MUHAMMAD UMAR KHAN 10619
QUIZ#05 OS

Question-1: Given Page size = 5 bytes
Process address space = 8 pages
Physical address space = 16 frames
Logical address ⟶ Physical address.

i) (7, 4)

The logical address is divided into 2 parts:
i) page number
ii) page offset

On the other hand, the physical address also have 2 parts:
i) frame no.
ii) frame offset

So, during conversion, the page offset is directly copied, and for the frame no., the page table is checked for the frame no to which the page is mapped to.
let us take a dummy page table here:

Page no.	frame no.
0	12
1	13
2	24
3	5
4	7
5	9
6	10
7	11

So, according to this table the page no. 7 is mapped to frame no. 11

So, the corresponding physical address will be

frame no.	Offset
11	4

⇒ | 1011 | 100 | ⇒ 92 = Physical address

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ii) (2,1)

As explained in the previous part.
The page offset will be 1.

We will check the previous page table only. So, the page no. 2 is mapped to frame no. 4.

So, the physical address will be

frame no.	offset
4	1

→ 0100 001 = 33

Question-2:-

Logical address space = 8 pages.
Page size = 512 words (1 word = 2 bytes)
= 1024 bytes.
Physical memory has 64 frames.

a) bits in logical address space:-

Ans. Logical address space has 8 pages, each of size 1024 bytes

So, total logical address space size = 8 × 1024
= 8192 bytes.
= 2^{13} bytes

So, there will be 13 bits in the logical address space.

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b) bits in physical address space :-

Physical address space have 64 frames.
frame size will be same as that of page size.

So, Net Physical address space size = 64 × 1024 bytes
= 65536 bytes
= 2^{16} bytes

⇒ 16 bits in the Physical address space

c) Page table size :-

Page table will have the entries of every page, with its corresponding frame no.
We have in total 8 pages in logical address space,

So, page table will have 8 entries.

The size of each page table entry will be the size of 1 frame no.
We have in total 64 frames. So, each frame can be represented using 6 bits.
So, Each page table entry size = 6 bits.

So, Page table size = 8 × 6 bits
= 48 bits or 6 bytes