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Printed Page:-4 **Subject Code:- AMICSE0702**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
M.Tech (Integrated)
SEM: VII - THEORY EXAMINATION (2025 - 2026)
Subject: Software Engineering and Design

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*
1. *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*
2. *Maximum marks for each question are indicated on right -hand side of each question.*
3. *Illustrate your answers with neat sketches wherever necessary.*
4. *Assume suitable data if necessary.*
5. *Preferably, write the answers in sequential order.*
6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION-A 20

1. Attempt all parts:-

1-a. Agile Software Development is based on which of the following type. (CO1,K2) 1

(a) Iterative Development
(b) Incremental Development
(c) Both Incremental and Iterative Development
(d) Linear Development

1-b. In which step of SDLC actual programming of software code is done. (CO1,K2) 1

(a) Development and Documentation
(b) Maintenance and Evaluation
(c) Design
(d) Analysis

1-c. It is the process in which developers discuss with the client and end users and know their expectations from the software.(CO2,K2) 1

(a) Requirements gathering
(b) Organizing Requirements
(c) Negotiation & discussion
(d) Documentation

1-d. Non-functional content in SRS covers. (CO2,K2) 1

(a) Usernames and passwords
(b) Performance and security
(c) Developer salaries
(d) Office layout

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1-e. The module in which instructions are related through flow of control is.(CO3.K2) 1

(a) Temporal cohesion
(b) Logical cohesion
(c) Procedural cohesion
(d) Functional cohesion

1-f. The worst type of cohesion is. (CO3,K2) 1

(a) Coincidental Cohesion
(b) Temporal Cohesion
(c) Logical Cohesion
(d) Sequential Cohesion

1-g. Identify the correct measure for correctness.(CO4,K2) 1

(a) Errors per KLOC
(b) $ per KLOC
(c) Defects per KLOC
(d) None

1-h. Top down approach is used for:(CO4,K2) 1

(a) Development
(b) Identification of faults
(c) Validation
(d) Functional Testing

1-i. Among which of the following is a re-engineering process.(CO5,K2) 1

(a) System specofication->Design and Implementation->New system
(b) Existing software system->Understanding and Transformation->Re-engineered system
(c) Both
(d) None of these

1-j. Regression testing is primarily related to.(CO5,K2) 1

(a) Functional Testing
(b) Data flow testing
(c) Development testing
(d) Maintenance Testing

2. Attempt all parts:-

2.a. Define the incremental model of software development and explain its main idea.(CO1,K2) 2

2.b. Discuss the importance of feasibility study phase in requirement analysis phase.(CO2,K3) 2

2.c. Analyze the role of activity diagrams in understanding system behavior during the design phase.(CO3,K3) 2

2.d. Discuss the objective behind testing.(CO4,K2) 2

2.e. Explain business goal of re-engineering.(CO5,K2) 2

SECTION-B 30

3. Attempt all parts:-

3.a. Answer any one of the following:-

3.a.(i)	Difference between Agile and Spiral model.(CO1,K3)	6
3.a.(ii)	Discuss prototype model with Diagram.(CO1,K3)	6

3.b. Answer any one of the following:-

3.b.(i)	Draw a 0-level and 1-level DFD for a library management system. (CO2,K2)	6
3.b.(ii)	List various requirement elicitation techniques and identify the most popular technique along with the reason for its popularity.(CO2,K3)	6

3.c. Answer any one of the following:-

3.c.(i)	Analyze how polymorphism and inheritance contribute to creating flexible object-oriented systems.(CO3,K4)	6
3.c.(ii)	Evaluate the impact of modularity on reducing system complexity in a large-scale project.(CO3,K3)	6

3.d. Answer any one of the following:-

3.d.(i)	Discuss structural testing. How is it different from functional testing.(CO4,K3)	6
3.d.(ii)	Explain how CMM encourages continuous improvement of the software process.(CO4,K2)	6

3.e. Answer any one of the following:-

3.e.(i)	Discuss various problems during maintenance. Describe some solutions.(CO5,K2)	6
3.e.(ii)	Evaluate the need for adaptive maintenance in dynamic software environments.(CO5,K3)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain briefly about the following (i) business process engineering (ii) product engineering. (CO1,K2)	10
4-b.	Discuss about Software Crisis in software engineering. (CO1,K2)	10

5. Answer any one of the following:-

5-a.	Discuss the flow representation in an activity diagram and outline its major components.(CO2,K2)	10
5-b.	Define data dictionary and decision table? Explain with an example. (CO2,K2)	10

6. Answer any one of the following:-

6-a.	Explain generalization and Inheritance with example.(CO3,K2)	10
6-b.	Describe various types of relationships used in UML.(CO3,K2)	10

7. Answer any one of the following:-

7-a.	Compare Robust test case, Worst test case and Equivalence test case design.(CO4,K2)	10
7-b.	You are conducting system testing for a new enterprise resource planning (ERP) system. Develop test scenarios that verify the system's integration with existing modules.(CO4,K2)	10

8. Answer any one of the following:-

8-a.	Explain how cost is estimated in the COCOMO estimation technique: cost, effort,	10

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duration, size. Represent the precedence ordering among these activities using a task network diagram.(CO5,K3)

8-b.	Explain the term project size. What are the popular metrics to measure project size. How can the size of a project be estimated during the project planning stage. (CO5,K2)	10