# Marks Allocation:

Best Case: T(n) = O(n2) --------------------------------------- 1 mark

Worst Case: Correct T(n) equation --------------------------------------- 1 mark

T(n) = O(n2) --------------------------------------- 0.5 mark

One line explanation --------------------------------------- 0.5 mark

void Func (int n)

{

int\* A=new int[n+1]; --------------------------------------- 0.5 mark

for (int i=0; i < n; i++) ---------------------------------- 0.5 x 3 mark

A[i]=0; -------------------------------------- 0.5 mark

for (int i=2; i <= n/2; i=i+2) ---------------------------------- 0.5 x 3 mark

{

if(i%2==0) -------------------------------------- 1 mark

{

for (int j=n; j >=0; j--) ---------------------------------- 0.5 x 3 mark

A[j]++; -------------------------------------- 0.5 mark

}

}

}

# Solution:

|  |  |
| --- | --- |
| **Statement** | **Number of times executed** |
| int\* A=new int[n+1] | 1 |
| i=0 | 1 |
| i<n | n + 1 |
| i++ | n |
| A[i]=0 | n |
| i=2 | 1 |
| i <= n/2 | n/4 + 1 |
| i=i+2 | n/4 |
| if(i%2==0) | n/4 |
| int j=n | n/4 |
| j>=0 | n/4\*n +n |
| j-- | n/4\*n |
| A[j]++ | n/4\*n |
| **Total** | **1 + 1 + n + 1 + n + n + 1 + n/4 + 1 + n/4 + n/4 + n/4 + n/4 + n/4\*n + n + n/4\*n + n/4\*n**  **T(n) = 5 + 4n + 4n/4 + 3n2/4 =5n +3n2/4 + 5**  **T(n) = O(n2)** |