Total No. of Questions: 24

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Engineering

End Semester Examination May 2025

CA5CO25 Software Engineering Principles

Programme	:	MCA / 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))

Q1. Standalone products developed by Software product companies such as Oracle, Microsoft etc. comes under which category of software? **Marks: 1 CO: 1 BL: 1**

Rubric	Marks
1	1

- (•) Generic software
- ( ) Customized software
- ( ) Scientific software
- ( ) Real time software

Q2. What is the disadvantage of the spiral model? **Marks: 1 CO: 1 BL: 1**

Rubric	Marks
1	1

- (•) Doesn't work well for smaller projects
- ( ) The high amount of risk analysis
- ( ) Additional functionality can be added later
- ( ) Strong approval and documentation control

Q3. Agile software development is based on- **Marks: 1 CO: 1 BL: 1**

Rubric	Marks
1	1

- ( ) Incremental development
- ( ) Iterative development
- (•) Both incremental and Iterative development
- ( ) Linear development

Q4. According to IEEE standards, which of the following is a key component of an SRS document? **Marks: 1 CO: 2 BL: 2**

Rubric	Marks
1	1

- (•) System requirements
- ( ) Source code
- ( ) Budget estimation
- ( ) Deployment strategy

Q5. Functional independence results in- **Marks: 1 CO: 2 BL: 2**

Rubric	Marks
1	1

- ( ) Error isolation
- ( ) Scope of reuse
- ( ) Understandability
- (•) All mentioned

Q6. Which of the following is the best type of module coupling? **1 2 2**

Rubric	Marks
1	1

- ○ Control coupling
- ○ Stamp coupling
- ◉ Data coupling
- ○ Content coupling

Q7. Which of the following UML diagrams should you use when allocating use case behavior to classes? **1 2 2**

Rubric	Marks
1	1

- ◉ Sequence diagrams
- ○ Use case diagrams
- ○ Activity diagrams
- ○ Composite structure diagrams

Q8. Class diagram represents _____ view. **1 2 2**

Rubric	Marks
1	1

- ○ Behavioral view
- ◉ Structural view
- ○ Implementation view
- ○ User view

Q9. Why is it important to test boundary values while testing a function? **1 4 1**

Rubric	Marks
1	1

- ○ It reduces test costs as boundary values are easily computed by hand
- ○ Debugging is easier when testing boundary values
- ○ The correct execution of a function on all boundary values proves that the function is correct
- ◉ In practice, programming the boundary conditions are error prone

Q10. The principal aim of code coverage analysis is to evaluate the quality of which one of the following: **1 4 2**

Rubric	Marks
1	1

- ○ Software
- ◉ Test cases
- ○ Requirements
- ○ Design

Section 2 (Answer any 2 question(s))

Marks CO BL

Q11. What do you understand by principles of abstraction and decomposition? Explain the problems that these two principles target to solve. **5 1 1**

Rubric	Marks
What do you understand by principles of Abstraction and Decomposition?	3
Explain the problems that these two principles target to solve?	2

Q12. What is a prototyping model? What are the advantages of constructing a prototype? **5 1 1**

Rubric	Marks
What is a prototyping model?	2
What are the advantages of constructing a prototype?	3

Q13. Describe the Rapid Application Development (RAD) model. What are its key characteristics and when is it most suitable? **5 1 1**

Rubric	Marks
Describe the Rapid Application Development (RAD) model	2
What are its key characteristics and when is it most suitable?	3

Section 3 (Answer all question(s))

Marks CO BL

Q14. List the five desired characteristics of a good SRS document. **4 2 2**

Rubric	Marks
List the five desired characteristics of a good SRS document.	4

Q15. (a) What is the agile manifesto? What is the importance of the agile methodology? **6 2 2**

Rubric	Marks
What is the agile manifesto?	3
What is the importance of the agile methodology?	3

(OR)

(b) What is the difference between functional and non functional requirements? Identify at least two functional and two non functional requirements of library automation software.

Rubric	Marks
What is the difference between functional and non functional requirements?	4
Identify at least two functional and two non functional requirements of library automation software.	2

Section 4 (Answer all question(s))

Marks CO BL

Q16. Explain the term “top-down decomposition” in the context of function-oriented design. **2 2 1**

Rubric	Marks
Explain the term “top-down decomposition” in the context of function-oriented design?	2

Q17. What do you understand by structured analysis and structured design? **3 2 1**

Rubric	Marks
What do you understand by Structured Analysis	1.5
What do you understand by Structured Design?	1.5

Q18. (a) Enumerate the different types of coupling that might exist between two modules. Give examples of each. **5 4 4**

Rubric	Marks
Enumerate the different types of coupling that might exist between two modules.	3
Give examples of each.	2

(OR)

(b) Draw a Data Flow Diagram (DFD) for the "Order Processing System". The diagram must consist of:
(i) Context Diagram (conceptually level zero)
(ii) The Level-1 DFD
(iii) And possible Level-2 DFD and further levels of functional decomposition depending on the complexity of the system.

Rubric	Marks
Draw a Data Flow Diagram (DFD) for the "Order Processing System". The diagram must consist of: a. Context Diagram (conceptually level zero)	1.5
Draw a Data Flow Diagram (DFD) for the "Order Processing System". The diagram must consist of: b. The Level-1 DFD	1.5
Draw a Data Flow Diagram (DFD) for the "Order Processing System". The diagram must consist of: c. And possible Level-2 DFD and further levels of functional decomposition depending on the complexity of the system.	2

Section 5 (Answer all question(s))

Marks CO BL

Q19. What are UML models? Why are they required? **2 1 1**

Rubric	Marks
What are UML models?	1
Why are they Required?	1

Q20. What do you mean by factoring use cases? Illustrate your answer with a suitable example. **3 1 3**

Rubric	Marks
What do you mean by factoring use cases?Illustrate your answer with a suitable example?	3

Q21. (a) What is the difference between a sequence diagram and a collaboration diagram? In what context would you use each? **5 2 1**

Rubric	Marks
What is the difference between a sequence diagram and a collaboration diagram?	4
In what context would you use each?	1

(OR)

(b) Define domain modelling. Also explain boundary objects, entity objects, and controller objects.

Rubric	Marks
Define Domain Modelling	2
Also explain Boundary objects, Entity objects, and Controller objects.	3

Section 6 (Answer any 2 question(s))

Marks CO BL

Q22. Explain the concept of pesticide effect in software testing. How can it be mitigated? **5 2 2**

Rubric	Marks
Explain the concept of Pesticide Effect in software testing.	3
How can it be mitigated?	2

Q23. Describe black-box testing techniques with examples, focusing on equivalence class partitioning and boundary value testing. **5 2 2**

Rubric	Marks
Describe Black-Box Testing techniques with examples.	2
focusing on Equivalence Class Partitioning and Boundary Value Testing.	3

Q24. What do you understand by positive and negative test cases? Give one example of each. **5 2 2**

Rubric	Marks
What do you understand by positive and negative test cases?	3
Give one example of each.	2

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