

Faculty of Science / Engineering

End Semester Examination May 2025

CA3CO13 Software Engineering

Programme	: BCA / BCA-MCA (Integrated)	Branch/Specialisation	: -
Duration	: 3 hours	Maximum Marks	: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary.
Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))			Marks CO BL
Q1. Model building can be considered to be an application of which one of the following techniques?	1 2 2	<input checked="" type="radio"/> Abstraction <input type="radio"/> Aggregation	<input type="radio"/> Decomposition <input type="radio"/> Composition
Q2. Prototyping Life Cycle Model is appropriate when a project suffers from the following risk?	1 2 2	<input type="radio"/> Schedule Slippage <input checked="" type="radio"/> Incomplete and Uncertain Requirements	<input type="radio"/> Manpower Turnover <input type="radio"/> Poor Quality of Outsourced Work
Q3. What is defined by the Scrum Framework?	1 2 2	<input type="radio"/> Rules & roles <input type="radio"/> Artifacts and events	<input type="radio"/> Document guidelines <input checked="" type="radio"/> Both (A) and (C)
Q4. Which one of the following is not desired in a good Software Requirement Specification (SRS) Document?	1 2 2	<input type="radio"/> Functional Requirements <input type="radio"/> Goals of Implementation	<input type="radio"/> Non-Functional Requirements <input checked="" type="radio"/> Algorithms for Software Implementation
Q5. What is the primary goal of achieving High Cohesion in Software Modules?	1 2 2	<input type="radio"/> To minimize the number of lines of code. <input checked="" type="radio"/> To make modules more focused and easier to maintain.	<input type="radio"/> To increase the complexity of the system. <input type="radio"/> To reduce the number of modules in the system.
Q6. A data dictionary is useful as I. It is a documentation aid II. It assists in designing input forms III. It contains All data in an application including temporary data used in processes	1 2 2	<input checked="" type="radio"/> I and II <input type="radio"/> I, II and III	<input type="radio"/> I and III <input type="radio"/> II and III
Q7. In the context of CRC Cards, what does "collaborator" refer to?	1 1 1	<input checked="" type="radio"/> Other classes that a class interacts with to fulfill its responsibilities. <input type="radio"/> The data that a class stores.	<input type="radio"/> The user interface of a software system. <input type="radio"/> The programming language used to implement a class
Q8. What is the benefit of using generalization in Object-Oriented Design?	1 1 1	<input type="radio"/> Increased code complexity <input checked="" type="radio"/> Increased flexibility and maintainability	<input type="radio"/> Reduced code reusability <input type="radio"/> Reduced code readability

Q9. In the context of Software Testing, what does the term "Test Harness" refer to?

1 2 2

- A defect in the code
- A tool used for automated testing
- A set of test cases
- A high-level description of a test condition

Q10. What is the purpose of Equivalence Partitioning in Software Testing?

1 1 1

- To divide input values into equivalent classes to reduce test cases
- To test the equivalence of system components
- To assess the equivalence of different software versions
- To find defects in the code

Section 2 (Answer all question(s))

Marks CO BL

Q11. "Software Crisis has impacted the field of Software Engineering". Is the statement valid or invalid? Explain with reasons.

2 2 2

Rubric	Marks
Is the statement valid or invalid	1
Explain with reasons.	1

Q12. Why is Classical Waterfall Model called an Idealistic Development Model? Does this model has any practical use at all? Explain your answer.

3 3 3

Rubric	Marks
Why is Classical Waterfall Model called an Idealistic Development Model	2
Does this model has any practical use at all	1

Q13. (a) Explain the V Model with diagram and answer the following:

5 3 2

- (i) What are the Strengths and Weaknesses of V Model?
- (ii) Give an example where V Model is considered appropriate.

Rubric	Marks
Explain the V Model with diagram	2
What are the Strengths and Weaknesses of V Model?	2
Give an example where V Model is considered appropriate.	1

(OR)

(b) Explain the Spiral Model with diagram and answer the following:

- (i) What are the strengths and weaknesses of Spiral Model?
- (ii) Give an example where Spiral Model is considered appropriate.

Rubric	Marks
Explain the Spiral Model with diagram	2
What are the Strengths and Weaknesses of Spiral Model?	2
Give an example where Spiral Model is considered appropriate.	1

Section 3 (Answer all question(s))

Marks CO BL

Q14. Highlight the importance and usage areas of Extreme Programming model.

3 1 1

Rubric	Marks
Importance of Extreme Programming.	2
Usage areas of Extreme Programming.	1

Q15. (a) Describe various steps of Scrum. Define different roles in Scrum.

7 2 2

Rubric	Marks
Various steps of Scrum	3
Different roles in Scrum	4

(OR)

- (b)** What do you mean by SRS Document? List desirable characteristics and advantages of a good SRS document. Discuss the important issue, which an SRS must address.

Rubric	Marks
Meaning by SRS Document	2
Desirable characteristics of SRS	2
Advantages of a good SRS document.	2
Important issue which an SRS must address	1

Section 4 (Answer all question(s))

Marks CO BL

Q16. Why is Data Dictionary important?

2 1 2

Rubric	Marks
Importance of Data Dictionary	2

Q17. (a) What is the level of cohesion and coupling needed for a good design? Elaborate the difference between the two.

8 4 4

Rubric	Marks
Level of Cohesion and Coupling needed for a Good Design?	4
Difference amongst the two: Cohesion and Coupling.	4

(OR)

- (b)** Draw 0-level, 1-level and 2-level data flow diagram for online shopping system.

Rubric	Marks
0-level DFD Diagram for Online Shopping System	2
1-level Data Flow Diagram for Online Shopping System	3
2-level Data Flow Diagram for Online Shopping System	3

Section 5 (Answer all question(s))

Marks CO BL

Q18. Explain Class-Responsibility-Collaborator (CRC) Cards.

2 2 2

Rubric	Marks
Class-Responsibility-Collaborator (CRC) Cards Explanation.	2

Q19. (a) What is the purpose of Use Case Diagram? Draw a use case diagram for a Library Management System(LMS). Also point out the various relationships associated to use case diagram.

8 4 4

Rubric	Marks
Purpose of Use Case Diagram	2
Use Case Diagram for a Library Management System(LMS)	3
Various relationships associated to Use Case Diagram.	3

(OR)

(b) What is the purpose of Class Diagram? Draw a class diagram for a bank management system. Also point out the various relationships associated to Class Diagram.

Rubric	Marks
Purpose of Class Diagram	2
Class Diagram for a Bank Management System	3
Various relationships associated to Class Diagram	3

Section 6 (Answer any 2 question(s))

Q20. What is the difference between Errors, Bugs, Faults and Failures?

Marks CO BL

5 2 1

Q21. What is a test case? Explain bug life cycle or defect life cycle along with one example.

5 3 2

Rubric	Marks
4 Definitions and then their differences, 1 mark each.	5
Explanation and Diagram of Bug Life Cycle / Defect Life Cycle	4

Q22. Write Short Note on:

5 3 2

- (i) Equivalence Class Partitioning
- (ii) Coverage Based Testing
- (iii) Regression Testing
- (iv) Pesticide Effect
- (v) Verification and Validation

Rubric	Marks
Equivalence Class Partitioning	1
Coverage Based Testing	1
Regression Testing	1
Pesticide Effect	1
Verification and Validation	1
