EE488C – Spring 2008 – Quiz 3 **Name:_____KEY_____**
Grade:_____

Make the following radix conversions as indicated. Show work where an algorithm would apply doing the problem by hand, show work, and feel free to use a calculator to confirm.

1. $(10111010)_2$ → base 5

$(10111010)_2 = (2+8+16+32+128)_{10} = 186_{10}$ -- then convert from base 10 to base 5
186/5 = 37 r 1,
37/5 = 7 r 2,
7/5 = 1 r 2,
1/5 = 0 r 1; therefore, $186_{10} = 1221_5$

2. $(2563)_7$ → base 2

$(2563)_7 = (2*7^3 + 5*7^2 + 6*7^1 + 3*7^0)_{10} = 976_{10}$ – then convert to base 2
976/2 = 488 r 0,
488/2 = 244 r 0,
244/2 = 122 r 0,
122/2 = 61 r 0,
61/2 = 30 r 1,
30/2 = 15 r 0,
15/2 = 7 r 1,
7/2 = 3 r 1,
3/2 = 1 r 1,
1/2 = 0 r 1, QED; therefore,
$976_{10} = 1111010000_2$

3. $(0.34)_{10}$ → base 2 and to HEX

.34 * 16 = 5.44 → 5
.44 * 16 = 7.04 → 7
.04 * 16 = 0.64 → 0
.64 * 16 = 10.24 → A
.24 * 16 = 3.84 → 3
.84 * 16 = 13.44 → D → since I'm back to .44, this indicates a repeating sequence will occur
= (0.570A3D *70A3D 70A3D* …..)$_{16}$
= (0.01010111000010100011110 1 *01110000101000111101 01110000101000111101* ..)$_2$

4. $(0.F00D)_{16}$ → base 10

$(0.F00D)_{16} = (F*16^{-1} + D*16^{-4})_{10} = (15*16^{-1} + 13*16^{-4})_{10} = 0.937698364258_{10}$