School of Computing Science and Engineering

Course Name: Introduction to Digital Systems

Course Code: BEE01T1005

Unit 1 Question Bank

1. Which gates are called as the universal gates? What are its advantages?
2. Explain classification of Number system
3. Explain about Diminished Radix complement
4. What is meant by parity bit?
5. Define duality property.
6. Perform (-50)-(-10) in binary using the signed-2's complement
7. Determine the value of base x if$(211)_x=(152)_8$
8. Define binary logic?
9. Convert the following numbers
i)$(163.789)_{10}$ to Octal number ii)$(11001101.0101)_2$ to base-8 and base-4
iii)$(4567)_{10}$ to base2 iv) $(4D.56)_{16}$ to Binary
10. Do as directed:
a) $(2ED)_{16}=(\ )_8=(\ )_2$
b) $(250.5)_{10} = (\ )_8= (\ )_4$
c) $(38)_9=(\ )_5=(\ )_2$
d) $(516)_7 = (\ )_{10}= (\ )_{16}$
11. Represent the decimal number 3452 in i)BCD ii)Excess-3
12. State and Explain the DeMorgan's Theorem
13. Evaluate $(198)_{12}+(12121)_3=(\ )_8$
14. Define Associative Law and Distributive law?
15. Convert the following numbers
a) $(163.789)_{10}$ to Octal number AND Hexadecimal number
b) $(11001101.0101)_2$ to base-8 and base-4
16. Given the two binary numbers X = 1010101 and Y = 1001011, perform the subtraction X-Y using 2's complements.
17. Subtract (111001) from (101011) using 2's complement?
18. Evaluate (103)4 + (50)7 = ( )9
19. Realize 2 input X-NOR gate using NAND gates only
20. Realize 2 input X-OR gate using NOR gates only
21. Multiply these numbers in the given base without converting to decimal.
a) (135)6 and (43)6
b) (121)3 and (12121)3
22. Design the circuit by Using NAND gates F= ABC'+ A'B+ AB'C' + A'C'
23. Implement Boolean functions
a) F= (A +B') (CD+E) using only NAND gates.
b) F=A (B+CD) +BC' with only NOR gates.
c) F=x'y+xy' using only four NAND gates.

24. Prove that:

a) AB + B'C + AC = AB + B'C

b) (AB + C + D)(C' + D)(C' + D + E)=ABC'+D

c) (A + B)'(A' + B')'= 0

25. Using 10's complement perform $(4572)_{10}$-$(2102)_{10}$.

26. Multiply the $(267)_8$ and $(71)_8$ in the given base without converting to decimal.

27. Evaluate $(103)_4 + (50)_7 = (\ )_9$

28. Determine the value of base b if $(211)_b=(152)_8$

29. Demonstrate by means of truth table the validity of the distributive law of + over ·.

30. show that the NOR and NAND operators are not associative.