

Additional Questions

1. Explain the structure of a C program with a neat block diagram.
2. Give the formatted output of the following program :

```
int main( )  
{    float a=125.5180;  
        char c='A';  
        printf("%5d, %03c, %-8.2f ",sizeof(a),c,a);  
        return 0;  
}
```

3. What are the different qualifiers that can be applied to an integer?
4. Code the variable definitions for each of the following:
 - a) An unsigned char variable named code initialized to Z.
 - b) A memory constant named Interest rate initialized to 7.2 %.
5. Write a C program to compute the following formula. Assume that all variables are defined as float and initialize those variables in the program.

$$Z = \frac{RX}{\sqrt{R^2 + X^2}}$$

6. What will be the value of b after the following statement if the value of a is 8 ?

b = a <= 20 ? (a>10) ? a +30 : a+10 : a+50;

7. Identify the syntactical and logical errors in the following code to check the equality of characters:

```
int main( )  
{    char S, R ="T";  
        scanf("%c",S);  
        if (S=R)  
            printf("Same");  
        else ;  
            printf(" Different");  
        return 0;  
}
```

8. What will be the output of the following program?

```
int main( )  
{    int x=10, y=6,z;  
        z = x!=5 //y= =3;  
        y = z++;  
        printf("%d\t%d",y,z);  
        return 0;  
}
```

9. Write a C program to read a number and print whether the number is divisible by 5 or 7 or both.
 10. Draw the complete flowchart for pretest and posttest loop .

11. Predict the output :

```
int main()
{
    int a=1,b=10,c=4,d;
    a= b++;
    a++;
    c=++a;
    if (c = a > b)
    {
        a+=1;
        c-=2;
        d = a > c;
    }
    printf("Updated values are %d, %d, %d and %d",a,b,c,d);
return 0;
}
```

12. Rewrite the following expressions using explicit type conversions (typecast) to replace implicit conversions.

a) **int x=123;**

double y= x;

b) **double a=10.67;**

int b=a;

13. Explain the field specification for formatted input and output statement.

14. What will be output of the following program for different inputs of variable *money* as given below

i) 10 ii) 20 iii) 35 and iv) 40

```
int main( )
{
    int money;
    scanf("%d",&money);
    switch(money*2)
    {
        case 10: printf("Willian");
            break;
        case 20: printf("Warren");
            break;
        case 30: printf("Carlos");
            break;
        case 40: printf("Inqvar");
            break;
        default: printf("Lawrence");
            break;
    }
    return 0;
}
```

15. Write a C program to print the odd numbers from 100 to 200 using while loop.

16. a) Identify the different types of operators in the given expression, explain their precedence and associativity and write the order of operators evaluated in the given expression. (3 marks)

$$a + = b * c * d / ++e$$

b) Evaluate the expression : $9.5 + 2 / 3 * 6.0 / 2 - 1.5$ (2 marks)

17. Write a C program to code for real time Bank application using switch case. (5 marks)

The program should perform the following :

Read an account number, name, balance and an option(D / W / S)

Depending on the option (D- deposit, W- withdrawal, S - show details) perform the following:

D - read the amount to be deposited and display the balance after adding the deposited amount.

W – read the amount to be withdrawn and display the balance after deducting the withdrawn amount from the balance.

S- Display the account number and balance.

1. How would you test whether x is the ASCII code of an upper-case letter, without using any library functions and without mentioning any numbers, and only one line of code?

2. What is the output of the following code?

```
int main()
{
int i;
for(i =0; i <5; i++)
printf("%c", 'a' + i);
}
```

3. As many of you are aware, mobile phone service is paid for on a per minute basis, with each partial minute being treated as a full minute. For example, if you use your mobile phone for 61 seconds, you are charged for 2 minutes of use.

Assume that an integer variable named *timeInSeconds* contains the exact number of seconds of a mobile phone conversation. Write a program fragment (not a complete program, no declarations, no printf's or scanf's, . . .) that assigns the value in minutes to the integer variable *timeInMinutes*, consistent with the above policy.

4. Determine the output produced by the following code fragment:

```
for (i = 0; i < 6; ++i)
{
for (j = 0; j < 6; ++j)
{
if (i > j)
printf("L");
else if (i < j)
printf("U");
}
```

```

else
    printf("D");    }    printf("\n");}

```

5. What will be output if you will compile and execute the following c code?

```

#include <stdio.h>
#define X 5+2
int main()
{
    int i;
    i = X * X * X;
    printf("%d", i);
}

```

6. A and B are both 8-bit values. A = 0x3E and B=0x5A. The result should also be at most 8- bits. Show your work below.

Operation	Result
A B	
A << 3	
B >> 2	
A && B	

7. Using the ternary operator write a single, concise, C statement that sets

- z = -1 if x is greater than 0
- z = 0 if x is equal to 0
- z = 1 if x is less than 0

8. Convert the following *switch-case* code to an *if-else* code.

```

switch ( i )
{
    case 0:
    case 1:
        n = 10;
        break;
    case 2:
        n = 500;
        break;
    default:
        n = 0;
}

```

```
break;
}
```

9. Predict the output of the following program and justify your answer.

```
#include <stdio.h>
int main()
{
    int i=0;
    while( i < 10)
    {
        i++;
        if( i %3 == 0)
            continue;
        printf("%d\t",i);
    }
}
```

10. Write C code , including a loop, required to calculate $y(t)$ from the equation:

$$y(t) = \begin{cases} 3t^2 + 5, & t < 0 \\ -3t^2 + 5, & t \geq 0 \end{cases}$$

for values of t between -9 and 9 in steps of 3. Display each value of t and $y(t)$.

11. Write a complete C program that does the following.

It asks the user to enter an integer between 100 and 9999. If the entered number is out of range, the program forces the user to enter more numbers until one in the correct range is given. Then the program prints the digits in the number (in reverse) on separate lines. Here is an example of how the program should work:

Enter an integer between 100 and 9999: 897

7

9

8

12. The following types of chocolates are available in a chocolate shop. Write a menu driven program to display the chocolate type, price and discount. Get the customer's choice and the number of chocolates required. Assume that each customer can buy only one type of chocolate. Use `switch_case` to calculate the total amount with discount for each customer and display it. Also keep track of how many of each type of chocolate was sold throughout the day and print it.

Sln0	Chocolate Type	Price(Rs.)	Discount (%)
1	White Chocolate	50	10
2	Dark Chocolate	60	12

3	Raw Chocolate	42	6
4	Bittersweet Chocolate	55	8