



DIPLOMA IN AUTOMOBILE ENGINEERING

CENTRALIZED QUESTION BANK

1020234440 - SENSORS AND ACTUATORS

**DIRECTORATE OF TECHNICAL
EDUCATION GOVERNMENT OF
TAMILNADU**

DIPLOMA END SEMESTER / YEAR EXAMINATION – 2025

Course:Automobile Engineering

Subject :Sensors and Actuators

QP Code :1020234440

Time :3 Hours

Date :

Session:

Max Marks:100

For Practical Experiments

Note: Select any one exercise by lot or question paper supplied by the DOTE Exam section shall be used.

Answer the Following Questions

1. TEMPERATURE MEASUREMENT

Activities to Perform:

- i) Construct a circuit to measure Temperature of Liquid using Thermistor or Thermo couple or RTD.
- ii) Also find the graphical relationship between input and output.

2. BEHAVIOUR OF PROXIMITY SENSORS

Activities to Perform:

- i) Observe the behavior of Inductive proximity sensor and Capacitive Proximity sensor for different material samples.
- ii) Interface relay and buzzer with sensor stoutest the output.

3. LVDT

Activities to Perform:

- i) Construct a circuit for Measurement of Linear Displacement using LVDT.
- ii) Find the graphical relationship between input and output.

4. PERFORMANCE OF LIGHT SENSOR

Activities to Perform:

- i) Construct a circuit to obtain the VI characteristics and Response Characteristics of Photo conductive Cell(LDR).
- ii) Construct a circuit to measure the speed of the motor using Optical Sensor.

5. PERFORMANCE OF ULTRASONIC AND MOISTURE SENSORS

Activities to Perform:

- i) Interface Ultrasonic sensor with Arduino and measure the distance of the object.
- ii) Interface Moisture sensor with Arduino and measure the moisture content in the soil.

6 OBSERVE THE BEHAVIOUR OF TRANSISTOR AS A SWITCH

Activities to Perform:

- i) Construct a circuit to get ON/OFF control on DC Motor using Push Button, SPST, SPDT and Limit Switch.
- ii) Construct a circuit to get ON/OFF control on DC Motor using Transistor and Relay.

7 FORWARD AND REVERSE CONTROL OF AC MOTOR

Activities to Perform:

- i) Connect Forward Reverse Control switch to change the direction of rotation of three phase induction motor.
- ii) Demonstrate the Forward and Reverse operation of Motor.
- iii) Measure the No-Load current in each phase using Tongue tester (ClampMeter).

8 PNEUMATIC CIRCUIT FOR DOUBLE ACTING CYLINDER

Activities to Perform:

- i) Construct a Pneumatic Circuit to control double acting pneumatic cylinder using 5/2 Solenoid Valve.
- ii) Discuss the behavior of cylinder as linear actuator.

9 OBSERVE THE BEHAVIOUR OF HYDRAULIC MOTOR

Activities to Perform:

- i) Construct a Hydraulic Circuit to control Hydraulic Motor.
- ii) Observe the behavior of Hydraulic Motor.

10 SERVO MOTOR CONTROL WITH AN ARDUINO

Activities to Perform:

- i) Construct an Arduino based circuit to sweep the shaft of servo motor back and forth across 180 degree.
- ii) Interface potentiometer with Arduino and based on its position Get the control of servo motor shaft.

Allocation of Marks

Sl. No	Description	Marks
1	Aim & Apparatus Required	5
2	Circuit Diagram	20
3	Connections / Execution	25
4	Output / Result	10
5	Written Test	30
6	Viva Voce	10
	Total	100