

Roll No.:

National Institute of Technology, Delhi

Name of the Examination: B. Tech.

Branch: CSE/ECE/EEE

Semester: I

Title of the Course: Problem Solving and
Computer Programming

Course Code: CSB101

Time: 3 Hours

Maximum Marks: 50

SECTION-A

Q. 1. Attempt all the parts:-

[1*10]

- What is header file? Give 2 examples.
- Why do we use macros? Explain.
- What is the difference between a data variable and a pointer variable?
- Why do we use file handling in C?
- What is pre-processor and what is the advantage of using it?
- What are the disadvantages of arrays?
- Give reason: Why for loop is used to input a 1-D array of numeric data but not for 1-D array of character data (string).
- $(ABCD54)_{16} + (BDC89)_{16} = ()_{16}$
- Convert $(1110010.001)_2 = ()_{10}$
- Subtract using 2's complement $(56)_{10} - (60)_{10} = ()_8$

SECTION-B

Attempt 4 Questions out of 5 Questions(Q.2 –Q. 6)

Q. 2. Explain the following functions with syntax:-

[5*4]

- getchar()
- puts()
- realloc()
- fgets()
- fputc()

Q. 3. What is the difference between while and do-while loop. Explain with the help of syntax and example.

Q. 4. Write a program to find the Armstrong numbers upto 1000.

Q. 5. Write a program to input and print the details (emp_name, emp_id, salary) of 50 employees using structures.

Q. 6. WAP to multiply 2 matrices. [Note: Take input for size of arrays from user].

SECTION-C

Attempt 2 Ques out of 3 Ques(Q.7 –Q. 9)

Q. 7. WAP to print these patterns:-

[3+3]

a)	1	b)	1
	1 1		123
	1 2 1		12345
	1 3 3 1		1234567
	1 4 6 4 1		

c) WAP to pass an entire 1-D array as argument to a function using pointer. [4]

Q. 8. Attempt the following:-

[4+2+2+2]

a) Find the output for the following:-

```
int a[5]={5,10,15,20,25};
int *ptr=a;
printf("%d",*(ptr+1));
ptr++;
printf("%d",*(a+2));
printf("%d",*(ptr+2));
printf("%d",&ptr);
```

b) Find the output for the following:-

```
#include<stdio.h>
int main()
{
    int x=4, y =3,z;
    y= --x;
    z=x--;
    Printf("%d %d %d\n",x,y,z);
    Return 0;
}
```

c) Write a for statement to print the following sequence of integers:-

-10,-12,-14,-18,-26,-42

d) Write a program to find the length of the string without using string function.

Q9 a) Explain the difference between call by value and call by reference with the help of program. [5+5]

b) Write a program to create a file and write the details of 5 students (Roll No., Name, Marks) in that file.