1. Convert the following decimal numbers to binary: 26.125, 49.875

2. Convert the following binary numbers to decimal 110111 , 1000010.101

3. Convert the decimal number 266 to binary, octal(radix 8), hexadecimal and binary coded decimal (BCD).

4. Draw a truth table (use your notes to find the equation) for a logic system which takes as its input a three bit binary number (b_2,b_1,b_0) and produces a three bit Gray code (g_2,g_1,g_0). Use the truth table to find an expression for each of the output bits and show how this can be minimised to a form suitable for implementation using exclusive OR gates.

5. Write your name in ASCII code. (You will have to find a listing of the ASCII code)

6. Convert the following decimal numbers to pure binary numbers, and add them together using 8 bit binary arithmetic.
   (a) 5 + 11 (b) 23 + 39 (c) 37 + 29

7. Derive the truth table for a full adder. Find expressions for the complement of the sum and carry in standard sum-of-products form. Use De Morgans theorem to obtain the expressions for sum and carry in standard product-of-sums form. Check this by extracting the maxterms directly from the truth table.

8. Evaluate the binary subtraction 01100101 – 01001100. Check your answer by performing the calculation using hexadecimal.

9. What are the clock periods of the following signals: (a) 20Mhz (b) 1GHz.

10. Explain what is meant by direct preset and clear on a flip-flop.

11. Show how the sum and carry output of a full adder could be implemented using 4-to-1 multiplexers and inverters.

12. Complete the timing diagram for a positive edge triggered D-Type flip-flop: