Industrial Automation Specialist

QP Code: IAS/Q8005 NSQF Level – 5

Full Curriculum

Module 1: Environment, Health & Safety Module

184 hrs

Environmental health and safety managers inspect and evaluate the environment, equipment, and processes in working areas to ensure compliance with government safety regulations and industry standards. Their chief goal is to protect the employees, customers, and the environment.

Technical Topics:

- Understand Health and safety legislation, obligations, and documentation
- Diligently follow electrical safety procedures
- Follow the situations when personal protective equipment must be used
- Identify and use the appropriate personal protective equipment including safety footwear, ear, and eye protection
- Introduce related trades to support customer requirements
- The common types of problem which can occur within the work process
- The importance of keeping a tidy work area
- Trends and developments in the industry including new technology
- Work efficiently and check progress and outcomes regularly
- Different methods of Fire Extinguish & advance fire suppression System

Non-Technical Topics:

- Grooming and Personal Hygiene
- Soft skill & Interpersonal skill
- Formal & Informal conversation

Module 2: Fundamentals Of Electricity

144 hrs

Voltage and current are the cornerstone concepts in electricity. We will create our first mental models for these basic electrical quantities. We will also talk about power, which is what happens when voltage and current act together.

Technical Topics:

- Understanding about basic principles of electricity
- Generation, Transmission & Distribution of Power
- Units, Measurements
- Measuring instruments, Electrical Components and Tools
- Cables, Wires and Cable Glands
- Ducts, Cables and Pipes
- Indian Standards
- Draw, Read, interpret, and revise drawings (SLD, Sketches)
- Symbols, SLD, Terminologies

Non-Technical Topics:

- Business communication
- Body language & workplace readiness
- Time & Stress Management

Module 3: Introduction To Electrical Machines

64 hrs

An electrical machine is a device that converts electrical energy into mechanical energy and vice versa. Transformer is also listed as an electrical machine which changes the voltage level of alternating current without changing frequency.

Technical Topics:

- Transformers
- Types of transformers
- Working Principles
- Generators
- Diesel Generator – working principles
- Routine checks on a DG along with the frequency
- Synchronization of DGs
- UPS
- Types of UPS
- Critical maintenance needs of an UPS
- Energy Conservation
- Energy Audit
- Motor & Drives
- Different types of Motors
- Application of various motors as applicable to different industries

Non-Technical Topics:

- Self-Management
- Problem solving & Decision making
- Basics of computer, MS Word

Module 4: Industrial Automation

312 hrs

Industrial Automation is a process of operating machines and other industrial equipment with the help of digital logical programming and reducing human intervention in decision making and manual command process with the help of mechanized equipment.

Technical Topics:

- Introduction to Automation
- Definition
- Role of Automation in Industrial Scenarios
- Industrial Applications
- History of Automation
- Automation Components
- Relays
- Sensors
- Control Actuators
- Solenoids
- Valves
- Hydraulics
- Pneumatics

Non-Technical Topics:

- Email Etiquette
- Presentation skill
- Techniques of attending Interview

Module 5: Programmable Logic Controller

144 hrs

The programmable logic controller, or PLC, is ubiquitous in process and manufacturing industries today. Initially built to replace electromechanical relay systems, the PLC offers a simpler solution for modifying the operation of a control system. Rather than having to rewire a large bank of relays, a quick download from a PC or programming device enables control logic changes in a matter of minutes or even seconds.

Technical Topics:

- Introduction
- Advantages of PLC Control
- Architecture of PLC
- Different type of I/O's
- Digital Input & Output
- Analog Input & Output
- Programming Basics
- Basic Instructions – NO/NC contacts
- Boolean gates – Symbols & Truth tables
- Programming language
- Programming Functional Blocks
- HMI Development
- Programming Instructions

Non-Technical Topics:

- Mock Interview Session
- Group Discussion
- Introductory module on Personality

Module 6: Residential & Industrial Wiring

120 hrs

Residential electrical wiring is always completely covered within sheath insulation. This is meant to protect residents from electrical shock. From a technical aspect, most residential wiring is single phase and 120 Volts, consisting of three wires: positive, negative, and neutral.

Technical Topics:

- Introduction to Residential wiring
- Activities on Pipe cutting and bending – PVC & GI
- Activities on Casing, Capping and cable trays cutting – PVC & GI
- Single switch
- Double switch
- Power socket
- Controlled power socket
- Introduction to Electrical Switchgears – Contactors, Switches, Circuit Breakers, Isolators, Protection devices etc
- Direct Online starter 2 directions with limit switches
- Star delta 1 direction

Non-Technical Topics:

- Resume Building
- Workplace Etiquettes
- Microsoft Excel & Power Point