



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND SEMESTER EXAMINATIONS FOR
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO307/SIT308: HUMAN COMPUTER INTERACTION

DATE: 6/12/2017

TIME: 11:00 – 1:00 PM

INSTRUCTIONS

*This paper consists of **FIVE** questions.*

*Answer question **ONE** and other **TWO** questions in this paper.*

QUESTION ONE (30 MARKS)

- a)
 - i) Explain the term *interaction* as used in user interface. (2 marks)
 - ii) Describe **three** modes through which a user could communicate with a computer system. (6 marks)
- b)
 - i) Software companies are advocating for universal design. Explain **three** principles used in this design. (6 marks)
 - ii) Using the waterfall model, describe the stages of user interface development. (6 marks)
- c)
 - i) Outline **three** requirements for user support. (3 marks)
 - ii) Explain the term adaptive help systems as used in Human Computer Interaction. (2 marks)

- d) In a supermarket transaction processing system, a cashier searches for an item by entering the name of the item in a textbox. The quantity and price are selected through option buttons and combo box respectively. The information is then stored into a data base when a button “Save” is clicked. The saved information can be edited when a button “Edit” is clicked. Assuming Visual Basic environment, sketch the interface. (5 marks)

QUESTION TWO (20 MARKS)

- a) Explain each of the following terms as used in Human Computer Interaction. (4 marks)
- (i) affordance;
 - (ii) Consistency.
- b) Explain the influence of each of the following individual differences on the design of a user interface (6 marks)
- i) Age;
 - ii) Religion;
 - iii) Gender.
- c) Describe **two** types of user interfaces that could be considered when developing a student portal. (4 marks)
- d) i) A secretary in a busy office has developed back pains due to long hours of computer use. Outline **three** precautions that she could have taken. (3 marks)
- ii) Mychoice computers has installed LaserJet printers in their office. Explain three factors they could considered in making this decision. (3 marks)

QUESTION THREE (20 MARKS)

- a) i) Define the term *ergonomics* as applied in Human Computer Interaction. (2 marks)
- ii) John, a computer scientist designed an interface for a game playing machine. Outline **three** ergonomic features he could have incorporated in the design. (3 marks)
- b) Explain the stages that a user interface goes through in prototyping model. (3 marks)
- c) i) Explain **three** ways through memory load could be reduced in a user interface.

(4 marks)

- ii) Distinguish between *cognitive walkthrough* and *review based* evaluations as used in Human Computer Interaction. (4 marks)
- d) Describe **three** formatting features that could improve the usability of a Human Computer Interface. (6 marks)

QUESTION FOUR (20 MARKS)

- a) Explain **three** methods that could be used to gather information about a proposed user interface. (6 marks)
- b) Describe **three** computer paradigms that have influenced the design of Human Computer Interaction over the years. (6 marks)
- c)
 - i) Distinguish between *multisensory* and *multimodal* systems. (4 marks)
 - ii) A student developed a user interface for a company. Explain **two** ways through which he could make navigating the interface easier. (4 marks)

QUESTION FIVE (20 MARKS)

- a)
 - i) Outline **three** types of menus that could be included in a user interface. (3 marks)
 - ii) A student prefers speech recognition as an input mode. Explain **two** challenges of this mode in a user interface. (4 marks)
- b) Designing an effective Human Computer Interface is a multidisciplinary task. Describe **four** of these disciplines. (8 marks)
- c) Describe **five** principles of user interface design as advocated by Scheidermann. (5 marks)