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

Question Paper Code : 25059

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

Third Semester

Computer Science and Engineering

CS 8351 — DIGITAL PRINCIPLES AND SYSTEM DESIGN

(Common to Electronics and Telecommunication Engineering / Information Technology)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the classification of binary codes.
2. Define Associative law.
3. Draw 1:8 Demultiplexer using two 1:4 Demultiplexers.
4. What is propagation delay?
5. State the operation of T flip-flop.
6. Mention the different types of shift registers.
7. What is race around condition?
8. Define state table.
9. List the major differences between PLA and PAL.
10. What is field programmable logic array?

PART B — (5 × 13 = 65 marks)

11. (a) Write short notes on Demorgan's theorem, Absorption law and Consensus law. (13)

Or

(b) (i) Convert the following Boolean expression into standard SOP form :

$AB'C + A'B' + ABC'D$ (6)

(ii) Express the Boolean function $F = A + B'C$ in a sum of minterms (SOP). (7)

12. (a) Explain in detail about encoders and decoders. (13)

Or

(b) Design 32 to 1 multiplexer using four 8 to 1 multiplexer and 2 to 4 decoder. (13)

13. (a) Design and implementation of SR Flip-Flop using NOR gate. (13)

Or

(b) Explain in detail about 4 bit Johnson counter. (13)

14. (a) Find the circuit that has no static hazards and implement the Boolean function $F(A,B,C,D) = \sum m(1, 5, 6, 7)$. (13)

Or

(b) What are called as essential hazards? How does the hazard occur in sequential circuits? How can the same be eliminated using SR latches? Give an example. (13)

15. (a) Illustrate with neat sketch and describe the categories of RAM. (13)

Or

(b) With neat diagrams describe the working principle of Programmable Array Logic. (13)

PART C — ($1 \times 15 = 15$ marks)

16. (a) Design a decade counter using JK Flip flops using IC 74LS112D. (15)

Or

(b) Declare a module that describe a circuit that is specified with the following two Boolean expressions : (15)

$E = A + BC + B'D$

$F = B'C + BC'D$.