ADCA / MCA (III Yr)

Term-End Examination

June, 2008

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) A department wants to schedule meetings. There may be different kinds of meetings as Sales/Purchase, Inventory management, Administrative and Finance. There is a list of members along with their address and other details for different meetings. Members are distinct for different meetings. Scheduling of meeting needs booking of conference room, fixing date, time and members are informed through an email. Draw the class diagram. Also, explain the classes along with associations. Make necessary assumptions, wherever necessary.   8

   (b) Define integrity constraints. Explain the types of integrity constraints.   5

   (c) Given an expression $\left(\dfrac{c}{3} + b\right)\left(\dfrac{b}{5} + a\right)\left(\dfrac{c}{b} + a\right)$, make an instance diagram for this expression.   5

   Note : Parentheses are used in the expression for grouping, but are not needed in the diagram.

(d) What is homomorphism ? Give an example to show its use. 6

(e) Define concurrency in objects. Explain, with an example, how concurrency is identified in a dynamic model. 6

2. (a) Differentiate between ER diagram and Object oriented diagram with significance of each. Use an example of hospital management system to show the differences between them. 8

(b) What is meant by Scenario ? Give an example of a Scenario. Also, define an event trace with an example. 5

(c) How can 'Metadata' be used to support data persistence ? Explain. 2

3. (a) Explain the relationship between generalization and inheritance with an example. 5

(b) Differentiate between 'Structural analysis and Design' and 'Object Modeling' technique. 5

(c) How can events be organized into a generalized hierarchy ? Explain with an example. 5

4. (a) Which characteristic of OOPS states that same operation may behave differently on different classes ? Give an example for that characteristic. 5

(b) Design a Data Flow Diagram for withdrawing and checking the balance in the bank using ATM Card. A user inserts a valid ATM Card, enters his/her PIN (4 digits), chooses one of the above actions, and finally receives the cash and a slip (on request) depending on whether user had made a withdrawal or check-balance transaction. 8

(c) How does a module differ from a package ? 2

5. (a) Explain the term *reusability* and *extendability*. Also, explain how they are useful in object oriented systems. 6

(b) What is a race condition in state diagram ? Give an example. 4

(c) What is serialization ? Where is it used and why ? 5