



Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH(CSE-OLD)/SEM-3/CS-301/2012-13

2012

PRINCIPLES OF PROGRAMMING LANGUAGE

Time Allotted : 3 Hours

Full Marks : 70

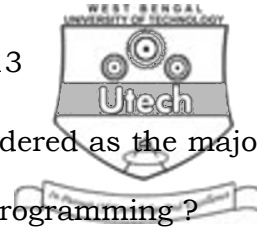
The figures in the margin indicate full marks.

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

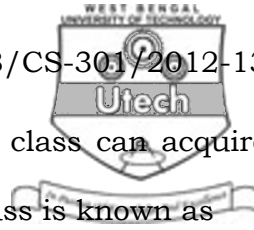
GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) Which of the following is a pure object-oriented language ?
 - a) C++
 - b) Smalltalk
 - c) Object Pascal
 - d) Objective C.
 - ii) Which of the following statements is true with respect to object-oriented programming ?
 - a) Emphasis is on algorithms rather than data
 - b) Data can move freely from function to function
 - c) Programs are divided into small programs called functions
 - d) Data and functions that operate on them are tied together.



- iii) Which of the following issues is considered as the major drawback of the procedure-oriented programming ?
- a) Employs top-down approach in program design
 - b) Emphasis is an algorithms
 - c) Most of the functions share global data
 - d) Large programs are divided into functions.
- iv) One of the major advantages of object-oriented programming approach is
- a) it can easily map real-world problems
 - b) data can move freely around the system
 - c) any language can be used for programming
 - d) structured programming concept can be easily incorporated.
- v) The wrapping up of data and functions into a single unit is known as
- a) Function overloading b) Static binding
 - c) Abstraction d) Encapsulation.



vi) The process by which objects of one class can acquire the attributes of objects of another class is known as

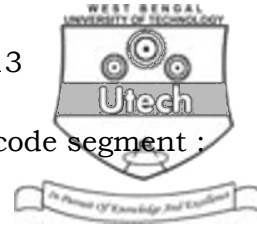
- a) Attribute passing b) Inheritance
- c) Abstraction d) Polymorphism.

vii) The following examples show that the class *C* is derived from classes *A* and *B*. Which one of them is legal ?

- a) `class C : private A, public B`
- b) `class C :: private A, public B`
- c) `class C : public A : public B`
- d) `class C : class A, B`
- e) `class C : private A, public B.`

viii) The casing operator function can be used to accomplish the conversion

- a) class type to structure type
- b) basic type to class type
- c) float type to long type
- d) class type to basic type.



ix) Identify error, if any, in the following code segment :

```
1. class Sample
2. {
3.   int m;
4.   Sample ( );
5.   Sample (int);
6. };
```

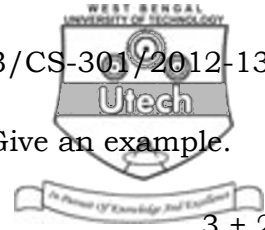
- a) line 6 should not have semicolon
 - b) in line 5 parameter name is missing
 - c) in line 4, argument should be of type void
 - d) constructors should be declared in public section.
- x) In a class, a member declared as public is accessible
- a) only to public members of the class
 - b) only to member functions of the class
 - c) to any function in the program
 - d) without using objects of the class.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following $3 \times 5 = 15$

2. a) What is call by value and call by address ?
- b) Write down a program in C which will calculate the GCD of the given numbers ? $2 + 3$



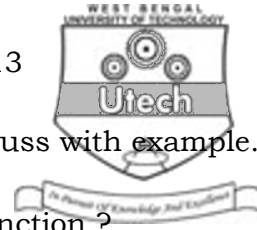
3. a) What do you mean by void pointer ? Give an example. 3 + 2
b) What do you mean by null pointer ? 3 + 2
4. a) What do you mean by Dynamic Memory allocation in C ?
b) What is an *L* value and *R* value in C ? 3 + 2
5. a) Define the term inheritance and encapsulation.
b) What is insertion and extraction operator ? 3 + 2
6. a) Write a C++ program that simulate the class and object concept in terms of OOP.
b) What are the differences between auto and static storage class ? 3 + 2

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is stack, heap and how it is used in programming ?
b) Discuss the use of pointer in C/C++ language.
c) When malloc(), calloc() and realloc() is used ? Show that with the proper example in C. 5 + 4 + 6



8. a) What is access specifier in C++ ? Discuss with example.
b) What is friend function and virtual function ?
c) What do you mean by function overloading ? Give an example. 3 + 6 + 6
9. a) What is dereferencing operator in C ? Write a program using dereferencing operator.
b) What do you mean by constructor and destructor ?
c) Distinguish between struct and class in C++. 6 + 4 + 5
10. a) Solve the initial value problem $u' = -2tu^2$, $u(0) = 1$ with $h = 0.2$ on the interval $[0, 0.4]$. Use the fourth order classical Runge-Kutta methods.
b) Given the following equations :
- i) $x^4 - x - 10 = 0$
ii) $x - e^{-x} = 0$

Determine the initial approximations to find the smallest positive root. Use these to find the roots correct to three decimal places with the Regula-Falsi method.

8 + 7



11. Write short notes on any *three* of the following : 3×5

- a) Actual and Formal parameter
- b) Operator overloading
- c) Dynamic binding
- d) Scope resolution operator.

=====