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

PAPER ID : 2706 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. VII) THEORY EXAMINATION 2011–12

OBJECT ORIENTED SYSTEMS AND C++

Time : 3 Hours *Total Marks : 100*

Note :– (i) Attempt **all** questions.

(ii) Make necessary assumptions if necessary.

1. Answer any **two** parts : **(10×2=20)**

(a) (i) What do you mean by object modeling technique ? Explain. Discuss the various stages of the object modeling techniques with some example.

(ii) What do you understand by encapsulation ? Describe with an example.

(b) (i) What do you mean by aggregation ? Discuss the modeling of aggregation using suitable example and a block diagram.

(ii) What do you mean by modeling ? What are the various purposes served by the models ? Explain.

(c) Write short notes on the following with suitable example and their significance to object oriented modeling :

(i) Link and Associations

(ii) Abstract Classes

(iii) Meta Data

(iv) Inheritance.

2. Answer any **two** parts : **(10×2=20)**

(a) (i) What do you mean by scenario ? Explain. Illustrate the scenario for phone call.

(ii) What do you mean by dynamic modeling ? How it is different from static modeling ?

(b) (i) What are the problems with flat state diagrams ? Also discuss the nested state diagram with suitable example.

(ii) Discuss the concept of state generalization with suitable example.

(c) Describe the following with an example using a diagram and their significance in modeling :

(i) Aggregation Concurrency

(ii) Event Generalization.

3. Answer any **two** parts : **(10×2=20)**

(a) There is a clear distinction between the definition and the implementation of a function. The definition describes the behavior of the function while the implementation actually computes the function. The definition of a function may be used to test the accuracy of the implementation. Prepare definition of each of the following functions using mathematics, diagrams, or pre-and post conditions :

(i) absolute value

(ii) trigonometric sine

(iii) natural logarithm, and

(iv) square root.

(b) Processes in data flow diagrams must eventually be implemented as operations on objects. Each bottom-level, atomic process is an operation. Discuss the various ways for specifying the operations with the help of examples and suitable diagrams.

(c) Write short notes on the following with suitable diagrams and some example :

(i) Data stores

(ii) Actors

(iii) Control Flows and

(iv) Constraints.

4. Answer any **two** parts : **(10×2=20)**

(a) (i) Write a short note on the principles of object oriented programming. Also give at least four examples of object oriented programming languages.

(ii) What do you mean by operator overloading ? Discuss. Also explain various types of operators in C++.

(b) (i) What do you mean by class templates and function templates ? Describe their applications with suitable example in C++.

(ii) Write a short note on the utility of virtual functions and friend functions in C++ with suitable example.

(c) Write a program in C++ using object oriented approach for multiplication and addition of two matrix of NXN where N is a positive integer and the matrix contains real numbers. Also give algorithm for the same.

5. Write short notes on any **four** with suitable example: **(5×4=20)**

(a) Polymorphism in C++

(b) Functions overloading in C++

(c) Exception handling in C++

(d) File System in UNIX

(e) Reusability and Extensibility

(f) Jackson Structured Development (JSD).