

## 第七周

1. A: (1) 时钟周期  $T_{\text{pipe}} = 2\text{ns} + 0.1\text{ns}$   
 $= 2.1\text{ns}$

(2)  $S = \frac{T_{\text{cycle}} \cdot \text{CPI}_{\text{pipe}} \cdot N_{\text{instruction}}}{T_{\text{pipe}} \cdot \text{CPI}_{\text{pipe}} \cdot N_{\text{instruction}}} \approx \frac{T_{\text{cycle}}}{T_{\text{pipe}}} = 3.33$

(3) 设流水线被分为  $K$  个时长相等的周期,

则  $T_{\text{pipe}} = \frac{7\text{ns}}{K} + 0.1\text{ns}$

$K \rightarrow \infty$  时,  $T_{\text{pipe}} \rightarrow 0.1\text{ns}$

故加速比  $S \rightarrow 70$