



Shirpur Education Society's  
**R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR**  
An Autonomous Institute

[ Affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere ]



**आर. सी. पटेल इन्स्टिट्यूट ऑफ टेक्नॉलॉजी, शिरपूर**  
(स्वायत्त महाविद्यालय)

**Programme:** B.TECH (AIML)/B.TECH (COMP)/B.TECH (DATA SCI.)/B.TECH (ETC)/B.TECH (CIVIL) /  
B.TECH (ELECT) /B.TECH (MECH)

**Year: I/Semester I (Exam Year: 2023-2024)**

**Subject:** Structured Programming using C

**Max Marks:** 60

**Date:** 06 Jan 2024

**Time:** 02:30 pm - 04:30 pm (02:00 Hrs.)

**END SEMESTER EXAMINATION ODD SEM-I (Acad. Year: 2023-2024)**

Instructions:

1. This question paper contains 3 pages
2. All Questions are Compulsory.
3. Figure in right hand side indicates full marks.
4. Answer to each new question to be started on a fresh page.
5. Assume suitable data wherever required, but justify it.
6. Support your answers with neat labelled diagrams, wherever necessary.

1. 1 15

A. 10

I. Implement a C program for simple calculator using switch...case statement. (eg- 1-addition, 2 - subtraction, 3-multiplication, 4-division) 10

----- OR -----

II. Lights should automatically turn off when no motion is detected in a room for a certain period. 10  
If the ambient light level is low, lights should turn on automatically when motion is detected.  
Considering the above mentioned scenario identify which statement you will use to solve this problem? Justify your answer with pseudo code or algorithm? Explain the respective statement with the syntax?

B. What will be the output of the following C code? 5

```
#include <stdio.h>
```

```
void main() {
```

```
int a = 1, b = 2, c = 3, d=-4;
```

```

a=a+b-c*d/a;
b=d % c;
c=(a + b) % (b - c);
d=++a+a-a++;
printf("a= %d \n", a);
printf("b= %d\n", b);
printf("c= %d\n", c);
printf("d= %d\n", d);
printf("%d\n", a+b*++a);
}

```

2. 2 15

A. Explain in detail the arithmetic operators in C programming with the help of suitable examples. 10

B. 5

I. Write an algorithm and draw a flowchart to find factorial of a number. 5

----- **OR** -----

II. i. Convert  $127_{10}$  to Octal. 5

ii. Convert  $52_{10}$  to Octal.

3. 3 15

A. 10

I. Write a C program to create an array with n elements entered by user. Calculate and display the product of all the elements of the array. 10

----- **OR** -----

II. Write a C program to count the number of vowels and consonants in a string. 10

B. Using the strlen() function, write a C program to calculate length of strings. 5

4. 4 15

A. Define recursion. Write a program to find factorial of a number using recursive function. 10

B. 5

I. Explain pointer declaration with example. 5

----- **OR** -----

II. Write a program in C to add two numbers using pointers. 5