

M.E. Second Semester (Digital Electronics) (Part Time / Full Time) (C.G.S.- New)
13236 : Elective-II : High Speed Digital System Design : 2 UMEF 5

P. Pages : 2

Time : Three Hours



AW - 3497

Max. Marks : 80

- Notes :
1. All question carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. What is necessity of proper design of interconnects in digital system? Explain lattice diagram of under-driven and overdriven transmission line. 14

OR

2. a) Explain the following termination techniques for odd mode and even mode transmission line. 7
- i) Pi-termination
- ii) T-termination
- b) Explain the effect of rise time on reflection. 7
3. a) What is meant by skin effect in conductor? Find the relationship between skin depth (δ) and frequency. 6
- b) Explain the effect of serpentine trace on signal integrity and timing. 7

OR

4. Explain the detail various factors that govern signal integrity in different types of connectors, chip packages and Vias. 13
5. a) What are the different techniques used for minimizing SSN? Explain in detail. 8
- b) Explain the non ideal current paths when signal changing reference planes. 5

OR

6. a) Describe the non ideal current path for a CMOS buffer driving a dual referenced stripline. 6
- b) Explain the generic model that can be used to evaluates SSN in a CMOS bus. 7

SECTION - B

7. a) Derive source synchronous timing equation with the help of eye diagram. 8
b) Explain the operation of output buffer that operate in the saturation region. 5

OR

8. a) What is mean by linear behavioural modeling of CMOS buffer? Explain in detail. 6
b) Draw and explain the block diagram of common clock timing technique. Derive the timing equation from timing diagram of common clock bus. 7
9. Explain differential mode radiation and common mode radiation. 13

OR

10. a) Explain the concept of flight time. Explain the process of flight skew calculation between data and stroke. 6
b) Discuss the different guidelines and rules for designing the digital system to manage the timing and signal integrity. 7
11. a) Explain the basic principle of operation of Time domain reflectometry (TDR) and discuss the major resolution factors for TDR. 6
b) How are various parameters of transmission line measured with VNA? 7

OR

12. a) Explain the following parameter related with digital oscilloscope. 6
i) Bandwidth
ii) Accuracy and stability
- b) Explain the following method used for measurement of propagation delay. 7
i) Length difference method ii) Y-Intercept method
