information processing cognition theory
 - Gestalt cognition Principles
 - Mental cognition Models theory
- e) User Control in Form Design is a key issue on the user center design in this regard analyze any four key issue (concepts)of user control in the context of form dialogue and layout design 8 marks
- f) The figure bellow shows the activities in HCI Design, briefly describe each activity and its relevance informing the stage of the next phase operating system development 4 marks



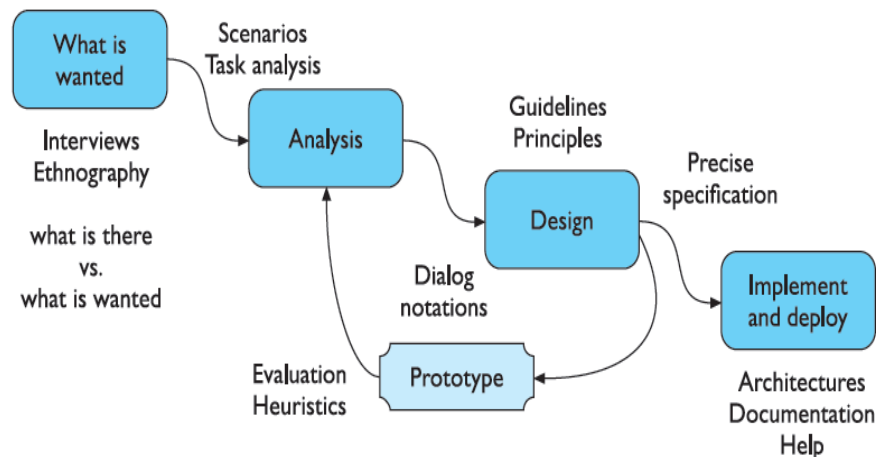
QUESTION TWO

20 MARKS

- a) Environmental factors can impair users' ability to recall information that is necessary to operate complex, computer systems. Briefly explain how such disruptions can impair both short-term AND long-term memory. 6 marks
- b) Explain the key four principles that support usability of Interaction Design 4 marks
- c) State the Norman's six principles for transforming difficult tasks into simple one 6 marks
- d) Describe the differences between expert-based and user-based usability testing, discussing their advantages and disadvantages. 4 marks

QUESTION THREE [20 MARKS]

- a) The following figure is an extract of interaction design process identify, and discuss the phases of the designs processes 6 marks



- b) Consider the two design principles "visibility" and "constraints". For each of the two, explain the principle and describe an example of it being used in a good design. 4 marks
- c) Explain 'flexibility principle' as one of the usability support principles and discuss four features that make up the flexibility principle. 4 marks
- d) Discuss the main contributions from the following disciplines to the study of HCI?
- Cognitive psychology 2 marks
 - Social and organization psychology 2 marks
 - Ergonomics factors 2 marks

QUESTION FOUR [20 MARKS]

- a) Usability goals are mainly concerned with meeting usability criteria. Name at least 4 of the usability criteria and discuss each. 6 marks
- b) The following figures are extracts of **interaction** style. Identify and discuss the types and features and the suitability of these interfaces for usability in the computer systems 8 marks

```
PAYMENT DETAILS                                P3-7

please select payment method:
  1. cash
  2. check
  3. credit card
  4. invoice

  9. abort transaction
```

(a)

```
sable.soc.staffs.ac.uk> javac HelloWorldApp
javac: invalid argument: HelloWorldApp
use: javac [-g][-O][-classpath path][-d dir] file.java...
sable.soc.staffs.ac.uk> javac HelloWorldApp.java
sable.soc.staffs.ac.uk> java HelloWorldApp
Hello world!!
sable.soc.staffs.ac.uk>
```

(b)

- c) Discuss the following in HCI
- i. Windowing system 1 mark
 - ii. Explain three benefits of using windows 3 marks
 - iii. Explain TWO ways of managing multiple windows 2 marks
- d) A HCI theory normally serves for at least one of the purposes: explanation or prediction. **Nielsen's 10 Usability Principles** is a good example. Name at least 4 of the 10 Nielsen's usability principles. 4 Marks

QUESTION FIVE

20 MARKS

- a) System users often judge a system by its interface rather than its functionality. State whether you support the statement or not and explain the reason of your choice? 3 marks
- b) Using a diagram below, answer the following questions?



- i) Name this type of interaction style? 1 mark
- ii) List two advantages and two disadvantages of this interaction style? 4 marks
- c) Give the difference between conceptual design and physical design? 4 marks
- d) Explain how Ergonomic Principles for Workstations affect the works performance and how we can implement the same 8 marks