Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination Dec-2023

CB3CO25 Software Design with UML

Programme: B.Tech. Branch/Specialisation: CSBS

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Which of the following phases is not typically found in the waterfall model? **1**

(a) Requirements analysis (b) Testing

(c) Maintenance (d) Prototyping

ii. Which term refers to the ability of software to be modified with minimum effort or impact on existing functionality? **1**

(a) Flexibility (b) Scalability

(c) Reliability (d) Efficiency

iii. In UML, what does an association relationship between two classes represent? **1**

(a) A "is a" relationship (b) A "has a" relationship

(c) A "uses" relationship (d) A "controls" relationship.

iv. Which of the following is NOT a primary diagram type in UML? **1**

(a) Class diagram (b) Use case diagram

(c) Circular diagram (d) Sequence diagram

v. Which of the following elements is commonly used in a collaboration diagram? **1**

(a) Lifeline (b) Message

(c) Object (d) Activation Bar

vi. How objects are represented in a sequence diagram during the "Find Objects" process? **1**

(a) Rectangle (b) Arrow

(c) Circle (d) Dashed Lines

vii. What is the primary purpose of a package diagram in UML? **1**
(a) Organization (b) Interactions
(c) Behavior (d) Flow

viii. What do dependencies between packages indicate in a package diagram? **1**
(a) Relationship (b) Structure
(c) Interaction (d) Behavior

ix. What does a component symbolize in a component diagram? **1**
(a) Object (b) Flow (c) Control (d) Module

x. What is the purpose of providing interfaces on components in a component diagram? **1**
(a) Additional (b) Communication
(c) Dynamic (d) Interaction

Q.2 i. Explain the significance of the Software Development Life Cycle (SDLC) in the software development process. **2**

ii. Give the reasons and example of software crises. **3**

iii. Discuss the five key characteristics of quality software, emphasizing the significance of each in the development process. **5**

OR iv. Differentiate object-oriented analysis process and structure analysis model with example. **5**

Q.3 i. How we can create use cases for a use case diagram. **2**

ii. Explain various design principles used in software engineering. **8**

OR iii. Draw and explain each element of use case diagram of library management. **8**

Q.4 i. What is the goal of using UML methods in software. **3**

ii. Describe the primary elements of a class diagram with example and explain their role in modeling the structure of a software system. **7**

OR iii. Discuss the significance of sequence diagrams in understanding system behavior and communication with example. **7**

Q.5 i. Differentiate black box and white box testing. **4**

ii. Explain Package diagram and all its elements in detail with example. **6**

OR iii. Draw and explain activity diagram of a railway reservation system in detail. **6**

Q.6 Attempt any two:

i. Explain component diagram with example. **5**

ii. How to design a database in UML environment. **5**

iii. Discuss deployment diagram in detail with suitable example. **5**

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Marking Scheme
Software Design with UML (T) CB3CO25 (T)

Q.1	i)	d) Prototyping		**1**
	ii)	a) Flexibility		**1**
	iii)	b) A "has a" relationship		**1**
	iv)	c) Circular Diagram		**1**
	v)	c) Object		**1**
	vi)	a) Rectangle		**1**
	vii)	a) Organization		**1**
	viii)	b) Structure		**1**
	ix)	d) Module		**1**
	x)	b) Communication		**1**
Q.2	i.	The significance …….. process.	(As per explanation)	2
	ii.	Reason Example	2 Marks 1 Mark	3
	iii.	5 key characteristics –	(1 Mark *5)	5
OR	iv.	Atleast 6 points of difference-	5 marks	5
Q.3	i.	Use cases for a use case diagram.	(As per explanation)	2
	ii.	12 design principles-	8 Marks	8
OR	iii.	Diagram Explanation	4 Marks 4 Marks	8
Q.4	i.	The goal of using UML methods in software.	(As per explanation)	3
	ii.	Diagram Explanation	4 Marks 3 Marks	7
OR	iii.	Diagram Explanation	4 Marks 3 Marks	7
Q.5	i.	Differentiate black box and white box testing.	(1 Mark*4)	4
	ii.	Diagram Explanation	3 Marks 3 Marks	6
OR	iii.	Diagram – Explanation –	3 Marks 3 Marks	6
Q.6		Attempt any two:		
	i.	Component diagram with example.	(As per explanation)	5
	ii.	Design a database in UML environment.	(As per explanation)	5
	iii.	Diagram Explanation	2 Marks 3 Marks	5

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P.T.O.