Assignment 1

CSE260: Digital Logic Design
Department of Computer Science and Engineering

Semester : Fall 25   **Marks: 5**

Graded (5 marks - 1 mark each)

1. Convert the decimal number $(72945)_{10}$ to its binary, BCD and Excess-5 representation. Prove that binary, BCD and Excess-5 expressions are not equivalent.

2. Convert the hexadecimal number $(2F8.BE)_{16}$ to its base 6 equivalent.

3. Signed Numbers:
   a. Subtract -15 from 23 using 6-bit 2's and 1's complement. Indicate if overflow occurs.
   b. Add -89 and 74 using 12-bit 2's and 1's complement. Determine if there's an overflow.

4. Perform $(56214306)_7 / (620)_7$; Find the quotient and remainder. You cannot convert it to decimal

5. You are planning a party and need to buy the following items:
   A cake costs $(1101)_2$ dollars.
   A pack of balloons costs $(24)_8$ dollars.
   2 set of decorations costs $(1A)_{16}$ dollars.
   You also need to buy 5 packs of snacks, each costing $(101)_2$ dollars.
   You have $(100011)_2$ dollars in your wallet. How much more money do you need to buy all the items? Show the final result in decimal.

Ungraded (Submission not mandatory)

6. Perform multiplication of $(1324)_5$ and $(24)_5$ in base 5. Verify your result by converting to decimal.

7. A laptop costs $(10110101)_2$ dollars, a monitor costs $(B2)_{16}$ dollars, and a keyboard costs $(56)_8$ dollars. You have $(100100110)_2$ dollars. How much more money do you need?

8. Add 13 with 28 in 6 bits using 2's complement number system and justify whether there is an overflow or not.