5.) CPU has 2^{16} bytes of RAM, virtual memory system whose virtual address is 32 bits long & is using page size 2^{10} bytes.

1.) physical pages =

$2^{16} / 2^{10} = \boxed{2^6} = 64$

2.) virtual pages =

$2^{32} / 2^{10} = \boxed{2^{22}} = 4194304$

3.) each entry size in page table (bits) =

$\log_2(\text{physical pages}) = \log_2 64 = \boxed{2^6} \rightarrow \boxed{6 \text{ bits}}$

4.) page table size for single process (bytes) =

6×2^{22} bits $= 1524,288 = \boxed{2^{19}}$ bytes

5.) Problems with a page table that size?

Yes, it is larger than the memory.

6.) CPU that has 2^{18} bytes of RAM, virtual memory system w/ secondary page tables. virtual address is 32 bits long & page size is 2^{10} bytes. Size of secondary pages = page size.

1.) physical pages =

$2^{18} / 2^{10} = \boxed{2^8} = 256$

2.) virtual pages =

$2^{32} / 2^{10} = \boxed{2^{22}}$

3.) secondary page tables =

$2^{22} / 2^{10} = \boxed{2^{12}}$

4.) each entry size primary page table (bytes) =

$\log_2 256 = 2^8 \rightarrow 8 \text{ bits} = \boxed{1 \text{ byte}}$

5.) each entry size secondary page table (bytes) =

Secondary pages size = page size $\rightarrow \boxed{1 \text{ byte}}$

6.) primary page table size (bytes) =

$2^{12} \times 1 = \boxed{2^{12}}$ bytes