Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER IV (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2744502 **Date:04/05/2016**

Subject Name: Electromagnetic Compatibility in Power Electronics

Time:10:30 am to 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)**	Write a note on EMI from semiconductor.	**07**
	(b)	Explain the EMI measurements for consumer appliances.	**07**
Q.2	**(a)**	Draw and explain equivalent circuits of common mode choke coils.	**07**
	(b)	Describe Electromagnetic Disturbances by Frequency Content.	**07**
		OR	
	(b)	Describe Electromagnetic Disturbances by Transmission Mode.	**07**
Q.3	**(a)**	Write a short note on measuring the interference voltage.	**07**
	(b)	Derive the formula for calculation of worst case insertion loss.	**07**
		OR	
Q.3	**(a)**	Write a short note on measuring the interference current.	**07**
	(b)	Write a short on measuring HF characteristics of EMI Filter Elements.	**07**
Q.4	**(a)**	Explain the design method for EMI filter with Common-mode choke coil.	**07**
	(b)	Briefly explain the reduction techniques for internal EMI.	**07**
		OR	
Q.4	**(a)**	Design a worst case EMI filter to provide at least 40 dB insertion loss at 150 kHz.	**07**
	(b)	Derive the equations of insertion loss of two port network in terms of Z parameters and ABCD parameters.	**07**
Q.5	**(a)**	Explain circuit balancing method of reduction of electromagnetic coupling reduction.	**07**
	(b)	Draw equivalent circuit for calculating conductive noise coupling with necessary equations.	**07**
		OR	
Q.5	**(a)**	Describe series injection method of worst-case insertion loss test method.	**07**
	(b)	Explain wiring layout method to reduce EMI coupling.	**07**

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