Digital Logic Design

BSCS Fall 2022

Assignment # 1

Submission Deadline: **Tuesday, 20 June, 2023 (During Lecture)**

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. Represent decimal **215** in (a) binary; (b) octal; (c) hexadecimal;
4. Perform subtraction $(110100)_2 - (10101)_2$
5. What is the largest binary number that can be expressed with 12 bits? What is the equivalent decimal and hexadecimal?
6. Convert the following binary number to a hexadecimal number. *Without converting into decimal number* $(1100111)_2 = (\ ?\ )_{16}$
7. Convert the following octal number to a binary number. *Without converting into a decimal number.* $(746)_2 = (\ ?\ )_2$
8. Compute the results following operations.
   i. $(111)_2 + (1011)_2 = (\ ?\ )_2$
   ii. $(1100)_2 - (1011)_2 = (\ ?\ )_2$
   iii. $(7DE)_{16} - (4FF)_{16} = (\ ?\ )_{16}$
   iv. $(47)_8 + (74)_8 = (\ ?\ )_8$
9. Add and multiply the following numbers without converting them to decimals.
   a) Binary numbers **1011** and **101**.
   b) Hexadecimal numbers **2E** and **34**.
10. Express the following numbers in decimal:
    a) $(10110.0101)_2$
    b) $(16.5)_{16}$
    c) $(26.24)_8$
    d) $(DADA.B)_{16}$
    e) $(1010.1101)_2$

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