JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF SCIENCE

COMPUTER SECURITY & FORENSICS

2ND YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR

CENTRE: MAIN

COURSE CODE: IIT 3215

COURSE TITLE: SYSTEM ANALYSIS & DESIGN

EXAM VENUE: LR 6   **STREAM: BSc. Computer Security & Forensics**

DATE: 10/12/2013   **EXAM SESSION: 11.30 – 1.30 PM**

TIME: 2 HOURS

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

a) Define system analysis and design   (4 marks)

b) Discuss different types of feasibility analysis.   (6 marks)

c) Explain the technology, people, and organizational components of an information system.   (8 marks)

a) Discuss different phases in system development life cycle   (12 marks)

QUESTION TWO

a) In systems theory, a system may be described as a soft system or as a hard system. Explain each type of system, and give an example of each.   (6 marks)

b) Specification documents often fail to describe the requirements clearly enough for the various people who need to read them. Describe five different types of mistakes made by specification authors.   (8 marks)

c) Explain the difference between verification and validation. Give an example of a technique that can be used for each.   (6 marks)

QUESTION THREE

a) The Analytical Hierarchy Process (AHP) simplifies the task of deciding which requirements should have higher priority, by grouping requirements into subsets, so that each requirement only has to be compared to others in the same subset. It then computes the relative weight for each requirement in the subset. Explain how the subsets are chosen, and how the relative weights are calculated.   (10 marks)

b) Two common techniques for gathering requirements are interviews and workshops. Choose one of these techniques and describe how an analyst would prepare for it and carry it out.   (5 marks)

c)   For the technique you have chosen in part (b) discuss its advantages and disadvantages
.   for requirements gathering.   (5 marks)

QUESTION FOUR

a)   Draw a sequence diagram to illustrate the normal operation of the Use Case for "Change DVDs" for the DVD player described in the previous question. Your sequence should start in the Playing state, and describe the scenario in which the user ejects the current disk, inserts a new one, and selects play again. Assume the DVD player software has to send signals to the motor (to tell it when to spin) and to the tray (to open and close), and in both cases needs to await confirmation from the device before doing anything else. Use activation bars to indicate when the devices are active. State any further assumptions you make.   (10 marks)

b)   Differentiate between system implementation and system maintenance   (5 marks)

c)   As a system developer, discuss five factors you will consider so as to design a user friendly .
.   system software   (5 marks)

QUESTION FIVE

a) Produce a top level data flow diagram representing a Shipping cargo handling systems.

(10 marks)

b) Draw a State Chart diagram to show the following behaviours of a DVD player. Be sure to label all transitions with the events that cause them. The DVD player is initially off. It can turned on or off by pressing the power button. When it is off, none of the other buttons do anything. When it is on, the tray can be opened or closed by pressing the eject button. When it is open, only the power and eject buttons will do anything. When the tray is closed, the motor is either spinning or stopped. When you turn on the power or close the tray, the machine first spins up the motor to read the disk. (10 marks)