```
Jusi sol.
             T(n) = 3T(nl_2) + n^2
               a=3, b=2 f(n) = n^2
         : af b are constant of f(n) n the function
            . Masteris theorem is applicable
                        C = loga
                          = log, 2 = 1.58
                        n° = n1.58 which us Ln2
                  · Case 3 us applicable
                        T(n) = O(n2)
92 soln! -
              TCH) = 4T (1/2) + n2
                a=4, b=2, f(n)=n^2
                C = log_{ha} = log_{h}4 = 2
                  n^{c}=n^{2} n^{c}=f(n)
                 Case 2 T(n) = O(n2logn)
Q3 Soln!-
               T(n) = T (h/2) + 2h
               a=1, b=2, f(n)=2n
              C = logba = log1 = 0 nc = n0 = 1
                f(n) > nC
               in case 3
               Ten) = O(2h)
Jusy sol n:-
               T(n) = 2^h T(h_{12}) + n^h
               a = 2^n b = 2 f(n) = n^n
          i a is neet constant, its value depends on w
            ". Plaster's theorem neet applicable.
```

```
Gus seln! -
              T(n) = 16T (n/4) + n
               a=16, b=4, f(n)=k
               C = log_b a = log_4 16 = 2
                   nc > f(n)
            Case 1
                 T(u) = Q(u2)
Just solu! -
             T(h) = 2T (h/2) + mlogw
              a=2, b=2, f(n)=n\log n
               C = logba = log22 = 1
                 nc = h
                 fen) >nc
              Cases as applied
               Tin) = Q(nlogn)
97 sol 1 !-
             T(n) = 2+(n/2) + n/logn
             a=2, b=2 f(n) = n log n
                  C = log_2 = 1
         non pulynomiel diff blw ncf f(u)
          ". masters theorem notapplicable.
              T(n) = 2T (N/4) + NO.51
Gels soln!-
              a = 2, b = 4, f(n) = n^{0.5}
                c = logba = logy2 = 0.5
                     ne = 0 no.5
                    : fin) >nc
                   Couse 3 is applied
                T(n) = 0(n0.51)
```

T(n) = 0.5 T (n/2) + 1 a < 1 :. Master's theorem applicable Gloseln! -T(n) = 16T (n/4) +n! a=16, b=4, f(n)=n! (= logpa sed = log 16 = 2 nc = n2 f(n) > n c Cerse3 T(n) = O(n!) OII seem -T(n) = 4T (1/2) + logn a=4, b=2, f(n) = log nC = log_4 = 2 $n^{c} = n^{2}$ nc >f(n) -. Case I is applied T(n) = O(n2) T(n) = In T(1/2) + logn \$12 solh! a is net constant, therefere master's theorem. not applicable.

49 Soln! -

```
T(n) = 3T(n/2) + n
 G13 Sceln! -
              a=3, b=2 f(h)=n
             C = logna = log, 3 = 1.58
                n(= n1.58 > f(n)
                Couse
               1. Tou) = 0 (n1.58)
             T(n) = 3T (n/3) +5TO
Q14 seluj-
              a=3, b=3, f(n)=Jn
                C = logba = 1
                 n(=n)JW
       Case 1 is applied T(n) = O(n)
             TCh) = UT (1/2) + CW
GISseln!-
            a = 4, b = 2, f(n) = 0.2
               nC = n^2 > fcn)
               - case I is applied
                T(u) = O(n^2)
           T(4) = 3T(4/4) +n dogw
$16 Seel h! -
            a=3, b=4, f(n)=n\log m
             c = log_b a = log_a 3 = 0.78
             nc = no.78 / fcm)
           : case 3 is applied Ton) = O (logn)
```

```
a=3, b=3 f(n)=n/2
           C = logba = 1
            n (= n > f(n)
        Case!! Tou) = O(n)
Cf16 seeln! - T(n) = GT (n/n) + n2 logn
            C = log, 6 = 1.63
              n(= n163 2 fch)
         Cases is applied - Ton = O(n 2 logn)
Q19 Seln! -
         T(n) = 4T(n/2) + n logn
               C = log, U = 2
              nC=12 ten) = 11log2
                  nc Ifon)
            -: case 1 is applied TCn) = O(n2)
            T(n) = 647 (N/8) + n2 log2
Q20 Soln! -
              a=64,8=8 f(u) = n2logw
                 C = log_h a = 2
                 nc=n2 Lf(u)
           Case 3 is applied T(n) = O(n2logn)
```

1178aln! - T(n) = 3T(n/3) + n/2

Q21 Seelⁿ! - $T(n) = 77 (n/3) + n^2$ a = 7, b = 3, $f(n) = n^2$ $C = log_b a = log_3 7 = 1.77$ $n^c = n^{1.77} 2 f(n)$ (as e = 3 is abbelied $T(n) = O(n^2)$ C(n) = T(n) = T(n/2) + n(z - cosn)Ten; is net vegular function. I haster's theorem can't abplied.