

- N.B.: (1) All questions are compulsory.
(2) Answer to the same questions must be written together.
(3) Numbers to the right indicate marks.
(4) Draw neat labeled diagrams wherever necessary.

1. Attempt the following (any THREE) [15]

- (a) List various techniques for the development of a program? Explain any one with suitable example.
(b) Define keywords and identifiers in C language? Also differentiate between keywords and identifiers.
(c) Determine if the following constants are valid in C :
(i) 27,882 (ii) 0.8E8 (iii) "Name" (iv) "1.3e12" (v) 0xBCFDAL
(d) What is the difference between machine level language and high level language?
(e) What are the various data types in C? Explain them.
(f) Draw a flowchart to generate numbers from 1 to 10.

2. Attempt the following (any THREE) [15]

- (a) Explain the purpose and use of following operators with suitable examples :
(i) == and = (ii) Conditional Operator (? :)
(b) C program contains the following variable declarations :
float a = 2.5, b=0.0005, c=3000;
Show the output from following printf statements
(i) printf("%f %f %f", a, b, c); (ii) printf("%3f %3f %3f", a, b, c);
(iii) printf("%8f %8f %8f", a, b, c); (iv) printf("8.4f f%8.4f %8.4f", a, b, c);
(v) printf("%e %e %e", a, b, c);
(c) Write an interactive C program to find roots of a quadratic equation $ax^2 + bx + c = 0$
and roots are given by $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.
(d) Write a program in C to solve the following expression $F = P(1 + i)^n$.
(e) Explain gets and printf statements used in C programming language.
(f) Explain the increment and decrement operator in C with example.

3. Attempt the following (any THREE) : [15]

- (a) Differentiate between while and do while loop with suitable examples. When to use which Loop?
(b) Predict the output of following C codes.
(i)

```
int i;
for(i=0;i<=2, i++)
{
    switch(i)
    {
        case 1: printf ("%d", i);
        case 2: printf ("%d", i);
        default: printf ("%d", i);
    }
}
```


(ii)

```
Void exchange (int, int);
void main()
{
    int x=20, y=10;
    exchange(x, y);
    printf("%d, %d", y,x);
}
Void exchange (int x, int y)
{
    int temp;
    temp=x;
    x=y;
    y=temp;
}
```

- (c) What is recursion? Write a recursive function to calculate factorial of a number.
- (d) Write a function in C to swap two integer variable using call by value and call by reference.
- (e) Explain the switch... case statement in C with an example.
- (f) Write a program in C to generate the Fibonacci series (0, 1, 1, 2, 3, 5, 8,...) n terms using a while loop.

4. Attempt the following (any **THREE**)

[15]

- (a) What do you understand from storage classes? List various storage classes? Explain any two.
- (b) Write a C program to find largest number out of given n numbers stored in an array using a function.
- (c) What is a macro? Write a program in C to find the area of a rectangle and square using macros.
- (d) Explain strlen, strcat, strcmp functions with example.
- (e) What are preprocessor directives in C? Explain #include and #define in C.
- (f) What are two dimensional arrays in C? How can they be declared and initialized in C?

5. Attempt the following (any **THREE**)

[15]

- (a) What is a structure? How does a structure differ from an array?
- (b) Explain : (i) Pointer declaration
(ii) '*' and '&' operators used with pointers
- (c) Explain nested structure in C with example.
- (d) Write a short note on pointer arithmetic in C.
- (e) Explain the terms "array of pointers" and "pointer to an array" in C.
- (f) Explain how members of a structure are accessed by a variable and a pointer in C.



Paper Discussion Schedule for all Subjects

Date	Day	Timing	Centre
26 Nov. 2018	Monday	9.00 a.m. to 11.00 a.m.	Dadar
26 Nov. 2018	Monday	12.00 p.m. to 2.00 p.m.	Thane
26 Nov. 2018	Monday	6.00 p.m. to 8.00 p.m.	Andheri
27 Nov. 2018	Tuesday	6.00 p.m. to 8.00 p.m.	Borivali