GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2022

Subject Code:2170906   **Date:01/06/2022**
Subject Name:Advanced Power Electronics
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	Compare two level inverter with multi-level inverter.	03
	(b)	Explain advantages of SMPS compared to linear voltage regulator.	04
	(c)	Classify FACTS devices. Explain any one shunt compensated FACTS devices.	07
Q.2	(a)	Discuss applications of SVC.	03
	(b)	Discuss factors affecting design of SMPS.	04
	(c)	Explain buck-boost converter. Analyse its performance during discontinuous mode of operation with waveforms.	07
		OR	
	(c)	Discuss working and applications of C'uk converter.	07
Q.3	(a)	Explain the need of resonant converter.	03
	(b)	Explain working of 3-level Cascaded H bridge inverter.	04
	(c)	Explain zero current switching dc-dc converter.	07
		OR	
Q.3	(a)	Compare different multilevel inverter topologies.	03
	(b)	Discuss problems associated with diode clamped multilevel inverter.	04
	(c)	Explain zero voltage switching dc-dc converter.	07
Q.4	(a)	Draw schematic diagram of 18 pulse converter with transformer connection.	03
	(b)	Discuss difference between series and shunt compensation.	04
	(c)	Discuss PWM technique used for multilevel inverter.	07
		OR	
Q.4	(a)	Explain applications of UPFC.	03
	(b)	Compare 6 pulse and 12 pulse converters.	04
	(c)	With neat circuit diagram and waveforms explain working principle of three level diode clamped inverter.	07
Q.5	(a)	Discuss applications of static synchronous series compensator.	03
	(b)	Give comparison of HVAC and HVDC transmission.	04
	(c)	Explain functions and applications of TSC and TCR.	07
		OR	
Q.5	(a)	Discuss static characteristics of SVC.	03
	(b)	Compare STATCOM and SVC.	04
	(c)	Discuss application of converters in HVDC transmission line.	07

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