

**Instructions :-**

1. All questions are compulsory.
2. Uses of any electronics devices are strictly prohibited.
3. Use Black or Blue color pen only

**Q.1 Select correct option/s for the following (Any 7).**

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- i. Which of the following is true
  - a. Linux- Proprietary , Windows- Proprietary
  - b. Linux- Open source , Windows- Open source
  - c. Linux- Proprietary , Windows- Open source
  - d. None of the above
- ii. Which of the following comes under object oriented concepts
  - a. Encapsulation
  - b. Inheritance
  - c. Data hiding
  - d. All of the above
- iii. Which of the following is not used in C++
  - a. cout <<
  - b. printf()
  - c. class
  - d. import
- iv. Consider below statements  

```
if(printf("Hello"))  
{  
    printf(" world");  
}
```

What will be output if we include above statements in a C program

  - a. world
  - b. Hello
  - c. Hello world
  - d. Compile error
- v. What needs to be included in the following 'C' program to make it work without any failure  

```
#include<stdio.h>  
void main()  
{  
    int number = 0;  
    for (int i=0; i<10; i++)  
    {  
        printf("Choose the correct option");  
    }  
    number = rand();  
    printf("%d", number);  
}
```

  - a. #include<conio.h>
  - b. #include<stdlib.h>
  - c. #include<math.h>
  - d. It is correct, and no need to include anything
- vi. Which of the following is not a 'C' language construct

- a. short int
  - b. long int
  - c. char []
  - d. String
- vii. The library function used to find the last occurrence of a character in a string is
- a. strnstr()
  - b. laststr()
  - c. strrchr()
  - d. strstr()
- viii. Which of the following is not the bitwise operator
- a. &
  - b. ||
  - c. |
  - d. <<

**Q.2 Select the correct option/s for the following**

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- i. What is (void\*)0 ?
- a. Representation of NULL pointer
  - b. Representation of void pointer
  - c. Error
  - d. None of the above
- ii. How can you combine the following two statements into one?
- ```
char *p;
p=(char*)malloc(100);
```
- a. char p = \*malloc(100);
  - b. char \*p = (char)malloc (100);
  - c. char \*p = (char\*)malloc (100);
  - d. char \*p = (char\*)(malloc\*) (100);
- iii. Which of the following function is correct that finds the length of a string?
- a. 

```
int xstrlen(char *s)
{
    int length = 0;
    while(*s != '\0')
    { length ++; s++; }
    return(length);
}
```
  - b. 

```
int xstrlen(char s)
{
    int length = 0;
    while(*s != '\0')
    length ++; s++;
    return(length);
}
```
  - c. 

```
int xstrlen(char *s)
{
    int length = 0;
    while(*s != '\0')
    length ++;
    return(length);
}
```

```

    }
d. int strlen(char *s)
    {
        int length = 0;
        while(*s != '\0')
            s++;
        return(length);
    }

```

iv. What will be the output of the following C program?

```
#include<stdio.h>
```

```
int main()
```

```
{
```

```
    static char *s[] = {"black","white","pink","violet"};
```

```
    char **ptr[] = {s+3, s+2, s+1, s}, ***p;
```

```
    p = ptr;
```

```
    ++p;
```

```
    printf ("%s", **p+1);
```

```
    return 0;
```

```
}
```

a. ink

b. ack

c. ite

d. let

v. What of will be the output of the following C program?

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int x = 30, *y, *z;
```

```
    y = &x; /*Assume address of x is 500 and integer is 4 byte size*/
```

```
    z=y;
```

```
    *y++=*z++;
```

```
    x++;
```

```
    printf("x=%d, y=%d, z=%d\n", x, y, z);
```

```
    return 0;
```

```
}
```

a. x=30, y=504, z=504

b. x=31, y=500, z=500

c. x=31, y=498, z=498

d. x=31, y=504, z=504

vi. What will be the output of the following C program?

```
#include <stdio.h>
```

```
main()
```

```
{
```

```
    int number = 1;
```

```
    switch(number)
```

```
    {
```

```
        default: printf("Not Present ");
```

```
        case 1: printf(" One ");
```

```
        case 2: printf("Two ");
```

```
        case 4: printf("Four ");
```

```
        case 3: printf("Three ");
```

```
    }
```

```
}
```

- a. Not Present One Two Four Three
  - b. One
  - c. One Two Four Three
  - d. One Two Three Four
  - e. One Two Four Three Not Present
- vii. What will be the output of the following C program?

```
#include <stdio.h>
#define findMax(a, b) ((a) > (b) ? (a) : (b))
main()
{
    int max = 0;
    max = findMax(2.1, 2.2);
    printf("Max = %d", max);
}
```

- a. 2.1
  - b. 2.2
  - c. 2
  - d. Compile error
- viii. What will be the output of the following C program?

```
#include <stdio.h>
{
    int a,b;
    a=3;
    b=10;
    a=add(3,10);
    printf("%d",a);
}
int add(int x, int y)
{
    x=x+y;
    return(y,x,3);
}
```

- a. 10133
  - b. 10
  - c. 3
  - d. 31310
- ix. what will the output when following lines are included in C program?

```
int a=10,b=20;
a=a^b;
b=b^a;
a=a^b;
```

- a. a =10,b=20
- b. a=20,b=10
- c. a=30,b=20
- d. a=30,b=10

**Q.3 Write the following****10**

- i. Deduce a generalized formula to calculate address of an element in a 2D integer array. Illustrate it with the help of following example. Assume size of an integer is 2 bytes and base address is 1000.

Array =    2    5    8    9  
          10    25    90    23  
          98    46    11    66

Find Array[i][j] where,

i – index of  $i^{\text{th}}$  row and j – index of  $j^{\text{th}}$  column

for  $i = 2, j = 2$

- ii.
- What are different types of variable and what is their scope in a program?
  - What is the dangling pointer?
  - What is difference between pass by VALUE and pass by REFERENCE? How an array is passed by?

**Q.4 Write any of the three 'C' programs****15**

- i. Read the 2D array of size  $N*N$  from the user and print its elements in spiral form and in clockwise direction.

e.g. if Array =    2    5    8    9  
                  10    25    90    23  
                  98    46    11    66  
                  16    26    30    87

then output should be :

2 5 8 9 23 66 87 30 26 16 98 10 25 90 11 46

- ii. Read the string from user and reverse it by removing any spaces in it.

e.g. If string is College of engineering, pune

then output should be:

enup,gnireenignefoegelloC

- iii. Find factorial of a given number using recursion and illustrate the flow using an example.  
iv. Write a C program which will make use of array of structures.