Reg. No. : | | | | | | | | | | | |

K 6026

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Elective

Applied Electronics

AN 1629 — ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY IN SYSTEM DESIGN

(Common to M.E. – Communication Systems and M.E. – VLSI Design)

(Regulation 2005)

e : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

What are the three criteria to be satisfied by any system to become electromagnetically compatible with its environment?

How do you prevent emission?

Define edge rate.

What is transient coupling?

What are Class A devices with reference to FCC?

Mention the two very important needs for TEM cell.

What are all the advantages of multipoint grounding?

8. What for MIL STD 461, 462 and 463?

9. Define Cross talk with reference to EMI/EMC design issues.

10. What is Zoning?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the sources of EMI? Give examples. (5)

(ii) Explain in detail the conducted and radiated EMI with examples. (11)

Or

(b) (i) Compare time domain EMI with frequency domain EMI. (10)

(ii) Explain about ESD. (6)

12. (a) Explain in detail the conducted, radiated and common impedance ground couplings with examples.

Or

(b) What is radiated differential mode coupling? In what way this is different than the radiated common mode coupling, explain this with example.

13. (a) (i) Explain the civilian standards FCC, CISPR and IEC in detail. (11)

(ii) Mention the requirements for the EMI shielded chamber. (5)

Or

(b) (i) Explain the MIL STD 461 D. (5)

(ii) Briefly explain the various EMI Test instruments (6)

(iii) What is EFT test bed? (5)

14. (a) (i) What are Isolation transformers? Explain there role. (8)

(ii) Explain various methods of grounding with examples. (8)

Or

(b) (i) What are transient suppressors? Explain them. (8)

(ii) Explain briefly cable routing and signal control techniques. (8)

15. (a) (i) How do you control the impedance value while designing the PCB? (8)

(ii) Explain the power distribution decoupling concept. (8)

Or

(b) Write notes on the following :

(i) PCB Motherboard design. (8)

(ii) Propagation delay. (8)
