



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE
IN MATHEMATICS AND COMPUTER SCIENCE

SCO 307: HUMAN COMPUTER INTERACTION

DATE: 25/7/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

This paper consists of FIVE questions.

Answer question ONE and other TWO questions in this paper.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a)
 - i) Define the term *learnability* as used Human Computer Interaction. (2 marks)
 - ii) Describe **three** types of human memory considered when designing a Human Computer Interface. (6 marks)
- b)
 - i) Differentiate between *standards* and *procedures* as used in Human Computer Interaction. (4 marks)
 - ii) Using the spiral model, explain the stages involved in user interface development. (5 marks)
 - iii) Outline **two** advantages of using the above model in HCI. (2 marks)
- c) ABC company has branches in many countries; the company has developed a common interface for its log in dialog box.
 - i) State the type of design used for the interface. (1 mark)
 - ii) Outline two advantages of the design identified in (i). (2 marks)
- d) Citing an example, explain the term *metaphor* as used in Human Computer Interaction. (3 marks)

- e) A student management system requires students to register through an interface for portal services. Name and registration number are entered through the use of textboxes. The course is selected from a combo box and the year of study through option buttons which are enclosed within a frame. The entered information is saved on a database when a button *submit* is clicked. Assuming a 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) Decay;
 - ii) Recognition.
- b) With the aid of an example in each case, describe each of the following classes of individual differences that could influence the design of a human computer interface.
- i) Long term;
 - ii) Short term;
 - iii) Changing. (6 marks)
- c) Describe **two** keyboard layouts that could be used to enter data into a computer.(4 marks)
- d) i) A computer screen is used to give output to a user. Outline **three** precautions that such a user needs to take. (3 marks)
- ii) A printer is a basic output device in most computers. Describe **three** types of printers that could be used in Human Computer Interaction. (3 marks)

QUESTION THREE (20 MARKS)

- a) i) Outline **three** challenges of speech recognition in Human Computer Interaction. (3 marks)
- ii) Human Computer Interaction nowadays is aimed at making the user comfortable while working. Explain **two** ways through which this could be achieved.(2 marks)
- b) Outline the components of the execution/evaluation loop in Human Computer Interaction. (3 marks)
- c) i) Differentiate between *form fill* and *point and click* user interfaces. (4 marks)
- ii) Human Computer Interaction has been influenced by various computing paradigms. Describe **two** such paradigms. (4 marks)
- d) A feasibility study is necessary in HCI development. Explain **two** types of feasibility studies that an HCI developer may carry out. (4 marks)

QUESTION FOUR (20 MARKS)

- a)
 - i) Explain the term *fit* as used in Human Computer Interaction. (2 marks)
 - ii) A system analyst would like to gather information about a proposed Human Computer Interface. Explain **three** methods he could use to achieve this.(6 marks)
- b) Explain **four** basic golden rules for Human Computer Interaction design. (6 marks)
- c)
 - i) Distinguish between *multimodal* and *multimedia* systems as used in Human Computer Interaction. (4 marks)
 - ii) An international airline is considering introducing a new booking system for use by associated travel agents to sell flights directly to the public. Identify
 - I. Primary stakeholders;
 - II. Tertiary stakeholders. (2 marks)

QUESTION FIVE (20 MARKS)

- a)
 - i) Outline **three** requirements of an effective user support in HCI. (3 marks)
 - ii) State an interaction mode that could be used to support each of the following users.
 - I. Hearing impaired;
 - II. Physically impaired. (2 marks)
- b)
 - i) Define the term *cognitive walkthrough* as used in HCI. (2 marks)
 - ii) When a new Human Computer Interface is designed, it is necessary to evaluate it. Explain to reasons for this evaluation. (4 marks)
- c) Designing an effective Human Computer Interaction involves a variety of fields. Describe **four** of these fields. (4 marks)
- d) Schneiderman defined eight rules that could be used in the development of a Human Computer Interface. Explain **five** of these rules. (5 marks)