Question Paper Code: 50380

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Second Semester
Computer Science and Engineering
CS6201 – 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. What is meant by self-complementing code?
2. What are the limitations of K-Map?
3. What are binary decoders?
4. Write the truth table of full subtractor.
5. How synchronous counters differ from asynchronous counters?
6. What is edge-triggered flip-flop?
7. Define Merger graph.
8. What is critical and non-critical race?
9. What is memory decoding?
10. What is programmable logic array? How it differs from ROM?

PART – B
(5×16=80 Marks)

11. a) Simplify the following expressions and implement them with two-level NAND gate circuits:
   i) \( AB' + ABD + ABD' + A'C'D' + A'BC' \)
   ii) \( BD + BCD' + AB'CD' \)
   (OR)
b) Simplify the following expressions in (1) sum of the products and (2) products of sums:
   i) \( x'z' + y'z' + yz' + xy \)
   ii) \( AC' + B'D + A'CD + ABCD \)
   iii) \( (A' + B' + D') (A + B' + C') (A' + B + D') (B + C' + D') \)

12. a) Design and implement binary to gray code convertor.
   (OR)
   b) Implement the switching function \( F(A, B, C, D) = \sum (0, 1, 3, 4, 12, 14, 15) \) using 8:1 multiplexer.

13. a) Explain the operation of JK FF, SR-FF, T-FF and D-FF with a neat diagram. Also discuss their characteristic equation and excitation table.
   (OR)
   b) Design Mod-7 counter using JK flip-flop.

14. a) Explain about the designing of Asynchronous sequential circuits with example.
   (OR)
   b) What are Hazards and its types? How can you design a hazard free circuit, explain with example?

15. a) Explain about error detection and correction using hamming codes.
   (OR)
   b) Explain in detail about the Programmable Logic Array, Programmable Array Logic.