A5-R4: STRUCTURED SYSTEM ANALYSIS AND DESIGN

अवधि: 03 घंटे **अधिकतम अंक: 100**

DURATION: 03 Hours **MAXIMUM MARKS: 100**

ओएमआर शीट सं.: **OMR Sheet No.:**						

रोल नं.: **Roll No.:** | | | | | | |

उत्तर-पुस्तिका सं.: **Answer Sheet No.:** | | | | | | |

परीक्षार्थी का नाम: **परीक्षार्थी के हस्ताक्षर:**

Name of Candidate: _____;Signature of candidate: _____

परीक्षार्थियों के लिए निर्देश: **Instructions for Candidates:**

कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका कीभाषा अंग्रेजी है । परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है ।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के **दो भाग**हैं ।**भाग एक** में **चार**प्रश्नऔर **भाग दो** में **पाँच** प्रश्नहैं।	There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions**.**
भाग एक"वैकल्पिक" प्रकार का है जिसके कुल अंक 40 है तथा **भाग दो,**"व्यक्तिपरक" प्रकार है और इसके कुल अंक 60 हैं।	**PART ONE** is Objective type and carries 40 Marks. **PART TWO** is subjective type and carries 60 Marks.
भाग एक के उत्तर, इस प्रश्न-पत्र के साथ दी गई **ओएमआर उत्तर-पुस्तिका** पर, उसमें दिये गए अनुदेशों के अनुसार ही दिये जाने हैं।**भाग दो** कीउत्तर-पुस्तिका में **भाग एक** के उत्तर **नहीं** दिये जाने चाहिए।	**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 for **PART TWO**.
भाग एक के लिए अधिकतम समय सीमा **एक घण्टा** निर्धारित की गई है।**भाग दो** की उत्तर-पुस्तिका,**भाग एक** की उत्तर-पुस्तिका जमा कराने के पश्चात दी जाएगी। तथापि, निर्धारित एक घंटे से पहले **भाग एक** पूरा करने वाले परीक्षार्थी **भाग एक** की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद,**भाग दो** की उत्तर-पुस्तिका ले सकते हैं।	Maximum time allotted for **PART ONE** is **ONE HOUR.** Answer bookfor **PART TWO** will be supplied atthe table when the answer sheet for **PART ONE** is returned. However, candidateswho 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.**
परीक्षार्थी,उपस्थिति-पत्रिका पर हस्ताक्षर किएबिना एवं अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल /कमरा नहीं छोड़ सकते हैं।ऐसा नही करने पर,परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	**Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his Answer sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात एवं उत्तर देने से पहले उम्मीदवार यह जाँच कर यहसुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टिसे संपूर्ण है।	After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question booklet is complete in all respect.

जब तक आपसे कहा न जाए,तब तक प्रश्न-पुस्तिका न खोलें।

DO NOT OPEN THE QUESTIONBOOKLET UNTIL YOU ARE TOLD TO DO SO.

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. (1×10)

1.1 System Study involves

(A) Study of existing System

(B) Documenting the existing System

(C) Identifying current deficiencies and establishing new goals

(D) All of the options

1.2 The primary tool used in structured design is a

(A) Structured Chart

(B) Data Flow Diagram

(C) Program Flowchart

(D) Module

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

(A) Interview

(B) Questionnaires

(C) Observation

(D) Data Flow Diagram

1.4 In a _____ one module of the new information system is activated at a time.

(A) System Development Life Cycle

(B) CASE tool

(C) Phased Conversation

(D) Success Factors

1.5 System Implementation Phase entails

(A) System check outs

(B) Pilot run

(C) Parallel Runs

(D) All of the options

1.6 Which of the following is not a part of MIS?

(A) Exception report for middle management

(B) Summary report for top management

(C) Action report for line management

(D) Payroll for workers

1.7 Decision tree uses

(A) Pictorial depiction of alternate conditions

(B) Nodes and Branches

(C) Consequences of various depicted alternates

(D) All of the options

1.8 Managers who are potential users of the MIS

(A) Select the optimum equipment configurations

(B) Evaluate alternate equipment configurations

(C) Describe information needs

(D) None of the options

1.9 Data Dictionary consists of

(A) All transaction that have been entered in the system.

(B) All words which can be referred to during the spell check by a word processor.

(C) Data about the files and their contents and about the processes used by the system.

(D) An indexed sequential file containing frequency of access of each data item in system.

1.10 Which of the following diagram of Object Oriented Design is used for representation of behavioral model of the system?

(A) State chart

(B) Class diagram

(C) Object diagram

(D) DFD

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1×10)

2.1 A data flow can may either emanate or terminate in an external entity but not both.

2.2 The primary functions of PERT charts are for planning and controlling complex system projects.

2.3 Unit test is done to test a module comprising of a few programs.

2.4 A technically feasible solution recommended by a study would always prove to be operationally feasible.

2.5 A context diagram is used as an aid to system design.

2.6 Decision Tree is a tabular method for describing the logic of the decisions to be taken.

2.7 Program specifications should be prepared after the system is accepted and implemented.

2.8 Modular coupling refers to the relationship among elements within a module.

2.9 In Probabilistic system the interaction between various subsystems cannot be defined with certainty.

2.10 Analysis Phase is a time consuming phase and yet a very crucial phase.

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. (1×10)

X		Y	
3.1	System	**A.**	Most comprehensive technique for solving computer problems.
3.2	Tactical	**B.**	Good example of Deterministic system.
3.3	SDLC	**C.**	Level supply information to strategic tier for the use of top management.
3.4	System Analysis	**D.**	Analysis of Unstructured decision.
3.5	Audit trail	**E.**	Ingredient of the report documenting the feasibility analysis.
3.6	Repository of Data	**F.**	is an important factor of management information system.
3.7	System which isolates it from environment is known as	**G.**	System Development Life Cycle.
3.8	Physical System	**H.**	Method which allows tracing of transactions from time of recording up to report generation.
3.9	Cost benefit analysis	**I.**	Close system.
3.10	Computer Program	**J.**	Consists of programs, data files and documentation.
		K.	Data Store in DFD.
		L.	Analysis of Structured Decision.
		M.	Hardware selection.

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1×10)

A.	System flow	**B.**	Data structure	**C.**	Structured chart
D.	Analysis	**E.**	DFD	**F.**	Use case
G.	Marcos	**H.**	Problem/Opportunity Identification	**I.**	Activity
J.	System Prototyping	**K.**	Debugging	**L.**	Top Down Analysis
M.	SDLC				

4.1 The first step in the systems development life cycle (SDLC) is _____.
4.2 Most modern software applications enable you to customize and automate various features using small custom-built "miniprograms" called _____.
4.3 _____ is finding and correcting errors in the program code.
4.4 In _____ and design of each succeeding phase is more detailed than the phase before it.
4.5 Data dictionary describes every data element and _____.
4.6 A _____ is the primary tool used in structured system development to graphically depict systems.
4.7 _____ helps the designer in communicating to the user, quickly, how the system, when developed, will look like and get a feedback.
4.8 System design is made up of Data Design and _____ design.
4.9 _____ Diagram in UML is used for describing user and system interaction.
4.10 _____ is a hierarchical diagram showing the relationship between various program modules.

PART TWO
(Answer any FOUR questions)

5. (a) Describe steps for Database Design. What is significance of Normalization in Database Design? List and explain various types of Normalization with proper examples.

(b) What is Software Development Life Cycle (SDLC)? Describe various phases of SDLC.

(c) In the context of testing, "*Verification and Validation*" are very widely and commonly used terms. Give differences between these two terms using proper example. **(7+4+4)**

6. (a) Who is System Analyst? Enumerate the roles of System Analyst in an organization.

(b) Explain the most common types of Information Systems in an organization.

(c) "Significant negative events like crippling cyber-attacks, equipment failures, and natural disasters can put an organization's operations at risk". How disaster recovery can be performed in the computer systems? **(4+8+3)**

7. (a) Elaborate the concepts of Coupling and Cohesion with reference to Modular Design approach.

(b) Compare the Object-Oriented Approach with Module Oriented Approach. Compare both the approaches using proper example.

(c) Classify the following UML diagram types as static or dynamic diagram types:

* Class diagram
* Component diagram
* Interaction diagram
* Use case diagram
* Deployment diagram

Also explain the use of these diagrams. **(5+5+5)**

8. (a) A supermarket needs to develop the following software to encourage the regular customer. For this, the customer needs to supply his residential address, telephone number, and the driving license number. Each customer who registers for this scheme is assigned a unique customer number (CN) by the computer. A customer can present his CN to the check-out staff when he makes any purchase. In this case, the value of his purchase is credited against his CN. At the end of each year, the supermarket awards surprise gifts to 10 customers who make the highest total purchase over the year. Also, it awards a 22 carat gold coin to every customer whose purchases exceed ₹ 30,000. The entire value against the CN is reset on the last day of every year after the prize winners' list is generated. Draw the DFD upto level- 2 for above Supermarket Prize Scheme.

(b) Why Decision tables are important? Explain the process to use decision tables in test designing with proper example. **(8+7)**

9. (a) Differentiate between Rapid Application Development (RAD) and Joint Application Development (JAD).

(b) "A form is generally classified by what it does in the system". Considering the above statement what should be the three primary classifications of forms? Enumerate the requirements of form design.

(c) Discuss the importance and scope of CASE tools throughout SDLC. **(5+5+5)**

SPACE FOR ROUGH WORK