

28.02.2017

II Semester – C Section

Basic Electronics

First Assignment [Module -III]

1. Convert $(1101101)_2 = (\quad)_{10}$ and $(69)_{10} = (\quad)_2$
2. Convert $(1010111011110101)_2 = (\quad)_{16}$ and $(FA876)_{16} = (\quad)_2$
3. Factorise the following Boolean equations
$$Y_1 = A\bar{B} + AB, Y_2 = (B+CA)(C+\bar{A}B).$$
4. Realise half adder using NAND gates only.
5. Write a note on Full Adder.
6. Define following gates
 - a. AND
 - b. OR
 - c. NOT
 - d. XOR
 - e. XNOR
7. State and explain De Morgan's law, give suitable examples.
8. Why NAND Gate is called Universal Gate.
9. Realize r-Bit Binary Adder
10. Write the truth table for Full Adder also Write circuit diagram using basic gates.
11. Convert the following: i) $(172.625)_{10} = (\quad)_2$ ii) $(ABCD.72)_{16} = (\quad)_8$
12. Perform the following operations using 1's and 2's complement technique
 - i) $(56)_{10} - (79)_{10}$
 - ii) $(23)_{10} - (18)_{10}$
13. Explain the Full Adder circuit with Truth Table. Realize the circuit using basic gates.
Also write FA using two half adders.
14. Simplify and realize the following Boolean Expression using only NAND and NOR gates.
 - i) $Y_1 = (A+\bar{B})(B-C)(\bar{C}+\bar{B})$
 - ii) $Y_2 = AB + AC + BD + CD$
15. Simplify and realize the following Boolean Expression using Basic Gates.
$$Y = A(\overline{ABC} + \overline{A\bar{B}C})$$