DE-1319

M. Sc. (Comp. Application) (Sem. I) Examination
March/April – 2016
Paper - 103 : Object Oriented System Design

Time : 3 Hours] [Total Marks : 70

Instruction :

1 Answer in brief :
   (1) Describe the benefits of polymorphism.
   (2) Differentiate between patterns and frameworks.
   (3) Explain in brief about when to use aggregation and when to use composition.
   (4) Define the term “Lifeline of an object” in context of sequence diagram.
   (5) Describe the term ‘Guards’ in context of State Diagrams.
   (6) Describe the term ‘stereotypes’ in context of UML.
   (7) Differentiate between ‘uses/includes’ and ‘extends’ relationships in context of use case diagrams.

2 Answer the following : (any two)
   (1) Describe benefits and limitations of object oriented system.
   (2) Briefly describe Booch’s system development processes. Give the strengths and weaknesses of BOOCH methodology.
   (3) Describe following terms in context of class diagrams giving a suitable example :
      (i) Role
      (ii) Navigability
      (iii) Qualification

DE-1319] 1 [Contd...
3 Answer the following : (any two)  
(1) Explain the process/steps/guidelines for identifying actors and use cases. 
(2) Describe the terms: “Super-Sub Class relationships” and “A Part of relationship (Aggregation)”. Give guidelines / steps to identify each of them from the system description. 
(3) Explain the corollary “Designing with Inheritance” in brief. Also explain how can one achieve Multiple inheritance in Single Inheritance system.

4 Answer the following : (any two)  
(1) Explain following situations in sequence diagrams with appropriate example and notations :  
   (i) Asynchronous message  
   (ii) Recursion  
   (iii) Message to self 
(2) Explain at least two Object Oriented metrics related to each of the object oriented analysis and design phase. 
(3) Explain the process of creating Object-Relational DBMS.

5 Answer the following : (any two)  
(1) Draw class diagrams for the following :  
   (a) There are two classes : Engineer and Company. An Engineer works for one and only one company and a company employs one or many engineers. Indicate these facts by using multiple names for association. Indicate the role names also.  
   (b) A department is an aggregate of lecturers. A lecturer can belong to many departments.  
(2) Draw a state transition diagram to depict the following : A simple digital watch has a display and two buttons ‘A’ and ‘B’. The watch has two modes of operation ‘Display Time’ and ‘Set Time’. In ‘Display Time’ mode, hours and minutes are displayed, separated by a flashing colon. The ‘Set Time’ mode has two sub modes ‘Set Hours’ and ‘Set Minutes’. The ‘A’ button is used to select modes. Each time it is pressed, the mode advances in sequence Display time, Set Hours, Set Minutes, Display Time, and so on. Within each sub-modes, the ‘B’ button is used to advance the hours or minutes once each time it is pressed.
(3) Draw an activity diagram for given pseudocodes(s).

(a) If (condition1) then
    do Activity1
Else
    do Activity2 OR do Activity3
    do Activity4

(b) do Activity3
    do Activity1 and Activity4
    do Activity2