

## **TERM WORK COMPUTER LAB-I(PCS 151)**

### **INSTRUCTION:**

1. Use one side ruled bond sheets (Thick) for writing and DMP sheets for printouts.
2. Every solution must contain the following: - Problem statement, Assumptions, Algorithms, Flowchart (back of ruled sheet), Printout of program and all possible outputs on separate sheets.
3. Margin should be drawn on flowchart sheet 2cm from right and 1cm from rest of the three sides.
4. Write your name, University roll no. and section with problem statement at the top of every code in the comment section.

1. WAP to input marks obtained by a student in five different subjects through the keyboard. Find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum mark that can be obtained by a student in each subject is 100.
2. The length & breadth of a rectangle and radius of a circle are input through the keyboard. Write a program to calculate the area & perimeter of the rectangle, and the area & circumference of the circle.
3. Mr. X's basic salary is input through the keyboard. His dearness allowance is 40% of the basic salary, and the house rent allowance is 20% of basic salary. Write a program to calculate his gross salary.
4. WAP to swap two numbers using third variable.
5. WAP to find roots of a quadratic equation, equation is of the form ( $ax^2+bx+c=0$ ).
6. WAP to input a year and check if it is a leap year or not.
7. In a town, the percentage of men is 52. The percentage of total literacy is 48. If total percentage of literate men is 35 of the total population, write a program to find the total number of Illiterate men and women if the population of the town is 80,000.
8. The following calculates value of  $f(x)$  if  $x$  has different ranges of value as below:

$$F(x) = x^2 + 2 \text{ if } 0 \leq x \leq 10$$

$$F(x) = x^2 + 2x \text{ if } 11 \leq x \leq 20$$

$$F(x) = x^3 + 2x^2 \text{ if } 21 \leq x \leq 30$$

$$F(x) = 0 \text{ if } x > 30$$

9. Write a code to input a number and check how many times it is doubled to cross the value 100000.
10. Write a program to implement a basic calculator (add, subtract, divide and multiply) using switch case.
11. WAP to find sum and average of n numbers using for, while, do-while loop?
12. WAP to find whether a given number is prime or not?
13. WAP to print Fibonacci series?  

$$0\ 1\ 1\ 2\ 3\ 5\ 8\ 13\ldots\ldots\ldots$$
14. WAP to input a number and check if it is a perfect number or not?

15. Write a program to print the following patterns-:

1	1
2 3	0 1
4 5 6	1 0 1
7 8 9 10	0 1 0 1
11 12 13 14 15	1 0 1 0 1

16. WAP to input 5 integers and print the smallest of them.

17. Write a user defined function to check a number is Armstrong or not using function.

18. Write a program to find the sum of following series using functions-:

$$1 + (1+2) + (1+2+3) + (1+2+3+4) + \dots + (1+2+3+\dots+n)$$

$$1 - 1/3 + 1/5 - 1/7 + 1/9 \dots \text{upto } n \text{ terms.}$$

$$1 + 2/2! + 3/3! + 4/4! \dots \text{n/n!}$$

19. Write a program to find reverse of a number using recursion.

20. Write a program to find GCD of two numbers using recursion.

21. Develop a program to find biggest and least element in an array of N elements.

22. Develop a program to count number's greater than, less than or equal to a number 'k' in a array.

23. Develop a program to merge the elements of two sorted arrays so that the resulting array is also sorted.  
(without using sorting method)

24. Develop a program to insert an element into a list of elements in the array at a particular position of an array.

25. Write a program to sort an array of integers using a sorting technique.