**Given:**

There is 64 line at total in set-associative cache.

There is 4 line sections at every set because of 4 way set-associative. So, 64/4=16 sets.

At main memory, there is 4096 (1K = 1024; 4K = 4096) blocks. Eery block has 128 words.

**Solution:**

**Block Offset:** Each block in main memory has 128 words. 128 words = 2^7 → 7. So, we need *7 bits* for the block offset.

**Set Index:** 16 set = 2^4 → *4 bits*

**Tag:** 4096 = 2^12 → *12 bits*

12+7 = 19, so 2^19 = 524288 words. And the total size of the main memory address is *19 bits*.

And;

**Tag bits =** Total address bits − Set index bits − Block offset bits = 19 bits − 4 bits − 7 bits = *8 bits*.

So, **the main memory address is 19 bits long**, divided into an 8-bit tag, a 4-bit set index, and a 7-bit block offset.