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**Question Paper Code : 71392**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Sixth Semester

Computer Science and Engineering

CS 2353/CS 63/10144 CS 603 — OBJECT ORIENTED ANALYSIS AND DESIGN

(Common to Information Technology)

(Regulation 2008/2010)

(Common to PTCS 2353/10144 CS 603 – Object Oriented Analysis and Design for B.E. (Part-Time) Fifth Semester – Computer Science and Engineering – Regulation 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Object Oriented Analysis and Design?

2. Define : Use Case.

3. What is a domain model?

4. What is the purpose of the association relationship?

5. What is a system sequence diagram?

6. Differentiate: sequence and communication diagrams.

7. Define : Pattern.

8. 'A system must be loosely coupled and highly cohesive'. Justify.

9. Draw the state machine diagram for telephone.

10. What is the purpose of using a component diagram?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is UML? (2)

(ii) Explain the include, extend and generalization relationship with an example. (6)

(iii) Draw the use case diagram for the following specification: (8)

A Coffee Vending Machine dispenses coffee to customers. Customers order coffee by selecting a recipe from a set of recipes. Customers pay for the coffee using coins. Change is given back, if any, to the customers. The 'Service Staff' loads ingredients (coffee powder, milk, sugar, water, chocolate) into the coffee machine. The 'Service Staff' can also add a recipe by indicating the name of the coffee, the units of coffee powder, milk, sugar, water and chocolate to be added as well as the cost of the coffee.

Or

(b) (i) What is the Unified Process? Is the UP iterative and incremental? Explain. (8)

(ii) For the specification given below, evolve a domain model. (8)

'DeepBlue' a multi-cuisine restaurant would like to automate its billing service. A waiter takes an order for each table in the restaurant, along with order details(item name and quantity). Customers are allowed to order more items after their first order. A bill is generated at the end for each customer having the following details: Restaurant name, date, bill no, item, quantity, amount and total amount.

12. (a) (i) Differentiate aggregation and composition with examples. (5)

(ii) What are the constructs (notation) used in an activity diagram? (3)

(iii) Draw the activity diagram for the following scenario. Booking a ticket on the Indian Railways e-ticket system (IRCTC) (8)

Or

(b) (i) Describe domain model refinement with suitable examples. (8)

(ii) Draw and explain the activity diagram for an on-line purchase system. (8)

13. (a) (i) What is the relation between sequence diagrams and use cases. Take an example to show the relationship, highlighting the advantages. (6)

(ii) For an ATM system, every user has to be validated with a PIN number to make a transaction. A customer is allowed three times to validate card giving the correct pin number. Show the use case representation for the same and elaborate the 'Validate User' use case using a sequence diagram. (10)

Or

(b) With examples explain the notation used in sequence diagrams for the foll : Object Destruction, Frames, Conditional Message, Mutually exclusive conditional message, Iterations over a collection. (16)

14. (a) What is GRASP? Explain the following GRASP patterns: Creator, Information Expert, Low Coupling, High Cohesion. (16)

Or

(b) (i) What is visibility? List four common ways that visibility can be achieved from Object A to Object B. (4)

(ii) Explain the following design patterns: Adapter, Singleton, Factory and Observer. (12)

15. (a) (i) What is the purpose of the state diagram? (2)

(ii) List two advantages of using the state diagram. (2)

(iii) List the constructs (notation) of the state diagram. Use the same to draw the state diagram for a software that controls an elevator in a building with five floors. (12)

Or

(b) What is the purpose of deployment diagrams? Explain the basic elements of a deployment diagram through an example. (16)