



**DIPLOMA IN MECHATRONICS**

**CENTRALIZED QUESTION BANK**

**1047234540 - INDUSTRIAL DRIVES AND CONTROL**

**DIRECTORATE OF TECHNICAL  
EDUCATION GOVERNMENT OF  
TAMILNADU**

**DIPLOMA END SEMESTER / YEAR EXAMINATION – 2025**

**Course:** Mechatronics

**Subject :** Industrial Drives and Control

**QP Code :** 1047234540

**Time :** 3 Hours

**Date :**

**Session:**

**Max Marks:** 100

**Answer the following questions**

1. (A) Construct a circuit with a thyristor (SCR), a DC voltage source, and a load resistor and Measure and observe the thyristor's turn-on characteristics by varying the gate trigger voltage and.  
(B) Speed Control of a DC Motor using PWM techniques.
2. (A) Build a circuit with a MOSFET or IGBT, a DC voltage source, and a resistive load and Investigate the switching behavior of the MOSFET or IGBT by applying gate signals with different rise and fall times.  
(B) Speed Control of an AC Induction Motor using a Variable Frequency Drive
3. (A) Construct a single-phase or three-phase rectifier circuit using diodes or thyristors and Measure the output voltage and current waveforms for different load conditions and input voltages.  
(B) Stepper Motor Control with various step modes and torque measurements.
4. (A) Set up a single-phase or three-phase inverter circuit using IGBTs or MOSFETs and Generate sinusoidal output voltages by modulating the switching of the power devices.  
(B) Closed-Loop Position Control of a Stepper Motor using an Encoder
5. (A) Build a chopper circuit using MOSFETs or IGBTs to control the speed of a DC motor and Experiment with different PWM (Pulse Width Modulation) techniques to vary the motor speed and direction.  
(B) Speed Control of a DC Motor using PWM techniques.
6. (A) Design and implement a cyclo converter circuit to convert AC power at one frequency to AC power at another frequency and Measure the output waveform and frequency under various load conditions.  
(B) Speed Control of an AC Induction Motor using a Variable Frequency Drive

### Allocation of Marks

<b>Sl. No</b>	<b>Description</b>	<b>Marks</b>
1	Aim and Apparatus Required	10
2	Circuit diagram	20
3	Connection and Procedure	30
4	Observations , Calculation / graph	20
5	Result	10
6	Viva Voce	10
	<b>Total</b>	<b>100</b>