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EXPLORE TO INVENT

CMR INSTITUTE OF TECHNOLOGY
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II – B.Tech. I – Semester

Digital Logic Design & Computer Organization
Department of CSE/CSM/CSD/AI&ML/CSC (22ES32)

ANSWER ALL THE QUESTIONS

Set-I (14 students)

1. Differentiate between Analog and Digital system. What are the advantages of a digital system?
2. Why don't care conditions are used? Simplify F(w, x, y, z) = ∑(1, 3, 7, 11, 15) which has the don't care conditions d(w, x, y, z) = ∑(0, 2, 5).
3. Differentiate between combinational logic and sequential logic. List some applications of sequential logic.
4. Describe BCD to excess-3 Code Conversion with truth table and logic diagram.
5. Explain about functional units of basic computer.

Set-II (14 students)

1. Convert the following decimal numbers to the indicated bases.
   a. 7562.45 to octal
   b. 1938.257 to hexadecimal
   c. 175.175 to binary
2. State and prove De-Morgan's theorem 1st and 2nd with logic gates and truth table .
3. What do you mean by full adder and full subtractor? Design a full adder using XOR gate.
4. Differentiate between a MUX and a DEMUX. Draw a logic circuit of 8*1 multiplexer.
5. Discuss about Instruction Codes.

Set-III (14 students)

1. State and prove commutative laws, associative laws and distributive law with truth table.
2. Explain about floating –point representation with an example.
3. What do you mean by decoder? Design a 3 to 8 line decoder and explain it.
4. How does a J-K flip flop differs from an S-R flip flop in its basic operations? Explain.
5. Explain about Basic Computer Register.

Set-IV (14 students)

1. What is a logic gate? What are the types of basic gates with truth table, logic circuit diagram?
2. What do you mean by the Gray code? What are its application?
3. What do you mean by shift registers? Mention the difference types of shift register.
4. Differentiate between Synchronous Sequential circuit and Asynchronous Sequential Circuit.
5. What is Instruction Cycle? Briefly explain with state diagram.

Set-V (14 students)

1. How to implement NOT, AND, and OR gate using NAND and NOR gates.
2. Find Out SOP for the following:
   A. F(A,B,C)=AB+BC '
   B. F(A,B,C,D)=A+B′CD′
3. Demonstrate the design steps of synchronous counters with suitable examples?
4. Explain about S-R Latch with a neat diagram using nand and nor gates.
5. What are the different types of Instruction Codes?