Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/M.Tech-IT(SE)/SEM-1/MSE-105/2009-10
2009
OBJECT ORIENTED PROGRAMMING

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions.   5 × 14 = 70

1. a) Define constructor and destructor. In what order the class constructor and destructors are executed ? How many types of constructors are there ?   6

   b) Discuss each type of constructor with syntax for a rational number class which is in the form of numerator/denominator.   8

2. a) What is friend function ? Write down a program in C++ to illustrate a member function of one class as friend to other class.   1 + 6

   b) What do you mean by static data member and static member function ?   2

   c) Write a C++ program to illustrate how are the static data member's invoked ?   5

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3. a) Explain 'flexible declaration' in C++.   7 × 2

    b) Explain 'dynamic initialization'.

    c) What is reference variable ?

    d) How do you specify type-casting mechanism in C++ ?

    e) Explain implicit type conversion.

    f) Explain dynamic binding.

    g) What do you mean by inline function ?

4. a) What is generic pointer ?

        Explain each of the following operators :

        i)   pointer to member declarator

        ii) pointer to member access operator

        iii) member dereferencing operator.   1 + 6

    b) Write a C++ program to illustrate accessibility using
        pointer to object to pointer to members of the class.   7

5. a) Write a C++ program to illustrate passing object as a
        function argument.   4

    b) How do the array of objects is used ? In which situation
        the array of pointers to object is used ?   4

    c) Write a C++ program to illustrate both 'call-by-reference'
        and 'return-by-reference'.   6
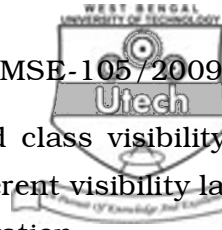
6. a) Make a comparative study of derived class visibility of various base class members with different visibility label under different visibility mode of derivation. 4

   b) Discuss each of the following inheritance with derivation diagram and declaration syntax :

   i) Multiple inheritance

   ii) Hierarchical inheritance

   iii) Hybrid inheritance. 6

   c) What is function over-riding ? Explain with diagram. 4

7. a) Explain compile time and run time polymorphism. 2

   b) Write a C++ program to illustrate the concept of operator overloading. 5

   c) Compare and contrast compile time and run time polymorphism. 3

   d) Write a C++ program to illustrate the concept of virtual function. 4

8. a) What do you mean by abstraction and encapsulation ? 4

   b) Discuss various stream classes in C++ related to file handling. 4

   c) Write a C++ program to illustrate execution with multiple files together. 6