

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME - SEMESTER-II • EXAMINATION – WINTER 2014**

**Subject Code:** 1723106**Date:** 05/12/ 2014**Subject Name:** ELECTROMAGNETIC COMPATIBILITY**Time:****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) Derive the equation of noise in case of capacitive coupling between two cables. 07  
(b) Draw the equivalent circuit of capacitive coupling when receptor conductor has resistance to ground. And derive the equation of noise. 07

- Q.2** (a) Explain effect of shield on magnetic coupling with necessary equation and schematic diagram. 07  
(b) Give voltage and current definition of Ground. Explain type of ground and compare it. 07

**OR**

- (b) What is ground loop? How can we break it? Explain any one in detail. 07  
**Q.3** (a) Explain effect of unbalanced source resistance and load resistance on CMRR. Derive equation of CMRR in both cases. 07  
(b) Write a short note on types of capacitors. 07

**OR**

- Q.3** (a) Explain various configuration of common mode filters. 07  
(b) How to minimize noise coupling in power supply? 07  
**Q.4** (a) Draw and explain various networks used to minimize the inductive kick produce by inductor. 07  
(b) Explain characteristics of thermal noise. Draw equivalent circuit of thermal noise in a resistor as a voltage source and a current source. 07

**OR**

- Q.4** (a) Draw noise equivalent circuit for a junction FET and explain it. Give necessary equation of noise. 07  
(b) Write a short note on Hybrid Ground. 07  
**Q.5** (a) Explain Radio frequency immunity mitigation techniques. 07  
(b) Give general characteristics of transient protection network. Explain general configuration of a transient voltage suppression network. 07

**OR**

- Q.5** (a) Explain test setup for Common mode current measurement. 07  
(b) Justify How twisting of transmission line cables can minimize magnetic coupling? 07

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