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B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2003.

Second Semester

Information Technology

IF 144 — OBJECT ORIENTED PROGRAMMING

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Define the terms (a) data abstraction (b) inheritance.

2.   What are the types of variables in C++ that can have floating point values? Write the range of each type of variable.

3.   What are wild pointers?

4.   What are inline functions? What are their advantages?

5.   Is the following statement correct? Give reasons.
     Destructors can be overloaded.

6.   How are interfaces different from classes?

7.   What is a thread? Compare a thread with a process.

8.   List any 4 methods of class applet.

9.   What are the different forms of comment statements in Java?

10. What is an I/O stream?

PART B — (5 × 16 = 80 marks)

11. Explain the elements of object oriented programming. Describe how these elements are implemented in C++ and Java.

12. (a)   Write a C++ program to read the elements of a 2D matrix and display them. Arrays should not be used. Dynamically allocate space for the elements of the matrix. Provide function for release of memory. Write a program to test the functions.

Or

(b) Model a complex number as a class. Provide constructors to initialize either with (0, 0) or with values given. Overload + =, – (unary) and << for operations on complex numbers. Write a test program.

13. (a) What are the different forms of inheritance supported in C++? Discuss on the visibility of the base class members in privately and publicly inherited classes.

Or

(b) What are virtual function? What are the rules associated with them? What are abstract classes? Give an example (with the program) to illustrate the use of abstract classes.

14. (a) Explain the life cycle of a thread. List any 4 methods of class thread in Java. With examples, illustrate ways of creating threads in a Java program.

Or

(b) Define an interface to declare methods to increment time and to display time. Define another interface that declares methods to set time. Define class digital clock that represents time in the format hr/min/sec. and another class minute clock to represent time in format hr/min. Have these two classes to implement methods defined in both interface. Write a test program.

15. (a) Write the syntax of applet tag in HTML. How are parameters passed to an applet? Write an applet to display the age of the user passed as the parameter to it.

Or

(b) Define an inheritance hierarchy to represent quadrilateral, trapezoid, rectangle and square. (x, y) co-ordinates of four end points of the shape should be taken as points in the super class. Write methods to display the co-ordinates and areas of shapes. Write a test program to create a set of shapes and display their area. Explain the object oriented features used.

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