$$5.4$$

(a) The cache line size $= 2^{byte\ offset\ bits}$

$$= 2^4$$

$$= 16\ bytes$$

Cache line size $= 4$ words

(b) The cache line size $= 2^{byte\ offset\ bits}$

$$= 2^5$$

$$= 32\ bytes$$

Cache line size $= 8$ words

② Cache $= 2^{index}$ bits

$= 2^6$

$= 64$ entries

The cache has 64 entries

ⓑ Cache $= 2^{Index}$ bits

$= 2^7$

$= 128$ entries

The cache has 128 entries

Address	Binary address	Tag	Index	Hit/Miss
0	0000	0	0	Miss
4	100	0	0	Hit
16	10000	0	1	Miss
132	10000100	0	1000	Miss
232	~~11000~~ 11101000	0	1110	Miss
160	10100000	0	1010	Miss
1024	10000000000	1	0	Miss *(repl. 0) [1] 190
30	11110	0	1	Hit
140	10001100	0	1000	Hit
3100	100110110	11	1	Miss [2]
180	10110100	0	1011	Miss
2180	100010000100	10	1000	Miss [3]

① replaced block with tag 0

② " " " " " "

3 3 3 " " " " 0

Hit Ratio

The hit Ratio is equal to number of hits/number of cache acess.

In this problem total hits are 3 and cache access is 12. Therefore Hit ratio = $3/12$