Training: Embedded and Internet of Things (IoT)

+ DISCUSSIONS ON IOT

- What is internet of things?
- Origin of the term IOT.
- Architecture of IOT solutions.
- IOT communication technologies.
- IOT Protocol Stack.
- IOT End points and its architecture.
- Application domains of IOT.
- Future of IOT.

☐ AUTOMATION PROGRAMMING ON IOT HARDWARE

- **Introduction of NODE MCU (IOT development Board)**
  o NodeMCU Architecture
  o Hardware description.
  o Pin diagram.
  o Capabilities.
  o Requirements.

- **Introduction of software IDE**
  o Introduction to Arduino software IDE.
  o PORT initialization & its significance.
  o PORT declaration & its significance.
  o Exercise.

☐ IOT PROGRAMMING

- **IOT HTTP PROTOCOL – POST REQUEST (on self-configured IOT cloud server): Industrial sensor data acquisition at cloud server and its database management in SQL database**
  - What is HTTP protocol?
  - What is HTTP POST request?
  - Configure server control panel.
  - File handling on server.
  - Server troubleshooting.
  - SQL database configuration at cloud server.
  - Cloud server connection troubleshooting with NodeMCU.
  - NodeMCU algorithm to make HTTP POST request
  - Sensor data acquisition and its packet formation for HTTP protocol.
  - PHP programming with java scripts for graphical representation of data.
  - PHP/HTML programming for tabular representation of data.
  - Industry Project

- **IOT HTTP PROTOCOL – GET REQUEST (on self-configured IOT cloud server):**

  Industrial Internet of things (IIOT) remote devices control and automation
  - What is HTTP protocol?
  - What is HTTP GET request?
  - NodeMCU algorithm to make HTTP GET request
  - Relay configuration to switch devices.
  - Configure domain name.
  - Configure server control panel.
  - File handling on server.
  - Server troubleshooting.
  - PHP/HTML programming for Graphical Control Panel.
  - Industry proejct

☐ IOT Cloud server Configuration (Configure your own server)
- Providers of server?
- Configure domain name.
- Configure webhosting.
- Configure phpMyAdmin for database management (SQL programming).
- GUI/Front end file and management.
- File handling on server.
- Server troubleshooting.