

COE 200, Term 042

Fundamentals of Computer Engineering

HW# 1

Suggested problems from the textbook: Ch.1 problems 1-5, 7-9, 11, 17, and 20

Q.1. Convert the following numbers from the given base to the bases indicated:

- (i) Decimal 225.225 to binary, octal, and hexadecimal.
- (ii) Binary 11010111.110 to decimal, octal, and hexadecimal.
- (iii) Octal 623.77 to decimal, binary and hexadecimal.
- (iv) Hexadecimal 2AC5.D to decimal, octal and binary.
- (v) Hexadecimal EF.C to base 5.
- (vi) Binary 1010101111.01101 to base 3.
- (vii) Decimal 1223 to base 7.

Q.2. Perform the following arithmetic operations using the designated bases without converting to decimal. Verify your result by converting the numbers to decimal and then performing the operation in decimal:

- (i) $(10111011)_2 + (01001111)_2$
- (ii) $(10111011)_2 - (01001111)_2$
- (iii) $(1101)_2 * (1011)_2$
- (iv) $(10E)_{16} + (13F)_{16}$
- (v) $(52E9)_{16} - (133F)_{16}$
- (vi) $(1E)_{16} * (11)_{16}$
- (vii) $(54)_{16} * (20)_{16}$
- (viii) $(11011.0111)_2 + (11.1101)_2$
- (ix) $(27.61)_{16} + (25.9F)_{16}$

Q.3. In each of the following cases, determine the radix r:

- (i) $(121)_r = (25)_{10}$
- (ii) $(345)_r = (180)_{10}$