MAY 2011 **P/ID 17454/RCD/PCAG**

Time : Three hours Maximum : 75 marks

PART A — (5 × 5 = 25 marks)

Answer ALL questions.

All questions carry equal marks.

1. (a) What is a number system? List the advantages of binary number system. With an example discuss how a decimal number can be converted into octal number.

Or

(b) What is Boolean Algebra? Discuss the basic properties of Boolean Algebra.

2. (a) What is a combinational circuit? Implement a half adder using AND and OR gates.

Or

(b) What is a multiplexer? With a circuit diagram discuss its function.

3. (a) What is an excitation table? Develop the excitation table of a JK flip-flop.

Or

(b) What is a state equation? Discuss with an example.

4. (a) What is a scratch pad memory? Discuss.

Or

(b) Write a short note on microprogramming.

5. (a) What is an instruction set? Discuss.

Or

(b) What is an instruction? Write a short note on the execution of an instruction.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

All questions carry equal marks.

6. Write a short note on Integrated circuits.

7. Using tabulation method simplify

$$f(a,b,c,d) = \sum_{m}(0,2,4,7,9,11,15) + \sum_{d}(3,8,12)$$

Verify the results using karnaugh map.

8. What is a decoder? Design a 3 to 8 line decoder and implement it using AND and OR gates.

9. Discuss the working of a Bidirectional shift register with parallel load.

10. Design a binary up-down counter and discuss its function.

11. Write a short note on the design of arithmetic circuit.

12. Draw the detailed block diagram for computer and discuss.

13. Discuss on the following:

    (a) PLA control.

    (b) H/W control.

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