

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Tech/ME (SE)/SEM-1/PGSE-103/2010-11**

**2010-11**

**OBJECT ORIENTED PROGRAMMING CONCEPTS**

Time Allotted : 3 Hours

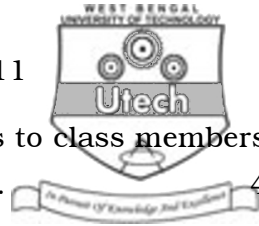
Full Marks : 70

*The figures in the margin indicate full marks.*

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

Answer Question No. 1 and any *five* from the rest.

1.
  - a) When do we declare a member of a class static ?
  - b) Distinguish between the following statements :  
time T2 (T1);  
time T2 = T1;  
where time is a class type.
  - c) How is dynamic initialization of objects achieved ?
  - d) When is a friend function compulsory ? Give example.
  - e) What is containership ? How does it differ from inheritance ?
  - f) When do we make a virtual function "pure" ? What are the implications of making a function a pure virtual function ?
  - g) Distinguish the terms 'class template' and template class'.
  - h) When do we use multiple catch handlets ?
  - i) Distinguish between the "water fall" model and the "fountain" model.
  - j) What does a use case description usually include ?  
10 × 2



2. a) Justify the need for “allowing pointers to class members accessing private members of a class”. 4
- b) What are self-referential classes ? Write a program to create an ordered linked list. 6
3. a) List the operators that cannot be overloaded and justify why they cannot be overloaded. 5
- b) Why is the friend function not allowed to access members of a class directly although its body can appear within the class body ? 3
- c) “Semantic of overloaded operators can be changed”, comment. 2
4. a) Design classes such that they support the following statements :
- ```
rupee r1, r2;           // rupee is a class type
dollar d1, d2;          // dollar is a class type
d1 = r1;
r2 = d2;                6
```
- b) Explain how base class member functions can be invoked in a derived class if the derived class also has a member function with the same name. 4
5. a) What is a function template ? Write a function template for finding the largest number in a given array. The array parameter must be of generic-data type. 6
- b) What are virtual destructors ? How do they differ from normal destructors ? Can constructors be declared as virtual constructors ? Give reasons. 4



6. a) When memory allocation fails, how does the new operator notify the error to the caller ? 4
- b) Write down the rules for handling exceptions successfully. 4
- c) What happens when a raised exception is not caught by catch-block ? 2
7. a) Discuss the application of structured design techniques in object oriented design. 5
- b) Describe why the testing of software is important. 5
8. a) What role does UML play in a software design ? 6
- b) What are extensibility constructs ? 4
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