C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Technology & Engineering
DEPARTMENT OF: -Electrical Engineering
SEMESTER: - VII
CODE: - 4TE07PEL1
NAME –Power Electronics-II

Teaching & Evaluation Scheme

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		External		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
4TE07PEL1	Power Electronics-II	4	0	2	6	5	30	1.5	70	3	30	20	---	150

Objectives

- To study various Electrical advance power electronics devices analysis and economical, frequency control machines economic analysis.
- To study design and implementation of modelling of resonant pulse inverter, multi-level converter, advance power supply,
- To study design and simulation of Advance power electronics devices.

Prerequisites

- Basics and fundamental electrical advance and modern power electronics devices waveform analysis and statically analysis.

Course Outlines

Sr. No.	Course Contents	Hours
1	**Resonant Pulse Inverters :** Introduction, Classification, Series resonant, Parallel resonant inverter, Class E resonant inverter/rectifier, Zero current / Zero voltage resonant converter, Comparison between ZCS and ZVS, Two quadrant ZVS converter, Resonant dc link inverters, Inverters for UPS.	10
2	**Multi-Level Converters:** Bridge inverters, Need for multi-level inverters, Concept of multi-level,Topologies for multi-level: Diode Clamped, Flying capacitor and Cascaded multilevel Configurations; Features and relative comparison of these configurations; Switching device currents; DC-link capacitor voltage balancing, features of multilevel converters and Applications.	14
3	**Multi-Pulse Converters:** Concept of multi-pulse, Types of multi-pulse converters, different transformer	12

	connections for multi-pulse converters, Applications of multi pulse converters.	
4	**Power Supplies:** **DC Power Supplies**: Switched-Mode DC Power Supplies, Fly back converter,Forward converter, Push pull converter, Half bridge converter, full bridgeconverter, resonant DC power supplies, Bidirectional power supplies. **AC Power Supplies**: Switch Mode AC Power supplies, Resonant AC Power supplies, Bidirectional AC Power supplies **UPS:** On line, Off line, Line Interactive, Chargers, Inverters, Transfer Switch, Transformer, Control and Design.	12
5	**Electronically Commutated Motors:** Brushless DC Drives: Introduction, Sinusoidal and Trapezoidal type, ElectronicCommutator, control of Brushless DC Drives, Current Control, SwitchingCircuits, ApplicationsSwitched reluctance motor drive: Construction, working, types, energyconversion and Stepper motor drives.	12

Learning Outcomes

The students would be able to design and implement various Introductions to Advance power electronics devices introduction and principles and applications. Solved software base power analysis and modelling analysis of power electronics devices and real time operation system.

Books Recommended

1. "Power Electronics" By M D Singh and K B Khanchandani by TMH publication 2nd edition.
2. "Power Electronics - circuits, devices and applications", Prentice Hall of India,2nd ed., 2000- Muhammad H. Rashid.
3. "Power Electronics – Devices, Converters and Applications", by Vedam Subramanyam Revised 2nd edition, New Age Publications.
4. "Power Electronics" By P. S. Bimbhra, Khanna Publications.
5. "Thyristorised Controller" by Dubey Joshi & Doralda, New age Publication.
6. "Power Electronics & Variable Frequency Drive" ,by B.K.Bose IEEE press
7. "Modern Power Electronics" by P. C. Sen, S. Chand and Co. Ltd., New Delhi.