

Q 2.1 (a) (1) max number of entries in page table

$$= \frac{1024}{4}$$

$$= 256$$

since page size is 1024 bytes, offset bit = $\log_2 1024 = 10$.

$$\therefore \text{remaining bits} = 32 - 10 = 22$$

$$\text{bits for page table} = \log_2 256 = 8$$

Therefore, we can have 3 levels page tables from the remaining 22 bits

Q 2.1 (2) There are 4 parts in logical address. 8 bits for the first level page table, 8 bits for the second level page table, 6 bits for third level page table and 10 bits for offset.

Q 2.1 (b) (1) 2 level

Q 2.1 (b) (2) 64 bytes logical address space = $\log_2 64 = 6$ bits.

number of physical page frame = 8

$$\therefore \text{offset bit} = \log_2 8 = 3$$

$$(20)_{10} = (010100)_2$$

first level page table index is 0 so map to PFN 21

the second level page table index is 2 so map to

PFN 10

$$\text{offset} = (100)_2 = (4)_{10}$$

Therefore, physical address = Page Frame Number \times Page Size + Offset

$$= 10 \times 8 + 4$$

$$= 84$$