



**N.B**

- (1) Question no. 1 is compulsory.
- (2) Attempt any 3 from the remaining questions.
- (3) Assume suitable data if necessary.
- (4) Figures to right indicate full marks.

( 3 Hours)

[ Max. Marks 80]

Q.1 (a) Select the correct option from multiple choice questions. 10

i. Which bitwise operator is used to multiply the number by  $2^n$  where n is number of bits.

- A] Bitwise-OR B] Bitwise-AND C] Bitwise Left shift D] Bitwise Right Shift

ii. Which operator has the lowest priority ?

- A] ++ B] % C] + D] ||

iii. Which of these is a valid variable declaration?

- A] int emp salary; B] float marks\_student; C] float roll-no; D] int main;

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

```
void main ( ) {
double x=28;
int r;
r= x%5;
printf ("\n r=%d", r); }
```

- A] r= 3 B] Run time Error C]Compile time Error D]None of the Above

What will be the output of the following program?

v. void main( ) {  
int x []= {10,20,30,40,50};  
printf ("\n %d %d %d %d ", x [4] ,3[x] ,x[2] ,1[x] ,x[0] ); }

- A]Error B]10 20 30 40 50 C]50 40 30 20 10 D]None of these

Which of the following is not a keyword of 'C' ?

- vi. A]auto B]register C]int D]function

What will be the output ?

vii. void main ( ) {  
int y ;  
y=0x10+ 010+10;  
printf ("\ny=%x", y); }

- A] y = 34 B] x = 34 C] y = 22 D]Error

Study the following C program

viii. 

```
void main ( ) {
    int a=0;
    for ( ; a ;);
    a++; }
```

what will be the value of the variable a, on the execution of the above program

A] 1    B] 0    C] -1    D] none of these

Which of the following is used as a string termination character?

ix. A] 0    B] \0    C] /0    D] None of these

What will be the output of the following program code?

x. 

```
void main ( ) {
    char a[] = "Hello World" ;
    char *p ;
    p=a;
    printf("\n%d %d %d %d", sizeof(a), sizeof(p), strlen(a), strlen(p) ); }
```

A] 11 11 10 10 B] 10 10 10 10 C] 12 12 11 11 D] 12 2 11 11

Q.1 b

State True or False with reason.

10

- i. Size of pointer variable is equal to the datatype it points to.
- ii. A float constant cannot be used as a case constant in a switch statement.
- iii. The statement void p; is valid.
- iv. while (0); is an infinite loop.
- v. scanf() function is used to input string having multiple words
- vi. A function can have any number of return statements.
- vii. In a union, space is allocated to every member individually.
- viii. An algorithm is a graphical representation of the logic of a program.
- ix. Comments in the program make debugging of the program easier.
- x. There is no difference between '\0' and '0'.

Q.2 a.

- i. How to create array of structure variables and assign values to its members? 5
  - ii. Differentiate between struct and union. When is union preferred over struct? 5
- Give one example of each.

Q.2 b.

- i. WAP to print the sum of the following series: 5  
 $1 + 2^2 + 3^3 + \dots + n^n$
- ii. Compare the following: 5
  - i) break and continue statements
  - ii) if-else and switch statements

Q.3 a.

Write a program to calculate number of vowels (a, e, i, o, u) separately in the entered string. 6

b.

Predict output of following program segment. 4  
 [Note: Show pictorial representation]

```
(i)main()
{
    int a,b,*p1,*p2,x,y;
    a=48;b=10;p1=&a;p2=&b;
    x=*p1**p2-8;
    *p1=*p1+*p2;
    y>(*p1/*p2)+20;
    printf("%d %d %d %d %d %d", *p1,*p2,a,b,x,y);
}
```

```
(ii)
main()
{
    int x=4,y=9,z;
    z = x++ + --y +y;
    printf("\n %d %d %d",x,y,z);
    z= --x + x+ y--;
    printf("\n %d %d %d",x,y,z);
}
```

- c. An electronic component vendor supplies three products: transistors, resistors and capacitors. The vendor gives a discount of 10% on order for transistors if the order is more than Rs. 1000. On order of more than Rs. 100 for resistors, a discount of 5% is given and discount of 10% is given on orders for capacitors of value more than Rs. 500. Assume numeric code 1, 2 and 3 used for transistors, capacitors and resistors respectively. Write a program that reads the product code and the order amount, and prints out the net amount that the customer is required to pay after discount. (Note: Use switch-case) 10

Q.4 a. What is recursion? WAP using recursion to find sum of array elements of size n. 10

Q.4 b. Write a C program to 10

- i. Create a 2D array (Matrix) [in main function]
- ii. Write a function to read 2D array(Matrix)
- iii. Write a function that will return true(1) if entered matrix is symmetric or false(0) is not symmetric.
- iv. Print whether entered matrix is symmetric or not [ in main function]

Q.5 a. Implements string copy function STRCOPY (str1, str2) that copies a string str1 (source) to another string str2 (destination) without using library function. 05

b. Explain File handling in c in detail. [Note: Mention file types, file modes, file related functions and its use] 08

- c. WAP to print all possible combinations of 1, 2, 3 using nested loops. 07
- Q.6 a. WAP to print following pattern for n lines. [Note: range of n is 1-9] 05
- ```
    1
   121
  12321
 1234321
```
- b. WAP to print binary equivalent of entered decimal no. 05
- c. What is significance of storage classes? Explain it with relevant examples. 10