Hand in questions 2, 6 and 7 from this file & Problems 4, 6, 8, 10 from reference book chapter 2.

1 - Convert the following decimal numbers to the indicated bases:

(A) 7562.45 to octal.

(B) 1938.257 to hexadecimal.

(C) 175.175 to binary.

2 - Add and multiply the following numbers without converting to decimal.

(A) (367)₈ and (715)₈

(B) (15F)₁₆ and (A7)₁₆

(C) (110110)₂ and (1011011)₂

3 - Encode “LOGIC” character strings in ASCII code. Represent the encoded strings by hexadecimal numbers and apply odd parity to the whole ASCII code. Put the parity in the left side of the code.

4 – Perform the following conversions:

(A) (8670)₈ = (?)₅₆₅

(B) (0101 1000 1001)₅₆₅ = (?)₁₆

5 - Define a 4-bit code for representing the decimal digits that has the property that the code words for any two digits whose difference is 1 differ in only one bit position and that this property also holds for the digits 0 and 9.

6 – Determine the base or bases which the following operations are performed:
(A) $15 \times 31 = 545$
(B) $302 / 20 = 12.1$

7 – Perform the following conversions without changing the base to decimal:
(A) $(1010.01101)_2 = (?)_8 = (?)_{16}$
(B) $(AF06.9F)_{16} = (?)_2 = (?)_8$

8 – Assume $A = +85$ and $B = +133$ are decimal numbers. First convert the numbers into 2’s complement format then calculate $A+B$, $A-B$, $-A-B$ and $B-A$. Is overflow occurred? Convert results to decimal and check whether they are correct or not.

9 – Suppose $A = 11101010$ and $B = 00101111$ are signed numbers. Calculate $A+B$, $A-B$, $-A-B$ and $B-A$ by assuming that $A$ and $B$ are:
(A) Sign-magnitude numbers
(B) 1’s complement numbers
(C) 2’s complement numbers