Printed page: 4 **Subject Code: BMCA0303**

Roll No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: III - THEORY EXAMINATION (2025-2026)

Subject: Software Engineering

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

General Instructions:

IMP: Verify that you have received question paper with 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. Which of the following is not a software process model? (CO1, K1) 1

(a) Waterfall Model

(b) Spiral Model

(c) Agile Model

(d) Binary Tree Model

1-b. The term Software Crisis refers to:(CO1, K2) 1

(a) Shortage of hardware resources

(b) Problems in software development and maintenance

(c) High cost of software licenses

(d) Virus attacks on software

1-c. Which IEEE standard is commonly used for preparing the SRS document? (CO2, K1) 1

(a) IEEE 802.3

(b) IEEE 830

(c) IEEE 754

(d) IEEE 1024

1-d. In requirement engineering, elicitation refers to: (CO2, K2) 1

(a) Writing code for user needs

(b) Collecting user requirements

(c) Testing the requirements

(d) Finalizing system design

1-e. Which of the following ensures low coupling in software design? (CO3, K2) 1

(a) Global variables

(b) Information hiding

(c) Code duplication

(d) Large functions

1-f. Cyclomatic complexity measures: (CO3, K2) 1

(a) Lines of code

(b) Logical complexity of a program

(c) Number of classes

(d) Compilation time

1-g. In software testing, test drivers and test stubs are used in: (CO4, K2) 1

(a) System testing

(b) Unit testing

(c) Integration testing

(d) Acceptance testing

1-h. Which of the following is a black box testing method? (CO4, K2) 1

(a) Control flow testing

(b) Boundary value analysis

(c) Code walkthrough

(d) Mutation testing

1-i. Which of the following is not a type of software maintenance? (CO5, K2) 1

(a) Corrective

(b) Preventive

(c) Adaptive

(d) Analytical

1-j. COCOMO is used for: (CO5, K2) 1

(a) Software cost estimation

(b) Code optimization

(c) Version control

(d) Test case generation

2. Attempt all parts:-

2.a.	Define software engineering and explain its importance. (CO1,K2)	2
2.b.	What are the key elements of a good Software Requirement Specification (SRS)? (CO2, K2)	2
2.c.	Differentiate between abstraction and modularity in design. (CO3,K4)	2
2.d.	List any two differences between black box and white box testing. (CO4),K2)	2
2.e.	What is software re-engineering? Give one example. (CO5,K3)	2

SECTION – B 30

3. Attempt all parts:-

3.a. Answer any one of the following-

3-a.i	Explain the Evolving Role of Software in the modern world. (CO1,K4)	6
3-a.ii	Compare the Waterfall and Spiral models with suitable diagrams. (CO1,K4)	6

3.b. Answer any one of the following-

3-b.i	Discuss the steps involved in the Requirement Engineering Process. (CO2,K4)	6
3-b.ii	What is a Feasibility Study? Explain its types and importance with the help of suitable examples. (CO2,K4)	6

3.c. Answer any one of the following-

3-c.i	Discuss Cohesion and Coupling with examples. (CO3,K4)	6
3-c.ii	Differentiate between ERD and DFD with the help of suitable diagrams.(CO3, K4)	6

3.d. Answer any one of the following-

3-d.i	Differentiate between Alpha testing and Beta testing with suitable examples. (CO4,K4)	6
3-d.ii	Analyze the provided test plan and identify three gaps that may compromise product quality.(CO4, K4)	6

3.e. Answer any one of the following-

3-e.i	Illustrate various types of software maintenance and their purposes. (CO5,K4)	6
3-e.ii	Compare adaptive and perfective maintenance for a system that needs UI modernization. Which is more suitable and why? (CO5, K4)	6

SECTION – C 50

4. Answer any one of the following-

4-a.	Describe in detail the various Software Development Life Cycle (SDLC) models. (CO1,K4)	10
4-b.	Illustrate Agile methodology and its advantages over traditional models.(CO1,K4)	10

5. Answer any one of the following-

5-a.	Prepare a detailed SRS outline for an Online Library Management System. (CO2,K4)	10
5-b.	Explain the IEEE standard 830 for SRS and its key components. (CO2,K4)	10

6. Answer any one of the following-

6-a.	Explain Function-Oriented Design and Object-Oriented Design with examples. (CO3, K4)	10
6-b.	Discuss Design Principles and their role in achieving good software architecture. (CO3,K4)	10

7. Answer any <u>one</u> of the following-

7-a.	Explain the Testing Life Cycle and different levels of testing. (CO4, K4)	10
7-b.	Discuss Software Quality Assurance (SQA) and the ISO quality standards. (CO4,K4)	10

8. Answer any <u>one</u> of the following-

8-a.	Explain Project Management Concepts in software engineering. Discuss COCOMO estimation model. (CO5,K3)	10
8-b.	Describe Software Maintenance in detail and explain Reverse Engineering and Reengineering. (CO5 , K3)	10