

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Simulation and Control of Power Electronics Circuits

(Course Code: BEEL657B)

Semester: Not Specified

CIE Marks: 50

Exam Hours: 100

Credits: 01

SEE Marks: 50

Exam Type: Practical / Viva-Voce

Cycle 1 Experiments

Date	Experiment Description
27/01/2026	Single phase half wave and full wave diode bridge rectifier (100V, 50Hz AC supply, 50Ω load).
03/02/2026	Single phase half controlled and fully controlled full wave rectifier (100V, 50Hz AC supply, 50Ω load).
10/02/2026	Buck converter simulation (20V DC input, 10V output regulated using PI controller, 10–20W output power, output ripple < 1%).
17/02/2026	Boost converter simulation (20V DC input, 35V output regulated using PI controller, 30–60W output power, output ripple < 1%).
24/02/2026	Three-phase inverter (Experiment 8 base) with LC filter for sinusoidal output, THD < 8%.
03/03/2026	Three-phase, 5-level Neutral Point Clamped (NPC) inverter (100V DC input, balanced 3-phase load, $R = 40\Omega/\text{phase}$).

Cycle 2 Experiments

Sl. No.	Experiment Description
10/03/2026	Single phase AC voltage controller using TRIAC (100V, 50Hz AC supply, RL load: $R = 10\Omega$, $L = 2mH$).
17/03/2026	Three phase inverter, 180° conduction mode (100V DC input, star-connected load, $R = 40\Omega/\text{phase}$, IGBT).
28/04/2026	Single phase SPWM inverter (50V DC input, modulation indices 0.5 / 0.6 / 0.8, 25Ω load, MOSFET).
05/05/2026	Three phase inverter, 120° conduction mode (100V DC input, star-connected load, $R = 50\Omega/\text{phase}$).
12/05/2026	Three phase SPWM inverter (50V DC input, modulation indices 0.5 / 0.6 / 0.8, star-connected load, $R = 25\Omega/\text{phase}$, MOSFET).
19/05/2026	Forward converter (30V DC input, transformer turns ratio 1:1.5, duty cycles 0.4 / 0.6 / 0.8, $R = 10\Omega$, output ripple < 0.5V).