

EECS 370: Sample Exam 1 Solutions

Problem 1:

- a. TRUE
- b. TRUE
- c. FALSE
- d. FALSE
- e. FALSE
- f. FALSE

Problem 2:

7953 to 12048

Problem 3:

- a. 0x42100000
or 01000010 00010000 00000000 00000000
- b. 0xc1580000
or 11000001 01011000 00000000 00000000
- c. -13.5

Problem 4:

```
lui $at, 0x34A3
lw $at, 0x8143($at)
lw $t2, 0($at)
```

Problem 5:

- a. $C3 = G + P * C0$
 - b. $P = (A2+B2)*(A1+B1)*(A0+B0)$
 - c. $G = (A2*B2) + (A2+B2)*(A1*B1) + (A2+B2)*(A1+B1)*(A0*B0)$
- or:
- a. $C3 = G \mid P \& C0$
 - b. $P = (A2 \mid B2) \& (A1 \mid B1) \& (A0 \mid B0)$
 - c. $G = (A2 \& B2) \mid (A2 \mid B2) \& (A1 \& B1) \mid (A2 \mid B2) \& (A1 \mid B1) \& (A0 \& B0)$
- or any of the various commutative or associative rearrangements of either of the above

Problem 6:

1, 6, 8, 10, 13

Problem 7:

580 ns

Problem 8:

$Z = AB + AC + BC$

Problem 9:

```
0 0 0 0 : 0 0
0 0 0 1 : 1 0
0 0 1 0 : 0 1
0 0 1 1 : 1 0
0 1 0 0 : 0 1
0 1 0 1 : 0 1
0 1 1 0 : 1 1
```

```
0 1 1 1 : 0 1
1 0 0 0 : 1 0
1 0 0 1 : 0 0
1 0 1 0 : 1 1
1 0 1 1 : 0 0
1 1 0 0 : 1 1
1 1 0 1 : 0 0
1 1 1 0 : 1 1
1 1 1 1 : 0 0
(listed in any order)
```

Problem 10:

```
add   : 0 2 0 0 0 1 0 1
addi  : 0 1 0 0 0 1 0 1
sub   : 0 3 0 1 0 1 0 1
and   : 0 2 1 X 0 1 0 1
andiu : 0 0 1 X 0 1 0 1
lw    : 0 1 0 0 0 0 0 1
sw    : 0 1 0 0 1 X 0 0
bltz  : 1 1 0 0 0 X 1 0
```