



# MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS & COMPUTER SCIENCE)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO307/SIT308: HUMAN COMPUTER INTERACTION

DATE: 25/9/2019

TIME: 2.00-4.00 PM

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## INSTRUCTIONS

*This paper consists of FIVE questions.*

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

1.
  - (a)
    - (i) Define the term *learnability* as used Human Computer Interaction. (2 marks)
    - (ii) Describe **three** types of human memory considered in the development of a Human Computer Interface. (6 marks)
  - (b)
    - (i) Differentiate between *standards* and *guidelines* as used in Human Computer Interaction. (4 marks)
    - (ii) Using the waterfall model, explain the stages in user interface development. (5 marks)
    - (iii) Outline **two** disadvantages of the above model in HCI. (2 marks)
  - (c)
    - (i) Outline **three** challenges associated with using touch sensitive screens for input. (3 marks)
    - (ii) Describe *eyegaze* input method as used in Human Computer Interaction. (3 marks)
  - (d) A Student Management Information System provides a form for registering new students. The form accepts registration number and name of a new student through input boxes, gender through option buttons and the course is selected from a combo box. The information is

saved into a database when a command button is clicked.

Assuming a Visual Basic environment sketch the interface. (5 marks)

2. (a) Explain each of the following terms as used in Human Computer Interaction. (4 marks)
- (i) Usability;
  - (ii) Flexibility.
- (b) With the aid of an example in each case, describe **three** classes of individual differences that may influence the design of a human computer interface. (6 marks)
- (c) Describe **two** interaction styles that may be incorporated in a new system. (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) Differentiate between *impact* and *laser* printers as used in HCI. (3 marks)
3. (a) Explain each of the following terms as used in Human Computer Interaction. (3 marks)
- (i) slip;
  - (ii) mistake.
- (b) A secretary in a busy office has been experiencing back pains due to prolonged use of a computer. Explain **three** precautions she could have taken to avoid these pains. (6 marks)
- (c) (i) Distinguish between *technical* and *legal* feasibility studies (4 marks)
- (ii) A system analyst would like to evaluate a new user interface. Explain **two** techniques that may he could use. (4 marks)
- (d) Tom, a user interface expert would like to gather requirements for a proposed system. Explain methods that he could use to achieve this. (4 marks)
4. (a) (i) Explain the term *consistency* as used in Human Computer Interaction. (2 marks)
- (ii) A university has installed a biometric reader to authenticate students at its main gate. Explain **three** benefits the university could accrue from this. (6 marks)
- (b) Describe **three** paradigms that have influenced the design of Human Computer Interaction over the years. (6 marks)
- (c) (i) Distinguish between *hypertext* and *hypermedia* as used in Human Computer Interaction. (4 marks)
- (ii) Outline **two** dangers that a student who is always listening to music through ear

phones is exposed to. (2 marks)

5. (a) (i) Define the term *Ubiquitous Computing* as used in HCI. (2 marks)
- (ii) Global Software engineering proposes universal designs. Explain **two** principles of this design. (4 marks)
- (b) Describe **three** types of menu that could be incorporated in a new user interface. (6 marks)
- (c) A project leader would like to form a team that would create a user interface for a new system. Outline **four** professionals he should have in the team (4 marks)
- (d) Nielsen established 10 usability heuristics in the development of a Human Computer Interface. Explain **two** of these heuristics. (4 marks)