Technical Specifications :-

1. Module One:

- Chapter 1: Photo Sensor Circuits
- Experiment 1: CdS Sensor Circuit:
- Operating Wave length: 500 nm - 580 nm
- Experiment 2: Photo Diode circuit:
- Operating Wave length: 760nm - 1000 nm
- Experiment 3: Phototransistor Circuit:
- Operating Wave length: 430nm - 670 nm
- Experiment 4: Photo Interrupter Circuit:
- Operating Wave length: 940 nm

2. Module Two:

- Chapter 2: Switch Sensor circuit:
- Experiment 1: Tilt Switch Circuit:
- Conduction Angel: 55-125 deg.
- SW Normal State: ON
- Operating State: LED Indicator
- Experiment 2: Micro Switch Circuit:
- SW Normal State: OFF

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.

- Operating State: LED Indicator
- Experiment 3: Touch Switch Circuit:
- SW Normal State: OFF
- Operating State: LED Indicator
- Experiment 4: Reed Switch Circuit:
- SW Normal State: OFF
- Operating State: LED Indicator
- Experiment 5: Vibration Switch Circuit:
- SW Normal State: ON
- Operating State: LED Indicator

3. Module Three:

- Chapter 3: Temperature Sensor circuit:
- Experiment 1: MCP9701 Temperature Sensor Circuit
- Measurement Range: -40°C to +125°C
- Accuracy (max.): ± 4°C@ (0°C to + 70°C)
- Experiment 2: LM335 Temperature Sensor Circuit:
- Measurement Range: - 40°C to +100°C
- Accuracy (max.): ±2°C @ (25°C)
- Experiment 3: TC620 Temperature Sensor Circuit:
- Measurement Range: 0°C to +70°C
- Accuracy (max.): ±2°C
- Experiment 4: TC74 Temperature Sensor Circuit:
- Measurement Range: -40°C to +125°C
- Accuracy (max.): ± 3°C @ (0°C to+ 125°C)

4. Module Four:

- Chapter 4: Humidity Sensor Circuits:
- Experiment 1: H25K5A Humidity Sensor Circuit:
- Measurement Range: 20% - 90% RH
- Accuracy (max.): ±5% RH@25°C

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- Experiment 2: SI7007 Humidity Sensor Circuit:
- Measurement Range: 0 - 100% RH
- Accuracy (max.): ±5% RH@ (0 - 80% RH)
- Experiment 3: RH818 Humidity Sensor Circuit:
- Measurement Range: 0 - 100% RH
- Accuracy (max.): ±1% RH@ (10%- 90% RH)
- Experiment 4: DHT11 Humidity Sensor Circuit:
- Measurement Range: 20% - 90% RH
- Accuracy (max.): ±5% RH@ 25°C

5. Module Five:

- Chapter 5 Infrared Sensor Circuits:
- Experiment 1: RE200B Passive Infrared Sensor Circuit:
- Frequency Response: 0.3 Hz - 3 Hz/±10 dB
- Field of View: 21 ° - 159° (X axis), 27.5° - 152.5° (Y axis)
- Experiment 2: OTP-628 Thermopile Infrared Sensor Circuit:
- Thermopile Voltage: 2.6±0.8 mV
- Field of View: 45 ° - 135 ° (X axis), 45° - 135° (Y axis)
- Experiment 3: TS-S2NMB Thermopile Infrared Sensor Circuit:
- Thermopile Voltage: 2.43±0.6 mV
- Field of View: 45 ° - 135° (X axis), 45° - 135° (Y axis)

6. Module Six:

- Chapter 6 Gas Sensor Circuits:
- Experiment 1: Smoke Sensor Circuit
- Sensing Body Resistance: 1 kΩ - 10 kΩ (1000 ppm lsobutane)
- Operating Humidity: <95% RH
- Operating Oxygen Concentration (min.): >2%
- Experiment 2: Nature Gas Sensor Circuit:
- Sensing Body Resistance: 2 kΩ - 20 kΩ (5000 ppm Methane)
- Operating Humidity: <95% RH
- Operating Oxygen Concentration (min.): > 2%

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- Experiment 3: Alcohol Sensor Circuit:
- Sensing Body Resistance: 100.kΩ - 500 kΩ (100 ppm Alcohol)
- Operating Humidity: <95% RH
- Operating Oxygen Concentration (min.): > 2%
- Experiment 4: Carbon Monoxide Sensor Circuit:
- Sensing Body Resistance: 2 kΩ - 20 kΩ (100 ppm Carbon Monoxide)
- Operating Humidity: <95% RH
- Operating Oxygen Concentration (min.): > 2%

7. Module Seven:

- Chapter 7: Ultrasonic Sensor Circuits:
- Experiment 1: Sound Generator:
- Frequency: 850±100 Hz And 1700±150 Hz
- Experiment 2: Ultrasonic Transmitter:
- Operating Frequency: 40 kHz
- Operating Temperature: -20°C ~ +70°C
- Operating Humidity: <90% RH@40°C
  Experiment 3: Ultrasonic Receiver:
- Operating Frequency: 40 KHz
- Operating Temperature: -20°C ~ +70°C
- Operating Humidity: <90% RH@40°C

8. Module Eight:

- Chapter 8 Color Sensor Circuits:
- Experiment 1: Red Sensor Circuit
- Operating Wave length: 590 nm ~ 720 nm (λp: 660 nm)
- Experiment 2: Green Sensor Circuit:
- Operating Wave length: 480 nm ~ 660 nm (λp: 540 nm)
- Experiment 3: Blue Sensor Circuit:
- Operating Wave length: 400 nm ~ 540 nm (λp: 460 nm)

9. Function Generator and DC Power Supply:

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- Waveforms: Sine, Triangle Square, TTL Pulse
- Amplitude: >10Vpp Impedance: 50ohm±10 percent
- Duty Control: 30 percent ~ 60 percent
- Display: 6 Digit LED display
- Frequency Range: 10HZ to 100 kHz (4 Ranges)
- Frequency Range: 100HZ to 1 MHz (4 Ranges)
- Constant Voltage Output: ±5V, ±12V
- Variable Voltage Output: 0V ~ ±15V
- Power source: 220 to 230V AC, 50HZ, 1 Phase

10. Curriculum Objectives:

- To understand the basic theory of internet of things (IoT) system.
- Design and implementation of sensor circuit.
- Ability to research and to develop the sensor circuit.
- Familiar with the applications of high accuracy sensor circuit.

11. Curriculum Outline:

- Design and implementation of photo and switch sensor circuits.
- Design and implementation of temperature and humidity sensor circuits.
- Design and implementation of infrared and gas sensor circuits.
- Design and implementation of ultrasonic and color sensor circuits.

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