Name : .....

Roll No. : .....

Invigilator's Signature : .....

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

2012
PRINCIPLES OF PROGRAMMING LANGUAGES

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) The break statement causes an exit

a) only from innermost loop

b) only from innermost switch

c) from innermost loop or switch

d) none of these.

ii) Which of the following can not be passed to a function ?

a) Reference variable b) Arrays

c) Class objects d) Header files.

iii) The function fopen ( ) returns

a) Nothing b) a pointer to file

c) a value 0 or 1 d) NULL.

iv) The library function exit ( ) causes an exit from

a) the loop in which it occurs

b) the block in which it occurs

c) the function in which it occurs

d) the program in which it occurs.

v) The scope resolution operator usually

a) resolves ambiguity

b) specifies a particular class

c) tells what base class a class is derived from.

d) limits the visibility of variables to a certain function.

vi) The minimum number of temporary variables needed to swap the contents of two variables is

a) 1 b) 2

c) 3 d) 0.

vii) What is the default return type of a main ( ) function in C ?

a) int b) float

c) void d) char.

viii) Which of the languages is a pure object-oriented language ?

a) C++ b) Small Talk

c) Java d) Object Pascal.

ix) Function overloading is an example of

a) Polymorphism b) Encapsulation

c) Inheritance d) None of these.

x) The constructor has some special characteristics :

a) They should be declared in the public section

b) They are invoked automatically when the objects are created

c) They don't return types, not even void

d) All of these.

GROUP – B

(Short Answer Type Questions)

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

2. What will be the output of the following 'C' codes ?

a)
```
void main ( )
{
int I,x,*ptr;
i = 5;
ptr = &i;
x = *ptr+ + + + +*ptr;
printf("%d",x);
}
```

b)
```
void main ( )
{
int a = 10, b = 20, c = 30;
printf (%d\n%d\n%d\n);
}
```

3. a) What are the things specified by the variables storage class ?

   b) What are the differences between auto and static storage classes ?

4. a) What are the differences between procedural and object oriented programming languages ?

   b) Write down the differences between array of pointer and pointer to array.

5. a) Why do we get error message "L value required" and "R value required" in function main ( ) ?

   b) Why do we use void pointer ?

6. a) What is C preprocessor ?

   b) When we should follow recursion and when we should avoid it ? Explain.

GROUP – C

(Long Answer Type Questions)

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

7. a) Write a C program to multiply two 2×2 matrices.

   b) Compare and contrast among inline, macro and function.

   c) Write a C program to calculate the g.c.d. of two numbers using recursion. 6 + 4 + 5

8. a) What is the difference between void pointer and NULL pointer ?

   b) Write a program to sort a sequence of n numbers using dynamic memory allocation.

   c) What are the advantages and disadvantages of dynamic memory allocation over static memory allocation ?

3 + 8 + 4

9. a) Read an array of N element and find the maximum and minimum among them and their position.

   b) What is self referential structure ? Explain with example.

   c) What is copy constructor ? 9 + 4 + 2

10. a) Explain the concept of operator overloading and function overloading in C++ language. Give examples.

    b) Explain private, public, protected access specifier in the context of oops. 9 + 6

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

a) Polymorphism

b) Debugging

c) Friend function

d) Dynamic memory allocation

e) Random files.