

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3170921****Date:14/06/2022****Subject Name:Power Quality and FACTS****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) Define the term “Power Quality”.	03
	(b) Explain about Power Quality Standards Consider for Power Quality.	04
	(c) Explain the all Power Quality Issues with necessary diagrams.	07
Q.2	(a) Explain the role of Grounding in terms of Power Quality.	03
	(b) Give the importance of FACTS controller for Power Quality.	04
	(c) Explain the role of SVC device for Reactive Power Compensation with necessary diagrams.	07
OR		
Q.3	(c) Write Short Note on Reactive Power Compensation and Also explain the comparison of Series & Shunt Compensation.	07
	(a) Explain the operation of single point and Multi Point Grounding.	03
	(b) Explain the role of Harmonic Filters in Harmonics Mitigation.	04
Q.3	(c) Explain the working of SVC device using TSC-TCR with necessary diagrams.	07
OR		
Q.3	(a) Explain the concept of Harmonics and its side effects in Power System.	03
	(b) Explain the Applications of SVC and STATCOM devices.	04
	(c) Explain the Operating Principle of STATCOM with Necessary Diagrams.	07
Q.4	(a) Write a Short Note on Harmonic Analyzer.	03
	(b) Prevention of Voltage Stability using SVC.	04
	(c) Give the Comparison of DC Drives & AC Drives.	07
OR		
Q.4	(a) Explain the Harmonics Effects in 3-Phase Transformer.	03
	(b) What is THD? Explain the Power Quality Standards for THD.	04
	(c) Explain the operating principle of Pulse Width Modulation (PWM) for Harmonics Mitigation.	07

- Q.5** (a) Give the Differences Between IEEE 519-1992 And IEC 61000-Series Standards. **03**
- (b) Give the Difference between Shunt And Series Active Power Filter. **04**
- (c) Explain the working of RMS Meter and Flicker Meter with necessary diagrams. **07**

OR

- Q.5** (a) List out of Various equipments used for Power Quality Measurements. **03**
- (b) Explain the role of Synchronous Condenser and Capacitor bank. **04**
- (c) Explain the Power Quality Monitoring Standards used in Power Quality. **07**
