

## B1.5-R3: STRUCTURED SYSTEM ANALYSIS AND DESIGN

### NOTE:

1. There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
2. **PART ONE** is to be answered in the **TEAR-OFF ANSWER SHEET** only, attached to the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.
3. Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates, who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE**.

**TOTAL TIME: 3 HOURS**

**TOTAL MARKS: 100**  
**(PART ONE – 40; PART TWO – 60)**

### **PART ONE** **(Answer all the questions)**

1. **Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the “tear-off” answer sheet attached to the question paper, following instructions therein.** **(1 x 10)**
  - 1.1 The primary tool used in structured design is a:
    - A) Data flow diagram
    - B) Module
    - C) Structure Chart
    - D) Program flowchart
  - 1.2 Coding and testing are done in a
    - A) Ad hoc manner
    - B) Module manner
    - C) Structure Chart manner
    - D) Program flowchart manner
  - 1.3 At the highest level, a DFD is referred to as
    - A) Level 2DFD
    - B) Level 1 DFD
    - C) Context Diagram
    - D) Scope Diagram
  - 1.4 In data-flow diagrams, an originator or receiver of data is usually designated by:
    - A) Square box
    - B) A circle
    - C) A rectangle
    - D) An arrow
  - 1.5 Which of the following does not occur in phase 4 of the SDLC?
    - A) Acquire hardware and software
    - B) Train users
    - C) Conduct interview
    - D) Test the new system

- 1.6 Which of the following might be output as a result of using a CASE tool?
- A) Prototypes
  - B) Cost benefit analysis
  - C) Programming Cycle
  - D) All of the above
- 1.7 The CASE tools are used for
- A) To support the modeling techniques used in structured system analysis
  - B) To support system for system requirement analysis
  - C) To defining input and output design
  - D) None of the above
- 1.8 Managers who are potential users of the MIS
- A) Describe information needs
  - B) Identify alternate equipment configurations
  - C) Evaluate alternate equipment configurations
  - D) Select the optimum equipment configuration
- 1.9 UML are used for
- A) Object oriented module development
  - B) Coding of system
  - C) Testing of system
  - D) None of the Above
- 1.10 During the system study, flowcharts are drawn using
- A) Non-standard symbols
  - B) General symbols
  - C) Abbreviated symbols
  - D) Specific symbols

**2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the “tear-off” sheet attached to the question paper, following instructions therein. (1 x 10)**

- 2.1 A system is an organized way of achieving a goal without any consideration of the people involved.
- 2.2 Decision support systems assist groups to make complex decisions.
- 2.3 During the analysis phase, fellow analysts can provide insights into solutions that have been applied to similar system problems.
- 2.4 The final documentation of a system must clearly and concisely present all aspects of the newly designed system.
- 2.5 A critical path refers to a sequence of activities whose order and durations gave no direct impact on meeting a projects completion deadline.
- 2.6 Structured decisions are programmable and unstructured decisions are judgemental.
- 2.7 A prototype system is essentially complete information system, but without the database.
- 2.8 The limit check is a procedural control.
- 2.9 An activity of all phases of a structured project is the walkthrough.
- 2.10 PERT is a tool used to manage and control schedule performance.

3. Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1 x 10)

X		Y	
3.1	Pilot implementation	A.	This marks the completion of the requirements phase of the SDLC, when the economic and practical feasibility of the new system is determined.
3.2	Computer-assisted Software Engineering (CASE) Tools	B.	Situations in which the old system is halted on a planned date and the new system is activated.
3.3	Data flow diagrams	C.	Design tool used by the system analyst to show the flow of data through a system.
3.4	Prototyping	D.	These provide computer-automated support for structured design techniques.
3.5	System requirements reports	E.	This method involves implementing a new system at one location at a time to ensure that it is working correctly before moving on to another location.
3.6	System flowcharts	F.	Formal evaluation of the new system.
3.7	Modeling tools	G.	Process of building a small simple model of the new system that can be prepared with a minimum effort.
3.8	Parallel implementation	H.	These provide computer-automated support for structured design techniques.
3.9	Phase Implementation	I.	Situation in which the old system and the new system are running at the same time for a specified period.
3.10	Project Dictionary	J.	Charts used to diagram and document the design of a new system
		K.	This stores all the requirements and specifications for all elements of data to be used in a new system.
		L.	Pseudo code, structure-charts, systems flow charts.
		M.	Method for implementing a new system used when the system is very broad in scope.
		N.	Process of setting up an information system.

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1 x 10)

<b>A.</b>	Feed back	<b>B.</b>	System	<b>C.</b>	Interface
<b>D.</b>	Testing	<b>E.</b>	Black Box	<b>F.</b>	Data Dictionary
<b>G.</b>	Module	<b>H.</b>	Data-flow diagram	<b>I.</b>	Program Study
<b>J.</b>	Structured Design	<b>K.</b>	Environment	<b>L.</b>	Structure charts
<b>M.</b>	Data Dictionary	<b>N.</b>	System Analysis	<b>O.</b>	Walkthrough
<b>P.</b>	Maintainability				

- 4.1 \_\_\_\_\_ is a set of interacting components that operate within a boundary for some purpose.
- 4.2 \_\_\_\_\_ is a process by which the output of a system is measured against a standard, and any difference is corrected by altering the input.
- 4.3 Under the \_\_\_\_\_ concept, the system is designed in terms of inputs and outputs rather than in terms of how the system effects a transformation.
- 4.4 The \_\_\_\_\_ of a system is designed as anything outside the boundary of the system.
- 4.5 The \_\_\_\_\_ is the region between the boundaries of systems and also the medium for transporting the output from one system to the input of another system.
- 4.6 The \_\_\_\_\_ is a listing of all data elements in a database.
- 4.7 \_\_\_\_\_ is a method for modeling and understanding complex systems.
- 4.8 \_\_\_\_\_ is the primary tool used in structured system development to graphically depict systems.
- 4.9 Procedure manuals are generally written concurrently with coding and \_\_\_\_\_.
- 4.10 \_\_\_\_\_ is the process of designing the computer programs that will be used in the system.

**PART TWO**  
(Answer any **FOUR** questions)

- 5.**
- a) Why is a life cycle needed for development of Information System? Define the phases used in the linear cycle.
  - b) What are advantages of top-down problem solving? Explain how the linear cycle meets top-down problem solving requirements?
  - c) What is the purpose of an Inventory Control System? Can an Inventory Control System also be a Decision Support System?

**(5+5+5)**

- 6.**
- a) What is the difference between system analysis and system synthesis?
  - b) What role does a repository play in system analysis?
  - c) What is object-oriented analysis? How it is similar to, and different from, modern structured analysis and information engineering?

**(5+3+7)**

- 7.**
- a) What is a model? Describe the difference between the logical model and physical model. Why the data modeling is required? Discuss the usefulness of ER diagram to represent data modeling.
  - b) Explain why a system analyst might want to draw logical models of an automated portion of an existing information system rather than simply accepting the existing technical information systems documentation, such as system flowcharts and program flowcharts.

**(8 + 7)**

- 8.**
- a) Below are some statements about order processing in an organization? You are required to construct an ER diagram from these statements.
    - \* Persons in the organization are identified by a PERSON-ID and have a SURNAME, FIRST-NAME and DATE-OF-BIRTH.
    - \* The persons are responsible for orders which are identified by an ORDER-NO and have an ORDER-DATE, DESCRIPTION and QUOTED-PRICE. Each order is from one customer. Only one person is responsible for a given order but a person may be responsible for many orders.
    - \* The organization manufactures the order in a series of jobs. A person responsible for an order makes formal requests to sections to carry out these jobs. The requests are identified by a REQUEST-NO. They nominate a START-DATE and an END-DATE for each request.
    - \* A number of jobs can be created by a section in response to a request. Each job is identified by a JOB-NO and has a COST. All jobs for one request go to the same section which is identified by SECTION-ID and has one MANAGER.
    - \* Each job uses a QTY-USED of one or more materials. Materials are identified by MAT-ID and have a MAT-DESCRIPTION.

- b) What are CASE tools used for? What is the purpose of i) Upper Case Tools, ii) Lower Case Tools.

**(10+5)**

- 9.**
- a) Describe how you would expect documentation to help analysts and designers? What are the components of a documentation system?
  - b) How CASE tools assist a design methodology?
  - c) What are the benefits and limitation of PERT?

**(5+5+5)**