

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1433

Roll No.

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MCA

THIRD SEMESTER EXAMINATION, 2005-2006

OBJECT ORIENTED SYSTEMS AND C++

Time : 3 Hours

Total Marks : 100

- Note :**
- Attempt **ALL** questions.
 - All questions carry equal marks.
 - In case of numerical problems assume data wherever not provided.
 - Be precise in your answer.

1. Attempt *any four* parts of the following : (5x4=20)

- What are object class ? Discuss how they are different from Normal class.
- How does Inheritance differ from generalisation ? Explain with an example.
- Design a template class for Implement a LINKED - LIST.
- Draw a class and Instance diagram for looping statement in c Programming language.

- VASIO
- (e) What is aggregation ? Explain with an example and a suitable diagram.
 - (f) Define the following term, giving at least one example of each.
 - (i) Polymorphism
 - (ii) Meta class.

2. Attempt *any four* parts of the following : (5x4=20)

- (a) What is dynamic model ? Explain how events between two object are Identified, with the help of an example.
- (b) Explain the Relationship between object and Dynamic model. Your explanation should include an example.
- (c) What is the Role of state diagram in dynamic modelling.
- (d) Explain the event generalization with the help of suitable example.
- (e) What do you mean by Concurrency in dynamic modelling ?
- (f) In your own words, describe why the recursive/ parallel process model is appropriate for object oriented systems.

3. Attempt *any two* parts of the following : (10x2=20)

- (a) What is the Role of data stores in Data flow diagram?
Using the quadratic formula as a starting point, prepare a DFD for computing the roots of quadratic equation $ax^2 + bx + c = 0$ Real numbers a, b, c are inputs, outputs are values of $x = R1$ and $x = R2$, which satisfy the equation. Remember $R1$ and $R2$ may be real or complex depending on the values of a, b and c . The quadratic formula for $R1$ and $R2$

$$\text{is } \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- (b) Draw object diagram in which each of the following conventional data structures is replaced by one or more associations

- (i) Structure
- (ii) Array

- (c) For each of the following system

- (i) Chess player
- (ii) Software to mail merge.

Identify the relative importance of three aspects of modelling

- (i) Object modelling.
- (ii) Dynamic modelling.
- (iii) Functional modelling Explain your answer.

4. Attempt *any two* parts of the following : (10x2=20)

- (a) What is a conversion function ? How is it created ? Explain its syntax. Also describe operator function and friend function with the help of suitable examples.

- (b) What is a constructor ? Is it mandatory to use constructor in a class ? How do we invoke the constructor function ? What is Parameterized constructor ?
- (c) Design a doubly linked list class. The class should include all functionalities relating to a doubly linked list like creation, deletion of elements, Insertion, Printing of elements etc. observe the following while designing classes;
- (i) Clearly indicate Public and Private elements
 - (ii) Design Constructors and explain their purpose
 - (iii) Identify data structure and methods which can be Inherited.
 - (iv) Implementation should be in C++

5. Attempt *any two* parts of the following : (10x2=20)

- (a) What is object modelling Technique ? Draw OMT object model for participant's registration system for a seminar.
- (b) Apply Booch's methodology for object-oriented Analysis and design specifications of sales office automation.
- (c) Write short notes on the following.
- (i) Jackson Structured Development (J S D)
 - (ii) Structured Analysis/Structured Design (SA/SD)

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