Q 8022

M.E. DEGREE EXAMINATION, MAY/JUNE 2006.

Elective

Applied Electronics

AN 1629 — ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY IN SYSTEM DESIGN

(Regulation 2005)

(Common to M.E. Communication systems)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is electrostatic discharge?

2. Why to avoid EMI?

3. What is the principle of power supply coupling?

4. What should be the potential (permissible levels) between ground to phase and Neutral to phase?

5. Which standards are stringent, civilian or Military? Why?

6. What is meant by EMI shielding?

7. Can you permit HV line to cross domestic places? What is the overhead?

8. What is Bonding with reference to EMI control?

9. What is the difficults with VLSI PCB boards? (Discuss with reference to million transistors in nano scale standards)

10. What is meant by zoning in fabrication of PCBs?

PART B — (5 × 16 = 80 marks)

11. (i) What is cross talk and how to avoid it in the design of PCBs of miniature size?

(ii) What is the significance of performance models? What are its applications in EMC design of PCBs?

12. (a) What are the various sources of EMI and their impact? How do designs help to encounter EMI and EMC.

Or

(b) Discuss Emission and immunity concepts in EMI environment. How does emission gauged / measured?

13. (a) How is Transient EMI coupling done? Also explain conducted and radiated coupling with sources.

Or

(b) What is meant by earthing? Explain the principles of power mains and power supply coupling?

14. (a) Why do standards evolve? What do FCC, IEC insist? What is the test procedure in them?

Or

(b) Discuss in detail the EMI shielded chamber and its functionalities.

15. (a) How is transient suppressors control EMI? How is signal control achieved?

Or

(b) Explain the following with reference to EMI control:

(i) Shielding

(ii) Filtering

(iii) Grounding

(iv) Bonding.

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