



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 (COMPUTER SCIENCE)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SCO307 HUMAN COMPUTER INTERFACE

SIT308 HUMAN COMPUTER INTERACTION

DATE: 25/3/2021

TIME: 2.00-4.00 PM

INSTRUCTION: Answer Question ONE and any other TWO Question

QUESTION ONE (30 MARKS)

- (a) (i) Explain the term affordance as used in Human Computer Interaction. (2 marks)
- (ii) Explain **two** importance of visibility of a human computer interface. (4 marks)
- (b) Outline **three** types of menus used in human computer interface. (3 marks)
- (c) Joan has been experiencing eye strain due to prolonged use of a computer. Outline **four** precautions she could have taken to avoid this strain. (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 human memory. (4 marks)
- (f) A student noted that the operation controls of a machine were grouped together. Explain **two** reasons that could have led to this grouping. (4 marks)
- (g) A library allows users to check the status of a reading resource through a web based form. The form contains: A picture box, two labels and text boxes to hold registration number and name of the user, three option buttons to show the status (Borrowed, Available, Reserved) and a submit button.
Draw the form as it would appear on a web browser. (5 marks)

QUESTION TWO (20 MARKS)

- (a) (i) Explain the term cognition as used in Human Computer Interaction. (2 marks)
- (ii) Outline **two** importance of studying cognition in Human Computer Interaction. (2 marks)
- (b) A student used color to improve the appearance of a user interface. Explain **three** aspects that could have been affected by this. (6 marks)
- (c) A user interface was not properly evaluated before deployment. Describe **three** types of evaluation that ought to have been done. (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) Outline **three** paradigm shifts that have influenced the development of HCI. (3 marks)
- (b) User interfaces are designed with a view of reducing memory load. Describe **three** types of human memory considered in order to achieve this. (6 marks)
- (c) Using the waterfall model, explain the stages in the development of a user interface. (5 marks)
- (d) 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) Hospital;
 - (ii) Police Station
 - (iii) Online shopping
 - (iv) Document Editing (4 marks)
- (b) Describe **three** programming languages used to develop a user interface. (6 marks)
- (c) Peter, a user interface specialist created an interface for a certain bank. Explain **three** types of individual differences he could have considered. (6 marks)
- (d) Distinguish between *gulf of execution* and *gulf of evaluation*. (4 marks)

QUESTION FIVE (20 MARKS)

- (a) (i) State **four** input devices used to capture data from existing documents. (4 marks)
- (ii) Explain **three** factors considered when acquiring a printer. (6 marks)
- (b) A system analyst adopted the Nielsen's heuristics to develop a user interface for hospital. Describe **three** heuristics he could have used. (6 marks)
- (c) Differentiate between *command based* and *WIMPs* user interfaces. (4 marks)