Reg. No. | | | | | | | | | | | | |

Question Paper Code : 27156

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Second Semester

Computer Science and Engineering

CS 6201 – DIGITAL PRINCIPLES AND SYSTEM DESIGN

(Common to Information Technology)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Convert $(126)_{10}$ to octal number and binary number.
2. Write short notes on weighted binary codes.
3. Discuss NOR operation with a truth table.
4. Draw the truth table of half adder.
5. Write short notes on propagation delay.
6. Draw the diagram of T flip flop and discuss its working.
7. What is a shift register?
8. What is a race condition?
9. What is memory address register?
10. Write short notes on PLA.

PART B — (5 × 16 = 80 marks)

11. (a) Simplify the following switching functions using Karnaugh map method and realize expression using gates $F(A,B,C,D) = \Sigma(0,3,5,7,8,9,10,12,15)$. (16)

Or

(b) Simplify the following switching functions using Quine McCluskey's tabulation method and realize expression using gates $F(A,B,C,D) = \Sigma(0,5,7,8,9,10,11,14,15)$. (16)

12. (a) Design a full subtractor and derive expression for difference and borrow. Realize using gates. (16)

Or

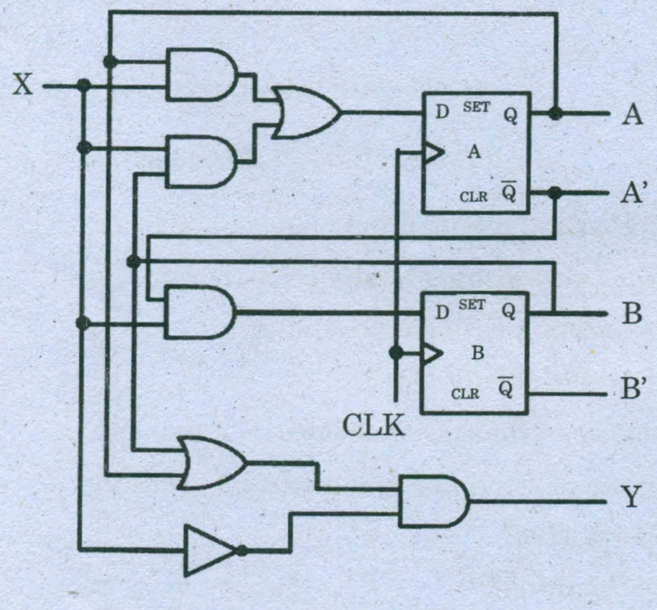
(b) Design a code converter that converts a 8421 to BCD code. (16)

13. (a) Design a sequence detector that detects a sequence of three or more consecutive 1 's in a string of bits coming through an input line and produces an output whenever this sequence is detected. (16)

Or

(b) Design a three bit synchronous counter with T flip flop and draw the diagram. (16)

14. (a) Analyze the following clocked sequential circuit and obtain the state equations and state diagram. (16)



Or

(b) Design a serial adder using a full adder and a flip flop. (16)

15. (a) Implement the following function using PAL F1 (A, B, C) = $\Sigma(1,2,4,6)$; F2 (A, B, C) = $\Sigma(0,1,6,7)$; F3 (A, B, C) = $\Sigma(1,2,3,5,7)$. (16)

Or

(b) Design a combinational circuit using ROM that accepts a three bit binary number and outputs a binary number equal to the square of the input number. (16)
