Exam.Code:1018
Sub. Code: 7465

2063

M.E. Electrical Engineering (Power System)

Second Semester

EE-8209(b): Power Electronics Converters for Smart Grid

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt any five questions.

x-x-x

1. a) Derive the expression for duty cycle 'D' of a buck boost converter under discontinuous conduction mode. (5)
   b) In a buck-boost converter operating at 20kHz, L=0.05mH. The output capacitor C is sufficiently large and Vd = 15V. The output is to be regulated at 10V and the converter is supplying a load of 10W. Calculate the duty ratio D. (5)
2. Explain the Zero Current Switching (ZCS) Resonant –Switch Converter topology with appropriate waveform and circuit diagram. (10)
3. What is the need for control circuit in power electronics supplies? Explain "current mode control" with appropriate diagram and waveforms. (10)
4. Explain uni-polar and bi-polar dc-coupled driver circuits. (10)
5. (a) What is the effect of blanking time on voltage in PWM inverter ? (5)
   (b) Determine the maximum switch utilization ratio of single phase inverter for full bridge configuration. (5)
6. a) List the commonly used PWM techniques for voltage control of inverters and explain any one of them. (5)
   b) Explain the space vector modulation for 3 phase bridge inverter. (5)
7. The turn-off snubber for a thyristor does not include a diode as it does for the BJT and MOSFET. Explain why? (10)
8. Explain the capactive snubber and the effect of adding a snubber resistance for a converter with diodes. (10)

x-x-x