CS-16 Ⓢ

# ADCA / MCA (III Yr)

## Term-End Examination

## June, 2007

## CS-16 Ⓢ : OBJECT ORIENTED SYSTEMS

*Time : 3 hours* *Maximum Marks : 75*

***Note :*** *Question number 1 is* ***compulsory****. Answer any* ***three*** *questions from the rest.*

**1.** (a) An airline has launched its operations. It is operating to various destinations across the country. It is having its offices in some places of the country from where the customers can make reservations. However, when they go to the office for reservation, the staff at office contact their headquarters to find about the availability of seats and other particulars. The same are conveyed to customers. Now, the airline wants to develop an *airline reservation system (ARS)* so that all reservation offices have information available to them instantaneously so that they can serve customers in a better manner.

Now, identify classes for ARS. Draw the class diagram. Also, explain the classes along with associations. Make necessary assumptions, wherever needed. *8*

(b) Identify at least 5 classes for Hospital Management System. Make necessary assumptions. Also explain their operations and behaviours. 5

(c) Explain the following terms, with an example of each : 12

(i) Polymorphism

(ii) Classification

(iii) Encapsulation

(d) Prepare an instance diagram for the expression $(x + \frac{y}{2})\ (\frac{x}{3} + y)$. Parentheses are used in the expression for grouping, but are not needed in the diagram. 5

**2.** (a) Prepare object diagrams showing at least 5 relationships among the following object classes. Include associations, aggregations and generalizations. Use qualified associations and show multiplicity balls in your diagrams. You do not need to show attributes or operations. Use association names where needed. As you prepare the diagrams, you may add additional object classes. 10

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|---|
| expression, constant, variable, function, argument list, relational operator, term, factor, arithmetic operator, statement, program |

(b) What is an abstract class ? Give an example which shows the use of abstract class. 5

**3.** (a) Explain the following concepts related to advanced dynamic modelling : *10*

(i) State

(ii) Event

(iii) Scenario

(iv) Concurrency

(v) Actions

(b) Draw a dataflow diagram for a Library Management System. Make necessary assumptions. *5*

**4.** (a) For each of the following systems, identify the relative importance of the three aspects of modelling, namely object, dynamic and functional modellings. *10*

(i) Spelling checker

(ii) Xerox machine

(b) Write any three advantages and two limitations of using a database management system. *5*

**5.** (a) Write the steps that are to be performed by a designer during object design. *8*

(b) Compare Jackson structured development with the approach of Object Modelling Technique. *7*