No. of Printed Pages : **8**

A8-R5.1 : SYSTEMS ANALYSIS, DESIGN AND TESTING

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

OMR Sheet No. :						

Roll No. : | | | | | | |

Answer Sheet No. : | | | | | | |

Name of Candidate : _____ **Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES

- Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English language only.
- There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
- **PART ONE** is Objective type and carries **40** Marks. **PART TWO** is Subjective type and carries **60** Marks.
- **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**.
- 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** to the Invigilator.
- **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- 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 respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART - ONE

(Answer all the questions; each question carries ONE Mark)

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 the instructions therein. (1x10)

1.1 Which of the following is an example of an open system ?

(A) A clock

(B) A closed ecosystem

(C) A computer network

(D) A sealed container

1.2 What is the main purpose of the Requirement Gathering phase in the SDLC ?

(A) To design the system architecture

(B) To determine system feasibility

(C) To collect and define user needs and requirements

(D) To perform system testing

1.3 During which stage of the SDLC is the Feasibility Study conducted ?

(A) System Implementation

(B) Requirement Gathering

(C) System Design

(D) Testing

1.4 Which of the following is NOT a primary activity in Structured Analysis ?

(A) Creating data flow diagrams

(B) Identifying process specifications

(C) Developing pseudocode

(D) Creating a use-case diagram

1.5 Which UML diagram is primarily used to show the interaction between objects in a system ?

(A) Class Diagram

(B) Use Case Diagram

(C) Sequence Diagram

(D) Deployment Diagram

1.6 Which testing type is performed to ensure that each module or unit of code functions correctly ?

(A) Integration Testing

(B) Unit Testing

(C) System Testing

(D) Acceptance Testing

1.7 What does "Maintenance" in SDLC involve ?

(A) Developing new features only

(B) Fixing defects and enhancing the system post-deployment

(C) Writing new code for the system

(D) Testing the system

1.8 Which of the following software development approaches is based on iterative and incremental delivery of functional code ?

(A) Waterfall Model

(B) Agile Methodology

(C) V-Model

(D) RAD Model

1.9 In Object-Oriented Modeling, what term is used to describe a class's ability to inherit attributes and behaviors from a parent class?

(A) Encapsulation

(B) Abstraction

(C) Polymorphism

(D) Inheritance

1.10 Which of the following is a disadvantage of the Waterfall Model ?

(A) It encourages user involvement throughout the process.

(B) It is difficult to go back to any stage once completed.

(C) It is ideal for large, complex projects with high uncertainty.

(D) It is highly flexible and adaptable to changes.

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 the instructions therein. (1x10)

2.1 A system can be defined as a set of interrelated components working together toward a common goal.

2.2 The Spiral Model is an iterative SDLC model that emphasizes risk analysis in each phase.

2.3 Feasibility Analysis only assesses the technical feasibility of a project.

2.4 Structured Analysis focuses on breaking down a system into smaller, more manageable parts to better understand the system's functions.

2.5 In Object-Oriented Modeling, UML Class Diagrams are primarily used to model dynamic behavior.

2.6 Integration Testing is performed after Unit Testing and focuses on testing the interaction between integrated modules.

2.7 System Implementation includes activities like coding, installation, and training.

2.8 In the Waterfall Model, it is easy to go back to a previous stage to make changes once it is completed.

2.9 Prototyping is an approach in SDLC where a preliminary version of the system is developed to refine requirements through user feedback.

2.10 The Agile methodology is best suited for projects with a well-defined scope and limited user involvement.

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 the instructions therein.** **(1x10)**

X		Y	
3.1	Open System	**A.**	Static Structure Representation
3.2	Spiral Model	**B.**	Coding and Deployment
3.3	Economic Feasibility	**C.**	Activity Diagram
3.4	Data Flow Diagram	**D.**	Checks if the project can be funded
3.5	Waterfall Model	**E.**	Risk Assessment in Iterative Phases
3.6	Use Case Diagram	**F.**	Linear Sequential Stages
3.7	Class Diagram	**G.**	Data Movement in the System
3.8	Unit Testing	**H.**	Single Module Functionality Testing
3.9	Integration Testing	**I.**	Environment Interaction
3.10	Object-Oriented Design	**J.**	Identifies Actors and Interactions
		K.	Adjustments Post Deployment
		L.	Preliminary Model for Feedback
		M.	Incremental, Collaborative Approach

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 the instructions therein. (1x10)

A	Iteration	**B**	Agile	**C**	Class Diagrams	**D**	Maintenance
E	Prototyping	**F**	Data Flow	**G**	Feasibility Analysis	**H**	Spiral
I	Sequence	**J**	Completed	**K**	Requirements	**L**	Unit
M	Open						

4.1 A _____ system is one that interacts with its environment and exchanges information or resources.

4.2 The _____ phase of the SDLC involves assessing whether a project is financially viable and operationally feasible.

4.3 A _____ diagram is used in Structured Analysis to represent the flow of data within a system.

4.4 In the Waterfall Model, it is difficult to return to a previous stage once it is _____.

4.5 _____ testing focuses on verifying that individual units of code work as intended.

4.6 During the design phase, _____ are used in UML to model the static structure of a system and show relationships between classes.

4.7 The _____ methodology emphasizes flexibility and incremental development with regular user feedback.

4.8 The _____ Model in SDLC is particularly suitable for projects with high-risk factors as it incorporates risk analysis at each iteration.

4.9 _____ diagrams in UML are used to describe the dynamic behavior of a system, particularly the sequence of messages exchanged between objects.

4.10 System _____ involves updating and modifying a system after deployment to fix issues or adapt it to new requirements.

PART - TWO

(Answer any FOUR Questions)

5. (a) Who is a System analyst ? Briefly explain the phases of the System Development Life Cycle.

(b) What is meant by requirements gathering and analysis ? Explain in brief the major activities of the requirement-gathering phase.

(7+8)

6. (a) What do you understand by Rapid Application Development (RAD) ? Explain the strengths and weaknesses of this methodology.

(b) What is a Distributed System ? List the characteristics of a distributed system and describe its advantages and disadvantages.

(8+7)

7. (a) Explain the software development process using the Agile development method.

(b) How is DevOps development methodology different from conventional software development ? Explain the differences.

(8+7)

8. (a) Differentiate between Unit testing and Integration testing.

(b) What do you understand about non-functional testing ? State any four characteristics of Non-Functional Testing.

(6+9)

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

i. Feasibility Study

ii. Use Case Diagram

iii. Categories of Information System

iv. Context and Level-1 DFD

v. Alpha and Beta Testing

(5+5+5)

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