

B.E. / B.Tech (FullTime) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2011  
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH  
EIGHTH SEMESTER

53

**EC 520 – ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY**

**(EMI/EMC)**

(REGULATION 2004)

Time: 3 Hours

Max.marks: 100

Answer ALL Questions

Part-A (10x2=20 Marks)

1. Explain the sources of surge.
2. Compare radiated EMI and conducted EMI.
3. Define ground coupled interference.
4. List out the types of coupling between cables.
5. What do you mean by EM shielding?
6. How do you classify EMI filters depending on the frequency range to be suppressed and the function performed?
7. What does the narrow band test deal with?
8. Differentiate: “absolute” and “relative” decibel measurements.
9. Give the features of TEM cell.
10. Define Antenna factor and give its significance.

Part-B (5x16=80 Marks)

11. Describe the ESD phenomenon in relation with human body and electronics equipments. Draw a schematic diagram of typical ESD current waveform. (16)
  
- 12.(a) Tabulate the differences between radiated DM and CM coupling. (16)

**OR**

- 12.(b) Describe in detail the Direct coupling, near field (inductive and capacitive) coupling and Radiated coupling and methods to minimize it. (16)
  
- 13.(a) Two PCB traces are purely inductively coupled to generate cross-talk interference. Trace 1 is fed by a voltage generator  $v_g$  having an impedance  $z_g$  and terminated by load  $R_1$  at other end. The trace 2 is terminated by impedance  $R_2$  at near end and by  $R_3$  at far end. Find an expression of cross-talk interference voltage at far end in terms of the electrical circuit parameters. Explain how such interference can be reduced. (16)

**OR**

- 13.(b) What are the factors influencing the EMI performances of the bonding? How can bonding be made? Mention some guidelines for Good Bonds? (16)

14.(a) Define class A and class B equipment categories. Describe the units of CE and RE levels as per FCC Pt15 and CISPR22 standard. Write down the FCC Pt15 CE/RE limits for ITE equipments for class A and B. How are they different from CISPR22 in terms of levels and frequency range? (16)

**OR**

14.(b) What are the specification limits on emissions for control of interference for military products? What are the Emission and Susceptibility Requirements of MIL-STD-461E? (16)

15.(a) Discuss and describe the construction of an anechoic chamber and the generation of RF field in it. Compare the tests made in it with that of OATS. (16)

**OR**

15.(b)(i) Define site attenuation and derive the expression for NSA. (8)

(ii) Discuss how LISN is placed in a measurement set-up. (8)

-----