



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 307: HUMAN COMPUTER INTERFACE

SIT 308: HUMAN COMPUTER INTERACTION

DATE: 12/11/2020

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) (i) Explain the term visibility as used in Human Computer Interaction. (2 marks)
- (ii) Explain **two** importance of usability of a human computer interface. (4 marks)
- b) Outline **three** techniques used to guide user's attention in human computer interface. (3 marks)
- c) Joan created an interface for a system used outdoors. Outline **four** environmental factors that he could have considered. (4 marks)
- d) Developing a good user interface requires a team that has people from a variety of disciplines. Outline **four** such disciplines. (4 marks)
- e) Distinguish between *decay* and *interference* as used in human memory. (4 marks)
- f) Explain **three** factors that influence grouping of controls in a user interface. (4 marks)
- g) County College allows prospective students to apply for courses using a web based form. The form contains: A picturebox, two text boxes to hold index number and name of the applicant, option buttons to select gender, a combobox to select course and a submit button. Draw the form as it would appear on a web browser. (5 marks)

QUESTION TWO (20 MARKS)

- a) Explain the stages in prototyping methodology of Human Computer Interface development. (4 marks)
- b) Discuss **three** aspects of human computer interface that could be improved by use of colour. (6 marks)
- c) Users of a certain interface complained that the interface was not meaningful. Explain **three** factors that determine the meaningfulness of an interface. (6 marks)
- d) Jane intends to create a user interface that would use icons. Describe **two** types of icons she could use. (4 marks)

QUESTION THREE (20 MARKS)

- a)
 - i Outline **two** challenges of speech recognition as a human computer interface. (2 marks)
 - ii Distinguish between *analogous* and *complementary* colours in user interface. (4 marks)
- b)
 - i Explain the term cognition as used in human computer interface. (2 marks)
 - ii Describe **three** ways through which cognition improves human computer interaction. (6 marks)
- (c) A user interface should be designed to help users form the correct productive mental model. Explain **three** factors considered when designing such interfaces. (6 marks)

QUESTION FOUR (20 MARKS)

- a) State the most appropriate metaphor that could be used for each of the following:
 - i. Graphic package;
 - ii. Restaurant
 - iii. Online shopping
 - iv. Media player (4 marks)
- b) A new user interface lacks user support. Explain **three** user support styles that could have been included in the interface. (6 marks)
- c) Distinguish between *gulf of execution* and *gulf of evaluation*. (4 marks)
- d) A student management information system uses a menu-based user interface. Explain **three** types of menus that have been in the system. (6 marks)

QUESTION FIVE (20 MARKS)

- a)
 - (i) Outline **four** pointing devices used in human computer interaction. (4 marks)
 - (ii) Explain one factor a system analyst would consider when recommending a printer for use in a hospital. (2 marks)
- b) A system analyst adopted the Nielsen's heuristics to develop a user interface for hospital. outline **four** heuristics he could have used. (4 marks)
- c) Differentiate between *cognitive walkthrough* and *heuristic* evaluations as used in human computer interaction. (4 marks)
- d) Jack, a system analyst designed a human computer interface for a supermarket. Explain **three** design model he could have used. (6 marks)