

**MAKERERE UNIVERSITY**

**SCHOOL OF COMPUTING & INFORMATICS TECHNOLOGY**

**END OF SEMESTER I EXAMINATION 2012/2013**

**PROGRAMME: CS, BIT, BIS, Bsc Flat**

**YEAR OF STUDY: III**

**COURSE NAME: User Interface Design**

**COURSE CODE: CSC3103**

**DATE: 29<sup>th</sup> November 2012**

**TIME: 4:00pm-7:00pm**

**EXAMINATION INSTRUCTIONS**

1. ATTEMPT ALL QUESTIONS IN SECTION A (40 MARKS)
2. ATTEMPT THREE (03) QUESTIONS IN SECTION B (60 MARKS)
3. DO NOT OPEN THIS EXAM UNTIL YOU ARE TOLD TO DO SO
4. ALL ROUGH WORK SHOULD BE IN YOUR ANSWER BOOKLET

## SECTION A [ 40 Marks ]

### QUESTION ONE

- a) How relevant is Consistency and Standardization in User Interface Design? (2 Marks)
- b) The main goal of heuristic evaluations is to identify any problems associated with the design of user interfaces. As a usability consultant discuss at-least 4 (four) heuristics that you can use to evaluate the usability of a system. (8 Marks)
- c) The severity of a usability problem is a combination of three factors: Describe them. (3 marks)
- d) Describe Nielsen's Severity rating scale for usability problems (3 marks)
- e) Differentiate between Symmetric and Asymmetric balancing in graphic design (2 Marks)
- f) No designer purposely sets out to confuse or irritate users, Give the two major reasons why it still happens (2 Marks)

### QUESTION TWO

- a) Differentiate between User Centered Design and Interactive Design (4 Marks)
- b) It is always important to understand some of the properties of the human that you are designing a system for; how can you design for the following human characteristics?
  - 1. Perception (2 Marks)
  - 2. Long and Short term memory (2 Marks)
  - 3. Visual Acuity (2 Marks)
- c) Define the following concepts and explain their application in system usability thinking.
  - i) Chunking (2 marks)
  - ii) Perceptual Fusion (2 marks)
  - iii) Spotlight (2 marks)
- d) Describe any two approaches of visual perception. (4 marks)

## SECTION B [ 60 Marks ]

### QUESTION ONE

- a) How do you integrate User Centric Design if you work with innovative Information Technology? (5 marks)
- b) Naggy has been developing software for ten years now with Golola group of Companies. He has appreciated the water fall approach of software systems development and wishes to take on a user centric approach in software development. Correctly advise Naggy. (4 marks)



- c) How do we address user participation in user centred design when we work in organizations with freelancers and independent contractors? (5 marks)

## QUESTION TWO

- a) Why would you need to develop a software architectural model? Give at least 3 reasons. (3 Marks)
- b) Architectural patterns or architectural styles allow a software engineer to design flexible systems using components. Using an illustration, how would you design a software architectural model using either pipe and filter or Model View Controller Architectural pattern? (7 Marks)
- c) The view and the controller are often said to be tightly coupled. Do you agree with this statement? Give reasons to support your answer (3 marks)
- d) Differentiate between user analysis and task analysis. (3marks)
- e) Why would the following be important in user analysis? (4marks)
- i) Domain experience
  - ii) Application experience

## QUESTION THREE

### Either

- a) GUI programs are designed to handle input asynchronously. Explain. (2 marks)
- b) A software development toolkit that does not provide separate events for *button down* and *button up* is poorly designed and makes it difficult or impossible to implement input effects like drag-and-drop or video game controls. Using the event queue concept, you are required to elaborate on this statement. (8 marks)
- c) What is a metaphor? (1mark)
- d) Explain the stroop effect in graphical design applications. (2marks)
- e) Briefly explain at least three properties of memory. (3marks)
- f) Describe the Bottom- up and Top Down approaches of perception. (4marks)

4.

### Or

- a) How do you perform a cognitive work-through in usability testing (12 marks)
- b) Individual differences complicate design because the design must permit people with widely varying characteristics to satisfactorily and comfortably learn the system tasks or job. Discuss at least 8 human factors that affect productivity of a system. (8marks)

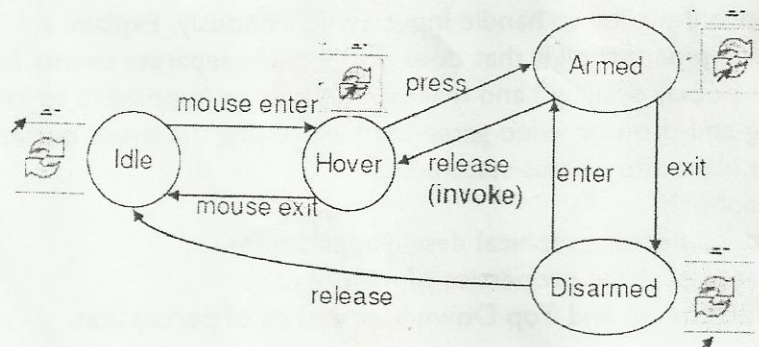
#### QUESTION FOUR

- While giving examples, discuss at least four interactive mode based activities in conceptual modeling. (8marks)
- Discuss the paper prototyping process line. (9marks)
- How do you use story boards and form builders in computer prototyping? (3marks)

#### QUESTION FIVE

##### EITHER

- Describe the two major categories of input events. (4marks)
- Explain the auto repeat mechanism of the input model. (6marks)
- Explain at least two properties of an input event. (2marks)
- Consider the Finite state machine below for a push button controller ( mouse input). Discuss it. (8marks)



##### OR

User interface designers enforce order and beauty on the formless void of our blank computer screen. Using **Gestalt Principles**, how is this possible? (12 Marks)

- In graphic design, simplicity forces you to have a good reason for everything you add, and to take away anything that can't survive hard scrutiny. As a graphic designer, how can you achieve simplicity? (4 Marks)
- How do you use selectivity and associatively techniques to achieve contrast in graphic design. (4 Marks)

Good Luck!