DDA -Assignment 20021513 Asymptotic notations are the mathematical notations used to describe the running tend towards a particular value or a limiting value Ex: bubble sout , when input are already sorted time taken by algo is Linear Also tells complexity of algo when input is large Mainly 3 types → Big - Ostolation - Omega Motation - Bigo Nolations f(n) = 0 (g(n)) iff $f(n) = c \cdot g(n)$ for (i=1 to n) (i=i+2;) G & 1+2+4...n Logan = Klog 2 Log 2 + Logn = 1 logs O(K = O(1 Hog n) = 0 (Lign)

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3. T(n) = 5 2T (n-1) if n 70 otherwise!

$$T(n) = 3T(n-1)$$

$$= 3(3T(n-1))$$

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

$$= 3^3 T (n-3)$$

$$=3^{\eta}T(0)$$

7. C 2 0 (3")

4. T (n) = \$2T (n+1)-1 1 f n 70 , otherwise 13

T(n)= 2T (n1)-1

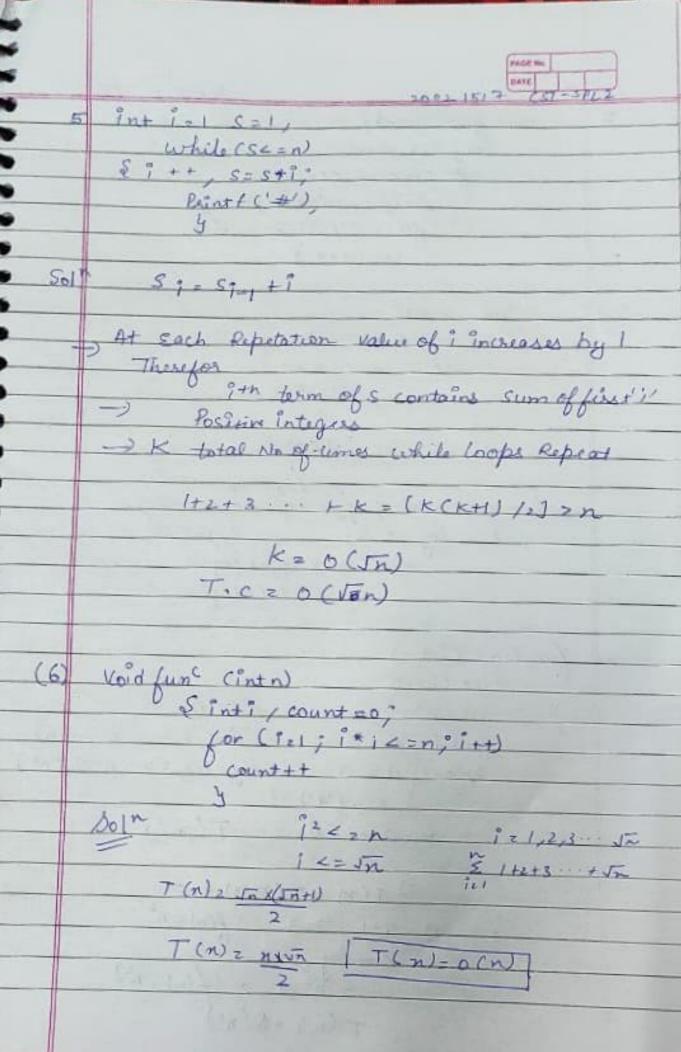
$$= 2^2 (T(n-2)) - 1 - 2 - 1$$

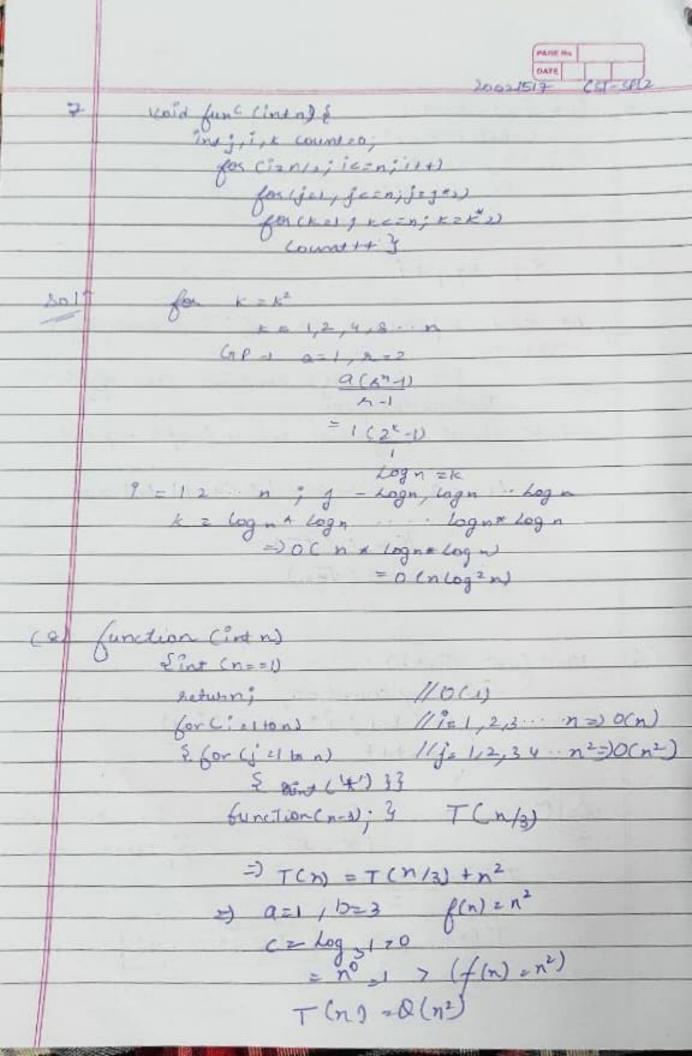
$$= 2^{n}T(n-n)-2^{n-1}-2^{n-2}-2^{n-3}$$

$$=2^{n}-(2^{n}-1)$$

T(n) = 1

T. (= 0(1)





Void function Cint N & for Cialton 1/0(n) for (j=1;j=n;j=jii) 110(n) $\begin{cases} or \ i=1=) & j=1,2,3 & n=n \\ for \ i=2=) & j=1,35 & n=n/2 \\ for \ i=3=) & j=1,4,7 & n=n/3 \end{cases}$ for inn) jel ... $3 \stackrel{!}{\geq} 2 n + n + n + n + n$ En [1+1+1++++++] E n[logn] T(n) = [nlogn] T (n) = O (h logn) n'k and c'n what is the asymptomic relationship between these functions? Assume K7=1 and C71 are constant. Value C and no for which Relation holds. Relation blw nk and c'n is 4n zno Some constant 970

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