

QUESTION 2003

1. a) What is an algorithm?

b) Give the properties of an algorithm.

c) Is a program a coded algorithm- Justify your answer?

See Topic: INTRODUCTION, Long Answer Type Question No. 1(a), (b), (c).

2. What would be the output of the following programs?

a)

```
main ( )
{ float a = 0.7;
  if (a < 0.7)
    printf ("C");
  else
    printf ("C++");
}
```

✓ (i) C

(ii) C++

(iii) Error

(iv) None of these

b)

```
main ( )
{ float a = 0.7;
  if (a < 0.7f)
    printf ("C");
  else
    printf ("C++");
}
```

(i) C

✓ (ii) C++

(iii) Error

(iv) None of these

c) Write a program in C which will take a string as input and output whether it is palindrome or not.
See Topic: ARRAYS, Short Answer Type Question No. 1.

3. Give the prototypes of the following functions:

a) (i) malloc (ii) calloc (iii) realloc (iv) free

b) Write a program to create a link list of a set of integer numbers entered in the ascending order and add a new number to the linked list, such that the numbers in the new list also remain in the ascending order.

See Topic: DYNAMIC MEMORY ALLOCATION, Long Answer Type Question No. 1 & 2.

4. a) What is structure in C? Explain with an example.

b) What is union in C? Explain with an example.

c) What is the difference between structure & union?

See Topic: STRUCTURES AND UNIONS, Long Answer Type Question No. 1.

5. a) What would be the output of the following program, if the array begins at address 85400?
main()

```
{ int arr[] = {12, 14, 15, 23, 45};  
printf ("%u%u", arr+1, &arr+1)  
}
```

b) What would be the output of the following program, if the array begins at address 1200?

```
main ()  
{ int arr[] = {2, 3, 4, 1, 6};  
printf ("%d%d", arr, size of (arr));  
}
```

c) What error would the following function give on compilation?

```
f(int a, int b)  
{int a;  
a = 20;  
return a;  
}
```

- i) Missing parentheses in return statement
- ii) The function should be defined as int f (int a, int b)
- ✓ iii) Redclaration of a
- iv) None of the above

d) Write a program in C for matrix multiplication.

See Topic: ARRAYS, Long Answer Type Question No. 1(a), (b) & (c).

6. a) What is preprocessor directives in C? Explain with example.

b) What would be the output of the following program?

```
#define SQR (x) (x*x)  
main()  
{ int a, b = 3;  
a = SQR(b + 2);  
printf("\n%d", a);  
}
```

c) What would be the output of the following program?

```
#define CUBE (x) (x*x*x)  
main ()  
{ int a, b = 3;  
a = CUBE(b++);  
printf("\n%d", a, b);  
}
```

d) What would be the output of the following program?

```
#define MAX(a,b) (a > b ? a : b)  
main ()  
{int x; x = MAX(3+2, 2+7); printf("%d", x);}
```

See Topic: C FUNDAMENTALS, Long Answer Type Question No. 1(a), (b), (c) & (d).

7. Write short notes on the following:

- a) Command line arguments in C.
- b) Modular programming.
- c) Enumeration in C.
- d) Bitwise operator in C.

a) See Topic: C FUNDAMENTALS, Long Answer Type Question No. 6.

b) See Topic: INTRODUCTION, Long Answer Type Question No. 4(a).

c) See Topic: STRUCTURES AND UNIONS, Long Answer Type Question No. 4(a).

d) See Topic: OPERATORS, EXPRESSIONS & MANAGING INPUT OUTPUT, Long Answer Type Question No. 7(a).

8. Write a program in C, which will copy one file into another.

See Topic: FILES, Short Answer Type Question No. 1.

9. a) What is type casting in C?

b) What is ternary operator in C?

c) Discuss the following:

- i) Static variables,
- ii) External variables,
- iii) Register variables.

See Topic: OPERATORS, EXPRESSIONS & MANAGING INPUT OUTPUT, Long Answer Type Question No. 1(a), (b) & (c).

10. A number is said to be a perfect number if it is equal to sum of all of its factors (except the number). As for example 6, $6 = 1 + 2 + 3$.

Write a C program, which will generate all such perfect numbers between 1 and 1000.

See Topic: FLOW OF CONTROL, Long Answer Type Question No. 2.

11. a) What is a function in C? Explain with example.

b) Write a recursive program in C to calculate n^{th} Fibonacci number.

See Topic: FUNCTION, Short Answer Type Question No. 1.

12. a) What is the difference between break statement and a continue statement within a loop.

b) Write a C program, which will read a number as input and print the multiplication table of that number.

See Topic: FLOW OF CONTROL, Long Answer Type Question No. 2.