| | 1 |
|---|--|
| $\frac{1 \cdot T(m) = 3T\left(\frac{m}{2}\right) + m^2}{50!^n}$ | 3. T(m)=T(m/2)+2m |
| 5017. | Sol4: Q=1 |
| $T(n) = aT(\frac{n}{b}) + f(n)$ | 1 - 0 |
| a ≥1, 5>1 | f(n) = 2" |
| A11 40 101 | $c = \log \alpha = \log c = 0$ |
| On companing $a=3, b=2, f(n)=n^2$ | Jb J2 |
| u=3, b=2, f(n)=m | $m^c = m^o = 1$ |
| Now, $C = \log a = \log 3 = 1.5$ | 584 fcn) > me |
| db. 12 | (-22) |
| ne= n1.584 < n2 | 7(m)=0(2m) |
| (n)>nc | And the Control of th |
| | 0-10-0 |
| $T(m) = \Theta(m^2)$ | 4. $T(n) = 2nT(n/2) + nn$ |
| 2. $T(m) = 4T(m/2) + m^2$ | 0-1h, 0-2m |
| ~ | p=2 /f(m) = 2 |
| solh; a≥1, b>1 | |
| $a=4, b=2, f(m)=n^2$ | C= log a = log 2 ^m |
| e = log 4 = 2 | $= \gamma$ |
| $\Rightarrow n^c = m^2 = f(n) = n^2$ | Je ⇒ Ny |
| 2 1 - 1015 - 11 | 2, f(n) = nc |
| = T(n) = O(n2 (og2n) | π T(m) = θ ($\pi^2 \log_2 \pi$) |
| 10 02 | 6.77n) = 27/n/ 1+n/ogn |
| 5. T(n) = 16T(n)+n | 80/h: a=2,b=2 |
| 30/1: a=16, b=4 | $f(n) = n\log n$ |
| f(n)=n | C= log 2=1 |
| c= log 16 = log (4)=2 | : ne=n1=n |
| 09 09 | Stree, mlognzn |
| We = W. | ~ - (m) > m c |
| f(n) < n | |
| $T(n) = \theta(n^2)$ | $T(n) = O(n\log n)$ |
| | - 1 1 m |

| | Dute |
|--|--|
| $7 \cdot T(n) = 2T(\frac{n}{2}) + n/\log n$ | 8. T(m) = 2T(m)+ m0.51 |
| Λ | 8. $T(m) = 2T(\frac{m}{4}) + n0.51$ $sol^n: a=2, b=4, f(m)=n0.51$ |
| Sol! a=2, b=2, f(n)= 1/logn | |
| $C = \log_2 2 = 1$ | c = loga - log 2 = 0.5 h $nc = mo.5$ |
| $;, m^c = m^1 = m$ | 2'. 12 215 1 CO DIST |
| Since, m < n | Sine, no.5 < no.81 f(n) > nc |
| | +(m)>11 |
| $\frac{1}{1000} + \frac{1}{1000} + 1$ | :, T(m) = 0 (n0.51) |
| $T(n) = \theta(n)$ | |
| a Tim) - hert /n 1+11 | 10. $T(n) = 16T(\frac{m}{4}) + n1$ |
| $9.T(n) = 0.5T(\frac{n}{2}) + \frac{1}{2}$ | 50 $a = 16, b = 4, f(n) = n1$ |
| solia = 0.5, $b=2$ | $c = \log_{10} a = \log_{10} 16 = 2$ |
| Since acc. to Master theorem | |
| az1, but here a 1x0.5 | Now, nº= n? - N = N |
| so we cannot apply master theorem. | 48 Wi > W_ |
| theorem. | : T(n) = 0 (n!) |
| 101 111 | 10 Tm) - 10x+10 TT/M/) 1 120m |
| 11. $4T(n/2) + \log n$ $a=4, b=2, f(n) = \log n$ | 12.T(n) = sqrt(n)T(n/2)+logn |
| Sol: a= 4, b= 2, f(n) = loan | $a=\overline{n}, b=2$ $c=\log_{a}a=\log_{2}\overline{n}=\frac{1\log n}{2}$ |
| | $\frac{1}{2} = \frac{1}{2} = \frac{1}$ |
| $c = \log_b a = \log_2 4 = 2$ | :. 1 log 2n < log(n) |
| " " " = " " = " " = " " = " " = " " " = " " " " = " | 2 02 8 |
| fen) = logn | f(n) > mC |
| | |
| since logn (n'2 | $\frac{1}{1} T(n) = O(f(n))$ |
| : f(m) < mc | = Alloward |
| The Alme | O (W) (VI) |
| $\frac{1}{1}(m) = \theta(m^2)$ | (m) = (m) |
| ~ ()(· ·) | |

$$\frac{13 \cdot T(n) = 3T(n/2) + n}{sol! a = 3, b = 2, f(n) = n}$$

13.
$$T(n) = 3T(n/2) + n$$

14. $T(n) = 3T(n/3) + 3qst(n)$

soli $a = 3$, $b = 2$, $t(n) = n$
 $c = loq a = loq 3 = 1$

$$c = \log_{a} = \log_{2} 4 = 2$$

$$n^{c} = n^{2}$$

$$\frac{m}{\log n} < n^{2}$$

$$2i \cdot T(n) = 7T(n/3) + n^2$$

 $a = 7, b = 3, f(n) = n^2$

$$C = \log_{b} a = \log_{3} 7 = 1.7712$$

$$\Rightarrow \frac{m^{1.7712}}{(m)} < m^2$$

$$20.T(m) = 64T(m/8) - m^2 \log m$$

 $50!$ $0 = 64 \cdot b = 8$
 $c = \log_{10} a = \log_{10} 64 = \log_{10} (8)^2$
 $C = 2$

$$T(n) = \Theta(n^2 \log n)$$

$$22 \cdot T(n) = T(n/2) + n(2-cosn)$$

 Sol^{n} ; $a = 1$, $b = 2$

$$Sol^{h}$$
; $a = 1$, $b = 2$
 $c = log a = log 1 = 0$

$$T(n) = \theta(n)$$