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 2022/2023 ACADEMIC YEAR

MAIN CAMPUS (REGULAR)

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COURSE CODE: ITB 2303

COURSE TITLE: HCI AND USABILITY

EXAM VENUE: **STREAM: BIS**

DATE: Sep-Dec 2022   **EXAM SESSION:**

TIME: 2.00 HOURS

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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) Bus Car Company dealing with car hire services has approached you to develop online car hire system. The system should, at the very minimum, allow the customer to select dates of travel, pick up and drop off locations, manual or automatic, category of car (e.g. small, medium, large), and type/model of car (within the chosen category).

    i.   Choose a suitable interaction style or styles that would be recommended for this function.
                                                                                     4 marks
    ii.   Justify your choice of interaction style(s) and other usability aspects.   4 marks

c) Explain the key principles that support usability of Interaction Design

                                                                                     8 marks

d) Define the following terms   6 marks

    i.   Ethnographic observation

    ii.   Integration

    iii.   Usability

e) Apple In Company introduce iphone 7.0 series and hard to conduct usability testing the device explain various of evaluations techniques and clearly explain each type which they ought to adopt evaluation that enables designers understand the system usability   6 marks

QUESTIONS TWO   **20 MARKS**

    a) The Interdisciplinary Design Science of Human-Computer Interaction (HCI) combines knowledge and methods associated with many professionals. Discuss at least *six* professionals associated with HCI.   (8 marks)

    b) Describe three types of human memory   (6 marks)

    c) Describe the main factors to consider when analyzing human factors in the design of interactive computer systems   (6 marks)

QUESTIONS THREE   **20 MARKS**

a) User interfaces Designers have several models including Norman's seven stages of action to choose from while coming up with UI. Discuss Norman's FIVE principles out of seven stages action model

6 marks

b) Discuss the four pillars of a successful user-interface development.   4 marks

c) The following figures are extracts of **interaction** style. Identify and discuss the features and the suitability of these interfaces for usability in the computer systems   8 marks

- Menu based interaction style

```
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)

d) 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)

QUESTIONS FOUR [20 MARKS]

a) Explain the meaning of the 'flexibility principle' as one of the usability principles and discuss four features that make up the flexibility principle.   4 marks

b) The Interdisciplinary Design Science of Human-Computer Interaction (HCI) combines knowledge and methods associated with many professionals. Discuss at least *six* professionals associated with HCI.   6 marks

c) What is the meaning of 'User-Centered Design'? Explain any four characteristics of User-Centered Design.   6 marks

d) Define the following terms as used in HCI

     i.   Visual affordance   2 marks
    ii.   Combo box   2 marks

QUESTION FIVE   **20 MARKS**

a) Briefly explain the meaning of the following terms:

    i)   Task analysis   2 marks

    ii) Metaphor   2 marks

    iii) Computer Supported Cooperative Work   2 marks

b) Define ergonomics and explain how the following factors affect the levels of interactions.

    i. The physical environment of the interaction

    ii. Health issues

    iii. Arrangement of controls and displays   6 marks

C) Using a diagram below, answer the following questions?
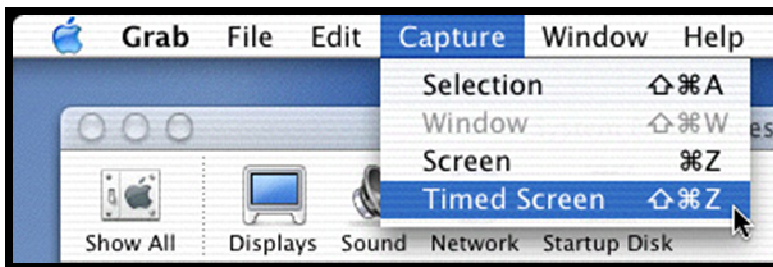
i) Name this type of interaction style?   1 mark
ii) List two advantages and two disadvantages of this interaction style?   4 marks
a) Give the difference between conceptual design and physical design?   3 marks