

King Fahd University of Petroleum & Minerals

College of Computer Sciences and Engineering

Department of Computer Engineering

COE 202: Fundamentals of Computer Engineering (071)

Assignment 1

(Note: All references to the text book are made to Morris Mano and Charles Kime, "Logic and Computer Design Fundamentals", Prentice-Hall, Second Edition, 2000.)

1. List the binary, octal, and hexadecimal numbers from 16 to 31.
2. What is the exact number of bits in a memory that contains (a) 48K bits; (h) 384M bits; (c) 8G bits?
3. What is the decimal equivalent of the largest binary integer that can be obtained with (a) 12 bits and (b) 24 bits?
- 4 Each of the following five numbers has a different base: $(11100111)_2$, $(22120)_3$, $(3113)_4$, $(4110)_5$, and $(343)_8$. Which of the five numbers have the same value in decimal?
5. Convert the following numbers from the given base to the other three bases listed in the table:

<u>Decimal</u>	<u>Binary</u>	<u>Octal</u>	<u>Hexadecimal</u>
369.3125	?	?	?
?	10111101.10!	?	?
?	?	326.5	?
?	?	?	F3C7.A

6. Convert the following decimal number to the indicated base using methods shown in the text book in examples 1-3 on page 16 and 1-6 on page 17: 1938.257 to hexadecimal
7. Perform the following binary multiplications: 1101×1001
8. In the following case, determine the radix r : $(BEE)_r = (2699)_{10}$
9. Represent the decimal numbers 694 and 835 in BCD, and then show the steps necessary to form their sum.
10. Find the binary representation for the following BCD number:

0011 0111 1000.0111 0101

11. What bit position in an ASCII code must be complemented to change the ASCII letter represented from uppercase to lowercase and vice versa?

12. Decode the following ASCII code: 1001010 1101111 1101000 1101110 0100000
1000100 1101111 1100101.