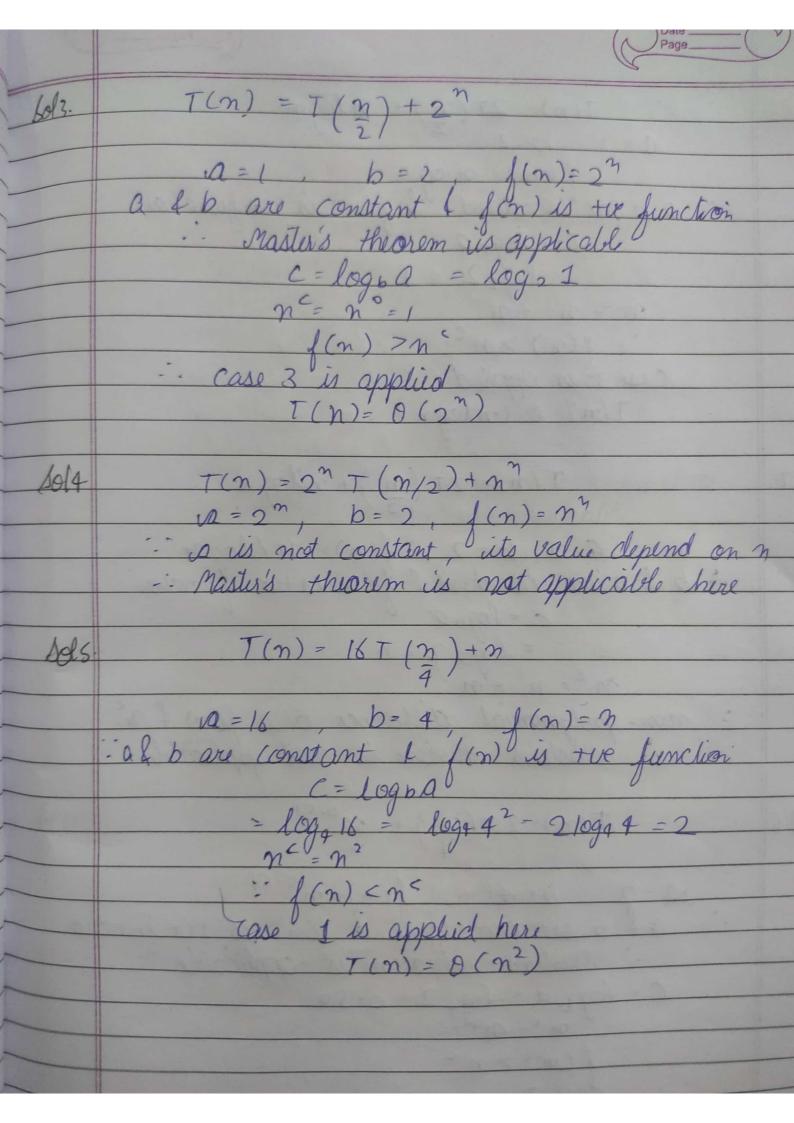
Tutorial 4 $T(n) = 3T(n) + n^2$ 121i a s, b are constant and f(n) is the function

- master's theorem is applicable C = log p a $m^{2} = \log_{2} 3 = 1.58$ $m^{2} = n^{1.58}$ Which is $n^{2} > m^{1.58}$ case 3 is applied here $T(n) = O(n^2)$ T(n)= 4T (n)+n Not 2. D=4, b=2, $f(n)=m^2$ · · · a d b are const- 2 fin) is the function

· · · Moster's theorem is applicable

c = logs q

= log 2 q = log 2 2 = 2 log 2 $\frac{n^{2} = f(n)}{\cos 2 \text{ is applied}}$ I(n) = 0 (n² logn)



T(n)= 2T(n)+ nlogn Sol 6. a=2, b=2 a, b are constant & f(n) is + ve function C=logsq $= log_2 2 = 1$ n = n = n $\vdots \quad f(n) > n^c$ $case 3 \quad is applied$ $T(n) = n^c$ T(n) = 0 (nlogn) $T(n) = 2T(\frac{n}{2}) + n \log n$ 1067a=2, b=2, f(n)=n/logy

-- a.l. b are constant f f (n) is +ve function

c=logs q

=log 22=1

n = n

mon-polynomial difference b/w f(n) f n

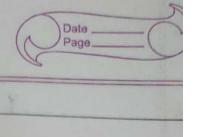
moster's theorem is not applicable Sol 8 $T(n) = 2T\left(\frac{n}{n}\right) + m^{0.5}$: (n) > n = T(n) = O(n 13-58)

 $T(n) = 0.5 T(\frac{n}{2}) + \frac{1}{2}$ a = 0.5, b = 2 f(n) = 1masters theorem is not applicable T(n) = 16T(n) + n!Sol10. a = 16, b = 4 f(x) = n!a 4 b are const. & f (n) is + ve function.

Master's theorem is applicable $c = \log_{10} a$ $= \log_{10} 4 \cdot 16 = \log_{10} 4^2 = 2\log_{10} 4$ case 3 is applied T(n) = 0 (n!)I(n)= 4T(n)+ logn a=4, b=2; f(n)=logn a 4 b are constant l f(n) is the $c = log_2 a log_2 4 = 2$ $n = n^2$ Case 1 is applied $T(n) = \theta (n^2)$

Soliz squar IF (n) (m/2) + logn , f(n)= (ogn a = In b = 2 : a is not constant not applicable : Master's theorem is Wol 13-F(n) = 3T(n)+n a = 3, b = 2, f(n) = n a l b are constant (f(n) is the :- Master's theorem is applicable C= logs a = log2 3 = 0-158 m = n 0.158 case 1 us applied $T(n) = \theta(n^{1.58})$ Dol 14 $T(n) = 3t\left(\frac{n}{2}\right) + \sqrt{n}$ a = 3 b = 3, f(n)=5n a & b are constant & f(n) us +ve master's theorem is applied n=10gpa=10g33= case I is applied

T(n)=0(n)



T(n)= 4T(n)+c.h Solk

> a = 4, b = 2 f(n) = c.n of bare constant of f(n) is +ve Master's theorem is applied C= logpa= log24

 $(n) = \theta(n^2)$

 $T(n) = 3T(n) + n\log n$

a=3, b=4, f(n)=n(ogn) a+b=constant, f(n) is +veMaster's theorem is applied

C = log 0 = log 3 = 0 - 79 $n = n^{0.79}$ $f(n) > n^{0.79}$ f(n) = 0 (nlog n)

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 $\frac{T(\frac{n}{2})+n}{2}$

 $C = log_b a = log_3 3 = n' = n$

 $n) = m \log n$

Sd 18. T(n) = 67 (n) + n2/0gn a = b, b = 3, $f(n) = n^2 \log n$ $e = \log n a = \log_3 6 = 1.63$ $n = n^{1-63}$ T(n) = 0 (n2 logn) Sol 19. $T(n) = 4T(\frac{n}{2}) + \frac{n}{\log n}$ a = 4 b = 2 f(n) = n / log n c = log a = log 4 = 2 f(n) < n $f(n) = 0 (n^2)$ NO 20 $T(n) = 64T(n) - n^2 \log n$ - a l b are most constant but function is -ve mostirs theorem us not applied Nol 21 $T(n) = 7T\left(\frac{n}{2}\right) + n^2$ a = 7 b = 3 $f(n) = n^2$ $c = \log_{10} a = \log_{10} 7 = 1.77$ $n = n^{1.71}$ $\frac{1}{f(n)} \frac{7n}{7n}$ $\frac{1}{T(n)} = \theta(n^2)$

