MCA (Revised)

Term-End Examination

June, 2008

MCS-032 : OBJECT ORIENTED ANALYSIS AND DESIGN

Time : 3 hours   Maximum Marks : 100

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

1. (a) Give two disadvantages of both, structured analysis and object oriented analysis approach.   5

   (b) In object oriented design, what steps must the designer take to adjust inheritance ?   5

   (c) What are immutable associations ? How can we implement them in C++/Java ? Explain.   5

(d) A system for distributing electronic mail over a network is needed. Each user of the system should be able to send mail from any computer account and receive mail on one designated account. There should be provisions for answering or forwarding mail, as well as saving messages in files or printing them. Also, users should be able to send messages to several other users at once through distribution lists. Each computer on the net should hold any messages destined for computers which are down.

    (i) Rephrase the above requirements to make them more precise. Remove any design decisions posing as requirements.

    (ii) Create an object diagram.   10

(e) Prepare an event trace for withdrawing, checking balance and transferring money in the bank using ATM card. In the ATM machine user inserts the card, enters his/her PIN and performs one of the above tasks.   7

(f) Prepare a data flow diagram for computing the volume and surface area of a cylinder. Inputs are height and radius of the cylinder. Outputs are volume and surface area. Discuss several ways of implementing the data flow diagram.   8

2. (a) Explain 4+1 view architecture with a suitable example. How does it affect the development of a software architecture ?   8

(b) List the steps for converting the state diagram to code.   7

(c) Explain the use of constraints in functional model, with the help of suitable examples.   5

3. (a) How does multiple inheritance differ from multilevel inheritance ? Explain with the help of an example.   7

(b) Prepare an instance diagram for the expression $(X + Y/2) / (X/3 + Y)$. Parentheses are used in the expression for grouping but are not needed in the diagram.   7

(c) What do you mean by object ID ? What are its advantages ?   6

4. (a) How can you say that an object oriented design of a software is good or bad ? How does software design influence the implementation part ? Give suitable example in support of your answer.   7

(b) Briefly describe the following :

   (i) Aggregation

   (ii) Association and its types

   (iii) Multiplicity and its types   6

(c) Explain the steps involved in implementing persistence in object oriented system.   7

5. (a) What is a collaboration diagram ? What is the importance of collaboration diagram ? Draw collaboration diagram for student management system.   7

    (b) Differentiate between State and Actions. Explain various notations used in State chart diagram. Create State chart diagram for Login system.   7

    (c) Write shrot notes on (any *two*) :   6
        (i)   Integrity constraints
        (ii) Concurrent environment
        (iii) Use-case diagram