ASSIGNMENT UNIT-1

1) Among 50 patients admitted to a hospital, 25 are diagnosed with pneumonia, 30 with bronchitis, and 10 with both pneumonia and bronchitis. Determine:

(a) The number of patients diagnosed with pneumonia or bronchitis (or both).

(b) The number of patients not diagnosed with pneumonia or bronchitis.

2) A large software development company employs 100 computer programmers. Of them, 45 are proficient in Java, 30 in C#, 20 in Python, six in C# and Java, one in Java and Python, five in C# and Python, and just one programmer is proficient in all three languages above. Determine the number of computer programmers that are not proficient in any of these three languages**.**

3) There are 350 farmers in a large region. 260 farm beetroot, 100 farm yams, 70 farm radish, 40 farm beetroot and radish, 40 farm yams and radish, and 30 farm beetroot and yams. Let B, Y, and R denote the set of farms that farm beetroot, yams and radish respectively. Determine the number of farmers that farm beetroot, yams, and radish.

4) Prove that $\Sigma n^2 = 1^2 + 2^2 + 3^2 + \ldots + n^2 = [n(n+1)(2n+1)] / 6$ Using Mathematical Induction

5) Using Mathematical Induction Prove that $n! > 2n$ Where 'n' is a positive integer greater than or equal to 4.

6) Show that $n^3 + 2n$ is divisible by 3 using Mathematical Induction

7)Solve the following system of equations by Cramer's rule:

$2x - 3y + 5z = 11$

$3x + 2y - 4z = -5$

$x + y - 2z = -3$

8) Solve the following system of linear equations using Cramer's rule:

$5x + 7y = -2$

$4x + 6y = -3$

9) The cost of 4 kg onion, 3 kg wheat and 2 kg rice is Rs 60. The cost of 2 kg onion, 4 kg wheat and 6 kg rice is Rs 90. The cost of 6 kg onion 2 kg wheat, and 3 kg rice is Rs 70. Find the cost of each item per kg by Cramer's rule.