9200/A13 **OCTOBER 2010**

DIGITAL PRINCIPLES AND APPLICATIONS

Time : Three hours Maximum : 100 marks

PART A — (6 × 5 = 30 marks)

Answer any SIX questions.

1. Write down the steps to convert octal number to binary number with example.

2. What are weighted codes?

3. Subtract 39 from 54 using 9's complement.

4. Simplify the expression using *K*-map

   $F = A'B'C + A'BC + AB'C + ABC$.

5. Construct the logic diagram for the Boolean expression $F = xy + y'z$.

6. What is half subtractor?

7. Explain ring counter with neat diagram.

8. What is triggering?

9. Differentiate encoder and decoder.

10. What is PROM?

PART B — (4 × 10 = 40 marks)

Answer any FOUR questions.

11. What are the steps involved to obtain POS?

12. Explain excess – 3 code.

13. Draw the pinout diagram for 743180. Explain.

14. Explain parallel binary adder.

15. Explain octets with suitable example.

16. Explain JK flip flop.

PART C — (2 × 15 = 30 marks)

Answer any TWO questions.

17. (a) Explain the block diagram of computer with neat diagram.

(b) Simplify the following Boolean function using K-map

$F(w, x, y, z) = \sum(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$

18. (a) Explain 10's complement subtraction with suitable example.

(b) Write short notes on PROM.

19. (a) Explain serial in parallel out shift register.

(b) Design mod – 10 counter.

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