# ADCA/MCA (III Yr) 

Term-End Examination

December, 2011

## 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 office wants to schedule meetings. There

 may be various kinds of meetings such as purchase committee, staff committee, manager's committee, etc. There is a list of members along with their address for different meetings. Members are distinct for different meetings. Scheduling of meeting needs a room of sufficient size, date, time. The members are informed through e-mail and SMS. Prepare a class diagram for this. Each class must have at least three attributes and three operations. Explain the classes and associations, if any. Make necessary assumptions wherever needed.(b) Prepare an instance diagram for the

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expression $\left(\frac{d}{4}+a\right)\left(\frac{a}{2}+d\right)\left(\frac{e}{2}+a\right)$.
Parentheses are used in the expression for grouping, but are not needed in the diagram.
(c) What is polymorphism? Give example to show its advantages.
(d) What is meant by scenario? Create scenario 5 for phone-call.
(e) "Nested state diagram is actually a form of 5 generalization on state". Justify the statement.
2. (a) Differentiate between method overloading 5 and overriding. Also, give an example of each.
(b) Draw a state diagram for process that can be either running or waiting for its turn or performing an input/output, or waiting for an interrupt from the operating system.
(c) Define integrity constraints. Explain the 5 types of integrity constraints with appropriate examples.
3. (a) What is encapsulation? Explain the need 5 for encapsulation, using an example.

# (b) For each of the following systems, identify the relative importance of the three aspects of modelling : 

(i) Typewriter
(ii) Telephone Answering Machine
4. (a) Draw a data flow diagram for computing the roots of the quadratic equation $a x^{2}+b x+c=0$. Real numbers $a, b, c$ are input, $\mathrm{a} \neq 0$. Output are values of $x=\mathrm{R}_{1}$ and $x=\mathrm{R}_{2}$, which satisfy the equation.

(b) What is metadata? Give an example of
metadata. How are pattern and metadata
related to each other ? Explain briefly.
(c) Differentiate between 1-way and 2-way 4
association with an example for each.
5. Explain the following terms, with an example of each of the following :
$3 \times 5=15$
(a) Generalization
(b) Use-case
(c) Classification
(d) Abstraction
(e) Recursive Aggregate

