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Total Number of Pages: 2

M.TECH
CSPC103

**1st Semester Regular/Back Examination – 2014
OBJECT ORIENTED SYSTEM**

**BRANCH(S): COMPUTER SCIENCE AND ENGINEERING, COMPUTER
SCIENCE, COMPUTER SCIENCE AND TECHNOLOGY**

Time: 3 Hours

Max Marks: 70

**Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.**



- Q1 Answer the following questions: (2 x 10)
- a) What do you mean by object-orientation? Explain the characteristics of OO approach.
 - b) What is meant by usecase realization?
 - c) What is meant by generalization set? Explain with an example.
 - d) What is meant by an abstract class? In a class diagram how is an abstract class depicted?
 - e) What is the difference between sequence diagram and collaboration diagram?
 - f) With proper example, explain about AND substate and OR substate in a state transition diagram.
 - g) What are gates in sequence diagram? What are entry and exit gates?
 - h) What is the importance of a Class Diagram?
 - i) "Many different abstractions of the same thing are possible" State whether the above statement is TRUE or FALSE. Justify your answer.
 - j.) What is meant by the term "analysis"? How is it different from "design"?
- Q2 a) Define the purpose of following terms with suitable example and UML notations with respect to class model. (5)
- (i) Qualified association (ii) Association class (iii) Aggregation (iv) Interfaces (v) Packages.
- b) Prepare a state transition diagram to depict the following:- (5)
- Simple digital watch has a display and two buttons to set it, the 'A' button and 'B' button. The watch has two modes of operation, 'Display time' and 'set time'. In the 'Display time' mode, the watch displays hours and minutes, separated by a flashing colon. The 'Set Time' mode has two sub modes, 'Set hours' and 'Set Minutes'. The 'A' button selects modes. Each time it is pressed the mode advances in the sequence: Display Time, Set Hours, Set Minutes, Display, etc. Within the sub modes, the 'B' button advances the hours or minutes once each time it is pressed.
- Q3 a) Explain the purpose of activity diagram? In which situation activity diagram is not necessary? Explain the use of followings concepts for activity diagram: synchronization bar, swim lane, dynamic concurrency and sending-receiving signals. (5)

- b) What is the importance of use case diagram? Explain relationships between use cases with suitable example and proper UML notations. Draw use case diagram for an 'Online railway ticket reservation system'. (5)
- Q4 a) Explain the following concepts of state transition diagram with the help of examples. (5)
- I. Synch state
 - II. Submachine Reference state
- b) Briefly explain the various Object Oriented Metrics. (5)
- Q5 a) What is meant by Layered architecture? Write a note on model-view-controller architecture. (5)
- b) Discuss different type of object oriented mappings with suitable examples. (5)
- Q6 a) Consider the following scenario: An object of class CircleDemo creates two objects c1 and c2 of class Circle by passing r1 and r2 in the Circle's constructor. It then sends a calculateArea() message to teach of the constructed circles. The return value is stored in the variables a1 and a2 respectively. This is followed by sending calculate Circumference() message to c1 and c2. The return value is stored in cir1 and cir2. Then CircleDemo calls its own printArea() and printCircumference() methods. Indicate this scenario by sequence and communication diagrams. (5)
- b) Why model is required in analysis and design? What is the role of UML in preparing the model? Explain the types of model with their purpose in brief. Which of these models belong to structural group and which of them fall under behavioral group? (5)
- Q7 a) What is CORBA? Describe the architecture of CORBA. (5)
- b) Why are component diagram necessary in modeling? Discuss the various types of components with examples. Which are the stereotypes applicable to the components? (5)
- Q8 Write short notes on any two of the following: (5 x 2)
- a) Deployment Diagram
 - b) History Indicators in state chart diagram
 - c) Object Relational Mapping.
 - d) Subclass Partitioning.

