

G 423

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Sixth Semester

Branch : Electronics and Communication Engineering

EC 010 606 L03—HIGH SPEED DIGITAL DESIGN (Elective I) [EC]

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]



Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions briefly.
Each question carries 3 marks.*

1. Discuss the relevance of mutual capacitance and mutual inductance in high speed circuits.
2. Discuss how a probe load down a circuit.
3. Enumerate the thumb rules for calculating the resistance of rounded copper wires.
4. Enumerate the properties of an end terminated line.
5. Write a note on clock skew.

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. With example, explain the active power dissipation in a totempole output circuit.
7. Write a note on shop-built 21 : 1 probe.
8. Write a note on reflections in transmission lines.
9. Write a note on inductance of vias.
10. Explain the different power system design rules.

(5 × 5 = 25 marks)

Part C

*Answer all questions.
Each full question carries 12 marks.*

11. Explain the presence of different reactances in a high speed logic circuit.

Or

Turn over

12. Explain the different circuit concepts to differentiate a low frequency and high frequency digital circuit. Explain how the step response is related to cross talk.
13. Explain how various operating margins are measured in digital systems.

Or

14. Explain metastability. How can it be measured ? What are the cures for metastability ?
15. Explain the different effects in a lossy transmission line. How does these affect the performance of the line ?

Or

16. Explain the different factors that affect the attenuation in a transmission line.
17. Explain the factors to be considered in the selection of resistors in high speed circuits.

Or

18. Explain the factors that influence the design of vias. How is tradeoff achieved ?
19. Explain the delay adjustments that are made in clock distribution of high speed ICs.

Or

20. Explain the selection of bypass capacitors. Discuss the different options for capacitors and dielectrics.

(5 × 12 = 60 marks)

