INTRODUCTION TO IOT USING ARDUINO

Credits : 2 **Semester: III**
Course Code : G23CSIOT1T **No. of Lecture Hours: 30**

OBJECTIVE:
1. To acquire basic knowledge on sensors and its hardware.
2. Practical hands on experience on interfacing sensors.
3. Simple programming language to study the sensor operation.

OUTCOME: Developing a working model using arduino technology.

UNIT 1 **6 hr**
Resistor –definition, series and parallel.
Capacitors- definition, series and parallel
Inductors- definition, series and parallel
Classification of materials based on energy gap, conduction and valence bands
P type and n type semiconductors

UNIT 2 **6 hr**
Potentiometer-its purpose, usage, connection in circuits
Program for Measuring various voltages of POT
Light emitting diode -types, construction, working
Program to blink an LED, Variation of intensity of LED using POT

UNIT 3 **6 hr**
LDR-construction ,working ,negative coefficient of resistance ,Design of circuit for switching on and off an LED using LDR. Variation of resistance depending on lights using LDR .Program to Switch on and off LED using LDR

UNIT 4 **6 hr**
Digital number systems.pin layout of arduino, it's working and basic commands for programming. LCD- it's pin layout and commands. Display a word on a 16x2 LCD

UNIT 5 **6 hr**
Sensors - temperature sensor , write a program to measure temperature using LM 35.
Ultrasonic sensor- it's working , pins and connections.
Interfacing ultrasonic sensor to arduino
steps to build an autonomous robo and its interfacing with LM 35 and LCD.
Building an autonomous Robo.

ESSENTIAL READING:

1. **Basic Electronics** – Bernard Grob 10th Edition (TMH)
2. **Digital Electonics**: Circuits and systems – Puri V.K., 1997 1st Edition (TMH)
3. **The Internet of Things: Key Applications and Protocols**"- Olivier Hersent, David Boswarthick, and Omar Elloumi, WileyPublications.
4. Helfrick Albert D. and Cooper W. D., "**Modern Electronic Instrumentation and Measurement Techniques**", Prentice Hall India.
5. Kalsi H. S. "**Electronic Instrumentation**", Tata McGraw-Hill Education.

INTRODUCTION TO IOT USING ARDUINO – LAB

Credits: 1 **Semester: III**
Course Code: G23CSIOT1P **No of practical hrs: 30**

Objectives:
To study the working of basic electronic components
To understand about the working of various sensors
To study the working of Arduino board and control of output devices

Outcomes:
Gained knowledge about the working of basic electronic components
Acquired knowledge about Arduino Board and its applications

List of Experiments

1. Colour coding of Resistors
2. Calculation of Equivalent Resistance in series and parallel networks
3. Calculation of Equivalent Capacitor in series and parallel networks
4. Setting up the Hardware and Software environment and library installation
5. Interfacing of LED
6. Interfacing of Relay
7. Interfacing of Switch
8. Interfacing of IR sensor
9. Interfacing of 16x2 LCD for Displaying message
10. Interfacing of LM 35
11. Reading data from Potentiometer and displaying it on LCD
12. Interfacing Ultrasonic sensor for safety parking system.