

計結 CH5

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$$1.(1) \text{ block size} = 2^{12} \text{ byte} = 4 \text{ KB}$$

$$(2) \# \text{ of block} = 2^{10} = 1024$$

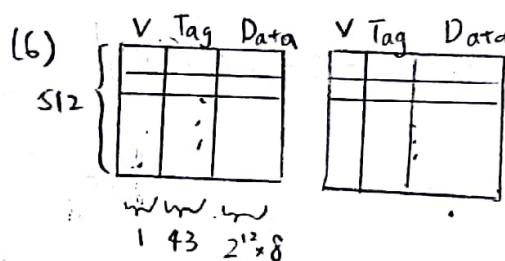
$$(3) \quad 4KB \times 1024 = 4096 \text{ (KB)}$$

$$(4) \quad (2^{12} \times 8 + 42 + 1 + 1) \times \frac{1}{8} \times 1024 = 4199936 \text{ (byte)}$$

(5) miss, hit, hit, miss, miss

miss, miss, hit, hit, hit,

miss, miss, hit, miss, hit



$$\begin{array}{ccccccc}
 & & & \text{valid bit} & & \text{dirty bit} \\
 & & & \nearrow & & \searrow \\
 & & \uparrow & & & \\
 \left[\left(2^{12} \times 8 + 43 + 1 + 1 \right) \times \frac{1}{8} \times 512 \right] \times 2 \\
 = 4200064 \text{ (byte)}.
 \end{array}$$

(1) miss, hit, hit, miss, miss,

miss, hit, hit, hit, hit,

miss, hit, hit, hit, hit

2

$$(1) \quad CPI = 2 \Rightarrow IPC = \frac{1}{2} = 0.5$$

$$(2) \text{ write bandwidth} = 0.5 \times \frac{100}{1000} \times 4 = 0.2 \text{ (bytes/cycle)}$$

3.

$$(1) 1.5 + \frac{7}{100} \times 200 = 15.5$$

$$(2) 1.5 + \frac{7}{100} \times 12 + \frac{7}{100} \times \frac{3.5}{100} \times 200 = 2.83$$

$$(3) 1.5 + \frac{7}{100} \times 28 + \frac{7}{100} \times \frac{1.5}{100} \times 200 = 3.67$$

$$(4) 1.5 + \frac{7}{100} \times 12 + \frac{7}{100} \times \frac{3.5}{100} \times 50 + \frac{7}{100} \times \frac{3.5}{100} \times \frac{1.3}{100} \times 200 = 2.46887$$

$$(5) 1.5 + \frac{7}{100} \times 28 + \frac{7}{100} \times \frac{1.5}{100} \times 50 + \frac{7}{100} \times \frac{1.5}{100} \times \frac{1.3}{100} \times 200 = 3.51523$$

5.

$$(1) (2^{19} \times 4) \times 5 = 10485760 \text{ (byte)} = 10.5 \text{ (MB)}$$

$$(2) \# \text{ of P2 needed} = \left\lceil \frac{100 \text{ MB}}{2^{24}} \right\rceil = 7$$

$$\text{Size of P2 table} = (2^{11} \times 4) \times 7 = 56 \text{ (KB)}$$

$$\text{Size of P1 table} = 4 \times 2^8 = 1 \text{ (KB)}$$

$$\text{total size} = (56+1) \times 5 = 285 \text{ (KB)}$$