**PSG COLLEGE OF TECHNOLOGY, COIMBATORE – 641 004**

**DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES**

**C Programming Lab – Work Sheet 1**

1. Write a program to find the simple interest, compound interest and maturity value. Simple interest I is

simple interest formula

The formula to find the maturity value, **S** is given below:

maturity value formula

Where:

1. **P** is the principal (the amount of money borrowed)
2. **r** is the interest rate (per year or per annum)
3. **t** is the loan duration in years.

The compound interest formula is given below:

compound interest formula

Where:

1. **A** is the total amount of money (including interest) after **n** years
2. **P** is the principal (the amount money borrowed or invested)
3. **r** is the interest rate (per year or per annum)
4. **n** is the loan or investment duration in years

2. Write a program to find the volume of cylinder, sphere, pyramid and cone. If we have a cylinder with the radius **r** and height **h**, the volume, **V** of the cylinder is:

**V = πr2h**

where**π** is a number that is approximately equals to 3.14.

for sphere with the radius **r**, the volume, **V** of the sphere is:

formula for the volume of a sphere

where**π** is a number that is approximately equals to 3.14

for a cone with height **h** and base radius **r**, the volume, **V** of the cone will be:

formula for the volume of a sphere

where**π** is a number that is approximately equals to 3.14

for a pyramid with width **w**, length **l** and height **h**, the volume, **V** of the pyramid will be:

formula for the volume of a sphere

3. Given a time in seconds (integer), print to the screen the corresponding time in hours, minutes and seconds. The output will be formatted like: “XXXX seconds is equivalent to XX hours, XX minutes and XX seconds”.

4. Write C code to convert a temperature in degrees Fahrenheit to degrees Celsius.

Problem input : integer temperature in degrees Fahrenheit

Problem output: double temperature in degrees Celsius

Computation Formula: Celsius = (5.0 / 9.0) \* Fahrenheit – 32

5. Write a program to read in a value representing hours and display the pay for working that number of hours, given that the hourly rate is Rs. 390.75 per hour. Display the pay. For example:

# “Your Pay is Rs. 3907.50 / for working at 10 Hours”

6. Write a program to calculate an electricity bill by reading unit in two values representing the old and new meter readings. Assume that the cost of each unit is Rs. 7.13 /- and that there is also a fixed charge of Rs. 30.50/-.

7. Develop the C Program that consumes a length represented by two values: the first value is for feet, and the second is for inches. Your program produces the total length in inches. (Hint: 1 feet = 12 inches)

Sample Input: Enter your length (in Feet and inches): 21 feet, 10 inches

Output: Your total length in inches is (21 \* 12 + 10) inches

8. Hourly workers at McFudd’s are paid by the hour. If a worker works more than 40 hours in a week, the hourly pay rate for the hours past the first 40 hours are increased by 50%. This is known as “time and a half” overtime pay. For example, if a worker making Rs.6.00 per hour works 45 hours in one week, that worker will receive 45.0\*6.0+6.0\*5.0\*.5, or Rs.285.00 in pay. Write a program that asks for and receives the hours worked and rate of pay from the user. The program should output the correctly calculated amount of pay.