**EE6301- DIGITAL LOGIC CIRCUITS (R-2013) – II YEAR (EEE)**

**QUESTION BANK**

**UNIT- I NUMBER SYSTEMS & DIGITAL LOGIC FAMILIES**

**Two Marks:**

1. Define binary logic?
2. What are the basic digital logic gates?
3. What is a Logic gate?
4. Give the classification of logic families
5. Which gates are called as the universal gates? What are its advantages?
6. State the classifications of FET devices.
7. Mention the classification of saturated bipolar logic families.
8. Mention the important characteristics of digital IC’s?
9. Define Fan-out?
10. Define power dissipation?
11. What is propagation delay?
12. Define noise margin?
13. What is Operating temperature?
14. What is High Threshold Logic?
15. What are the types of TTL logic?
16. What is depletion mode operation MOS?
17. What is enhancement mode operation of MOS?
18. Mention the characteristics of MOS transistor?
19. Why totem pole outputs cannot be connected together
20. State advantages and disadvantages of TTL List the number systems.
21. What is the abbreviation of ASCII and EBCDIC code?
22. What are the different types of number complements?
23. Why complementing a number representation is needed?
24. How to represent a positive and negative sign in computers?
25. What is meant by weighted & non weighted codes?
26. What are error detecting codes?
27. Convert the (153.13)10 to octal.
28. Subtract 11001 from 01101 using 2’s complements
29. Define Noise margin.

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**16 Marks**

1. Explain the various Number Systems
2. Convert the 1101011010.1101010100 to hexadecimal.
3. Perform (11101100)2 – (00110010)2.
4. Explain the classification of Binary Codes
5. Perform the excess 3 addition of a) 8,6 b)1,2
6. Explain the gray & binary code and its applications
7. Encode binary word 1011 into seven bit even parity Hamming Code
8. List the characteristics of Digital logic families and explain,
9. Explain the operation of (TTL) Transistor- Transistor Logic.
10. Explain the operation & Characteristics of CMOS Technology.
11. Explain the characteristics of MOS family.

**UNIT II – COMBINATIONAL CIRCUITS**

**Two Marks:**

1. State De Morgan's theorem.
2. State the associative property of Boolean algebra.
3. Simplify the following using De Morgan's theorem [((AB)'C)'' D]'
4. What is a Karnaugh map?
5. Find the minterms & maxterms of the logical expression.
6. What are called don’t care conditions?
7. What are Logic gates?
8. What are the basic digital logic gates?
9. Which gates are called as the universal gates? Why?
10. What is meant by multilevel gates networks?
11. Implement AND gate and OR gate using NAND gate.
12. Draw 4 bit binary parallel adder.
13. Give the four elementary operations for addition and subtraction
14. Write an expression for borrow and difference in a full subtractor circuit.
15. What are the steps to convert POS to standard POS?
16. What are the limitations of K-Map
17. Define half and full adder with their truth tables
18. What do you mean by Propagation Delay?
19. Write a short note on Encoder.
20. What do you mean by comparator?

**16 Marks**

1. Determine the prime implicants of the function

F (W,X,Y,Z) = m (1,4,6,7,8,9,10,11,15)

1. Simplify the Boolean function using K-map

F(A,B,C,D,E) = (0,2,4,6,9,13,21,23,25,29,31)

1. Reduce the following function using K-map technique

f(A,B,C,D)= M (0,2,3,8,9,12,13,15)

1. Reduce the following function using k-map technique

f(A,B,C,D)= M(0,3,4,7,8,10,12,14)+d(2,6)

1. Reduce the following function using K-map technique

F(A,B,C,D,E)= M(0,4,5,6,7,8,12,15,21,26,27,30)+d(1,9,17,19,25,29).

1. Design a logic circuit to convert the BCD code to Excess – 3 codes
2. Explain the carry look ahead adder
3. Explain the BCD adder with examples
4. Design a logic circuit to convert the 8421 BCD to Excess-3 code.
5. Mention the difference between MUX and DEMUX.