



End Semester Examination – Nov/Dec – 2016

Code : **14EE2035**
Sub. Name : **Switched Mode Power Supplies**

Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Compare and contrast a linear regulator with switched mode regulator.	CO1	8
	b.	Explain how the conduction efficiency and regulator efficiency are calculated for Buck regulator.	CO1	12
(OR)				
2.		Explain the operation of a forward converter, its voltage conversion ratio and forward converter with transformer equivalent circuit.	CO1	20
3.	a.	Explain the principle of operation of flyback converter in continuous mode.	CO1	10
	b.	Derive the expression for voltage conversion ratio, current in the transformer and voltage ripple of a flyback converter in continuous mode.	CO1	10
(OR)				
4.		Design a full-bridge converter with the following specification: $V_o = 5V$, $P_{o(max)} = 50W$, $I_{o(max)} = 10A$, $I_{o(min)} = 1A$, $V_{dc(max)} = 60V$, $V_{dc(min)} = 38V$, switching frequency = 50kHz.	CO1	20
5.	a.	Explain how a MOSFET is selected based on its switching characteristics.	CO2	10
	b.	Why converters do required snubber circuit protection? Write the difference between the dissipative snubber and non-dissipative snubber circuit.	CO3	10
(OR)				
6.		Design a 5V, 10A Power supply with the following specifications using IC TL494: Input Voltage = 32V, Output Voltage = 5V, Output Current = 10A, Switching frequency = 20kHz, Ripple voltage = 20mV, Ripple current = 1.5A.	CO2	20
7.	a.	Explain the steps of a designing a transformer for a forward converter based on core and bobbin area (A_e, A_b), current density, frequency and peak flux density.	CO2	14
	b.	Brief why the core loss is more in a push pull converter?	CO2	06
(OR)				
8.		Explain the working of Current Mode Control circuitry. Compare the properties of Voltage fed regulator topologies with current fed regulator topologies.	CO2	20
Compulsory:			CO2	
9.		Discuss about the various DC/AC inverter topologies used in the electronic ballast of fluorescent lamps.	CO2	20

ALL THE BEST