Assignment - Main Memory

- 8.20 Assuming a 1-KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):
 - a. 3085
 - c. 215201 d. 650000
 - e. 2000001
- Ans The given page size is capual to 1 KB.

 1 KB = 1024 bytes = 2'0 bytes

Nothing is given therefore it means that the

No. of lists reserved for the page offset is 10.

This means a total of 10 LBS will be used to refer to the page offset. Now,

(a) 3085

In binary, 3085 = 11.000000 1101

The LSB 10 bits are the page offset and the rest

2 bits are the page number. In decimal, the page
number is 3 and the page offset is 13.

(6) 42095

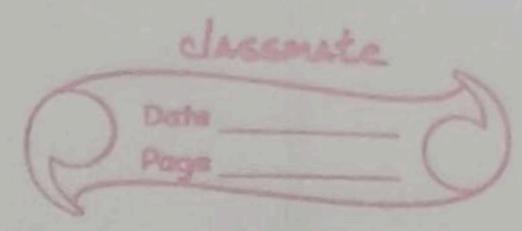
In binary, 42095 = 1010010001101111

The LSB 10 bits are the page offset and the next

6 bits are regular page numbers. In decimel, the

page number is 41 and the page offset is 111.

(c) 215201 In binacy, 215201 = 110160100010100001



The LSB 10 bits are the page and the rest 8 bits are the page number. In decimal, the page number is 207 and the page offset is 161.

In binavey, 650000 = 10011110101100010000 The LSB 10 loits and the page offset and the nest lo bits ave the page number. In decimal, the page number is 634 and the page offset is 784.

(e) 2000001

In binacy, 2000001 = 111101000010010000001 The hSB 10 bits are the page offset and the rest 11 bits ave the page number. In decimal, the page number is 1953 and the page offset is 129.

8.23 Consider a logical address space of 256 pages with a 4-KB page size, mapped onto a physical memory of 64 feames.

And hogical address size = 2m ("imz no of logical address) Logical address size = No. of pages X page size = 256 X 4 KB [-: 1 KB = 1024 Sytes]

2 256 X 4096 = 1048576 = 220

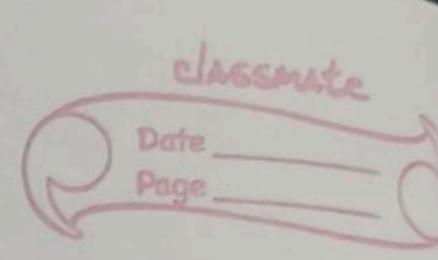
in = 20 bit And

by How many bits are required in the physical address?

My het x be the no of physical addresses.

Physical address size = 2"

= No of fearnes X fearne size = 64 X 4 4 KB = 64 X 4096 = 26 X 212 = 218



i. No. of ocequired bits in the physical address is Xoic 18 loits Are 8.24 Consider a computer system with a 32-bit logical address and 4-KB page size. The system supposets up to 512 MB of physical memory How many entreies are there in each of the following? A conventional single-level page table: No of pages = No of single enteres = ? Size of logical address space 2 2 m2 Norof pages X page size => 2³² = No. of pages × 2¹²

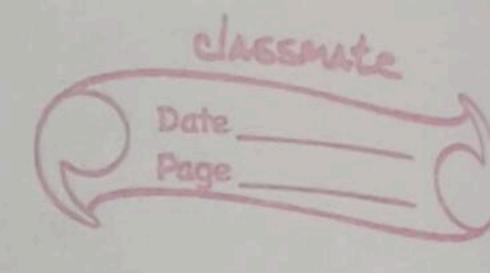
=> No. of pages = 2³² = 2²⁰ pages Arry
2¹² = 2¹² pages Arry 8.25 Consider a paging system with the page table stered in memory. (a) If a memory deference takes 50 nanoseconds, how Ans Here, we have two memorey addresses > total 100 nanoseconds required. 50 nanoseconds to access the page table & 50 nanose conds to access the world in memory 50 x 2 2 100 nanose conds.

(b) If we add TIBS, and 75 percent of all page itable deferences are found in the TIBS, what
is the effective memory reference time? (Assume
that finding a page - table entry in the TIBS
takes 2 nanoseconds, if the entry is present).

Effective Access Time - PX hit memory time + (1- P) x miss memory time If we fail to find the page number in the TLB, then we must first access memory for the page table and frame number (100 nanoseconds). Hit happens 75% of the time and a miss happens 25% of the time, then the .° Effective Access Time = 75% × hit memory time +25% X TLB miss time z 0.75 X (50 ns + 2 ns) + 0.25 x (100 ns + 21s) 2 64.5 ms. pms 8.28. Consider the following segment table: Segment Base hength 600 219 2300 90 100 580 1327 96 1952 hhat are the physical addresses for the following logical addresses?
(a) 9,430
(b) 1,10
(c) 2,500 (C) 4, 112 3,400 ms(a) 0,430

2 649

=> 219 + 430



	C Page
(b)	1, 10 MARY - MATERIAL TO THE PARTY OF THE PA
	2300+10 = 2310
	2500 + 10 2 2510
(6)	
	710. 500
	Illegal address since size of segment 2 is 200 and the effect in logical address is 500,
	Loo and the offset of regions to
	3.400
(0)	
	10277900
e-	Tural alabore since size et segment 4 is 96
	Thegal address since size of segment 4 is 96 and the offset in logical address is 112.
	and the effect an agree doctores
	The telephone was a company of the second se
	TONOM ROS
	1894
	Belle