Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER VII-(NEW SYLLABUS) EXAMINATION- SUMMER - 2018

Subject Code: 2170906 Date: 28/04/2018

Subject Name: Advanced Power Electronics (Departmental Elective - II)

Time:02:30 PM TO 05:00 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)**	Explain operation of boost converter with neat circuit diagram.	**03**
	(b)	Define FACTS. Give classification of FACTS controllers.	**04**
	(c)	Describe Cuk converter with circuit diagram.	**07**
Q.2	**(a)**	Explain fly back converter topology with diagram and wave forms.	**03**
	(b)	Compare ZVS-ZCS converter.	**04**
	(c)	Explain principle of shunt compensation used for transmission line.	**07**
		OR	
	(c)	Explain working of Diode Clamped three level inverter.	**07**
Q.3	**(a)**	Classify resonant pulse converter and discuss applications.	**03**
	(b)	Explain operation of Cascaded H-bridge multilevel inverter.	**04**
	(c)	Draw circuit diagram and output voltage phasor diagram of 12-pulse converter.	**07**
		OR	
Q.3	**(a)**	State advantages and disadvantages of multi-pulse converters.	**03**
	(b)	Discuss Equipment required for HVDC System and their significance.	**04**
	(c)	Discuss importance of reactive power compensation. Discuss phase-shifting transformer with necessary diagram in brief.	**07**
Q.4	**(a)**	Comparison of EHVAC and HVDC transmission system.	**03**
	(b)	Classify career based PWM technique for multilevel inverter. Discuss any one in detail.	**04**
	(c)	Explain five level flying capacitor type multi-level inverter. What are demerits of this topology?	**07**
		OR	
Q.4	**(a)**	Explain the working of Fixed Capacitor Thyristor-Controlled Reactor (FC-TCR). Draw neat diagrams.	**03**
	(b)	Describe SEPIC converter with circuit diagram.	**04**
	(c)	Explain working of STATCOM with neat diagram.	**07**
Q.5	**(a)**	What is series compensation. Discuss working of Thyristor-controlled series capacitor (TCSC).	**03**
	(b)	What is phase angle compensation in transmission system?	**04**
	(c)	Explain working of Static Synchronous Series Compensator (SSSC) with neat diagrams.	**07**
		OR	
Q.5	**(a)**	Explain working of forward converter with diagram and wave forms.	**03**
	(b)	With neat circuit diagram and waveform discuss class E resonant inverter.	**04**
	(c)	Explain operating principle of Unified power flow controller (UPFC).	**07**

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