	offset:				25 byte/b	
	There a	$re^{\frac{256}{32}} = 8$	3 blocks	, index:	7-5	13 m 2 m
	Then,	tag: 31-	8			1 14
(b)	Address	Tag	Index	Offset	Hit/Miss	Replaced
	0×00	0x 000000	000	00000	M	<u> </u>
	0×04	0×000000	000	00100	Н	, V
	0×10	0x000000	000	[0000	Н -	31-, 31-
	0×84	0x 000000	[00	00100	M	
	0×E8	0x000000	111	01000	M	January A. Amid
	0 × A0	Ox 000000	101	00000	Μ	
	0×400	0×000004	000	00000	Μ	0×00-0×1F
	O _X IE	0×000000	000	11110	Μ	0×400-0×41F
	0×8C	0× 000000	100	01100	Н	
	0×CIC	0x 00000C	000	11100	M	0x00-0x1F
	0×84	0x000000	101	10100	Н	1.01. 8
	0×884	0×000008	100	00100	Μ	0×80-0×9F
(d)	< 0, 0x0	, Mem[0×Co	o] – Mem[OxCIF] >	\ (c) H;+	Ratio is $\frac{4}{12} = 33.3$
		. Mem[o×88			1 27 11.0 1	12 33.5
		, Mem[0x]				
		, Membeo]				

	1 1 1			1 1	Date .
(a) Address is	s word addr	ress, block	k is 2- u	vord block	. offset: 0-0
	× 2 word blo				
There are	$2\frac{48}{8} = 8 = 2$	³ sets.		834.65	401 40
index: 43	-1 , tag: 31	1-4		-10-8-3	17 (X)
b) Total size					
Word Address	Tag	Index	Offset	Hit/	Miss
0×03	00000			M	
0×b4	10110	10	0	M.	to as
0x 2b	00101			M	5325
0×02	00000	. 01	0	HA H	- x*-
0×be	10111	/// 11	0	M	Zast
0×58	01011	00	0	M	faxs
0×bf	10111	1211	1	o H	N 500
0×0e	00001	-01	0	M	35×3
0×1f	00011	-11	1	M	
0×65	10110	10		н	180 mm
0×bf	10111	11	1 1/2	⇒ H	
		01	10.11	M	NA M
0×ba	10111		0	M	- 10 m
0x2e	00 01			- M	
0×0e	110 01				
Final Cache:	•		Way	+00	Nata
	tog data	tag		tag	IA.
Set o	11 M[\$8-59]		NA		[ba-bb]
Set 1	0 M[02-03]		M[2a-2b]	25 M	
Set 2	>2 M[b4-b5]		MA	25 ME	
Set 3	23 M[be-bf]	5 N	[2e-2f]	25 /11	W-01J

Date

	Tag Index		SS	
0×03 0×	03 No In		13.30	170
0xb4 0x	Ь4	M	5: 5 500	11 . 1
Ox2b Ox	2b	* M &	511 . tas:	4 (4 (4)
0×02 0×	02:	M	120 V 150 E	2 1 2 3 2
0×be 0×	be	y do at M	N- 2	Love Addic
0×58 0×	58	M	13533	£ J
	ьf	M .	1 0	72. 10
0×0e 0×	De	M	(0) 00	de
0×1f 0×	ıf	M	2.65.55	CONDS
	b5	M	11.91	Mail
	Ьf	:5 H	1,000	77
	Ьа	M	15.191	* U.K.C
	2e	M	13000	9353
		M	1,00	Alas
		5.1	3.1 vol	2d×0
Final Cache:	1.1-	11		*******
ta	100			
wayo Ox-	58 M[58]	1	1 1	7.020
way1 0x0	e MIOE	- (10/50	1/2
wayz 0x	of MIIF]	10011	5.80
Way 3 Oxl]	24.8	The same of the
way4 0x		(sot	and the	
ways 0x			180 KWM 1	\$ 555
way6 0×			Con and a	1.0
/			port 186 18	4 38
way 7 Ox	I MILOS			

			No.	
			Date	
3. (a) 2GHz ⇒ 1 cycle 0.5 ns.	- 2	4	my kit	18.15
Access main memory needs	100.00	= 200 c	vcles.	
$CPI = 1.5 + 7\% \times 200 = 15.5$	_0.3 MS/c/CH	2	· Section of	
	00 - 0 2/4	·	See E	
(b) $CPI = 1.5 + 7\% \times 12 + 3.5\% \times 28$			· KDA	4
(c) $CPI = 1.5 + 7\% \times 10 + 1.5\% \times 200$			0770	:4%
(d) $CPI = 1.5 + 7\% \times (12 + 3.5\% \times 10^{-6})$	200) = 2.83			(v
W. HT.			-	
4. (a) $2^{p} > p + 128 + 1 \Rightarrow p = 8$			11.5	19)
Hence we need 9 bits	to prot	ect.	1 (0	1000
(b) D ₇ D ₆ D ₅ D ₄ P ₄ D ₃ D ₂	D, P3 Do	P. P.		
001101-1	101	01		
$G_4=P_1 \oplus D_0 \oplus D_1 \oplus D_3 \oplus D_4 \oplus D_6 = 1$		1 0.		
$G_2 = P_2 \oplus D_0 \oplus D_2 \oplus D_3 \oplus D_5 \oplus D_6 = 0$	1	ZÃI L		
$G_3 = P_3 \oplus D_1 \oplus D_2 \oplus D_3 \oplus D_7 = V$	or Tro	eat sea	well	1 416
93=13 D D D D D D = 0		,		0 100
$G_4 = P_4 \oplus D_4 \oplus D_5 \oplus D_6 \oplus D_7 = 0$ $G_4 G_3 G_2 G_1 = 0101 = 5, \text{ Hen}$	co He ti	hat is D	is inco	rrect
G& G3 G2 G1 = 0101=5, FIEVE	LE /IS V	100 10		3.5%
The correct one is 0×365 .				
	-41			
5. (a) Next Page	-5			OL. Y
J. J		1		307
	9)		5-210
		ř.		

						No.		
	1 1	,	1 1	1 .		Date		
(a) Address	Virtual Po	ige Num	TLB HM,	PT H/M	, PF		e 1412	0
4669	9 4114	War Bar	TLB miss,	PT hit	, PF		1,000	
2227	. 0	"In the l	TLB miss	, PT hit			3427	
13916	*\ 3	81 r	TLB hit,	PT hit	٤		13112	
3 <i>45</i> 87		King of	TLB miss,	PT hit,	PF		1000	
48870	b	Pin But	TLB miss,	PT hit	d.		57.80	
12608	3	3 1 B. N	TLB hit,	PT hit	3		8085	
49225	4 . 20 C		TLB miss,	PT miss	, PF		1205	
Final TLB	: Valid	Tag F	Physical Page	Num	Time S	ince L	ast Acc	es
	1	0×C	15		0	0		
		0×8	14	\	3	3		
						,		
4	1	0×3	- 6	1				
4.0	1	0×3 0×b	2. 12			2		
Einal Page	I I Table:	0×b	2. 12			•		
Final Page	I I Table:	0×b	Physical Page			•		
Final Page	Table:	0×b	12 Physical Page	or in l		•		
Final Page	Table:	0xb Valid	Physical Page	or in l 35		•		
Final Page	Table:	0×b	Physical Page	or in l 35 13 Disk		•		
Final Page	Table:	0xb Valid	Physical Page	or in l 35		•		
Final Page	Table:	0xb Valid	Physical Page	or in 1 35 13 Disk 6		•		
Final Page	Table:	Oxb Valid I O I I	Physical Page	or in 1 35 13 Disk 6 9		•		
Final Page	Table:	0xb Valid	Physical Page	or in 1 35 13 Disk 6 9 11		•		
Final Page	Table:	Oxb Valid I O I I	Physical Page	or in 1 35 13 Disk 6 9 11 isk		•		
Final Page	Table:	0xb Valid 0 0 0 1 0 1 1 1 1	Physical Page	or in 1 35 13 Disk 6 9 11 isk		•		
Final Page	Table:	Oxb Valid I O I I	Physical Page D L Di	or in 1 35 13 Disk 6 9 11 isk 4		•		
Final Page	Table:	0xb Valid 0 0 0 1 0 1 1 1 1	Physical Page D D Di	or in 1 35 13 Disk 6 9 11 isk		•		

te	1 1 1	1	1	1 1 1	DC	
(b) Address	Virtual Page	Index	Tag	TLB H/M, PT I	1/M, PF	- 1
4669	<u> </u>	74 3	0	TLB Miss, P	Thit, P	
2227	0	0	0	TLB miss, P		
13916	3	171 6	1.5	TLB miss, P		- 721
34587	8 .0	0 0	4	TLB miss, P	T hit, P	F . 13753
48870	Ь		5	TLB miss, P	T hit	35.13
12608	3	1 :	1-25	TLB hit, PT	hit	56/5
49225	C 29	0	6 - 1	TLB miss, P	T miss,	PF 7
Final TL	B: Index	Valid	Tag	Physical Page	Time Sin	ce Last Acc
	0		0×6	15		0
	0		0x4	14		3
	1		0×1	6	1	1
3			0x5	12		2
	date et	to the st	1 1 2 2	d very at	161.12	7.
		3.53			- 1,01	16.151
		13				
				1		
		2711		3		
		*1				
		100				
	,					
		Ja C				
		14				
		4:				