

IoT Equipments

Please provide quotation at best possible rates for following equipment on or before 30.11.2025 via email at: pa2director@thdcihet.ac.in

Sno.	Equipment	Specification	Quantity
1	Raspberry Pi 4 Model B 4GB Budget Kit	• Quad-Core Processor (1.5GHz): Fast performance with improved processing power. • Dual 4K HDMI Output: Supports dual 4K displays for enhanced multimedia. • 4GB RAM: Provides smooth multitasking and faster app performance. • USB-C Power Input: Ensures stable power supply with 5V, 3A input. • Wi-Fi & Bluetooth 5.0: Fast wireless connectivity for IoT and peripherals.	1
2	NodeMCU ESP8266 WiFi Module	• ☐ Processor: Dual-core Xtensa LX6 @ 240MHz • ☐ Flash Memory: 4MB • ☐ WiFi + Bluetooth: 802.11 b/g/n + BLE 4.2 • ☐ GPIO Pins: 30–36 (varies by board) • Operating Voltage: 3.0–3.6V	1
3	Arduino Uno R3	• Microcontroller: ATmega328P • Operating Voltage: 5V • Digital I/O Pins: 14 (6 PWM outputs) • Analog Input Pins: 6 • Clock Speed: 16 MHz • Flash Memory: 32 KB	1
4	Sensors & Modules Pack (Basic IoT Starter Kit)	• DHT11 (Temp & Humidity) • LDR (Light Sensor) • Soil Moisture Sensor • Ultrasonic Sensor HC-SR04 • IR Obstacle Sensor • MQ-2 Gas Sensor • Relay Module (5V / 12V)	1

5	SG90 9g Mini Servo Motor	• Model: TowerPro SG90 • Operating Voltage: 4.8V – 6V DC • Stall Torque: • 1.2 kg·cm @ 4.8V • 1.6 kg·cm @ 6V • Operating Speed: • 0.12 sec/60° @ 4.8V • 0.10 sec/60° @ 6V • Control System: PWM (Pulse Width Modulation) • Rotation Range: 0° – 180° (approx.) • Gear Type: Plastic gears • Motor Type: Coreless DC motor • Connector: 3-pin (VCC, GND, Signal) • Cable Length: ~25 cm • Weight: 9 g • Dimensions: 22.8 mm × 12.2 mm × 28.5 mm • Operating Temperature: 0°C – 55°C • Horn Type: Comes with 3 servo arms and mounting screws	1
6	DC motor	3RPM 12 Volts	1
7	Mini Water Pump	• Model: WPS27 • Rated Voltage: 12V DC • Operating Voltage Range: 5V – 12V DC • Power Consumption: 4.8 W • Max Flow Rate: 1 L/min (≈ 60 L/h) • Max Lift (Head): 1.2 meters • Working Current: 0.4 A • Pump Type: Diaphragm micro pump (non-submersible) • Inlet/Outlet Diameter: 4.5 mm (approx.) • Noise Level: Low noise operation • Waterproof Rating: IPX4 (splash-resistant) • Material: Engineering plastic body with rubber mounts	1

		• Drive Mode: Brushed DC motor • Life Span: > 20,000 hours continuous operation • Operating Temperature: 0°C – 60°C • Dimensions: 57 mm × 27 mm × 35 mm • Weight: ~60 g	
8	SIM800L V2 5V Wireless GSM GPRS MODULE Quad-Band with Antenna	• Model: SIM800L V2.0 • Power Supply Voltage: 3.7V – 5V DC • Operating Current: • Idle: ~18 mA • Transmission: 500 mA (peak up to 2A) • Frequency Bands (Quad-Band): • GSM 850 MHz • EGSM 900 MHz • DCS 1800 MHz • PCS 1900 MHz • Communication Interface: UART (TTL level, 2.8V logic) • Baud Rate: 1200 bps – 115200 bps (default 9600 bps) • GPRS Multi-Slot Class: 12 (maximum) • GPRS Mobile Station Class: B • SIM Card Support: Micro SIM • Antenna Interface: External antenna via IPX connector (included) • Network Protocols: TCP, UDP, HTTP, FTP, SMS, Voice • Operating Temperature: –40°C to +85°C • Indicator LEDs: • Power status • Network status • Dimensions: 25 mm × 23 mm × 3 mm • Weight: ~10 g	1
9	SX1278 LoRa Module	• Model: Ra-02 (based on Semtech SX1278 chip) • Frequency Range: 410 MHz – 525 MHz (default 433 MHz)	1

		• Modulation Technique: LoRa (Long Range) Spread Spectrum • Communication Interface: SPI (Serial Peripheral Interface) • Data Rate: 0.018 kbps – 37.5 kbps • Output Power: Up to +20 dBm (100 mW) • Receiver Sensitivity: –148 dBm (maximum) • Communication Distance: • Up to 5 km (line of sight, low interference) • Antenna Interface: IPEX (U.FL) connector • Power Supply Voltage: 1.8V – 3.7V DC (typical 3.3V) • Current Consumption: • TX: 120 mA (max) • RX: 10.3 mA • Sleep: 0.2 μA • Operating Temperature: –40°C to +80°C • Protocol Support: LoRa™ and FSK modulation • Dimensions: 17 mm $\times$ 16 mm $\times$ 2 mm • Weight: ~2 g	
10	HC-05 6pin Bluetooth Module with Button	• Model: HC-05 • Bluetooth Version: 2.0 + EDR (Enhanced Data Rate) • Frequency: 2.4 GHz ISM band • Modulation: GFSK (Gaussian Frequency Shift Keying) • Communication Interface: UART (Serial) • Default Baud Rate: 9600 bps (configurable: 1200–1382400 bps) • Operating Voltage: 3.6V – 6V DC (typically 5V) • Logic Level: 3.3V (RX/TX pins) • Operating Current: • Idle: ~30 mA • Connected: ~8 mA • Sleep Mode: <1 mA	1

		• Communication Range: ~10 meters (open space) • Transmit Power: $\leq +4$ dBm • Sensitivity: ≤ -80 dBm • Configuration: AT Command Mode (via onboard button) • Roles Supported: Master and Slave (switchable) • Pins: EN, VCC, GND, TXD, RXD, STATE • Indicator LEDs: Connection status indication • Antenna: Onboard PCB antenna • Dimensions: 37 mm $\times$ 15 mm $\times$ 6 mm • Weight: ~5 g	
11	Breadboard and Jumper Wires	-	1
12	12V 5200mAh Rechargeable Lithium-ion Battery Pack	• Battery Type: Lithium-ion (3 $\times$ 18650 cells, series connection) • Nominal Voltage: 12V DC • Capacity: 3000mAh (3Ah) • Output Connector: DC Barrel Jack (5.5 $\times$ 2.1 mm) • Input Connector: 5.5 $\times$ 2.1 mm (for charging) • Charging Voltage: 12.6V DC (use 12.6V Li-ion charger) • Maximum Discharge Current: ~1.5A – 2A (continuous) • Protection Circuit: Built-in BMS (overcharge, over-discharge, and short-circuit protection) • Recharge Cycles: 500+ cycles (typical) • Cable Length: ~15 cm • Dimensions: Approx. 67 mm $\times$ 56 mm $\times$ 18 mm • Weight: ~90 g • Use Case: Ideal for Arduino, Raspberry Pi, ESP32, IoT nodes, LED strips, small motors, and portable robotics projects.	1

13	5V 8 Channel Relay Module	• Operating Voltage: 5V DC • Trigger Voltage: 5V TTL signal (compatible with Arduino, Raspberry Pi, ESP32, etc.) • Relay Type: SPDT (Single Pole Double Throw) × 8 channels • Contact Rating: 10A @ 250V AC or 10A @ 30V DC (per channel) • Trigger Current: 15–20 mA per channel • Isolation: Optocoupler isolation between control and load circuits • Control Signal: Active Low trigger • Input Interface (per channel): IN1–IN8, VCC, GND • Output Interface (per relay): COM (Common), NO (Normally Open), NC (Normally Closed) • Indicator LEDs: • Power status LED • Relay status LEDs (one per channel) • Operating Temperature: –40°C to +85°C • Dimensions: Approx. 138 mm × 55 mm × 19 mm • Mounting: Pre-drilled holes for easy panel mounting • Protection: Flyback diode protection for relay coils • Board Type: Optocoupler-isolated PCB for enhanced safety	1
14	3.3V/5V MB102 Breadboard Power Supply Module	• Input Voltage: 6.5V – 12V DC (via DC barrel jack or USB port) • Output Voltage: 3.3V and/or 5V DC (selectable via jumpers) • Output Current: Max 700 mA (recommended continuous) • Power Input Options: • Standard DC barrel jack (5.5 × 2.1 mm) • USB Type-A connector • Output Channels: • Dual independent output lines (one for each power rail on the breadboard)	1

		• Can simultaneously output 3.3V on one rail and 5V on the other • Compatible Breadboard: Standard MB102 830-point solderless breadboard • Indicator LED: Power status indicator • Onboard Switch: Power ON/OFF toggle • Voltage Selection Jumpers: Two sets (left & right rails) for 3.3V or 5V selection • Protection: Overcurrent and short-circuit protection • Operating Temperature: -20°C to $+85^{\circ}\text{C}$ • Dimensions: 53 mm $\times$ 32 mm $\times$ 15 mm • Weight: ~ 15 g	
15	0.96 Inch I2C/IIC 4-Pin OLED Display Module	• Display Type: OLED (Organic Light Emitting Diode) • Display Size: 0.96 inch (diagonal) • Resolution: 128 $\times$ 64 pixels • Color: White (monochrome) • Driving IC: SSD1306 • Interface Type: I2C (IIC) – 4-pin interface (GND, VCC, SCL, SDA) • Operating Voltage: 3.3V – 5V DC (compatible with Arduino, Raspberry Pi, ESP32, etc.) • Operating Current: 20 mA (typical) • Viewing Angle: $>160^{\circ}$ • Communication Speed: Up to 400 kHz (I2C standard mode) • Display Technology: Self-emissive (no backlight needed) • Operating Temperature: -30°C to $+70^{\circ}\text{C}$ • Dimensions: 27 mm $\times$ 27 mm $\times$ 4 mm • Weight: ~ 5 g • Mounting: 4-pin header (male/female compatible)	1

		• Compatibility: Works with Arduino, ESP8266, ESP32, STM32, and Raspberry Pi boards	
16	16×2 (1602) LCD Keypad Shield	• Operating Voltage: 5 V DC • LCD Model: 1602 (16 characters × 2 lines) • Character Color: White • Backlight Color: Blue • Number of Push Buttons: 5 (Up, Down, Left, Right, Select) • Reset Button: Yes, separate reset button on the shield • PCB Dimensions: 80 mm × 58 mm • Total Height: 26 mm • Weight: Approximately 45 g	1
17	Wireless VoIP GPON Router	• Dual-band Wi-Fi (2.4 GHz & 5 GHz), speeds up to 1200 Mbps (867 Mbps at 5 GHz, 300 Mbps at 2.4 GHz) • 4 x Gigabit LAN ports • 1 x SC/APC GPON port (fiber), compliant with ITU-T G.984/G.988 • 1 x RJ11 FXS port for VoIP calls • 2 external dual-band antennas • WPA/WPA2, WPA-PSK/WPA2-PSK wireless security • Mesh technology support: EasyMesh, TP-Link OneMesh • OMCI, TR-069 remote management support • Parental control, QoS, VLAN, IPTV support • Power supply: 12V/1.0A (or 1.5A) • Compatible OS: Windows, macOS, NetWare, UNIX, Linux • Dimensions: Approx. 50 x 50 x 28 cm; Weight: 560g • Package: Router, ethernet cable, power adapter, quick installation guide	1

