Assignment 1 Math for Computer Science – 201-H01-HR

Due: Thursday, January 28 at 1pm

Instructions: Submit complete solutions to the following problems on a piece of paper. Be sure to include your name and student number.

Total Marks: 17

Problems:

1. [3 marks] Give the face value and place value of each nibble in the number A2.F316. Express this number in expanded form.

|  |  |
| --- | --- |
| Face value | Place value |
| A  2  F  3  1  6 | 161  160  16-1  16-2  16-3  16-4 |

A (161) + 2 (160) + F (16-1) + 3 (16-2) + 1 (16-3) + 6 (16-4)

2. [4 marks] Convert each of the following numbers to decimal.

(a) 10110102

1 (26) + 0 (25) + 1 (24) + 1 (23) + 0 (22) + 1 (21) + 0 (20)

64     + 0        + 16     + 8       + 0        + 2       + 0

= 9010

(b) 56.38

5 (81) + 6 (80) + 3 (8-1)

40     + 6       + .375

= 46.37510

3. [10 marks] Convert each of the following decimal numbers to the requested base.

(a) Convert 489 to octal.

489 = 61 (8) + 1

61 = 7 (8) + 3

7 = 0 (8) + 7

= 7318

(b) Convert 36725 to hexadecimal.

36725 = 2295 (16) + 5

2295 = 143 (16) + 7

143 = 8 (16) + 15

8 = 0 (16) + 8

= 8F7516

(c) Convert 23.7 to binary.

23 = 11 (2) + 1

11 = 5 (2) + 1

5 = 2 (2) + 1

2 = 1 (2) + 0

1 = 0 (2) + 1

10111

2(.7) = 1.4

2(.4) = 0.8

2(.8) = 1.6

2(.6) = 1.2

2(.2) = 0.4

2(.4) = 0.8

101100

10111.101100