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M.Tech. 2nd Semester (ECE) Examination, May-2017

ELECTRONICS SYSTEM DESIGN

Paper-MEEC-502

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt any five questions.

1. (a) Design a full subtractor using NOR gates. 10
(b) Using theorems minimize the following expression 10

$$F = \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}CD + \overline{A}BCD + \overline{A}B\overline{C}D + AB\overline{C}D + ABCD$$

2. (a) Implement the following function with a multiplier with B, C and D are to be select lines :

$$F(A, B, C, D) = \sum (0, 1, 3, 4, 8, 9, 15) \quad 10$$

- (b) Discuss XOR and AND-OR-Invert gates in detail. 10

3. (a) Draw the circuit diagram of R-S type flip-flop. Design a JK flip flop using R-S flip flop. 10
(b) What are basic clocking aspects with flip-flops ? What is clock skew ? Describe why clock skew create data transmission problems. 10

4. (a) Discuss the design steps for next decoders. 10

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- (b) Explain briefly the MDS diagram construction concepts with flow diagram. 10
- 5. (a) Differentiate between ROM, PLA and PAL. 10
- (b) Explain the various design steps of asynchronous machine. 10
- 6. (a) Explain the concept of system controllers. Also discuss the controller design phase and system documentation. 10
- (b) Design and implement 2 bit comparator. 10
- 7. (a) Explain MEV approaches to asynchronous design. 10
- (b) What are essential hazards ? How these hazards affect the operation of machines ? 10
- 8. Write short notes on (any two) : 20
 - (a) Excitation map
 - (b) Cycle and Races
 - (c) MSI Decoders.

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