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

Question Paper Code : 10577

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Elective

Applied Electronics

EL 4071 — ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY

(Common to: M.E. Communication Systems/M.E. Electronics and Communication engineering/M.E. Electronics and Communication Engineering (Industry Integrated)/M.E. VLSI Design)

(Regulations 2021)

Time : Three hours — Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give two examples of Electromagnetic Interference sources.
2. Outline the need for EM compatibility.
3. Define shielding effectiveness.
4. List various shielding methods.
5. Give suitable explanation for 'ground' with respect to EMI/EMC design issues.
6. Outline the need for EMI standards.
7. Classify EMI filters.
8. List the two types of EMC product standard.
9. Define interoperability.
10. How frequency spectrum is used efficiently?

PART B — (5 × 13 = 65 marks)

11. (a) How EMI occurs and discuss in detail about the common sources of EMI.

Or

(b) Define an intersystem EMI. How does it affect an equipment in an EM environment and also discuss about the cases related to intersystem EMI.

12. (a) Illustrate in detail, about low frequency magnetic shielding and effect of apertures.

Or

(b) Illustrate the consequence of different shielding materials over the shielding. Tabulate some of the shielding materials and their uses.

13. (a) Explain in detail about different types of system grounding for EMI/EMC.

Or

(b) Explain power line filters and single line filters.

14. (a) Analyze the purpose of EMI standard and give different types of standard that followed in different countries.

Or

(b) Analyze in detail about EMC measurement techniques and its importance.

15. (a) Justify, why EMC challenges are important to consider in an early phase of development in broadband communication with an example.

Or

(b) Analyze the methods to overcome EMC problems in Digital subscriber line.

25

PART C — (1 × 15 = 15 marks)

16. (a) Justify the reasons of how the cable coupling, near and far coupling of EM field produced can be reduced. Also, analyze the ways to enhance the immunity of circuits/equipments/systems.

Or

(b) For residential power distribution system, analyze, the requirements and the steps, to design a safety grounding system.

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