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Question Paper Code : 20356

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Second Semester

Computer Science and Engineering

CS 6201 — DIGITAL PRINCIPLES AND SYSTEM DESIGN

(Common to Information Technology)

(Regulations 2013)

**(Also common to PTCS 6201 – Digital Principles and System Design for
B.E. (Part-Time) First Semester — Computer Science and Engineering —
Regulations 2014)**

Time : Three hours

Maximum : 100 marks

(Codes/ Tables/ Charts to be permitted, if any, may be indicated)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Convert $(7368)_{10}$ into an equivalent binary number.
2. List out the advantages and disadvantages of K-map method?
3. Mention the design procedure for combinational circuits.
4. List any two features of Multiplexer circuit in digital systems.
5. What is synchronous counter?
6. Give the comparison between combinational circuits and sequential circuits.
7. When do race conditions occur?
8. Define merger graph.
9. List basic types of programmable logic devices.
10. State the types of ROM.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Simplify the following Boolean expression to a minimum number of literals. (8)
 $A'B' + A'C'D' + A'B'D + A'B'CD'$
- (ii) Convert the given expression in canonical SOP form
 $Y = AC + AB + BC$. (8)

Or

- (b) (i) List out the procedure for converting Binary to Gray Code. (4)
- (ii) Convert the following number from one base to other $(65.342)_8 = ()_7$. (8)
- (iii) What are the different ways to represent a negative number? (4)
12. (a) Explain Logical Implementation of Full-adder and Full-Subtractor. (16)

Or

- (b) (i) Construct 5 to 32 decoder using one 2 to 4 decoder and four 3 to 8 decoder. (6)
- (ii) Design a code converter that converts a decimal digit from 'BCD' code to Excess-3 code. (10)
13. (a) (i) Explain the working of Master Slave JK Flip Flop. (10)
- (ii) Discuss about the modification of JK Flip-Flop to form T-FlipFlop with its characteristic table. (6)

Or

- (b) (i) Explain the operation of Serial in Serial out Shift Register. (6)
- (ii) Design and explain the working of a up down counter. (10)
14. (a) Explain the analysis and design procedures of synchronous sequential circuits. (16)

Or

- (b) With necessary example and diagram explain the concept of reduction of state and flow tables? (16)

15. (a) Design a 16 bit RAM (4×4 RAM) and explain the operation. (16)

Or

(b) Explain the following:

(i) ASIC (8)

(ii) Field Programmable Gate Array. (8)