Memory Management: Paging Questions

Q1. Consider a logical address space of 16 pages each of 1024 words (each word of 2 Bytes) mapped into a physical memory of 32 frames. Give the Logical and Physical address format. Also give the total Logical and Physical address space Compute the required page table size for this situation

Q2. A system has 48 bit L.A & a main memory of 64 GBs. Page size is 4096 bytes. Compute the number of pages and frames that exist in the system. Also give L.A & P.A format.

Q3. Consider a system with
L.A = 32 bits ; Page Size = 4 K ; Main memory = 512 MB.
Compute the total process address space and maximum number of pages in a process address space. Also give the logical and physical address format. Also give the page table size for this situation.

Q4. Consider a LA space of 8 pages of 1024 words mapped into memory of 32 frames. How many bits are there in the LA? How many bits are there in PA?

Q5. In a system with a logical address space of 64 pages, each of 512 bytes mapped into physical memory of 1024 frames. Compute lengths (in bits) of p, d, f, logical and physical address format.

Q6. A system has 48 bit logical address, physical address space is 32 bits and page size is 4 KB. Determine the lengths of p, d, f, logical and physical address formats, maximum number of pages per process and maximum number of frames in the system, page table entry size (PTES) and the size of the page table.

Q7. Consider a system that allows maximum 2 Mega pages per process with 2 KB page size. Determine the length of the logical address only.

Q8. Consider a system with 24 bits physical address space that supports a frame size of 512 Bytes. Calculate the page table entry size (PTES) and the length of physical address.

Q9. For each of the following logical addresses (given in decimal), compute the page number and offset within the page; if the page size is 4 KB
– 20000
– 32768
– 60000

Repeat for an 8 KB page.

Q10. A machine has a 48 bit virtual addresses and 32 bit physical addresses. Pages are 8 KB of size. How many entries are needed for the page table?

Q11. Let 14000 is a logical address, in which page does it exist if the page size is 1 KB?

Q12. In a system with 34 bits logical address and 32 bits physical address and a 16 KB page size. How many entries will be there in the page table?

Q13. Consider a virtual address 40808. Compute the virtual page number and offset for a 4 KB page