CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR SCIENCE IN LIBRARY AND INFORMATION SCIENCE

LINS 450: INFORMATION SYSTEMS ANALYSIS,DESIGN AND EVALUATION 1

STREAMS:LINS Y4S1   **TIME: 2 HOURS**

DAY/DATE: FRIDAY 8/12/2017   **11.30 A.M – 1.30 P.M**

INSTRUCTIONS:

- **Answer question ONE and TWO other questions**
- **Sketch maps and diagrams may be used whenever they help to illustrate your answer**
- **Do not write anything on the question paper**
- **This is a closed book exam, No reference materials are allowed in the examination room**
- **There will be No use of mobile phones or any other unauthorized materials**
- **Write your answers legibly and use your time wisely**

QUESTION ONE (COMPULSORY) [30 MARKS]

(a) Explain the role of a systems analyst and requisite skills required during the system analysis phase of a systems project.   [4 marks]

(b) State and explain the tools used by system analyst to plan, design and implement information systems?

[3 marks]

(c) In business information systems, it makes sense to identify a system by its functions and features rather than its users. Explain each type of system, and give an example of each.   [5 marks]

(d) What are the limitations of flowcharts?   [3 marks]

(e) Briefly describe FOUR methods for developing information systems   [4 marks]

(f) With the aid of a suitable diagram explain the four main activities of the systems analysis phase of a systems project.   **[5 marks]**

(g) Explain the various team-based techniques for systems development used to deliver the best possible information systems, at the lowest possible cost.   [3 Marks]

(h) In a certain business case a customer is applying for credit from a bank. The bank only offers loans to customers who have held an account for three or more years and who are in full-time employment or can offer some form of security. Required is a decision tree diagram. [3 marks]

QUESTION TWO [20 MARKS]

Data Flow Modeling is widely used in SSADM.

(a) Explain the purpose of Data Flow Modeling. [4 Marks]

(b) Draw and explain the symbols used in Data Flow Diagrams. [5 Marks]

(d) Explain the differences between logical and physical data flow diagrams, and suggest how one is derived from the other. [4 Marks]

(e)Draw a suitable DFD to depict the following case scenario:

> When an invoice is received from a supplier, it is checked against a file of authorized purchases. If the invoice does not match an authorized purchase, then a querying letter is prepared and returned back with the invoice to the supplier. If the invoice reconciles, a payment authorization is made out. A cheque is then prepared and sent to the supplier, and the invoice and the authorization are filed. (7 marks)

QUESTION THREE [20 MARKS]

(a) Explain what is meant by the following Object-Oriented terms
  (i) Class (2 marks)
  (ii) Object (2 marks)
  (iii) Methods (2 marks)
  (iv) Messages (2 marks)

(b) The IT team at Game Technology prepared DFDs for the new Customer Contact Care system (**C3**). Now, you will help the team develop a set of object models. The **C3** system model will use the following object classes
  • Bus.
  • Passengers.
  • Engine.
  • Wheel.

Use UML graphical notation and your own experience of these types of objects to decide on the attributes, operations and any relationships that should be associated with the object classes:
i) Design the object classes identifying attributes and operations (methods) (8 marks)
ii) Draw a class or object relationship diagram for **C3** system model. (4 marks)

QUESTION FOUR [20 MARKS]

When planning a computer program, it is recommended that the fundamental knowledge necessary is the notion of an algorithm aided by flow charts and decision tables, which should be adopted by the development team.

(a) Describe what is meant by an algorithm   . (5 marks)

(b) Explain what is meant by decision tables and decision trees   (4 marks)

(c) One hundred students of a library class appear for a fitness checkup, write an algorithm to calculate and print the average weight and height of the students.   (5 marks)

(d) With reference to question (c) above, draw a flowchart for the algorithm.   ([6 marks)

QUESTION FIVE [20 MARKS]

Read the following scenario and answer the questions that follow
A video library stocks both DVDs and video tapes. When a potential client visits the shops, the librarian checks in the database to establish whether the client is registered or not. If the client is not registered, he/she is advised by the librarian to register with the library first before any services could be rendered. Once a client has been registered, he/she is eligible to borrow at most one library item per week. The item borrowed must be returned before any other item can be borrowed. If the client does not return the item within a month, he/she is surcharged a certain amount per day up to the time he/she returns the item.

Required:
i. Describe what a use case is.   (2 Marks)

ii. Show the notations used in a use case   (2 Marks)

iii. Identify the actors in the scenario above   (3 Marks)

iv. Draw a use case diagram to model the video library system.   (6 Marks)

iv. State what you understand by a sequence diagram   (2 Marks)

v. From the scenario above, draw a sequence diagram.   (5 Marks)