

## 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 Which of the following is the most important phase of SDLC
    - A) Requirements Analysis
    - B) Design
    - C) Testing
    - D) Coding
  - 1.2 An Entity in ER diagram represents what in DFD?
    - A) Data Flow
    - B) Store
    - C) Process
    - D) Both A) and b)
  - 1.3 The output of System Design stage is represented by
    - A) ER diagram
    - B) Context Diagram
    - C) Structure Chart
    - D) Activity Diagram
  - 1.4 UML stands for
    - A) Unified Modeling Language
    - B) Unified Modular Language
    - C) Unique Modeling Language
    - D) None of the above
  - 1.5 The largest percentage of total life cycle cost of software is
    - A) Design cost
    - B) Maintenance cost
    - C) Coding cost
    - D) Testing cost

- 1.6 The popular project management technique/s is/are:
- A) Critical Path Method
  - B) Gantt Chart
  - C) PERT
  - D) All of the above
- 1.7 Which of the following is not a Cost Benefit Analysis Technique
- A) Net present value
  - B) Return on Investment
  - C) Break Even analysis
  - D) JAD
- 1.8 Which one of the following Testing is done by user?
- A) Acceptance testing
  - B) Stub Testing
  - C) Unit Testing
  - D) All of the above
- 1.9 Cost of error correction is least at
- A) Design stage
  - B) Requirement analysis stage
  - C) Development stage
  - D) Implementation stage
- 1.10 A new instance of a class is created by:
- A) Query operation
  - B) Constructor operation
  - C) Update operation
  - D) Destructor operation

**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 DFD is used to represent the functional view of the application Domain.
- 2.2 Use Case Diagram Plays the same role in Object Oriented Analysis and Design that Context Diagram plays in Structured Analysis and Design.
- 2.3 Changes made to an Information System to evolve its functionality to meet the changing requirements are called corrective maintenance.
- 2.4 A database administrator is one who designs the database for an application.
- 2.5 All activities lying on critical path have slack time equal to zero.
- 2.6 In second normal form non-key attributes do not depend on other non-key data elements.
- 2.7 PERT stands for Project Evaluation Review Technique.
- 2.8 UML consists of nine diagrams.
- 2.9 In order to maintain the software efficiently, the modules must have high coupling.
- 2.10 Data dictionary is a technique for writing process specifications.

**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 Benefits that can be measured in Rupees and with certainty	<b>A.</b> Computer system security
3.2 The Repository of all data items	<b>B.</b> Component Diagram
3.3 Data at rest	<b>C.</b> Tangible Benefits
3.4 Disaster Recovery	<b>D.</b> Data store
3.5 A diagram which shows the Architectural View	<b>E.</b> Class Diagram
3.6 One of the concept used in Use case Diagram	<b>F.</b> Cohesion
3.7 One of the technique to control the User access	<b>G.</b> Data dictionary
3.8 Extent to which modules are dependent on each other	<b>H.</b> Temporal Cohesion
3.9 Changing a system in response to environmental changes	<b>I.</b> Class
3.10 Part of relationship	<b>J.</b> View
	<b>K.</b> Coupling
	<b>L.</b> Generalization
	<b>M.</b> Configuration Management
	<b>N.</b> Adaptive maintenance
	<b>O.</b> Aggregation
	<b>P.</b> Actor

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>	CPM	<b>B.</b>	functional	<b>C.</b>	Flat
<b>D.</b>	Data couple	<b>E.</b>	Inspection	<b>F.</b>	Network diagram
<b>G.</b>	System	<b>H.</b>	Transitive	<b>I.</b>	Sequence Diagram
<b>J.</b>	CASE Tools	<b>K.</b>	Context diagram	<b>L.</b>	Audit trail
<b>M.</b>	Component Diagram	<b>N.</b>	Cardinality	<b>O.</b>	Requirement analysis
<b>P.</b>	System	<b>Q.</b>	Software	<b>R.</b>	Code Generators
<b>S.</b>	Degree	<b>T.</b>	System Design		

- 4.1 A(n) \_\_\_\_\_ is an interrelated set of components with an identifiable boundary working together for some purpose.
- 4.2 PERT and \_\_\_\_\_ are techniques for scheduling project plans.
- 4.3 Tools that enable the automatic generation of program and database definition code directly from design documents, diagrams, forms and reports are called \_\_\_\_\_.
- 4.4 In UML collaboration diagram and \_\_\_\_\_ are complementary to each other.
- 4.5 A(n) \_\_\_\_\_ dependency in a relation exists between two non-key attributes.
- 4.6 A(n) \_\_\_\_\_ shows data being exchanged between the modules.
- 4.7 \_\_\_\_\_ is a formal group activity where participants manually examine code for occurrence of errors.
- 4.8 \_\_\_\_\_ is a list of changes to a data file which allows business transactions to be traced.
- 4.9 The number of entity types that participate in a relationship is called \_\_\_\_\_ of the relationship.
- 4.10 The phase of SDLC in which all functional features of the system are described independently of any computer platform is called \_\_\_\_\_.

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

- 5.
- a) What are the different stages of object oriented development life cycle?
  - b) Define a system. What are its characteristics?
  - c) What are the three views of modelling? Explain briefly their purpose and also name the models used to represent these views.

**(6+4+5)**

- 6.
- a) Explain the purpose of making decisions tree and decision tables. Why do we record data descriptions?
  - b) An Art Gallery is the business of buying and selling paintings. Artists can register with the gallery for selling their Paintings by paying a nominal amount. Whenever artists approach the Gallery for registration. Gallery checks the past auction records to know about the artist's standing. If satisfied, artist is given a registration code. In case artist is a new artist he is given six months temporary registration code to prove himself failing to which his registration is cancelled. Paintings can be classified as masterpiece, masterwork and other paintings. They can be also categorized as landscape, portrait spiritual etc. For every painting to be sold, its title, date of work, artist name, medium used, size, classification, expected price by the artist and target selling price are recorded. Once the painting is sold, status is changed to sold. Every three months, payments to be made to various artists are computed and cheques are dispatched. Gallery also maintains the record of customers who visit the gallery. Based on their past purchases, customers are also offered discounts. Customers also record their liking for the artists so that Gallery can contact them when paintings by those artists are available. Gallery also keeps updating the auction records. Gallery also gives its exhibition hall on rent to the customers for holding exhibition.

- c) For these requirements draw a Context Diagram.  
What is quality assurance? What factors determine quality of a system?

**(6+5+4)**

- 7.
- a) Write the names of diagrams used by UML.
  - b) Explain the functions of Transaction Processing System, Decision Support System and Expert System.
  - c) Write the basic principles of successful systems.

**(3+7+5)**

- 8.
- a) Explain the methods of interacting while designing Human Computer Interface.
  - b) A module of an Employee Management System computes salary of the employees. Each employee can have status or worker, instructor or manager. Each of these is given fixed salary per week. However if the employees work more than 40 hours per week, they are given fixed salary plus extra money per hours as per following rate.

Worker	-	Rs. 100
Manager	-	Rs. 200
Instructor	-	Rs. 150

In case an employee works more than 80 hours in a week he also given an additional allowance of Rs. 1000. Prepare a decision table to show the logic of the module.

c) Write a note on the responsibilities of system analyst.

**(4+6+5)**

**9.** Write short notes on any **three**:

- a) Use case Diagram
- b) Types of Coupling
- c) Types of feasibility
- d) Techniques for writing

**(3x5)**