

**SUBJECT : COMPUTER SCIENCE (SET-I)****Time : 3 Hrs****MM : 70****General Instructions:****(i) All questions are compulsory.****(ii) Programming Language C++.**

- Q1. (a) Distinguish between Software and Hardware. [2]  
(b) Differentiate between input devices and output devices? Give two examples for each, [2]  
(c) Convert the following: [3]  
(i)  $(77726)_8$  to hexa decimal.  
(ii)  $(1010110101)_2$  to decimal.  
(iii)  $(43567)_{10}$  to octal  
(d) Find the 8 bits two's complement form of the following decimal number. [1]  
 $(-95)_{10}$   
(e) What is impact printer? [1]  
(f) Define robustness. [1]
- Q2. (a) Explain any two operating system. [2]  
(b) What are keywords? Can keywords be used as identifiers? Give any two examples of identifier and keyword. [3]  
(c) Write the declaration of the following: [1+1+2=4]  
(i) a constant integer.  
(ii) a array consist of 10 float numbers.  
(iii) a customer structure that holds customer number, name, address and gender.  
(d) What are the advantages of floating point number over integer. [1]
- Q3. (a) Write a program in C++ to check whether a string is palindrome or not. [2]

- (b) (i) Define polymorphism with an example. [2]  
 (ii) What is the procedural programming paradigm. [1]
- (c) Explain the following data types with an example: [3]  
 (i) Union (ii) Class  
 (iii) Enumerator
- (d) Differentiate between run time error and logical error. [2]

Q4. (a) Write a program to find number of even and odd numbers from the given set of n numbers. [3]

(b) `int i= 10;` [4]  
`while (++i<=20)`

```
{
    cout<<i<<endl;
    i++;
}
```

- (i) How many time the above loop will execute? Explain.
- (ii) Convert the above code using 'for loop'.
- (c) Observe the following program and find out, which option or options out of (i) to (iv) will be expected output(s) from the program? Justify your answer. [2]

```
#include<iostream.h>
#include<stdlib.h>
void main()
{
    char col[10]={"Rose","White","Yellow","Green"};
    randomize();
    for(int i=0; i<4; i++)
```

```
    {   int t=random(sizeof(t))+2;
        cout<<col[t]<<'$';
    }
}
```

- (i) Rose\$White\$Yellow\$Green\$
  - (ii) Yellow\$White\$Rose\$Yellow\$
  - (iii) White\$Yellow\$Yellow\$White\$
  - (iv) Green\$Yellow\$Yellow\$Green\$
- (d) Write the syntax of switch() statement. [1]
- Q5. (a) Write the name of the function based upon the following information. [2]
- (i) Using this function we can input character from the keyboard. This function is available in stdio.h file.
  - (ii) Using this function we can input string from the keyboard. This function is available in istream.h file.
  - (iii) Using this function we can count the number of characters from the string. This function is available in string.h file.
  - (iv) Using this function we can change uppercase into lowercase letter. This function is available in ctype.h file.
- (b) Explain the following with an example. [4]
- (i) call by value
  - (ii) global scope
  - (iii) pointer
  - (iv) default argument
- (c) Write a function to pass an array and its size and to return number of elements divisible by 7. [2]
- (d) Write a C++ program to checks whether the given character is alphanumeric or special character. [2]



- Q6. (a) Write a program to input a list, any position value and a number and to insert that number at the particular position of the list. [3]
- (b) Write a program to input any matrix and to implement the following: [4]
- (i) Display diagonal value.
  - (ii) Display upper triangular matrix.
- (c) Find the number of elements to be stored and size of the array. [2]
- (i) long l[10][5]
  - (ii) char a[20] [5]
- (d) If amount is float array holding 10 elements, how are amount and amount +6 different from each other. [1]

Q7. (a) Write a program to input n product information with product number, name, price and quantity and to calculate total price, discount and net price using following information. Display all information on the output screen. [4]

- Total price = price \* quantity
  - Discount based upon total price
- | Total price      | Discount |
|------------------|----------|
| <10000           | 10%      |
| >10000 & <200000 | 20%      |
| >=200000         | 30%      |
- Netprice = total price - discount.

- (b) Mention any four steps you would follow while writing a program. [2]
- (c) Find the output of the following program. [2]
- ```
#include <iostream.h>
#include <ctype.h>
void Changelt (char Text[], char C)
{
```

```

for (int K=0;Text [K]!='\0' ;K++)
{
if (Text[K] >='F' && Text[K] <='L')
Text[K]=tolower(Text[K]);
else if (Text[K]=='E' || Text[K]=='e')
Text[K]=C;
else if (K%2==0)
Text[K]=toupper(Text[K]);
else
Text [K] =Text[ K-1];
}
}
void main( )
{
char oldText[] = "Click@CAreeR2015" ;
Changelt (oldText,'%');
cout <<"New TEXT:"<<oldText<<endl;
}

```

(d) Find output of the following program segment: [2]

```

int a = 5;
void demo(int x, int y, int &z)
{
a += x+y;
z = a+y;
y += x;
cout<<x<<"*"<<y<<"*"<<z<<endl;
}
void main()
{
int a = 3, b = 4;
demo(a,a,b);
demo(a,a,b);
}

```

(5)