

## A5-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 one of the following is not an important characteristic of useful and effective information?
    - A) Accuracy
    - B) Timeliness
    - C) Completeness
    - D) Economy
  - 1.2 Testing can be applied to
    - A) Requirements
    - B) Analysis
    - C) Design
    - D) Code
  - 1.3 Analysis & Design is done and participated by
    - A) Tester
    - B) Programmer
    - C) Software Manager
    - D) All of the above
  - 1.4 The CASE tools are used for
    - A) system requirement analysis
    - B) system designing
    - C) input output design
    - D) none of the above

- 1.5 Decision trees are developed for  
A) Module specification  
**B) System design**  
C) Planning consideration  
D) None of the above
- 1.6 A DFD depicts  
A) Reports  
B) Data flow  
C) Entity flow  
D) Process
- 1.7 UML are used for  
A) object oriented module development  
B) coding of system  
C) testing of system  
D) none of the above
- 1.8 ER diagram is related with  
**A) Entity relationship**  
B) Data flow  
C) Primary key  
D) Foreign key
- 1.9 An object oriented software component  
**A) is made of objects**  
**B) is part of software architecture**  
**C) is part of structured analysis**  
**D) is part of structured system design**
- 1.10 PERT is model for  
A) Project management  
B) Project development  
C) Analyzing tasks  
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. (1 x 10)**

- 2.1 The existing system is evaluated. Deficiencies are identified. This can be done by interviewing users of the system and consulting with support personnel.
- 2.2 The new system requirements are defined. In particular, the deficiencies in the existing system must be addressed with specific proposals for improvement.
- 2.3 The proposed system is designed. Plans are laid out concerning the physical construction, hardware, operating systems, programming, communications and security issues.
- 2.4 The new system is developed. The new components and programs must be obtained and installed. Users of the system must be trained in its use, and all aspects of performance must be tested. If necessary, adjustments must be made at this stage.
- 2.5 The system is put into use. This can be done in various ways. The new system can be phased in according to application or location, and the old system is gradually replaced. In some cases, it may be more cost-effective to shut down the old system and implement a new system.
- 2.6 Once the new system is up and running for a while, it should be exhaustively evaluated. Maintenance must be kept up rigorously at all times. Users of the system should be kept up-to-date concerning the latest modifications and procedures.
- 2.7 CMM is costing model for software development project, as a part of project management.
- 2.8 Reporting capability is optional in a software audit process.
- 2.9 Audits provide an independent evaluation of software products or processes resulting in noncompliance to standards.
- 2.10 CASE tools help to visualize structured analysis and design.

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	Water fall software model	A.	Association between classes defined in UML
3.2	Spiral Model	B.	Logical grouping of components
3.3	JAD	C.	Collection of classes only with their collaborations
3.4	RAD	D.	The phases are iterated until the customer is satisfied
3.5	CASE	E.	A separate unit of software or hardware
3.6	MIS	F.	Deals with managing the information
3.7	Module	G.	Use of a computer-assisted method to organize and control the development of software, especially on large, complex projects involving many software components and people
3.8	Coupling	H.	Computer systems in an enterprise that provide information about its business operations. It is also used to refer to the people who manage these systems
3.9	Package	I.	Components are ready off the shelf in the library for use
3.10	Subsystem	J.	Describe a development method that is linear and sequential
		K.	Physical grouping of components
		L.	Concepts that products can be developed faster and of higher quality
		M.	Methodology that involves the client or end user in the design and development

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>	actions	<b>B.</b>	mathematically	<b>C.</b>	reviews
<b>D.</b>	Testing	<b>E.</b>	generalization	<b>F.</b>	Process
<b>G.</b>	structure	<b>H.</b>	behavior	<b>I.</b>	PERT
<b>J.</b>	data	<b>K.</b>	Audit	<b>L.</b>	Biometric

- 4.1 The primary foundation in using Data Structure-Oriented Methods encompasses \_\_\_\_\_ component of the Information domain.
- 4.2 Formal Methods used in developing computer systems are \_\_\_\_\_ based techniques for describing system properties.
- 4.3 In JSD the model description consists of \_\_\_\_\_ and entities.
- 4.4 Abstraction permits one to concentrate on a problem at some level of \_\_\_\_\_ without regard to irrelevant low-level details.
- 4.5 Complex projects require a series of activities, some of which must be performed sequentially and others that can be performed in parallel with other activities. This collection of series and parallel tasks can be modeled as a network called \_\_\_\_\_.
- 4.6 Statistical Quality Assurance is a process of software \_\_\_\_\_.
- 4.7 A device to measure or detect fingerprints or signature is called a(n) \_\_\_\_\_ device.
- 4.8 Structured or procedural approach is \_\_\_\_\_ driven development.
- 4.9 Object oriented approach is \_\_\_\_\_ driven development.
- 4.10 DFD is used to show the abstraction of data and \_\_\_\_\_.

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

- 5.**  
a) Compare structured and object oriented analysis in detail.  
b) Explain enterprise information system. **(8+7)**
- 6.** The Requirements Statement for an ATM system is given as follows:  
  
The ATM must be able to provide the following services to the customer:  
  
i) A customer must be able to make a cash withdrawal from any suitable account linked to the card, in multiples of \$20.00. Approval must be obtained from the bank before cash is dispensed.  
ii) A customer must be able to make a deposit to any account linked to the card, consisting of cash and/or checks in an envelope. The customer will enter the amount of the deposit into the ATM, subject to manual verification when the envelope is removed from the machine by an operator. Approval must be obtained from the bank before physically accepting the envelope.  
iii) A customer must be able to make a transfer of money between any two accounts linked to the card.  
iv) A customer must be able to make a balance inquiry of any account linked to the card.  
a) Perform the Object Oriented Analysis using use cases of this ATM system.  
b) Find and describe analysis classes of this system.  
c) Draw a conceptual class model of this system. **(5+5+5)**
- 7.**  
a) What do you mean by Cost Benefit Analysis? Discuss problems involved in Cost Benefit Analysis?  
b) Discuss the type of threats to the computer systems and control measures.  
c) Explain various factors on which information requirements depend? **(5+5+5)**
- 8.**  
a) Differentiate the static and dynamic modeling.  
b) Explain the concept of business process re-engineering with the help of an appropriate example.  
c) How disaster recovery is performed in the computer systems? **(5+5+5)**
- 9.** Describe the following:  
a) Benefits and limitations of PERT  
b) Steps in CPM planning  
c) Gantt Chart **(5x3)**