No. of Printed Pages : **8**

A8-R5 : 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 What is the primary goal of system analysis in the context of system development ?

(A) Designing user interfaces

(B) Identifying and understanding business requirements

(C) Coding and programming

(D) Testing and debugging

1.2 Which phase of the System Development Life Cycle (SDLC) involves creating detailed specifications for how the system will be built ?

(A) System Analysis

(B) System Design

(C) Implementation

(D) Maintenance

1.3 Which type of testing is performed to ensure that different system components work together as intended ?

(A) Unit testing

(B) Integration testing

(C) Acceptance testing

(D) Regression testing

1.4 What are functional requirements in the context of the SRS ?

(A) Requirements related to the system's performance and reliability.

(B) Requirements related to the user interface design.

(C) Requirements that describe what the system should do.

(D) Requirements that specify how the system should be implemented.

1.5 What is feasibility analysis in the context of system development ?

(A) The analysis of user requirements.

(B) The assessment of whether a proposed system is worth developing.

(C) The design of the system architecture.

(D) The implementation of system features.

1.6 What is the primary purpose of a Data Flow Diagram (DFD) in system analysis and design ?

(A) To illustrate the physical structure of a database.

(B) To model the flow of data within a system.

(C) To design the user interface of a system.

(D) To define the relationships between tables in a database.

1.7 What does cardinality represent in an ER Diagram ?

(A) The uniqueness of an entity

(B) The number of instances of an entity that can be associated with another entity

(C) The data type of an attribute

(D) The primary key of an entity

1.8 What does a double oval in an ER Diagram represent ?

(A) A weak entity

(B) A strong entity

(C) A derived attribute

(D) A multivalued attribute

1.9 Which UML diagram is used to represent the state transitions of an object over time ?

(A) Sequence Diagram

(B) Collaboration Diagram

(C) State Machine Diagram

(D) Use Case Diagram

1.10 Which type of testing is focused on evaluating how well the system can recover from crashes and hardware failures ?

(A) Performance Testing

(B) Stress Testing

(C) Recovery Testing

(D) Security Testing

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 The implementation phase of the system development process involves coding, testing, and debugging of the software.

2.2 In the waterfall model of system development, each phase must be completed before moving on to the next one.

2.3 UML is primarily a programming language used for software development.

2.4 Class diagrams in UML represent the static structure of a system, including classes, attributes, and relationships.

2.5 Regression testing is performed to ensure that new changes do not negatively impact existing functionality.

2.6 Stress testing involves testing the software's performance under normal and expected workloads.

2.7 The maintenance phase is an ongoing process that continues as long as the system is in use.

2.8 In structured design, the system is broken down into smaller, manageable modules that can be developed and tested independently.

2.9 A weak entity in structured design is an entity that can be uniquely identified by its own attributes without considering its relationship with other entities.

2.10 Dynamic modelling focuses on representing and analysing systems or processes that change over time.

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	Defines the scope, goals, and objectives of the system development project.	**A.**	Waterfall Model
3.2	A visual representation of the flow of data within a system, showing processes, data stores and data flows.	**B.**	User Acceptance Testing (UAT)
3.3	Testing conducted to ensure that the system meets user expectations and is ready for production use.	**C.**	Data Flow Diagram (DFD)
3.4	The process of gathering and documenting information about the problem domain and user requirements.	**D.**	System Analysis
3.5	Represents the interactions between actors and the system, illustrating various use cases.	**E.**	Relationship
3.6	The process of studying a current system to identify its goals, components and functions.	**F.**	Use Case Diagram
3.7	Describes the nature of associations between entities.	**G.**	Black Box Testing
3.8	The phase where the system design is created based on the specified requirements.	**H.**	Planning
3.9	Testing the software without knowledge of its internal code or logic.	**I.**	Requirement Elicitation
3.10	A software development model that follows a linear and sequential approach.	**J.**	Design Phase
		K.	Spiral Model
		L.	White Box Testing
		M.	Implementation

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	Spiral Model	**B**	Functionality	**C**	Bugs	**D**	Waterfall
E	Sequence Diagram	**F**	Requirements Gathering	**G**	Modelling	**H**	Requirements
I	Planning	**J**	Preliminary	**K**	Structured Design	**L**	Agile
M	Interview						

4.1 During system design, the creation of representations of the system's components, data and architecture is done through _____.

4.2 The primary goal of system testing is to ensure that the entire system functions as intended and meets the specified _____.

4.3 In system analysis, the process of gathering and documenting information about the problem domain is known as _____.

4.4 Feasibility analysis is typically conducted during the _____ phase of the system development life cycle.

4.5 Prototyping is a technique that involves creating a _____ version of the system to gather feedback and refine requirements.

4.6 A DFD is a visual representation that helps in understanding the _____ of a system.

4.7 During system maintenance, the focus is on fixing _____ and making enhancements to the system.

4.8 The _____ model is a linear and sequential approach to software development.

4.9 The _____ represents the flow of messages in the system and is also termed as an event diagram.

4.10 The _____is a risk-driven software development process model.

PART - TWO

(Answer any FOUR Questions)

5. (a) Explain the importance of conducting a feasibility analysis in the early stages of a system development project. How does it contribute to the overall success of the project ?

(b) Explain the significance of using Unified Modeling Language (UML) in the system development process. Provide examples of at least two UML diagrams and describe how they contribute to effective communication among project stakeholders. **(5+10)**

6. (a) Explain the key principles and benefits of using Structured Analysis in the system development process. Provide an example of how a Data Flow Diagram (DFD) can be employed to represent the flow of information in a typical business scenario.

(b) Explain the key principles of Structured Design in the context of system development. How does Structured Design contribute to the creation of efficient and maintainable software systems ? **(10+5)**

7. (a) What is software testing, and why is it an essential phase in the software development life cycle ?

(b) What is requirement gathering in the context of software development and why is it a crucial phase in the project life cycle ?

(c) What is the role of a system analyst in software development process. **(5+7+3)**

8. (a) Describe the challenges associated with requirement gathering in the software development process. How can these challenges be mitigated to ensure a successful outcome for a project ?

(b) Imagine you are tasked with conducting a feasibility analysis for a new online learning platform. The platform aims to provide a diverse range of courses to learners globally. Outline the key feasibility aspects you would investigate and provide a structured approach to assess the viability of this project. **(7+8)**

9. (a) Explain activity diagram.

(b) Explain the key components of a Cost-Benefit Analysis.

(c) Explain different software development approaches/models. **(4+4+7)**

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SPACE FOR ROUGH WORK

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