



## **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**

<b>Sl. No</b>	<b>Description</b>	<b>Marks</b>
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
<b>Total</b>		<b>100</b>