



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)
BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO307/SIT308 HUMAN COMPUTER INTERACTION

DATE: 26/3/2021

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

This paper consists of FIVE questions.

Answer question ONE and other TWO questions in this paper.

QUESTION ONE (20 MARKS)

- (a) (i) Define the term *goal* as used in Human Computer interaction. (2 marks)
- (ii) Explain each of the following terms in reference to Human Computer interaction:
- I. Slip; (2 marks)
- II. Mistake. (2 marks)
- (b) A student developed a user interface for a supermarket however, workers kept on forgetting the actions required in order to achieve a goal.
- (i) State **two** ways through which this information could have been forgotten. (2 marks)
- (ii) Outline **three** ways through which the system could be improved. (3 marks)
- (c) Explain **three** paradigm shifts that have influenced the development of Human Computer Interaction as a study area. (6 marks)
- (d) A computer-based gaming unit requires a player to sit for long hours. Outline **three** ergonomic features that could have been included in its design to improve players experience. (3 marks)

- (e) Describe **five** interaction styles that could be incorporated in a Student Management information system. (5 marks)
- (f) Students in a University register for units through a student portal. To register a student keys in the registration number through a text box, selects the semester through a combo box and chooses either regular or repeat through an option button. The student then selects the units to register for through check boxes and clicks a command button Submit.

Assuming a Visual Basic programming environment, sketch a user interface for the portal.

(5 marks)

QUESTION TWO (20 MARKS)

- (a) Explain each of the following terms as used in Human Computer Interaction. (4 marks)
 - (i) Fit;
 - (ii) Usability.
- (b) Developing a user interface is quite challenging due to the various needs of users. Explain **three** types of individual differences that contribute to this challenge. (6 marks)
- (c) Floppy diskettes were a preferred secondary storage device however; they are no longer in use. Explain **two** possible reasons that could have led to this change. (4 marks)
- (d) A student has created a user interface whose default input device is a keyboard.
 - (i) Describe **two** types of keyboards that could be used in this interface. (4 marks)
 - (ii) Outline **two** challenges the users could face. (2 marks)

QUESTION THREE (20 MARKS)

- (a) Explain **three** factors that influence the interpretation of a signal in Human Computer Interaction. (6 marks)
 - (b) Distinguish between *affordance* and *accuracy* as used in Human Computer Interaction. (4 marks)
 - (c) GeoTown Community Hospital would like to acquire an Information System. Describe **two** types of user interfaces that could be used in the system. (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) MyUniversity prints fee payment receipts for its ten thousand students each semester.
 - I. Identify the most appropriate type of printer for this task. (1 mark)
 - II. Outline two advantages of the printer identified in I. (2 marks)
- (6 marks)

QUESTION FOUR (20 MARKS)

- (a) (i) Define the term *ergonomics* as applied in Human Computer Interaction. (2 marks)
- (ii) A company acquired a universally designed system for its operations. Outline **three** principles of such systems. (3 marks)
- (b) (i) A user interface developer evaluates the system after development. Outline **three** reasons for this evaluation. (3 marks)
- (ii) State two query techniques that could be used to evaluate a user interface. (2 marks)
- (c) Distinguish between *principles* and *standards* 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 FIVE (20 MARKS)

- (a) (i) Outline **three** types of menus that could be included in a user interface. (3 marks)
- (ii) A user interface uses short message services (SMS) for feedback. Explain **two** disadvantages of such a system. (4 marks)
- (b) User interfaces are generally created by a team composed of various professionals. Describe **four** such professionals. (4 marks)
- (c) Distinguish between *hypertext* and *hypermedia* as used in Human Computer Interaction. (4 marks)
- (d) Animated user interfaces are becoming popular with the youth. Outline **five** uses of such interfaces. (5 marks)