



W1-2-60-1-6

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**  
**UNIVERSITY EXAMINATIONS 2017/2018**  
**FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER**  
**OF SCIENCE IN SOFTWARE ENGINEERING / MASTER OF SCIENCE IN**  
**INFORMATION TECHNOLOGY**

**ICS 3107: HUMAN COMPUTER INTERACTION / MIT 3108: HUMAN COMPUTER INTERACTION**

**DATE: JANUARY 2018**

**TIME: 3 HOURS**

**INSTRUCTIONS**

Answer **Question ONE** and any other **two** questions

**Question ONE (Compulsory)**

- i) Define the following terms as used in HCI:
  - a) User interface metaphor
  - b) Task migratability(2 marks)
- ii) Task analysis entails analysing the way people perform tasks. Describe the purpose or relevance of task analysis in the design process. (4 marks)
- iii) Give a brief description of each of the main components of an adaptive or adaptable interactive computing system. (6 marks)
- iv) Many software development projects have adopted the user-centred design methodology. What are the characteristics of the methodology? (4 marks)
- v) Describe the three main elements of usability as found in the widely accepted definition of usability. (3 marks)
- vi) *GIT Ltd.* is an application development company. It has developed two versions of the same navigation system. One version enables users to look for directions through a map-based user interface. The other version enables users to look for directions through a text-based user interface. *GIT* has approached you as a usability consultant in order to conduct an experiment to assess whether users reach destinations faster when using the text-based user interface than when using the map-based user interface. In this case, determine: the independent variable(s), the level(s) of the independent variable(s), dependent variable(s), and corresponding hypothesis and null hypothesis. (6 marks)
- vii) Differentiate between the two main approaches/theories of visual perception. (5 marks)

**Question TWO**

- i) In what situations would you opt to conduct usability evaluations in the laboratory rather than in the field? (4 marks)
- ii) Highlight three differences between multimodal interfaces and traditional graphical user interfaces. (3 marks)



- iii) As a HCI expert, you have been requested by an international company to give a tutorial to its ICT staff on how to conduct evaluations of their software applications. During the tutorial, how would you describe the possible experimental designs/setup? (8 marks)
- iv) The software development team at *DoIT Inc.* have come up with the initial prototype of the intended company's website. The team would like to evaluate the prototype first before proceeding with the next version. The team has decided to use the cognitive walkthrough type of evaluation.
  - a) Who would be the participants in cognitive walkthrough? (1 mark)
  - b) During this type of evaluation, what questions should the participants ask themselves for each action? (4 marks) ⑤

### Question THREE

- i) Highlight the dimensions of interaction design. (5 marks) ⑤
- ii) Explain what the following golden rules of design mean:
  - a) *Support internal locus of control*
  - b) *Design dialogs to yield closure* ③
  - c) *Reduce short-term memory load*
 (3 marks)
- iii) *Design Consultants Inc.* has organized a workshop whose theme is "User Interface Design". As a respected authority in user interface design, you have been invited to give a keynote speech on design rules and menu design.
  - a) How would you define *substitutivity*? (1 mark)
  - b) What would you include in your keynote speech as the guideline(s) on menu design? (5 marks)
- iv) In what ways can scenarios be useful in the design process? (4 marks)
- v) Highlight any two of the main types of signs that can be used when designing for navigation. (2 marks) Signage in menu ②

### Question FOUR

- i) Highlight the advantages of multimodal interfaces. (6 marks)
- ii) Describe the other approaches to task analysis besides task decomposition. (2 marks)
- iii) Draw an illustration of the user-centred design methodology based on the corresponding ISO standard. (12 marks)