1. Analysis of Insertion Sort (Average Case)  
     
   Solution:

**Note,**

S = = 0 + 1 + 2 +...+ (n-3) + (n-2) … (i)

We can also write,

S = (n-2) + (n-3) +...+ 2 + 1 + 0 … (ii)

(i) + (ii)

2S = (n-2) + (n-2) + (n-2) +...+ (n-2) + (n-2) + (n-2)

= (n-1)(n-2)

S = (n-1)(n-2)/2