**Assignment 19.3**

# Problem Statement 1:

Calculate F Test for given 10, 20, 30, 40, 50 and 5,10,15, 20, 25.

For 10, 20, 30, 40, 50:

Answer :

**Calculate Variance of first set**   
  
Total Inputs (N) =(10,20,30,40,50)   
Total Inputs (N)=5   
Mean (xm)= (x1+x1+x2...xn)/N   
Mean (xm)= 150/5   
Means(xm)= 30   
SD=sqrt(1/(N-1)\*((x1-xm)2+(x2-xm)2+..+(xn-xm)2))   
=sqrt(1/(5-1)((10-30)2+(20-30)2+(30-30)2+(40-30)2+(50-30)2))   
=sqrt(1/4((-20)2+(-10)2+(0)2+(10)2+(20)2))   
=sqrt(1/4((400)+(100)+(0)+(100)+(400)))   
=sqrt(250)   
=15.8114   
Variance=SD2   
Variance=15.81142   
Variance=250

**Calculate Variance of second set**   
For 5, 10,15,20,25:   
Total Inputs(N) =(5,10,15,20,25)   
Total Inputs(N)=5   
Mean (xm)= (x1+x2+x3...xN)/N   
Mean (xm)= 75/5   
Means (xm)= 15   
SD=sqrt(1/(N-1)\*((x1-xm)2+(x2-xm)2+..+(xn-xm)2))   
=sqrt(1/(5-1)((5-15)2+(10-15)2+(15-15)2+(20-15)2+(25-15)2))   
=sqrt(1/4((-10)2+(-5)2+(0)2+(5)2+(10)2))   
=sqrt(1/4((100)+(25)+(0)+(25)+(100)))   
=sqrt(62.5)   
=7.9057   
Variance=SD2   
Variance=7.90572   
Variance=62.5

**To calculate F Test**   
F Test = (variance of 10, 20,30,40,50) / (variance of 5, 10, 15, 20, 25)   
= 250/62.5   
= 4.   
  
The F Test value is 4.