

### 第三章

1. 5级流水时钟周期后为划分阶段后最长的阶段时间  $T = 2ns$

2. 流水化后  $T_{new} = (N+K-1) \times 2 + (N+K-2) \times 0.1 = (N+K) \times 2.1 - 2.2$

$$S = \frac{T_{old}}{T_{new}} = \frac{7N}{2.1N+7.3} \quad \text{当 } N \rightarrow \infty \quad S = \frac{7}{2.1} = \frac{10}{3}$$

3) 当  $K \rightarrow \infty$  时 ~~表达式~~  $S = \frac{7N}{2.1N+2.1K-2.2}$

则每个阶段使用的时间很短可以忽略  $S = \lim_{K \rightarrow \infty} \frac{7N}{2.1N+2.1K-2.2} = \frac{7}{2.1} = 3.33$

$$T_{old} = 7N$$

$$\begin{aligned} T_{new} &= \frac{7}{K} \cdot (N+K-1) + (N+K-2) \times 0.1 \\ &= \frac{7}{K} (N+1) + \frac{7}{K} \times K + 0.1N + 0.1K - 0.2 \end{aligned}$$

$$\begin{aligned} R \rightarrow \infty \\ &= 6.8 + 0.1(N+K) \end{aligned}$$