

Code No: **R41052****R10****Set No. 1****IV B.Tech I Semester Supplementary Examinations, May/June - 2014****UML & DESIGN PATTERNS****(Computer Science and Engineering)****Time : 3 hours****Max. Marks: 75****Answer any Five Questions****All Questions carry equal marks**

1. a) Why is UML called unified? Why is it called a language when UML is a bunch of diagrams?
b) Discuss Rumbaugh's Object modeling technique.
2. a) What are the differences between a class diagram and an object diagram? How do you indicate public, protected and private members of a class in a class diagram?
b) Apply the noun phrase approach to short list the class names in an inventory system.
3. a) What are the essential criteria for ideal use case diagram? What are "extends" and "includes" constructs in use case diagram.
b) Define state, event and transition. Using example draw state diagram.
4. a) Explain the difference between component diagram and deployment diagram.
b) Draw component and deployment diagram of the student information system.
5. a) What is a pattern? What are its advantages? Give its advantages and disadvantages.
b) Distinguish between a pattern and a framework.
6. a) What are factories responsible for? What is the essential reason to use a Factory Method?
b) What is the intent of the Singleton pattern? How many objects is the Singleton responsible for creating?
7. a) Why are the Bridge and Decorator patterns more correctly classified as structural rather than behavioral patterns?
b) Is there a case for writing a new system rather than encapsulating the old system with Façade? What is it?
8. a) What are behavioral patterns? Using a general example, explain how each of the patterns can be applied to solve a problem.
b) Distinguish between strategy pattern and state pattern.

Code No: **R41052****R10****Set No. 2****IV B.Tech I Semester Supplementary Examinations, May/June - 2014****UML & DESIGN PATTERNS****(Computer Science and Engineering)****Time : 3 hours****Max. Marks: 75****Answer any Five Questions****All Questions carry equal marks**

1. a) What are the primary goals of UML?
b) What are the different phases of rational unified process?
2. Explain the activities involved in designing classes. Design the class diagram for ATM bank system.
3. a) What is the difference between state chart diagram and activity diagram?
b) Model an activity diagram for the use case of a driver starting a car.
4. a) Explain the sequence diagram and collaboration diagram with an example used in UML.
b) What is a component? What are the different types of components?
5. a) What is a design pattern? How do you categorize design pattern? Give an example for each category.
b) How will you select a design pattern? Explain with an example.
6. a) Why is this pattern called a "factory method"? How does the Factory Method pattern fit in with other factories?
b) What type of pattern is the Singleton? What general category of pattern does it belong to?
7. a) How does the Decorator pattern help to decompose the problem? What does each Decorator object wrap?
b) Does the Façade pattern usually gives you access to the entire system?
8. a) Explain the use of Interpreter pattern while solving a problem of converting from roman to decimal values.
b) What is the difference between the Strategy pattern and the Template Method pattern?

Code No: **R41052****R10****Set No. 3**

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1. a) Explain the object oriented analysis phase of unified approach.
b) Discuss Jacobson's object oriented methodology.
2. a) With relevant examples discuss unary association, binary association with association class and ternary association.
b) What is the difference between an "is-a" relationship and a "has-a" relationship? What are the two types of "association" relationships?
3. a) What is a domain state model? Explain nested states with appropriate diagram.
b) Why use case modeling is useful in analysis? Develop a use case model for library application.
4. a) How do you model the source code using components?
b) Draw the deployment diagram for a two –tier web applications.
5. a) What are the key elements in the description of a design pattern?
b) What are pattern languages and pattern catalogues? Compare them.
6. a) What does the "Abstract Factory" class do? How do you know when to use the Abstract Factory pattern?
b) Briefly explain various creational patterns.
7. a) What are the consequences of the Façade pattern? Give an example.
b) In what way does the Bridge pattern illustrate the open-closed principle?
8. a) Compare and contrast Iterator pattern with Interpreter pattern.
b) The Template Method pattern makes the method call in a special way. What is that?

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1. Explain the processes and components of the unified approach in software development.
2. a) What are the differences between a method and message? Explain how the objects respond to messages with example.
b) With suitable examples, explain about the properties of objects and their relationships.
3. a) What is meant by an actor? Explain the concept of forking, merging and joining with the help of an example.
b) Compare and contrast events and signals.
4. Give the different types of systems which can be modeled using deployment diagram? Draw the deployment diagram for an email system.
5. a) Briefly describe about the design patterns in Smalltalk MVC.
b) How a design pattern is selected and used? Explain with an example.
6. a) What are the three key strategies in the Abstract Factory? What are the consequences of the Abstract Factory pattern?
b) The Singleton uses a special method to instantiate objects. What is special about this method?
7. a) How is implementation defined in the context of the Bridge pattern? What is the basic problem being solved by the Bridge pattern?
b) What does the Adapter pattern free you from worrying about? What is the most common use for the Adapter pattern?
8. a) Discuss the chain of responsibility in behavioral pattern.
b) What is the intent of the Observer pattern? Under what conditions an Observer pattern should not be used?