

GUJARAT TECHNOLOGICAL UNIVERSITYM. E. Sem. – IInd - Examination – June/July- 2011

Subject code: 1723106

Subject Name: Electromagnetic Compatibility

Date: 29/06/2011

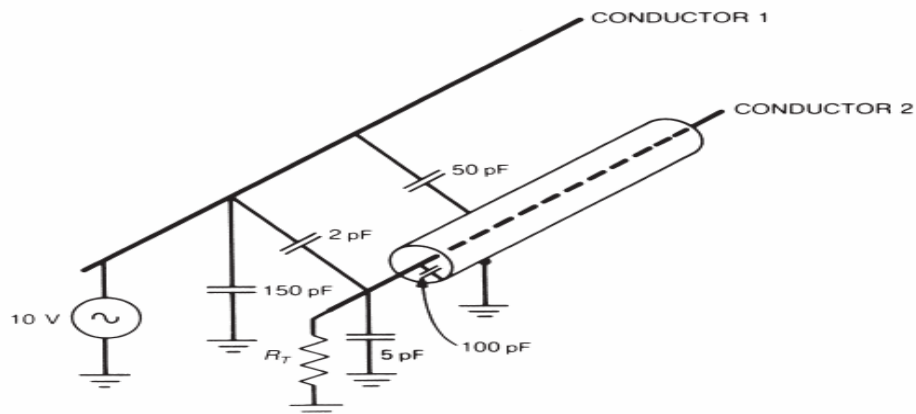
Time: 10:30 am – 01:00 pm

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 three different components that can be used to break the ground loop. **07**
- (b) Explain Hybrid grounds. **07**
- Q.2** (a) Explain effect of shield on magnetic coupling. **07**
- (b) In Fig. 1, a grounded shield is placed around conductor 2. The capacitance from conductor 2 to the shield is 100 pF, The capacitance between conductors 2 and 1 is 2 pF, and the capacitance between conductor 2 and ground is 5 pF. Conductor 1 has a 10-V ac signal at a frequency of 100 kHz on it. For this configuration, what is the noise voltage picked up by conductor 2 if its termination R_T is:
- a. An infinite resistance?
 - b. A 1000- Ω resistance?
 - c. A 50- Ω resistance?

**FIGURE .****OR**

- (b) 1) Explain Near Fields and Far fields. **04**
- 2) Explain Contact noise source. **03**
- Q.3** (a) Explain internal noise sources of Digital circuits. **07**
- (b) Explain contact protection networks for inductive loads. **07**

OR

Q.3	(a)	Explain transient suppression for inductive loads.	10
	(b)	Explain Galvanic action of noise source.	02
	(c)	“To minimize the total loop inductance, the partial mutual-inductance between the conductors should be maximized” Are you agree with above statement? Why?	02
Q.4	(a)	Draw and explain equivalent circuit for passive component capacitor.	05
	(b)	Explain noise voltage and current model.	07
	(c)	How balanced circuits reduce the common mode noise?	02
OR			
Q.4	(a)	Explain the effect of unbalanced source resistance and unbalance load resistance on CMRR of balanced circuit.	07
	(b)	Explain active device noise in operational amplifier.	07
Q.5	(a)	Give summary of noise reduction methods.	07
	(b)	Explain RFI Mitigation Techniques.	07
OR			
Q.5	(a)	Explain Near Field measurement technique.	07
	(b)	Explain transient immunity.	07
