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Question Bank

Course: S.Y. B. Tech in Instrumentation Engineering

Sem: IV

Subject Name: Digital Electronics

Subject Code: BTINC401

Unit-I

1. What are different types of number system explain any one?
2. Convert following number into Binary number.
   i) $(25)_{10}$ ii) $(14)_{10}$
3. Convert following number into Binary number.
   i) $(1101)_2$ ii) $(11101)_2$
4. Explain AND, OR and NOT operation with appropriate truth table.
5. Why NAND and NOR gates are called as universal gates?Explain with suitable example.
6. What are different types of codes? Explain Hamming code with suitable example.
7. Convert following binary number into Gray number
   i) 11110 ii)111101
8. State and prove Demorgan's theorem.
9. Using Boolean algebra laws minimize following equation and implement using AND/OR logic

   ABC+ABC+BC

Unit-II

1. Explain SOP and POS forms.
2. Explain two variable and three variable k-map techniques.
3. What are different types of k-maps? Explain five variable k-map technique.
4. Minimize using k-map and implement the function
   F(A,B,C) = ∑m (0,1,2,3,4,5)
5. Minimize using k-map and implement the function
   F(A,B,C,D) = ∑m (0,1,2,3,8,9,10,11,12,13)
6. Design Half- adder circuit using k-map.

7. Design Full- adder circuit using k-map.
8. Design Halfsubtractor circuit using k-map.
9. Design BCD to seven segment decoder using k-map.

Unit-III

1. Explain with neat block diagram multiplexer operation.
2. Explain in details De-Multiplexer operation.
3. Design one bit comparator circuit.
4. Design BCD to Excess-3 CodeConvertercircuit.
5. Design Binary to Gray CodeConvertercircuit.
6. Design Two bit comparator circuit.
7. Design 16:1 multiplexer using 8:1 multiplexer.

Unit-IV

1. Explain One bit memory cell.
2. What are different types of Flip-Flops. Explain D-type Flip-Flop
3. Explain clocked S-R Flip-Flop with neat diagram.
4. Explain Excitation table of Flip-Flops.
5. Explain different types of counters in details.
6. Explain asynchronous counter in details with example.
7. Explain synchronous counter in details with appropriate example.
8. Explain state table, state diagram & next state equation.

Unit-V

1. What are different types of Analog to Digital converters, explain any one.
2. What are different types of Digitalto Analogconvertersexplain any one.
3. CompareROM and RAM.
4. Write short note on PLA.
5. Explain in details FPGA.
6. Explain dual slop analog to digital converter.
7. Explain R/2R ladder D to A converter.