S D M College of Engineering and Technology, Dhavalagiri, Dharwad

Department of Computer Science and Engineering

Principles of Programming using C (POP) lab

PART A

1. Write a C program to find and print the area and perimeter of a circle whose radius is given.

2. Write a C program to compute the displacement for the given values of initial velocity, time and acceleration.

$$s = ut + \frac{1}{2}at^2$$

3. Write a C program to print the following patterns:

```
a                    $  $  $
a  b                    $  $
a  b  c                    $
....              For 'n' rows
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4. Write a C program to print the value of following sum:

Sum = 1 + 3 + 5 + ….

5. Write a C program to print the 1st 'n' elements in a Fibonacci series.

6. Write a C program to find the largest of any 3 given integers.

7. Write a C program to find copy one array into another array and print both the arrays.

8. Write a C program to find and print the number of digits in a given string.

9. Write a C program to show the use of the following built-in functions in strings:
   i. strcat ii. strcpy iii. strcmp

10. Write a C program to include two functions – add (int , int) and subtract (int, int) and main () calls these functions to print the sum and difference of 2 input numbers passed as parameters from main.

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PART B

1. Write a C program to implement a simple calculator involving +, -, * and / operations. Use 'switch' to implement this. *[NOTE: The program must report errors for division by zero and illegal operator]*

2. Write a C program to check whether a given number is a prime number or not.

3. Write a C program, which calculates the roots of a Quadratic Equation, given the values of a, b and c and print the type of the roots and roots of the equation.

4. Write a C program to search an element from a list of 'n' array elements using binary search technique.

5. Write a C program to sort elements of an integer array using bubble sort technique. Print both unsorted and sorted array of elements.

6. Write a C program that computes the mean, variance and standard deviation of n elements in an array.

7. Write a C program to read a matrix of order m x n, find whether it is a square matrix or not. If it is not print error message and go back and read the correct order. Once it is a square matrix find the sum of all elements of secondary diagonal.

8. Write a C program to read 2 strings, compare both of them. If both are unequal then concatenate the 1st string with the 2nd and print the resultant string; if equal print the success message along with the length of the strings.

9. Write a C program to find the number of lowercase, uppercase letters, digits and special characters. Implement this without using any built-in string handling functions. Print all the counts along with the input string.

10. Write a C program to read the values of n and r, and call a user defined function factorial () to compute factorial of a number and calculate $^{n}C_{r}$ and $^{n}P_{r}$.