Reg. No.



MANIPAL INSTITUTE OF TECHNOLOGY

I SEMESTER M.TECH (POWER ELECTRONICS & DRIVES)

MAKE UP EXAMINATIONS, DECEMBER 2017

SUBJECT: MODELING AND ANALYSIS of POWER-

ELECTRONIC SYSTEMS and ELECTRICAL MACHINES [ELE 5123]

REVISED CREDIT SYSTEM

Time: 3 Hours		Date: 28 December 2017	Max. Marks: 50
Instructions to Candidates:			
	 Answer ALL the question 	ns.	
	Missing data may be suit	cably assumed.	
1A.	Explain Inductor Volt Seco examples	ond Balance and Capacitor Charge Balance wi	th relevant (04)
1B.	Derive the expression of MOSFET on state resistance one value of load.	the efficiency of a Buck-Boost converter. Co e as a non-ideality. Plot the Efficiency vs Duty R	onsider the atio for any (06)
2.	Explain the steps involving design a Lag compensator.	g State Space Averaging Method. Explain the pi	rocedure to (10)
3A.	Derive the electromechar electrical excitation and on	nical model of an electromechanical system le moving part.	with one (05)
3B.	Differentiate between Mag expression for the above in	gnetizing Inductance and Mutual Inductance. a electromagnetic systems with two coils.	Derive the (05)
4.	Derive the electromechani frame where all the quantit assumptions made.	ical model of a two phase machine (d-q) in th ties are DC in Steady State from the basic princip	e reference les. Discuss (10)
5A.	Explain the switch realizati	ion in Buck Converter.	(05)
5B.	Explain how the DC Machin	ne Model is equivalent to a two phase machine.	(05)