Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 1720304 **Date: 03-06-2013**

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)**	Define Electromagnetic Compatibility. Explain the importance of considering the EMI-EMC issues at each and every stage of electronics system design.	**07**
	(b)	Explain various intrinsic noise sources.	**07**
Q.2	**(a)**	Show that for a system with high input impedance voltage peaked up due to capacitive coupling is independent of frequency of noise source.	**07**
	(b)	Give reason, sharp bend of conductor should be avoided.	**07**
		OR	
	(b)	Give reason, twisted pair cable can reduce noise because of magnetic coupling but it cannot reduce noise because of capacitive coupling.	**07**
Q.3	**(a)**	Show that capacitive coupling can be reduced by separating two conductors.	**07**
	(b)	Show that for a magnetic coupling shield at receiving conductor is effective only at high frequency.	**07**
		OR	
Q.3	**(a)**	Show that for a low input impedance input system the noise appear because of capacitive coupling depends on frequency of noise source.	**07**
	(b)	Show that magnetically coupled noise can be reduced at high frequency by providing shielding at transmitter side	**07**
Q.4	**(a)**	Explain difference between safety ground and signal ground.	**04**
	(b)	Explain noise coupling due to common impedance sharing.	**03**
	(c)	List various ground topologies. Explain merits, demerits and application of each topology.	**07**
		OR	
Q.4	**(a)**	Show that the radiated electrical field is controlled by shield at transmitter conductor side.	**07**
	(b)	Give reason, PCBs are many times tin plated.	**03**
	(c)	Give reason, to provide filtering over wide frequency range two different types of capacitors are used in parallel	**04**
Q.5	**(a)**	Give reason, for an ungrounded source and grounded amplifier the shield should be connected to amplifier common.	**07**
	(b)	Explain various isolation techniques to avoid ground loop noise.	**07**
		OR	
Q.5	**(a)**	Give reason, if coaxial cable is to be used in balanced system it is preferable to used two cables.	**07**
	(b)	Explain role of guard shield in noise reduction.	**07**

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