CIS-350 – INFRASTRUCTURE TECHNOLOGIES

SMALL GROUP ACTIVITY #1

Topics: Number systems and conversion between number bases

Names of group members: _____

_____

Logistics

1. Get in touch with your group of 3 or 4 students. (See Groups folder on Blackboard.)
2. Discuss and work **all** of the 7 problems collectively with your group via E-mail, Discussion Forum, Blackboard Collaborate Ultra, and/or MS Teams. (Do not divide the work among group members.)
3. Choose a recorder to prepare the final copy (one per group) and submit it via the Blackboard Assignments/Small Group Activities folder.
4. Be sure all group members' names are on final copy. Do **not** add names of your group members who did not participate in the assignment or whose contribution was minimal.

Work the following problems for unsigned numbers. Show all steps of your solution in the blank space below each problem.

Convert numbers from one base to another:

Problem 1: $(754)_8$ = (111101100)$_2$ = (1EC)$_{16}$

Octal to binary: 7 5 4
111 101 100
Binary to hex: 0001|1110|1100
1 E C

Problem 2: $(102)_{10}$ = (146)$_8$

Decimal to octal: 102:8 = 12 6
12:8 = 1 4
1:8 = 0 1

Problem 3: $(BC)_{16}$ = (188)$_{10}$

B C
$11*16^1$ + $12*16^0$ = 188

Problem 4: $(10100011)_2$ = (163)$_{10}$

$1*2^7 + 0*2^6 + 1*2^5 + 0*2^4 + 0*2^3 + 0*2^2 + 1*2^1 + 1*2^0 = 163$

Problem 5: $(456)_8$ = (302)$_{10}$

4*8^2 + 5*8^1 + 6*8^0 = 302

Problem 6: $(AC.EF)_{16} = (10101100.11101111)_2 = (\ 254\ .\ 736\ )_8$

Hex to binary: A C . E F
1010 1100 1110 1111

Binary to octal: 010|101|100.111|011|110
2 5 4 . 7 3 6

Problem 7: $(75.46)_8 = (\ 111101\ .\ 100110\ )_2 = (\ 3D.\ 98\ )_{16}$

Octal to binary: 7 5 . 4 6
111 101 100 110
Binary to hex: 0011|1101.1001|1000
3 D 9 8