

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2016
Electronics & Communication Engineering
(VLSI and Embedded Systems)
04EC7509—HIGH SPEED DIGITAL DESIGN

Max. Marks : 60

Duration: 3 Hours

PART A

Answer All Questions

Each question carries 3 marks

1. Differentiate between lumped and distributed system with an example.
2. Comment on the self inductance of probe ground loops.
3. Why does point to point wiring generates crosstalk?
4. Derive the characteristic equation and the characteristic impedance of an ideal transmission line at high speeds.
5. Comment on the capacitance offered by vias.
6. Illustrate end termination.
7. Sketch the timing analysis showing clock skew and explain.
8. What is delay adjustment? List different types of delays.

PART B

Each question carries 6 marks

9. Discuss the effect of sudden change in the current and voltage in the speed of operation of logic circuits.

OR

10. What are the reasons for power dissipation in a digital circuit? Explain each type.

11. Explain rise time and bandwidth of oscilloscope with necessary expressions and figures.

OR

12. With the help of electrical model of oscilloscope, explain the process involved in the estimation of self-inductance of probe ground loop and Q value of the probing circuit.

13. Discuss the problem of point to point wiring at high frequencies with necessary equations.

OR

14. Explain Meta –stability in clock distribution at high speeds.

15. Compare and contrast the features of low – loss and RC transmission line.

OR

16. Explain Skin effect and its mechanics at very high speeds.

17. Summarize end terminations in the following respects (a) Rise time by intuition and calculation (b) DC Biasing.

OR

18. Illustrate the mechanical properties of Vias

19. With suitable diagrams, briefly discuss the design rules to be followed for providing stable voltage reference to the digital systems.

OR

20. Explain the significance of timing margin at high speeds. What is Clock Jitter?