B1.5-R4: 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 **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 An update operation in an object instance
A) Updates the class
B) Has no side effects
C) Deletes an instance
D) Alters the state of an object

1.2 Prototyping means–
A) Creating, developing and refining a working Model of the final operational system
B) Testing the computer system
C) Designing the computer system
D) None of the above

1.3 A major principle of modularization is:
A) Cohesion of each module should be low and coupling between modules should be strong.
B) The number of modules should be as low as possible.
C) The number of modules should be as high as possible.
D) Each module should have a high degree of cohesion.

1.4 The main advantage(s) of normalized relations in DBMS are:
A) The redundancy is removed.
B) Minimizes anomalies during delete and update operation.
C) Occupy minimal storage.
D) Both A) and B)

1.5 Peer review is an aid to:
A) Programming
B) Quality assurance
C) Feasibility
D) None of the above

1.6   Which of the following is a strategic decision?
A)   Diversification
B)   Hiring of local employees
C)   Budget allocation
D)   None of the above

1.7   Which of the following(s) is/are invalid data flows in DFD?
A)   Process to process
B)   Data store to data store
C)   Data store to process
D)   All of the above

1.8   A structure chart–
A)   Shows inter module relationships in a hierarchical manner.
B)   Describes the internal structure of a program in a graphical manner.
C)   Is a graphical representation of structured English?
D)   Depicts data structures in the form of a chart.

1.9   In the analysis and presentation of logic, which of the following techniques will ensure that all the combinations of conditions have been considered?
A)   HIPO CHART
B)   Decision Table
C)   Pseudo code
D)   DFD

1.10   Entities, attributes and relationship are associated with–
A)   Logical concepts of data.
B)   Physical concepts of Data
C)   Persons of an Organization
D)   None of the above

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   Test case design is done after the coding/construction phase is over.
2.2   A stub is a dummy module used in bottom up approach of testing.
2.3   The SRS document is designed after design phase of SDLC and is the first technical agreement of requirements between the developers and the client.
2.4   A polymorphic operation uses different methods to perform on the same class.
2.5   Each data flow in the DFD has a corresponding entry in the data dictionary.
2.6   A cost benefit analysis calculates the break even point.
2.7   The Second Normal form may have transitive dependency.
2.8   System Flow Charts are an effective means for relating input data to files and output reports.
2.9   Questionnaire and DFD are used to capture data for analysis of an organization's functioning.
2.10   Reviews and walkthroughs are carried out at almost all the stages of the SDLC.

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	DSS	**A.**	Low Level Design
3.2	Breakeven Analysis	**B.**	High Level Design
3.3	Structured walkthrough	**C.**	Functional Testing
3.4	IF–THEN–ELSE-ENDIF	**D.**	Performance Testing
3.5	A structured repository of data about data is called	**E.**	Context Diagram
3.6	Load Testing	**F.**	Data Dictionary
3.7	Black Box Testing	**G.**	Decision Table
3.8	The SDLC phase where database design is done	**H.**	Structured English
3.9	Benchmarking	**I.**	Strategic Management
3.10	Audit Trail	**J.**	Review of a system or its software by persons involved in development team
		K.	Analysis where cost of new system equals cost of old
		L.	Selection of hardware and software
		M.	Tracking data item

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.	FINANCE	**B.**	LEAST	**C.**	SUMMARISED
D.	AUTHENTICATION	**E.**	MOST	**F.**	MODULE
G.	USE CASE	**H.**	CASE TOOLS	**I.**	CLASS DIAGRAM
J.	DOCUMENTATION	**K.**	PROCESS	**L.**	MAINTENANCE
M.	SYSTEM SPECS				

4.1 System design is made of data design and _____ design.
4.2 Changes made periodically, to a system after its implementation, is called System _____.
4.3 _____ are essential to assure that the developer and the customer have the same perception of the System.
4.4 Manuals, forms and other descriptive information, that portray the use and/or operation of a system, are called _____ of the system.
4.5 The three basic subsystems (business functions) of any industrial organization are Marketing, Manufacturing and _____.
4.6 Cost of error correction is _____ at Requirement Analysis phase.
4.7 As the management level goes up the hierarchy, information becomes more and more _____.
4.8 _____ testing must precede Unit Testing and System Testing.
4.9 In most computer systems, access control is exercised by means of some form of _____.
4.10 A _____ is a set of scenarios that specifies a particular user goal.

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

5. Write brief notes on **any three** of the following:
a) Black-Box testing
b) Data warehouse
c) Normalization
d) Phases of SDLC

(5+5+5)

6.
a) A company canteen needs an automated system for its food and beverage management. The canteen receives food and beverage items from different distributors. All the non perishable items are stored in the store-room and the perishable items are put in the fridge. The manager should be able to add, delete or update food and beverage items onto the system and perishable and non perishable item details are to be stored separately. Both waiters and the cooks should be able to update the perishable items, but only the cooks should be allowed to update the non perishable items. Both cooks and waiters are not allowed to add or delete any items that are entered.
Draw DFD Level 0, Level 1 and, if necessary, Level 2 diagrams for the above scenario.
b) What is Context diagram? What is the difference between a logical DFD and a physical DFD?

(10+5)

7.
a) A Baby shop sells items like toys, cradles, prams etc. The salesman enters the information regarding the sales in a register. The shop also places orders for new toys, cradles etc whenever required.
Identify the entities and their attributes and draw an ERD for the above scenario. Would Salesman be an entity? Why?
b) What are the objectives of an input design? Discuss the different methods, which are used for Input Verification and control?

(8+7)

8.
a) The following are the major processes in a Supermarket.
  P1. Inventory management
  P2. Bill Generation
Inventory management process is further exploded into sub processes as shown below:
  P1.1 Add Item
  P1.2 Modify Item Details
  P1.3 Delete Item
The process Add Item is further exploded into sub processes as shown below.
  P1.1.1 Get New Item Details
  P1.1.2 Generate Item Number
  P1.1.3 Add New Item Details
  P1.1.4 Display Item Number
Draw a Structure Chart capturing the above situation.
b) Elaborate the concepts of Coupling and Cohesion with reference to modular design approach.
c) Discuss BVA approach of Black box testing with examples.

(7+4+4)

9.
a) Discuss the various features of Object Oriented Methodology. Define an object mapped to real life scenario.
b) What is SRS document? What are the major characteristics of SRS?

(8+7)