

GUJARAT TECHNOLOGICAL UNIVERSITY**ME Semester –II Examination Dec. - 2011****Subject code: 1723106****Date: 16/12/2011****Subject Name: Electromagnetic Compatibility****Time: 02.30 pm – 05.00 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 Hybrid grounds. 07
(b) Explain the common methods of noise coupling. 07

- Q.2** (a) Explain the effect of shield around conductor on capacitive coupling. 07
(b) Explain safety ground for metal chassis. 07

OR

- (b) Explain the effect of shield around conductor on magnetic coupling. 07

- Q.3** (a) Explain the Networks used across load to minimize “inductive kick” produced by an inductor when the current is interrupted. 08
(b) Write a short note on passive component FERRITES. 06

OR

- Q.3** (a) Explain the effect of unbalanced source resistance and unbalance load resistance on CMRR of balanced circuit. 08
(b) Explain power supply decoupling from noise. 06

- Q.4** (a) Draw the Noise equivalent circuit of typical OPAMP and Explain it. 07
(b) Explain internal noise sources generated in Digital circuits. 07

OR

- Q.4** (a) Explain contact protection networks for Inductive Loads. 07
(b) Explain Grounding of shield when a grounded amplifier is connected to an ungrounded source. 07

- Q.5** (a) A receptor circuit consists of a 1-m long wire, located 5 cm above a Ground plane. Each end of the circuit is terminated with a 50 Ohm resistor. An electric field induces a noise current of 0.5 mA into the circuit. The magnetic field from the same noise source induces a noise voltage of 25mV into the circuit. 06
a. If the noise voltage is measured across each of the terminating resistors, what will the two readings be?
b. What general conclusion can you draw from the above results?
c. What will happen if the polarity of the magnetic-field induced Voltage is reversed?

- (b) Explain methods to measure Noise Factor. 08

OR

- Q.5** (a) Write a short note on intrinsic noise source “Thermal Noise and Shot Noise”. 08
(b) Explain parasitic effect in performance of Filters. 06
