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第3章

$$1. (1) T_{\text{pipe}} = 2 \times 7 + 0.1 \times 5 = 2.1 \text{ ns}$$

$$(2) S = \frac{T_{\text{total}}}{T_{\text{new}}} = \frac{7}{2.1} = 3.33$$

(3) 设 n 个流水级

$$\text{则 } S = \frac{7}{\frac{7}{n} + \frac{1}{10}}$$

$$\lim_{n \rightarrow \infty} S = 7.0$$

2. 1 2 3 4 5 6.

I1 -

I2 / -

3 WAW RAW -

4 / WAW WAR -

5 RAW RAW RAW RAW -

6 / / / / RAW -

$$4. (1) S = \frac{0.6 \times \frac{11}{8}}{1 \times \frac{6}{5}} = \frac{3}{5} \cdot \frac{11}{8} \cdot \frac{5}{6} = \frac{11}{16}$$

$$(2) A: CPI_A = 20\% \times 5\% \times \frac{6+2}{5} + 99\% \times \frac{6}{5} \\ = \frac{8}{5} \times \frac{1}{100} + \frac{6}{5} \times \frac{99}{100} = \frac{602}{500} = 1.204$$

$$B: CPI_B = 1\% \times \frac{11+5}{8} + 99\% \times \frac{11}{8} \\ = \frac{16}{800} + \frac{1089}{800} = 1.38125.$$

插入页脚
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6. ① $lsl \text{ a1, } 0(\text{R2})$ ②
 add1 a1, a1, 1 ③
 sel a1, 3(R2) ④
 add1 a2, a2, 4 ⑤
 sub a4, a3, a2 ⑥
 bneq a4, Loop ⑦
⑧⑨ RAW(a1) ⑩⑪ RAW(a1)
⑫⑬ RAW(a1)
⑭⑮ RAW(a2)
⑯⑰ RAW(a4).

(2)

① IF ID EX MEM WB
② IF ID S S EX MEM WB.
③ IF S S ID S S EX MEM WB.
④ S S IF S S ID EX MEM WB.
⑤ S S S S IF ID S S EX MEM WB.
⑥ S S S S IF S S ID, S S EX MEM WB

$25 \times 18 = 450.$



