**1.** **Festplatte Zeit**  **CPU Zeit**

a)

$8 \cdot 32 \, Bit = 32 \, Byte$  $800 \, MHz = 800 \cdot 10^6 \, Hz = 800 \cdot 10^6 \, \frac{1}{s}$

$8 \, \frac{MB}{s} = 8 \cdot 10^6 \, \frac{B}{s}$  $\frac{1000}{800 \, MHz} = \frac{1 \cdot 10^3}{800 \cdot 10^6 \, \frac{1}{s}} \cdot \frac{1}{10^3}$

$\frac{32 \, Byte}{8 \cdot 10^6 \frac{Byte}{s}} = 4 \, \mu s$  $= \frac{1}{800} \, ms = 1{,}25 \, \mu s$

$\frac{1{,}25 \cdot 10^{-6} \, s}{4 \cdot 10^{-6} \, s} \quad 0{,}05 = \frac{1{,}25 \cdot 0{,}05}{4}$

$= \frac{0{,}0625}{4} = 0{,}015 = 1{,}5 \, \%$

b) **Festplatte Zeit**  **CPU Zeit**

$16 \cdot 10^3 \, B$  $= \frac{2}{800} \, ms = 2{,}5 \, \mu s$

$\frac{16 \cdot 10^3}{8 \cdot 10^6 \frac{1}{s} \cdot \frac{1}{10^3}} = 2 \, ms$

$\frac{2{,}5 \cdot 10^{-6} \, s \cdot 10^{-3}}{2 \cdot 10^{-3} \, s} \cdot 0{,}05 = 0{,}0000625$

$= 0{,}00625 \, \%$

**3.**

$$i_{31} \cdot i_{30} \cdot \overline{i_{26}} \cdot i_{25} \cdot E \cdot S_0 \cdot S_1$$

$$INT \cdot E \cdot S_0 \cdot S_1$$

States:

**hs0**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs1**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs2**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs3**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs4**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs5**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs6**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

**hs7**: $\overline{NB}, \overline{ACK}, \overline{CNT_{inc}}, \overline{CNT_{dec}}$

Transitions:

$CNT_{zero} \cdot E \cdot S_0 \cdot S_1$

$INT \cdot E \cdot S_0 \cdot S_1$

$i_{31} \cdot i_{30} \cdot \overline{i_{26}} \cdot i_{25} \cdot E \cdot S_0 \cdot S_1$

$i_{31} \cdot i_{30} \cdot i_{26} \cdot \overline{i_{25}} \cdot E \cdot S_0 \cdot S_1$

$E \cdot S_0 \cdot S_1$

$E \cdot S_0 \cdot S_1$

$E \cdot S_0 \cdot S_1$

$\overline{CNT_{zero}} \cdot E \cdot S_0 \cdot S_1$