

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2017****Subject Code: 2170906****Date: 02/11/2017****Subject Name: Advanced Power Electronics(Departmental Elective - II)****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.

		MARKS
<b>Q.1</b>	(a) Differentiate multi pulse converter with multi-level converter.	<b>03</b>
	(b) Compare switching voltage regulator with linear voltage regulator.	<b>04</b>
	(c) Explain in brief Static VAR Compensator (SVC). Compare it with STATCOM.	<b>07</b>
<b>Q.2</b>	(a) State important advantages, disadvantages and applications of SMPS.	<b>03</b>
	(b) Discuss design criterion of SMPS.	<b>04</b>
	(c) Discuss operation of Flyback converter. Draw its circuit diagram and waveforms.	<b>07</b>
	<b>OR</b>	
	(c) Discuss operation of Forward converter. Draw its circuit diagram and waveforms.	<b>07</b>
<b>Q.3</b>	(a) What is the need of resonant converters? Give its classifications.	<b>03</b>
	(b) Discuss need of multilevel inverter. Mention various topology of multilevel inverter.	<b>04</b>
	(c) Discuss operation of series load resonant DC to DC converter	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Compare zero voltage switching (ZVS) and zero current switching (ZCS) resonant converter.	<b>03</b>
	(b) Explain concept of multilevel inverter.	<b>04</b>
	(c) Discuss operation of parallel load resonant DC to DC converter	<b>07</b>
<b>Q.4</b>	(a) Discuss star/delta phase shifting transformer with Phasor diagram.	<b>03</b>
	(b) Discuss concept of multi pulse converter. Mention its advantages, limitations and applications.	<b>04</b>
	(c) Discuss operation of diode clamped multilevel inverter with neat circuit diagram and waveforms.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Give classification and applications of phase shifting transformer.	<b>03</b>
	(b) Compare 12 pulse and 18 pulse converter based on its harmonic analysis.	<b>04</b>
	(c) Discuss operation of five level flying capacitor multilevel inverter with neat circuit diagram and waveforms.	<b>07</b>
<b>Q.5</b>	(a) Draw schematic diagram of Monopolar, Bipolar and Homopolar link.	<b>03</b>
	(b) Discuss control of HVDC system.	<b>04</b>
	(c) Discuss principle of shunt compensation. Explain operation of fixed capacitor- thyristors controlled reactor.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Draw block diagram of HVDC transmission system. Mention equipment required for HVDC system.	<b>03</b>

- (b) Give comparison of HVAC and HVDC transmission. **www.FirstRanker.com** **04**  
(c) Discuss principle of series compensation. Explain operation of static **07**  
synchronous series compensator (SSSC).

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