Tutorial-4

Ans-1) $a = 3$, $b = 2$, $f(n) = n^2$, $c = \log_2 3 \approx 1.58$

$\therefore TC = \Theta(n^2)$

Ans-2) $a = 4$, $b = 2$, $f(n) = n^2$, $c = 2$

$\therefore TC = \Theta(n^2 \log n)$

Ans-3) $a = 1$, $b = 2$, $f(n) = 2^n$, $c = \log_2 1 \Rightarrow 0$

$\therefore TC = \Theta(2^n)$

Ans-4) $a = 2^n$, $b = 2$, $f(n) = n^n$

a is not const ∴ we can't find

Ans-5) $a = 16$, $b = 4$, $f(n) = n$, $c = \log_4 16 \neq 2$

$\therefore TC = \Theta(n^2)$

Ans-6) $a = 2$, $b = 2$, $f(n) = n \log n$, $c = \log_2 2 \approx 1$

$\therefore TC = \Theta(n \log n)$

Ans-7) $a = 2$, $b = 2$, $f(n) = n/\log n$

$c = \log_2 2 = 1$

$\therefore TC = \theta(n)$

Ans-8) $a = 2$, $b = 4$, $f(n) = n^{0.51}$

$c = \log_4 2 = 0.50$

$TC = \theta(n^{0.51})$

Ans-9) $a = 0.5$, $b = 2$, $f(n) = 1/n$

$a < 1$ $\therefore$ Master not applicable

Ans-10) $a = 16$, $b = 4$, $f(n) = n!$

$c = \log_4 16 = 2$

$\therefore TC = \theta(n!)$

Ans-11) $a = 4$, $b = 2$, $f(n) = \log n$

$c = \log_2 4 = 2$

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

Ans-12) $a = \sqrt{n}$, $b = 2$, $f(n) = \log n$

a is not constt $\therefore$ Not applicable

Ans-13) $a = 3$, $b = 2$, $f(n) = n$, $c = \log_2 3 \Rightarrow 1.58$

$\therefore TC = \Theta(n^{1.58})$

Ans-14) $a = 3$, $b = 3$, $f(n) = \sqrt{n}$, $c = \log_3 3 \Rightarrow 1$

$TC \Rightarrow \Theta(n)$

Ans-15) $a = 4$, $b = 2$, $f(n) = c \cdot n$, $c = \log_2 4 \Rightarrow 2$

$TC = \Theta(n^2)$

Ans-16) $a = 3$, $b = 4$, $f(n) = n \log n$, $c = \log_4 3 \Rightarrow 0.79$

$TC = \Theta(n \log n)$

Ans-17) $a = 3$, $b = 3$, $f(n) = n/2$, $c = \log_3 3 \Rightarrow 1$

$\therefore TC \Rightarrow \Theta(n)$

Ans-18) $a = 6$, $b = 3$, $f(n) = n^2 \log n$, $c = \log_3 6 \Rightarrow 1.63$

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

Ans-19) $a = 4$ $f(n) = n/\log n$

$b = 2$

$c = \log_2 4 = 2$

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

Ans-20) $a = 64$ $f(n) = -n^2 \log n$

$b = 8$

$f(n)$ is -ve $\therefore$ Masters not applicable

Ans-21) $a = 7$ $f(n) = n^2$

$b = 3$ $c = \log_3 7 = 1.77$

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

Ans-22) Not Applicable.