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

PAPER ID : 1433   **Roll No.** [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

M.C.A.

(SEM. III) ODD SEMESTER THEORY EXAMINATION 2010-11

OBJECT ORIENTED SYSTEMS AND C++

Time : 3 Hours   *Total Marks : 100*

Note :– Attempt *all* questions.

1. Answer any *two* parts of the following :—   **(10×2=20)**

   (a)   (i)   Discuss various object oriented themes with suitable example.

        (ii)   Describe the various stages of object oriented methodology.

   (b)   Categorize the following relationships into generalization, aggregation, or association. Beware, there may be ternary or n-ray relationships in the list, so do not assume every relationship involving three or more object classes in a generalization. Define your answers :

      (i)   Files contain records.

      (ii)   A route connects two cities.

      (iii)   A polygon is composed of an ordered set of points.

      (iv)   A person uses a computer language on a project.

   (c)   (i)   Discuss the concepts of generalization and inheritance. Are these two concepts same or not ? Explain.

        (ii)   What do you mean by abstract class ? What is its significance ? Explain with an example.

2. Answer any *two* parts of the following :— (10×2=20)

    (a) Draw a class diagram with two classes, Teacher and Course. Add at least 5 attributes and 3 operations for both classes. Describe the classes and association with suitable diagram. Assume that a teacher can teach many courses and a course can be taught by two or more teachers. Further, assume that that a teacher teaches a minimum of one course and a maximum of many courses. Also, a course is taught by a minimum of one teacher and a maximum of many teachers. ·

    (b) What do mean by event ? Why they are used ? Explain. Draw an event trace for the following :

        (i) telephone answering system.

        (ii) printing a document using a computer system.

    (c) (i) What do you mean by a state ? What does it signify ? Explain state diagram with suitable example.

        (ii) Write a short note on state generalization and event generalization.

3. Answer any *two* parts of the following :— (10×2=20)

    (a) Why data flow diagram is used ? List various symbols used to make a data flow diagram. Also prepare a data flow diagram for computing the volume and surface area of a cylinder. Inputs are the height and radius of the cylinder. Outputs are the volume and surface area. Discuss several ways of implementing the data flow diagram.

(b) (i) Write a short note on the relation of functional model to object and dynamic model.

(ii) Describe Nested data flow diagram with suitable example.

(c) Processes in data flow diagrams must eventually be implemented as operations on objects. Each bottom-level, atomic process is an operation. Higher-level processes may also be considered operations, although an implementation may be organized differently from the data flow diagram it represents because of optimization. Describe the various ways of specifying the operation with example.

4. Answer any *two* parts of the following :— (10×2=20)

(a) How classes are defined in C++? Why constructors and destructors are used in C++ ? Explain with suitable example. Also discuss the implementation of inheritance in C++ with example.

(b) (i) What is friend function ? What are the merits and demerits of using friend function ? Explain.

(ii) What do you mean by an extended class ? Explain its application with an example.

(c) How multiple inheritance is implemented in C++? Explain with some example. How does it different from containership ? Explain by giving an example of containership.

5. Answer any *two* parts of the following :— (10×2=20)

(a) (i) What do you mean by polymorphism ? How it is implemented in C++ ? Explain with an example.

(ii) Write a short note on "Object Oriented Technique as a software engineering methodology".

(b) (i) Define database. What are the advantages disadvantages of using a database ? Explain.

   (ii) What do you mean by system design ? What are the decisions have to be taken by the system designer ?

(c) Write short notes on the following :—

   (i) Jackson Structured Development (JSD).

   (ii) Reusability.