B1.5-R4: STRUCTURED SYSTEM ANALYSIS & 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. (1x10)

1.1 Which step of SDLC performs cost-benefit analysis?
A) Feasibility Study
B) Analysis
C) Design
D) None of the above

1.2 The relationships among elements within a module is called
A) Modular Coupling
B) Modularization
C) Modular Cohesion
D) None of the above

1.3 Project planning is done by
A) PERT
B) State visits
C) Spiral Model
D) COCOMO

1.4 The term used to refer to the checking of outputs of a computer with the corresponding documents is called
A) Beta Test
B) Auditing through the computer
C) Auditing around the computer
D) Alpha Test

1.5 Tools used during system analysis include
A) Grid charts
B) Data Flow Diagrams
C) Decision Trees
D) All of the above

1.6 While designing output report, it is important to keep the following in mind

i) Volume of Output
ii) Potential Users
iii) Current Users
iv) Periodicity of Output

A) i), ii), iii)
B) ii), iii), iv)
C) i), ii), iv)
D) i), ii), iii), iv)

1.7 Which of the following is not a tool for data collection?

A) On-site observations
B) Program flowcharts
C) Interviews
D) Questionnaires

1.8 By security of an information system we mean protecting

i) data from accidental or intentional damage or loss
ii) Programs from accidental or intentional corruption or loss
iii) Programs and data from unauthorized disclosure
iv) Individual private data from disclosure

A) i) and ii)
B) i) and iii)
C) i), ii), iii)
D) i), ii), iii), iv)

1.9 In UML diagram of class

A) State of object cannot be represented
B) State is irrelevant
C) State is represented as an attribute
D) State is represented as a result of an operation

1.10 An ER diagram depicts

A) Entities
B) Keys
C) Relationship
D) All of the above

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. (1x10)

2.1 A decision table is a pictorial representation of data flow.
2.2 A decision support system need not necessarily use computer graphics.
2.3 A data dictionary is used for spelling checks in Word Processor.
2.4 System in-effectiveness can result due to reasons other than program bugs.
2.5 A well designed and tested system does not, typically, require Maintenance.
2.6 Alpha Testing is the verification process a System goes through for the first time.
2.7 Critical Success Factors are required to design an MIS.
2.8 The computer's ability to perform complex tasks under adverse conditions is known as Reliability.
2.9 Physical design must precede the logical design of the System.
2.10 An instance of an object is created by a update operation.

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. (1x10)

X		Y	
3.1	Aggregation	**A.**	Is a relation
3.2	Composition	**B.**	A set of objects
3.3	Inheritance	**C.**	Part of relation
3.4	Entity-relationship diagram	**D.**	Entity having multiple forms
3.5	Gantt chart	**E.**	System development Model
3.6	System	**F.**	A horizontal bar chart
3.7	Spiral model	**G.**	A data modeling technique
3.8	Object-oriented analysis and design	**H.**	Use cases
3.9	UML Class diagrams	**I.**	Technical systems options are produced
3.10	Logical System Specification	**J.**	A software engineering approach that models a system as a group of interacting objects
		K.	A group of interdependent items that interact regularly to perform a task
		L.	A coding error in a computer program.
		M.	The set of processes and programming tools used to create the program or software product
		N.	A methodology used to develop and refine an organization's software development process

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. (1x10)

A.	Isolation	**B.**	Delphi	**C.**	Benchmarking
D.	Module	**E.**	Planning	**F.**	Data consistency checks
G.	Numeric	**H.**	2nd Form	**I.**	Implementation
J.	Maintenance	**K.**	Throughput	**L.**	Coding
M.	Black Box	**N.**	A graphical	**O.**	Planning
P.	System Software	**Q.**	3rd Form		

4.1 The total amount of processing that computer can complete over a fixed period of time is called _____.

4.2 _____is a part of the SDLC.

4.3 The type of code which involves the assignment of a consecutive and unique number to each item is the _____ code.

4.4 'Removal of functional dependency from a relation' falls under the category of _____ of Normalisation.

4.5 _____ testing must precede Unit testing and System testing.

4.6 Questionnaire and _____ methods are used to capture the data for analysis of an Organisation's functioning.

4.7 A flow chart is _____ representation of the processing logic.

4.8 User training is implicit in the _____ stage of SDLC.

4.9 Changes made periodically, to a system after its implementation, is called System _____.

4.10 If a Data Dictionary is not included in the System Analysis and Design of a software project, then _____ cannot be carried out well.

PART TWO

(Answer any **FOUR** questions)

5.

a) What special skills should a system analyst possess? Why is it important for system analyst to communicate effectively?

b) What is the main difference between business data processing systems and MIS?

c) What do you understand by archival of data? How is archival of data used?

d) Elaborate on special care that has to be taken for disaster recovery of data while designing an ERP solution.

(6+2+4+3)

6.

a) Describe the different phases of System Development Life Cycle.

b) What is the main difference between a flow chart and DFD? What is context diagram? What is the difference between a physical DFD and a logical DFD?

(9+6)

7.

a) What are the objectives of system tests?

b) What is the difference between a pilot test and a parallel test?

c) What is an audit trail? What is the difference between controls and audit?

(6+5+4)

8.

a) Define an object. Why is object-oriented modeling used in practice?

b) What do you understand by the term data independence? How is data dependence of application programs ensured in a DBMS?

c) Distinguish between issues of privacy and security in a database.

(7+4+4)

9.

a) New Financial Company uses the following billing procedure for the output selection logic. If a customer's balance is less than or equal to zero, no additional conditions have to be checked. A statement is not to be printed to the customer. If a customer's balance is greater than zero, but less than his or her credit limit, no additional conditions have to be created. A statement is to be printed for the customer. If the customer's balance exceeds his or her credit limit, then the credit rating is checked. If the crediting is not sufficient, a statement is to be printed and a credit warning message is to be added to it.

Construct a decision tree and decision table to illustrate the above logic.

b) A list of employees with their basic pay is forwarded to an accounts assistant. He calculates the gross pay using standard allowances which are known for each pay slab. Deduction statements such as loan, advances taken etc. are also sent to another accounts assistant who matches these slips with the slips of gross pay and calculates net pay. Finally, the slip is used by a third accounts assistant whose job is to write out pay cheques for each employee and sent to respective employees. The total pay bills paid are also computed.

Draw a logical DFD for the above system.

(9+6)