第7周作业

1 (1) $T = T_{pipe} + \Delta t = 2.1\,ns$

(2) $S = \dfrac{T}{T} \times \dfrac{CPI_{pipe}}{CPI_{cycle}} = \dfrac{2.1}{7} \times \dfrac{N+5-1}{N} = \dfrac{3}{10} \times \dfrac{N+4}{N}$ 当 $N \gg 4$ 时

$S \approx \dfrac{3}{10}$ 加速比 $= \dfrac{1}{S} = \dfrac{10}{3}$

(3) $N \to +\infty$ $T_{pipe} \to 0$ $T' = T_{pipe} + \Delta t \approx 0.1\,ns$

$S = \dfrac{T'}{T} \times \dfrac{CPI_{pipe}}{CPI_{cycle}} = \dfrac{0.1}{7} \times \dfrac{N+5-1}{N'} = \dfrac{1}{70} \times \dfrac{N'+4}{N'}$ 当 $N' \gg 4$ 时

$S \approx \dfrac{1}{70}$ 加速比极限 $= \dfrac{1}{S} = 70$