KASNEB

CICT PART II SECTION 3

SYSTEMS ANALYSIS AND DESIGN

WEDNESDAY: 24 May 2017. **Time Allowed: 3 hours.**

Answer ALL questions. Marks allocated to each question are shown at the end of the question.

QUESTION ONE

(a) Enumerate four advantages of object-oriented analysis compared to structured analysis. (2 marks)

(b) Use a well-labelled diagram to express the relationship among three sub-phases of the systems analysis phase of a project. (6 marks)

(c) System modelling is a major activity in systems design.

Assess why modelling activities tend to focus on logical system models. (3 marks)

(d) The sales clerk at XYZ Ltd. receives a phone call from a customer enquiring on a certain product. The clerk records the description of the item and the quantity as well as the name and address of the customer. The items are then checked against the catalog of available items. If the item is not in stock, a reject e-mail is sent to the customer. Verified requests are recorded in the outstanding request file.

Required:
Using the above scenario, develop the corresponding context (Level 0) data flow diagram. (6 marks)

(e) Highlight three objectives of a post implementation review. (3 marks)
(Total: 20 marks)

QUESTION TWO

(a) (i) Explain the philosophy behind systems thinking. (2 marks)

(ii) Differentiate between "behaviour over time graph" and "causal loop diagram" as used in systems thinking. (2 marks)

(b) Highlight two situations when you could recommend soft systems methodology in systems analysis. (2 marks)

(c) You are preparing a feasibility report for a proposed information technology (IT) system. You have decided to write the contents page first to help you structure your report.

Required:
Produce a sample table of contents page. (4 marks)

(d) Describe how you would carry out each of the following forms of testing:

(i) Stress testing. (2 marks)

(ii) Usability testing. (2 marks)

(e) ABC Ltd. is a manufacturing company located in Kigali City. It has a simplified purchasing and inventory tracking system that works as follows:

- The raw material inventory personnel inform the purchasing department when the stock falls below the re-order point.
- The purchasing department issues a purchase order to relevant suppliers.
- On arrival, goods and invoices are directed to the receiving department where they are recorded and the packaging slip is verified against a copy of the purchase order.

At the end of the month, the billing department checks to make sure that all adequate documentation is available and produces a payment voucher.

The payment voucher is processed by a cash disbursement clerk, who then prepares a cheque for the Senior Accountant's signature. The cheque is subsequently forwarded to the suppliers destination by the Senior Accountants office.

Required:
Draw a data flow diagram to represent the above purchasing routine scenario. (6 marks)
(Total: 20 marks)

QUESTION THREE

(a) Differentiate between "prescriptive architecture" and "descriptive architecture" as used in systems analysis and design. (4 marks)

(b) Explain four functions of system analysis and design standards. (4 marks)

(c) Highlight four usability goals to be included in the usability test of a system interface. (4 marks)

(d) In an e-commerce website, customers may search for items, browse items, view items recommended for them and add items to shopping cart or wish list.

Customer authentication is required to view recommended items and add items to the wish list. Items could be added to the shopping cart without user authentication.

Required:
Construct a UML use case diagram based on the above information. (8 marks)
(Total: 20 marks)

QUESTION FOUR

(a) Discuss three challenges associated with "traceability" in systems development. (6 marks)

(b) It is always important to prioritise business requirements in the process of requirements modelling.

(i) Analyse how time boxing could facilitate the above process. (3 marks)

(ii) Suggest the expected inputs and outputs when applying the technique in b (i) above. (4 marks)

(c) Explain one safety and one privacy concern for an information system to manage patients in a hospital. (4 marks)

(d) Highlight three factors that you would consider in determining the method of training for users of a new information system. (3 marks)
(Total: 20 marks)

QUESTION FIVE

(a) Structured specification analysis has gained much respect throughout the information technology world in recent years and is increasingly being used.

Explain four advantages of structured specification. (4 marks)

(b) A case tool is a set of software tools to support the technical, management and administration tasks in systems development.

Highlight six features of a case tool. (6 marks)

(c) Describe three components that are addressed during the system design risk evaluation process. (4 marks)

(d) Structured systems analysis and design methodology is widely used in computer application development. Its use is often specified as a requirement for government computing projects.

Required:
Assess three techniques used in structured systems analysis and design methodology. (6 marks)
(Total: 20 marks)

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