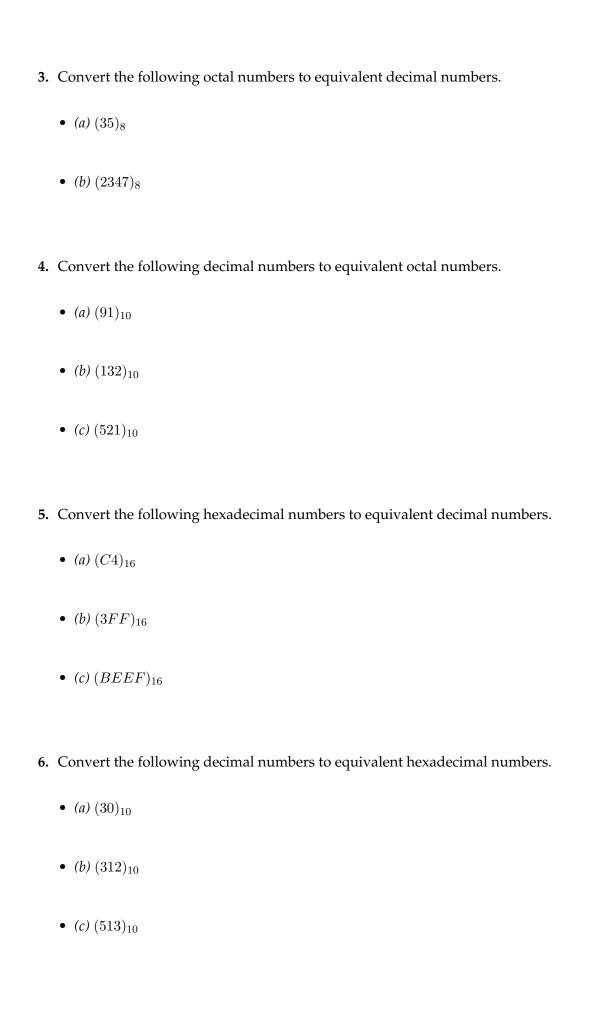
## CS150 - Computer Organization and Architecture Homework #1 - Spring 2023

**1.** Convert the following binary numbers to equivalent decimal numbers.

	• (a) (00001101) <sub>2</sub>
	• (b) (00010001) <sub>2</sub>
	• (c) (01101101) <sub>2</sub>
	• (d) (11011101) <sub>2</sub>
	• (e) (11111111) <sub>2</sub>
	• (f) (11100.011) <sub>2</sub>
2.	Convert the following decimal numbers to equivalent binary numbers.
	• (a) (67) <sub>10</sub>
	• $(b) (54)_{10}$
	• (c) (255) <sub>10</sub>
	• $(d) (256)_{10}$
	• (e) (2416) <sub>10</sub>
	• (f) (4096) <sub>10</sub>



- 7. Convert the following binary numbers to equivalent octal numbers.
  - (a)  $(11101)_2$
  - *(b)* (11101101)<sub>2</sub>
  - (c) (10110101)<sub>2</sub>
- **8.** Convert the following binary numbers to equivalent hexadecimal numbers.
  - (a)  $(101010)_2$
  - (b) (111100110)<sub>2</sub>
  - (c) (11010101)<sub>2</sub>
- **9.** Miscellaneous Perform the following base conversions.
  - (a)  $(341)_5 = (?)_{10}$
  - (b)  $(76)_{10} = (?)_7$
  - (c)  $(1101001)_2 = (?)_4$
  - (d)  $(BFE)_{16} = (?)_{12}$
  - (e)  $(2112)_3 = (?)_8$
  - (f)  $(7AD)_{16} = (?)_{10}$
  - $(g) (6101)_7 = (?)_{10}$

**10.** Perform the following **binary** arithmetic.

a. 01010111

+ 00110011

b. 00100110

+ 01001111

c. 01010011

+ 10111011

d. 01011100

+ 00011111

e. 10011011

- 00111011

f. 01011001

- 00011111

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**11.** Perform the following **octal** arithmetic.

a. 424

+ 163

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b. 5112

+ 1346

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**12.** Perform the following **hexadecimal** arithmetic.

a. A4

+ 27

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b. 7F3

+ 41D

c. 806

- 4B

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d. 56C

- 2FF

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