708-409 Assignment-01. 1.) These notations are used to tell complerity of an algorithm, when disput is very larges of None Versamples of Asymptotic modations are · Dis O notation this notation represents the apper bound of an algorithm's growth rate It supresent the worst case sterois for the algorithmis performance. Exist O(logu), O(w), etc. · Big Omega (n) notation: This notation describes the Cour bound of an algorithms growth rate

Represents the best case scenars for the algorithms performance. Exi a(n), va (logk), etc Theta notation(o): This notation describes both the appear & lower bounds of an algorithm's growth rates providing a tight bound on the growth Ex: O(n), O (logn), etc 7=2 1=12481632 h  $n = a(x^{n-1})$ n= 2 k-1 2 K-1 = 1 leg on both sides, (Keef)log 2 - log 2 > K=log 2 - O(logn)

$$T(1) = \Im T(n-1)$$

$$T(2) = 3t(n-2)$$

$$T(2) = 3t(n-2)$$
  
 $T(3) = 3t(n-3)$ 

On every step it get could by 3 times, 
$$T(n) = 3^n$$
.

$$T(h) = 2T(h-1)-1$$

$$= 2(2T(h-2)-1)-1$$

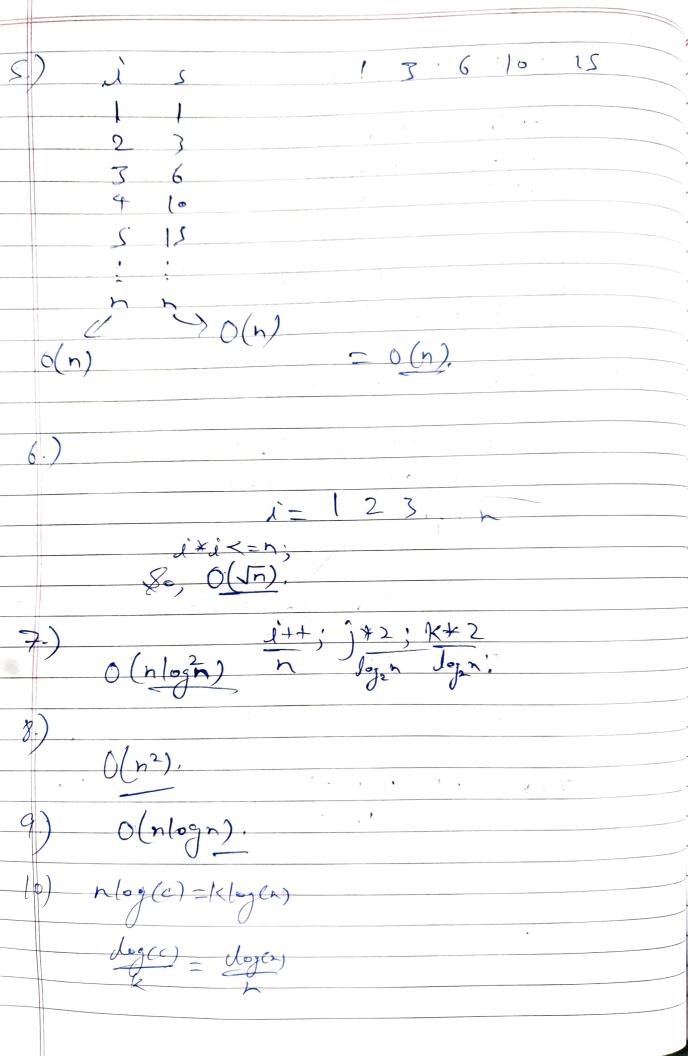
$$= 2^{2}(aT(h-3)-2)-1$$

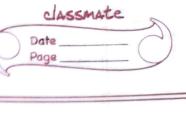
$$= 2^{2} (aT(n-3)-2) -$$

$$= 2^{K}T(n-k) - (2^{K-1} + 2^{K-2} + \dots + 1)$$

$$T(n) = 2^{n} - (2^{n-1} + 2^{n-2} + ... + 1)$$

$$T(h) = 2^{h} - 2(1-2^{h}) = 2^{h} - 2 + 2^{l-h}$$





Since boses are Some, exporests must be equal,

loge- K or for base=10,