Seat No.: _____ Enrolment No.

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

(b) Give comparison of HVAC and HVDC transmission. 04

(c) Discuss principle of series compensation. Explain operation of static synchronous series compensator (SSSC). 07

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