1. Add the following: $(364)_8$ and $(646)_8$ in octal system without converting to decimal.
2. Multiply $(650)_8$ and $(210)_8$ without converting to decimal.
3. Determine the base of the number assuming the operation is correct $54 / 4 = 13$
4. Convert the following binary number to Grey Code. $(110100101)_2$
5. Solution of quadratic equation $x2 - 11x + 22 = 0$ is $x = 3$ and $x = 6$. Find the base of numbers.
6. Represent decimal 215 in (a) binary; (b) octal; (c) hexadecimal; (d) binary-coded decimal (BCD).
7. Perform subtraction using 2's complement and then using 1's complement. $110100 - 10101$
8. Represent -25 stored in a 8 bit register, using sign magnitude, 2's complement and 1's complement.
9. What is the largest binary number that can be expressed with 12 bits? What is the equivalent decimal and hexadecimal?
10. Perform following arithmetic using 10's complement
    a. $(-9826) + (+801)$
    b. $(+9826) + (-801)$
11. Convert decimal 9126 to both BCD and ASCII codes. For ASCII, an odd parity bit is to be appended at the left.
12. Represent decimal number 6027 in BCD, excess-3 and 2421 code.
13. Assign a binary code in some orderly manner to the 52 playing cards. Use the minimum number of bits.
14. Write the expression "Abdullah" In ASCII using an eight-bit code. Include the period at the end.
15. What bit must be complemented to change an ASCII letter from capital to lowercase, and vice versa?
16. The state of a 12 bit register is 100010010111. What is its content if it represents
    a. Three decimal digits in BCD?
    b. Three decimal digits in the excess-3 code?
    c. Three decimal digits in the 84-2-1 code?
    d. A binary number?
17. Floating point numbers are represented in computer systems as 32 bit binary numbers as discussed in class. Convert the following Floating Point Decimal numbers. Give your final answer in Hex-Decimal Notation. Show complete working
    a. 13.4
    b. -14.7
    c. 31.9
18. Given the following Boolean functions; (perform given operations with each function separately using not, and, or, xor, nand, nor, & xnor gates as discussed in class).
    a. $F(x, y) = [(x + y)(x + y')]'$
    b. $F(A, B, C) = [A'C' + ABC + AC']'$
    c. $F(w, x, y, z) = (x'y' + z)' + z + xy + wz$
    d. $F(x, y, z) = (xy + z)$ **xor** $(y + xz)$
    e. $F(A, B, C, D) = (AB + C)$ **xnor** $(B + C'D)$

    - Obtain the truth table of each function
    - Draw the logic diagram using symbolic gates as discussed in class
    - Dry run the circuit by applying sample values from the truth table

Note: This assignment should be handwritten on A4 pages, with a printed cover page stating students' names and Roll Numbers, etc.