III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019
OBJECT ORIENTED ANALYSIS & DESIGN USING UML
(Computer Science and Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A　　　　　　　　　　　　　　　　　　　　　　**(14 Marks)**

1. a) Write the properties of simple and complex software systems. [2M]
   b) List different kinds of relationships exist among objects. [2M]
   c) Write the importance of Modeling. [2M]
   d) Define Scenario, Actors and different types of actors. [3M]
   e) What is Call Event and explain Time and Change Events? [3M]
   f) Define Component Diagram. [2M]

PART –B　　　　　　　　　　　　　　　　　　　　　　**(56 Marks)**

2. a) Why Software is Inherently Complex? List and Explain how inherent complexity derives from different elements? [7M]
   b) Discuss clearly about different Models of Object-Oriented Development with a neat sketch. [7M]

3. a) Discuss the role of classes and objects in analysis and design. [7M]
   b) Write short notes on the following: [7M]
   i) Structured Analysis
   ii) Key Abstractions & Identifications of Key Abstractions.

4. a) Define and explain the following with examples: [7M]
   i) Class　ii) Object　　　iii) Attributes　　iv) Operations.
   b) Discuss clearly about the Modeling a System's Architecture with a neat sketch. [7M]

5. a) Draw the activity diagram for online shopping cart. [7M]
   b) Discuss clearly about different representations used in interaction diagrams. [7M]

6. a) Explain the following: [6M]
   i) History states　　　ii) Time and space.
   b) Explain a problem statement for Library Management system. Draw the Sequence and State chart diagrams. [8M]

7. a) Discuss about package, component and deployment diagrams. [7M]
   b) Draw a diagram that shows set of nodes and their relations for Library Management system. [7M]

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Code No: R1631053

R16

SET - 2

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PART –A   (14 Marks)

1. a) Write the examples of Complex Systems.   [2M]
   b) Define key abstraction and mechanism.   [2M]
   c) List the four basic principles of modeling.   [2M]
   d) What are the Purposes of Interaction Diagram?   [2M]
   e) What are States, transitions, and activities?   [3M]
   f) What are the steps to model simple collaborations of class diagram?   [3M]

PART –B   (56 Marks)

2. a) Write and explain the Limitations of the Human Capacity when Dealing with   [7M]
      Complexity.
   b) Discuss the following: [7M]
      i) Algorithmic versus Object-Oriented Decomposition
      ii) Elements of Software Design Methods.

3. a) Explain how to measure the quality of an abstraction?   [8M]
   b) Discuss the following: [6M]
      i) Domain Analysis   ii) Behavior Analysis.

4. a) What is UML? Briefly discuss its purpose. Discuss clearly about different   [7M]
      Building Blocks of UML.
   b) What is a class diagram? What are the common properties and uses of class   [7M]
      diagrams?

5. a) What is forking and joining in activity diagram? Explain with an example.   [7M]
   b) What is meant by use case? Explain about use case description with an example. [7M]

6. a) Explain components of State Chart diagram with example.   [5M]
   b) i) What is an event? What are different types of events?   [9M]
      ii) Define State Diagrams. Draw and explain Sample State diagram for washing
      machine.

7. a) Explain about Deployment diagram with an example.   [7M]
   b) Define component, port, and connectors. How component are related with   [7M]
      interfaces?

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PART –A   (14 Marks)

1.	a)	List Five Attributes of a Complex System.	[2M]
	b)	What is CRC Card? Write its usage in OOAD.	[2M]
	c)	Mention three kinds of building blocks in UML.	[2M]
	d)	What is Activity Diagram? Mention the Elements of an Activity Diagram.	[3M]
	e)	Define and brief about Active objects, processes, and threads.	[2M]
	f)	Give an example Collaboration diagram and explain.	[3M]

PART –B   (56 Marks)

2. a) What is the Role of Decomposition and Abstraction in designing complex software systems? Explain. [7M]

 b) i) Explain the phases of System development life cycle giving its salient features. [7M]
 ii) Write the Benefits of the Object Model.

3. a) List the meaningful metrics used to know a given class or object is well designed or not? Discuss. [7M]

 b) Define Classification and discuss clearly about Incremental and iterative nature of classification. [7M]

4. a) i) What are the primary goals in the design of UML? [9M]
 ii) Discuss how to organize the Attributes and Operations while designing the Class Diagram?
 iii) Explain about links and associations in Class Diagram.

 b) Draw and explain the class diagram for an ATM bank system. [5M]

5. Who are the various users participating in the library information system? Explain the use case diagram that is associated with various interactions with a neat diagram. [14M]

6. a) Define State Diagrams. Draw and explain Sample State diagram for washing machine. [7M]

 b) Define an event and a signal. Explain briefly about the common modeling techniques of events and signals. [7M]

7. a) Write the five standard stereotypes that can be applied to components in UML. [7M]

 b) Define Node. Draw the deployment diagram for ATM system. [7M]

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PART –A   (14 Marks)

1. a) What is the Role of Decomposition, Abstraction in designing a complex software system? [2M]
   b) Define Domain analysis and Who exactly is a domain expert? [2M]
   c) Define UML Diagram and list any four diagrams in the UML. [3M]
   d) Mention the Strength and Weakness of the Use case Diagram. [3M]
   e) List out the types of Events. [2M]
   f) Distinguish between action state and activity state. [2M]

PART –B   (56 Marks)

2. a) Explain the following : [7M]
      i) OOP, OOD, and OOA   ii) Kinds of Programming Paradigms.
   b) Write the importance of modeling in object oriented and Discuss clearly about the modeling principles. [7M]

3. a) Explain the procedure to identify key abstractions. [7M]
   b) Discuss clearly about the three general approaches used in classification. [7M]

4. i) Define UML. What are the basic building blocks of UML? [14M]
   ii) What are the various types of UML diagrams drawn to handle static and dynamic component of software under development? Explain with an example.

5. a) Explain the following with an example: [6M]
      i) use case   ii) Actor   iii) flow of events.
   b) Draw swim lane flowchart for financial accounting template and customize it to show your processes and procedures. [8M]

6. a) Distinguish signals and active classes. [4M]
   b) Explain the forward engineering tool and reverse engineering tool for a sample code with respect to the state chart diagram. [10M]

7. a) Define the term transition. Discuss concurrent states with example. [7M]
   b) What are components? Show the stereotypes that apply to components. [7M]

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