

# Digital Logic Design

## Midterm Assignment-1

### Submission Instructions:

- 1. Submit the assignment on or before 13<sup>th</sup> August 2020*
- 2. Before submitting please make sure the file is in Pdf format.*
- 3. Submit through Microsoft teams assignment section*

1. State rules of Boolean Algebra.
2. Number conversion:
  - a.  $(3287.513)_{10} = (??)_8$
  - b.  $(13.65625)_{10} = (??)_2$
  - c.  $(26153.7406)_8 = (??)_2$
  - d.  $(2C6B)_{16} = (??)_8$
3. Convert  $(A85)_{16}$  into its equivalent gray code.
4. Construct the XOR and XNOR gates by using basic gates.
5. Simplify the following Boolean expression:
  - a.  $(\overline{A}\overline{B}(C + BD) + \overline{A}\overline{B})C = \overline{B}C$
6. If  $F(x, y, z) = \Sigma(1, 3, 6, 7)$  then show that  $F(x, y, z) = \Pi(0, 2, 4, 5)$
7. Minimize the following Boolean expression using k-map.
  - a.  $\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}C\overline{D} + \overline{A}\overline{B}CD + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D + \overline{A}BC\overline{D} + \overline{A}BCD$
8. Design a 4-bit parallel adder using single bit full adder.