



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL INFORMATICS AND INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR**  
**OF BUSINESS ADMINISTRATION**  
**4<sup>TH</sup> YEAR 2<sup>ND</sup> SEMESTER 2013/2014 ACADEMIC YEAR**  
**CENTRE: MAIN**

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**COURSE CODE: SCS 416**

**COURSE TITLE: HUMAN COMPUTER INTERACTION**

**EXAM VENUE: AH**

**STREAM: BSc. Computer Security & Forensics**

**DATE: 13/12/2013**

**EXAM SESSION: 2.00 – 4.00 PM**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer question 1 (Compulsory) and ANY other 2 questions.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

**QUESTION ONE (COMPULSORY)**

**[30 MARKS]**

- (a) “Human Computer Interaction (HCI) can be viewed as a discipline concerned with the design, implementation and evaluation of interactive computing systems for human use”
- (i) Do you disagree with the above statement? Using supporting diagram, provide reason for your answer. [4 Marks]
  - (ii) Explain the main elements of HCI [4 Marks]
  - (iii) Identify TWO reasons why HCI is considered important [2 Marks]
- (b) “User-interface independence is quite significant in user-interface design”.
- (i) Define the underlined term. [2 Marks]
  - (ii) Briefly describe how the designers, user manual writers, and software engineers benefits from it. [2 Marks]
- (c) Using a well labeled diagram, explain the human computer interaction (HCI) design process with detailed activities. [4 Marks]
- (d) The following statements might be TRUE or FALSE. For each, support your choice. [8 Marks]
- (i) *Focus on users and tasks* is not considered as one of the main design principles in user interface design.
  - (ii) *Feedback* is not among the Eight Golden Rules of Interface design.
  - (iii) It is often better for the prototype to exceed the final product so that the users can see all the possible options the system could have.
  - (iv) As designers, we use evaluation tools aimed at understanding a user’s mental model of an interaction, so we can then modify the user’s mental model when we see it is incorrect.
- (e) Uwezo Company Limited is designing a system for hospitals that will allow receptionists to check in people at the hospital faster. They wish to develop an interface that meets both the receptionist and patient’s needs. Describe in detail a design methodology of stages to facilitate proper design of such a system. [4 Marks]

## QUESTION TWO

- (a) Pick on a practical scenario to explain the motivations for including human factors in User Interface Design. [4 Marks]
- (b) Jamii Simu Company Limited needs to design a mobile phone for kids to enable them communicate with their parents when out of home. Consider you having been consulted as an expert in User Interface Design to assist. You are free to assume any specifications that according to you shall solve this problem.

Below are additional design requirements to supplement your effort;

- As buttons are pressed, a special sound is played.
  - The phone receives only calls from known numbers.
  - The phone can dial some preprogrammed numbers from the address book.
  - The phone vibrates and is making a sound when someone is calling. Also it says so on the screen.
- (i) Which age groups does it phone target? Explain. [2 Marks]
- (ii) Comment on the usability of this phone by the age group you have chosen in Q3 (b) (i) above. [4 Marks]
- (iii) What design, interaction and cognition principles you shall take into account in your design. [6 Marks]
- (iv) Provide any TWO suggestions to improve the usability as well as the functionality of this mobile phone. [2 Marks]
- (c) Explain your understanding on the Engineering Models (KLM Model and GOMS Model) as important approaches to User Interface Design. [2 Marks]

## QUESTION THREE

A JOOUST Professor has retained your design team for a fee to design the interface for a new web-based recruitment and reservation system for education psychology experiments (known by the internal name “**StudentSignupNow**”). This system will be used by university postgraduate students and staff running user experiments, the staff managing the experiment rooms and equipment, and the students who participate in these experiments. In the past, experimenters have used email and posters to recruit and sign up subjects, who are compensated with a

monetary payment, course credit, or the satisfaction of a job well done. However, these methods are not good for developing and accessing a subject pool. Furthermore, subjects and experimenters alike find it cumbersome to use. For whatever reason, not very many subjects have been signing up lately. Your client (the Professor), having noticed how much students these days use mobile phones, has told you it's very important that students be able to view available experiment opportunities and sign up for them using a mobile networked device (i.e. mobile phone with internet access). Your team is right at the start of the design process for **StudentSignupNow**. And while you are excited about the project, you are also concerned that your client might not completely understand either the source of the problems observed with current method, or the implications of the suggested new approach.

- (a) From the information provided in the design brief, name and explain FOUR important stakeholders with clear demographic characteristics where applicable. [8 Marks]
- (b) Explain why it is wise to use more than one such activity to understand what is involved in the process that this new interface will support. [4 Marks]
- (c) Explain the most immediately appropriate activities that you, as a trained HCI designer, could do in this stage to learn how this interface should work? [6 Marks]
- (d) Comment on "*Recognize User Diversity*" as one of the applicable design principle in this case. [2 Marks]

#### **QUESTION FOUR**

- (a) "Usability is one of evaluation criteria captured in ISO 9126 for Software Quality". Use an appropriate example to support or disagree with this statement. [4 Marks]
- (b) Explain TWO common usability factors considered in interface design. [4 Marks]
- (c) Provide THREE reasons why interface evaluation at times are omitted or performed poorly. [3 Marks]
- (d) Nowadays, the mobile phones are used not only for making phone calls, but also used as digital camera, mp3 and radio, M-Banking etc. One can access internet and play games on it as well. For such kind of product, how can you evaluate its usability? How would you plan the laboratory evaluation process for such products? [5 Marks]
- (e) Suppose your mobile phone design has been accepted by Sonny Ericsson and they made a first full scale prototype and would like you to make the usability evaluation before the mass production started. Explain how you would like to perform the usability evaluation. [4 Marks]

## QUESTION FIVE

- (a) Describe three populations of computer users with special needs. For each of these populations, suggest three ways in which current user interfaces could be improved to better serve them. [6 Marks]
- (b) Consider the following scenario. Oguna and Jacktone are working on a software system and are using mercurial, a distributed version control system to manage their code. Jacktone pulls from the master repository and updates his working copy. He realizes there is a bug in the code and works to fix it. When he is finished, he commits his code. The next day, Oguna begins working on the code by pulling from the master repository and updating his working copy. He too realizes the code has a bug (the same one Jacktone saw) and spends the whole day fixing it. What went wrong? Why didn't Oguna benefit from Jacktone's work? [4 Marks]
- (c) The Students Affairs office at JOOUST plans to create a website for students. The desire is to design an informative, communicative, collaborative and eye catching site. The web domain shall be *students.jooust.ac.ke* with its contents co-hosted in the same server for the main university website. Consider you being approached to aid in the design of this site.
- (i) Give any TWO communication mechanisms and TWO collaboration mechanisms that you are likely to incorporate in the design. [4 Marks]
- (ii) Provide TWO ways in which communication and collaboration of this website can be improved. [4 Marks]
- (iii) Give reason why your overall design model for the website shall be efficient and effective for the intended users. [2 Marks]

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