

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**M. E. - SEMESTER – II • EXAMINATION – WINTER 2012**

**Subject code: 1723106****Date: 02-01-2013****Subject Name: Electromagnetic Compatibility****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain the concept of noise and interference. Why it is important to design a device that is not a source of noise – explain in detail. **07**  
(b) Prove that to minimize total loop inductance, the partial mutual inductance between the conductors should be maximized. **07**
- Q.2** (a) Explain the different methods of noise coupling. **07**  
(b) Explain the different methods of noise coupling. **07**  
**OR**  
(b) Write a short note on different types of noise sources. **07**
- Q.3** (a) Write a short note on ground loops. **07**  
(b) Explain the concept of inductive coupling. How you can find whether the coupling that exists is inductive or capacitive? **07**  
**OR**
- Q.3** (a) Explain the concept of voltage definition and current definition of ground. **07**  
(b) Explain the effect of shield on capacitive coupling. **07**
- Q.4** (a) Write a short note on decoupling capacitors in digital circuits. **07**  
(b) Write a short note on shielding effectiveness. **07**  
**OR**
- Q.4** (a) Write a short note on digital circuit grounding **07**  
(b) Explain characteristic impedances and wave impedances in detail. **07**
- Q.5** (a) Write a short note on contact protection fundamentals. **07**  
(b) Explain differential mode emission in SMPS. **07**  
**OR**
- Q.5** (a) What is power line filter? How it is helpful in common mode and differential mode filtering. **07**  
(b) Write a short note on ESD protection in equipment design. **07**

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