A5-R4: STRUCTURED SYSTEM ANALYSIS & DESIGN

NOTE:

IMPORTANT INSTRUCTIONS:

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 **OMR ANSWER SHEET** only, supplied with 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 "OMR" answer sheet supplied with the question paper, following instructions therein. **(1x10)**

1.1 Which statement best reflects the role of a systems analyst?
A) Systems analysts focus basically on how a system works.
B) Systems analysts must understand business requirements as well as technical requirements.
C) Systems analysts' primary job is to manage projects.
D) the most common work performed by a systems analyst is programming.

1.2 Which of the following is a true statement regarding the SDLC phases?
A) The SDLC is not iterative.
B) The life cycle is always a sequentially ordered set of phases.
C) It is not possible to complete some activities in one phase in parallel with those of another phase.
D) The life cycle may be thought of as a circular process in which the end of the useful life of one system leads to the beginning of another project to develop a new version of or replace an existing system.

1.3 A data dictionary has consolidated list of data contained in:
   i)   data flow
   ii)   data stores
   iii)   data outputs
   iv)   Processes
A) i) and iii)
B) i) and ii)
C) ii) and iv)
D) i) and iv)

1.4 If the objects focus on the problem domain, then we are concerned with
A) Object Oriented Analysis
B) Object Oriented Design
C) Object Oriented Analysis & Design
D) None of the above

1.5 This is another name for a working model that demonstrates how part of an information system works.
A) CASE tool
B) Prototype
C) Data flow diagram
D) Decision Tree

1.6 Software feasibility is based on which of the following:
A) Business and Marketing concerns
B) Scope, constraints, market
C) Technology, finance, time, resources
D) Technical prowess of the developers

1.7 ER model shows the:
A) Static view
B) Functional View
C) Dynamic View
D) All of the above

1.8 A good database design:
   i)   is expandable with growth and changes in organization
   ii)   easy to change when software changes
   iii)   ensure data integrity
   iv)   allows access to only authorized users
A) i) and ii)
B) ii) and iii)
C) i), ii), iii) and iv)
D) i), ii) and iii)

1.9 Coupling and cohesion can be represented using a:
A) Cause-effect graph
B) Dependence matrix
C) Structure chart
D) SRS

1.10 The testing that relies on the variables is called:
A) Black box testing
B) White box testing
C) Data variable testing
D) Data flow testing

2. **Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

2.1   A system is an organized way of achieving a goal without any consideration of the people involved.
2.2   In OOP inheritance refers to the ability to take more than one form.
2.3   Worms and viruses are programs that can cause destruction to data and software, but they differ on how they spread and function.
2.4   In the context of requirements analysis, partitioning results in the elaboration of data, function or behavior.
2.5   The diagram that shows the scope of the system, indicating what elements are inside and which are outside the system, is called context diagram.
2.6   Sometimes the systems development life cycle is iterative.
2.7   Each sub-system in an organization can function as an island by itself without being connected to other sub-systems.
2.8   Coupling is the extent to which subsystems depend on each other.
2.9   Expert system (ES) derives from the discipline of Artificial Intelligence.
2.10   An entity in an ER diagram is basically the same as an entity in a DFD, the only difference being that in the former it stores data and in the latter it processes data.

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 "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

	X		Y
3.1	In ER modeling, entities are depicted using	**A.**	Data Dictionary
3.2	A repository of information about a database that documents data elements of a database	**B.**	Triangles
3.3	An important security feature	**C.**	DBMS
3.4	A diagram which depicts the flow of data in different elements of the system	**D.**	LAN
3.5	The name for tools that support high-level program development	**E.**	Rectangles
3.6	A complete software facility of building, maintaining and generating reports from a database.	**F.**	CASE
3.7	A display using icons and other graphical images rather than typed lines of text.	**G.**	Encryption
3.8	Enhancements, upgrades and bug fixes	**H.**	Documentation
3.9	In SDLC, the stage which refers to the technical specifications for input, output, file and processing that will be applied in implementing the candidate system, is known as	**I.**	DFD
3.10	A decision table facilitates conditions to be related to	**J.**	Maintenance and Evaluation
		K.	Tuples
		L.	Action
		M.	GUI

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 "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

A.	Feedback	**B.**	System	**C.**	Interface
D.	Testing	**E.**	Black box	**F.**	Data dictionary
G.	Module	**H.**	DFD	**I.**	Program Stubs
J.	Structured design	**K.**	Environment	**L.**	Structure Charts
M.	System Analysis				

4.1   A(n) _____ 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 defined in terms of inputs and outputs rather than in terms of how the system effects a transformation.

4.4   The _____ of a system is defined 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   A _____ is the primary tool used in structured system development to graphically depict system.

4.9   Procedural 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. Define the following terms:
a) Management Information System (MIS)
b) System Users
c) Joint application development (JAD)

(5+5+5)

6.
a) What is the difference between system analysis and system synthesis?
b) Define software testing. Explain various stages of testing.
c) What is object-oriented analysis? How is it similar to, and different from modern structured analysis and information engineering?

(5+3+7)

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

(8+7)

8.
a) Define the terms economic feasibility, technical feasibility, operational feasibility and schedule feasibility.
b) State the phases that make up the system design?
c) How do users prevent and protect themselves against viruses?

(8+3+4)

9.
a) Explain the difference between batch and on-line input methods.
b) List the several input data validation techniques.
c) Explain the reuse maintenance model with the help of a diagram.
d) What is the fastest-growing medium for computer outputs?

(5+3+4+3)