Code No: J4301/R16

M. Tech. II Semester Regular Examinations, May-2017

SWITCHED MODE POWER CONVERSION

(Common to Power Electronic (43), PI&D (42), PE & ED (54), PE & D (52), PE & S(12), EM & D (44), Power Electronics & Power Systems (99))

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions
All Questions Carry Equal Marks

1.	a	Explain the operation of buck converter with neat circuit and waveforms in Continuous conduction mode	6M
	b	In a buck-boost converter operating at 20 kHz, L = 0.05 mH. The output capacitor is sufficiently large and V_d = 15 V. The output is to be regulated at 10V and converter is supplying a load of 10 W. Calculate the duty ratio D.	6M
2.	a	Explain the operation of Buck-Boost converter with neat circuit and waveforms in continuous conduction mode	6M
	b	Draw the circuit diagram of a buck converter including non idealities in the components. Explain the effect of non idealities on the performance of the converter.	6M
3.	a	Explain frequency characteristics of series and parallel resonant circuit	4M
	b	Explain the operation of zero current switching Quasi-resonant boost converter with neat circuit and waveforms	8M
4.	a	Explain the operation of zero current switching Quasi-resonant buck converter with neat circuit and waveforms	8M
	b	Compare ZVS and ZCS topologies	4M
5.	a	Explain the operation of half-bridge dc-dc converter with neat circuit and waveforms	6M
	b	Explain the operation of fly back converter with neat circuit and waveforms.	6M
6.	a	Explain Voltage-mode control for switch mode converters	6M
	b	Briefly explain about DC inductor and capacitor design considerations	6M
7.		Obtain the steady state solution of the non-ideal boost converter by using its average model	12M
8.		Derive the transfer function and Obtain the gain and phase plot of the non-ideal boost converter	12M

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