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# Model Curriculum

## Industrial Automation Specialist

**Sector:** Instrumentation Automation Surveillance & Communication  
**Sub-Sector:** Automation  
**Occupation:** Product Engineering / System Design  
**Ref ID:** IAS/Q8005

### List of NOS involved:

1. IAS/N2000 Design and Develop Automation System
2. IAS/N2001 Technical Support for Installation and Commissioning of control panel
3. IAS/N2002 Coordination With Different Stakeholders
4. IAS/N2003 Health and Safety in Workplace

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# Industrial Automation Specialist

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of an “Industrial Automation Specialist”, in the “INSTRUMENTATION AUTOMATION SURVEILLANCE & COMMUNICATION” Sector/Industry and aims at building the following key competencies amongst the learner:

<b>Program Name</b>	<b>Industrial Automation Specialist</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	IAS/Q8005, V 1.0		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	30/07/2019
<b>Pre-requisites to Training</b>	B. E. / B. Tech. (Electrical, Electronics, Mechatronics, Instrumentation) or M.Sc. (Electronics)		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• Provide solutions to automation problems for manufacturing and process industries.</li> <li>• Capture client requirements of industrial automation needs</li> <li>• Study existing facilities, if any, at the client premises and suggest appropriate technologies and systems.</li> <li>• Identify I/O devices and interfaces required for the system.</li> <li>• Create wiring specifications, wiring layout and wiring plan.</li> <li>• Create specifications, drawings and Bill of Quantities (BOQ) of the system to aid in procurement</li> <li>• Design solutions based on recommended components and assist in making proposals.</li> <li>• Design wiring and interconnection layouts for the proposed system.</li> <li>• Design Panel drawing and layouts.</li> <li>• Develop programs for the PLC and SCADA systems included in the design to satisfy the user requirements.</li> <li>• Inspect the correctness of the procured systems against specifications.</li> <li>• Assemble / Supervise assembly of the system panel, with all components, terminals and interconnections.</li> <li>• Perform wiring and I/O checks</li> <li>• Perform factory test of the control panel with dummy/simulated loads</li> <li>• Document the project, test reports and prepare user manual.</li> <li>• Supervise shipment of the control panel to customer site.</li> </ul>		

	<ul style="list-style-type: none"> <li>• Perform site inspection and coordinate with the customer on site readiness.</li> <li>• Providing technical support for installation and commissioning of the control panel at customer site.</li> <li>• Test the control panel at customer site and ensure its powering up and proper operation.</li> <li>• Integrate the control panel to user systems as specified in order.</li> <li>• Perform user acceptance test and ensure all issues are closed.</li> <li>• Train the users on the operation of the panel.</li> <li>• Install automation system components and verify correct operation.</li> <li>• Provide technical support and guidance to the technicians and other personnel involved in the project.</li> <li>• Monitor progress at every stage and prepare logs.</li> <li>• Prepare test, inspection, failure and acceptance reports and communicate to the superiors timely.</li> <li>• Escalate issue in time to get support from managers.</li> <li>• Follow health and safety norms of the industry</li> <li>• Work effectively in a multidisciplinary team</li> </ul>
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This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Industrial Automation Specialist” Qualification Pack issued by “Instrumentation Automation Surveillance & Communication Sector Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p><b>Overview of Industrial Automation</b></p> <p><b>Theory Duration</b> (hh:mm) 32:00</p> <p><b>Practical Duration</b> (hh:mm) 32:00</p> <p><b>Industry visit Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> IAS/N2000 IAS/N2001 IAS/N2002 IAS/N2003</p>	<ul style="list-style-type: none"> <li>• Familiarize with the components and technologies involved in a typical Industrial Automation System</li> <li>• Recall concepts of Current, Voltage, Power Factor &amp; Power, Ohms Law, Kirchhoff’s laws</li> <li>• Recall of concepts of AC &amp; DC Current and Voltage, Line &amp; Neutral, Single and Three phase systems</li> <li>• Recall of basic electronic components - Diodes, Triodes, Transistors, Resistors, Capacitors, Inductors, LEDs, Thermistors etc.</li> <li>• Recall of basic electrical components Push Buttons, Indicating Lamps, Selector/Key Switches, Limit Switches, and Proximity Switches etc.</li> <li>• Recall of Transformers (CT/PT), Voltmeter, Ammeter, Energy meter, Terminal Blocks &amp; Din Rails</li> </ul>	Laptop, white board, marker, projector, Electrical & Electronics lab, Automation and Mechatronics lab, MS Office / Open office, PLC, SCADA Software, Industry visit

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Recall of concept of Relays and Contactors (NO/NC)</li> <li>• Recall of Power Supplies, Earthing &amp; Grounding practices</li> <li>• Recall of the properties and use of Shielded &amp; Unshielded Cables, LAN and Fibre cables, Power cables, Cable Gauges &amp; AWG sizes, IS standards for Colour Codes &amp; Application</li> <li>• Recall of Electrical Circuits (Series / Parallel), Star &amp; Delta Connections, Bus Bars, Line chokes &amp; Capacitors, ISA Symbols</li> <li>• Recall of common sensors used in the industry – temperature, pressure, level, flow, pH, conductivity, gas detectors, turbidity, position encoders etc.</li> <li>• Recall common actuators, switches, valves, control elements etc. used in automation such as electromechanical, solenoid valves, control valves, positioners linear, rotary, pneumatic and hydraulic and accessories.</li> <li>• Recall PLC systems, I/O modules and accessories</li> <li>• Recall PLC programming and testing basics</li> <li>• Recall SCADA systems, programming and communications</li> <li>• Recall Pneumatics basics</li> <li>• Recall Hydraulics Basics</li> <li>• Recall Mechatronics basics</li> <li>• Recall Robotics Basics</li> <li>• Recall industrial safety basics</li> <li>• Recall Project Management basics</li> <li>• Recall Teamwork and Communication basics</li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Design and Develop Automation system</b></p> <p><b>Theory Duration</b> (hh:mm) 64:00</p> <p><b>Practical Duration</b> (hh:mm) 128:00</p> <p><b>Industry visit Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> IAS/N2000</p>	<p>Able to:</p> <ul style="list-style-type: none"> <li>• Capture the process flow in the client industry</li> <li>• Understand the critical stages in the process and articulate about the possibility of automation in the existing processes and global trends in automation</li> <li>• Capture requirements of sensors, actuators, controllers, accessories and software and their specifications</li> <li>• Capture control and functional requirements of the user and draw specifications</li> <li>• Suggest possible automation alternatives with costs, time, effort and justifications</li> <li>• Assist in deciding on configurations, BOQ, deliverables and timelines</li> <li>• Prepare panel design and drawings</li> <li>• Prepare wiring layout, I/O list, wiring list and drawings</li> <li>• Design and developing control system application – for PLC, HMI and SCADA</li> <li>• Design and develop other interfacing and communication software</li> <li>• Inspect the procured components</li> <li>• Supervise assembly and wiring of control panels</li> <li>• Test and Troubleshoot the system developed</li> <li>• Conduct factory inspection and coordinate dispatch</li> <li>• Conduct site visit and customer interactions</li> <li>• Perform panel inspection at site and take corrective actions</li> <li>• Assemble control panel at site</li> <li>• Ensure proper installation of field device, sensors, actuators and power sources</li> <li>• Supervise wiring and interconnections</li> <li>• Supervise integrity tests and powering of connected systems in a planned manner</li> </ul>	<p>Laptop, white board, marker, projector, Automation and Mechatronics lab, MS Office / Open Office software, PLC, SCADA Software, Industry visit</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Assist in control loop tests in orderly manner</li> <li>• Assist in control loop tuning</li> <li>• Ascertain safety and security compliance of the system</li> <li>• Demonstrate system performance to client</li> <li>• Perform acceptance test and close issues</li> <li>• Document and file reports</li> <li>• Take backup of program, configuration and data</li> <li>• Escalate issues to superiors and take directions</li> <li>• Provide technical assistance and guidance to the field personnel and client team</li> <li>• Achieve quality and productivity standards</li> </ul>	
3	<p><b>Technical Support for installation and commissioning of control panel</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 40:00</p> <p><b>Industry visit Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> IAS/N2001</p>	<p>Able to perform:</p> <ul style="list-style-type: none"> <li>• Capture work requirement at site</li> <li>• Plan Installation and Commissioning work at site</li> <li>• Perform Site Inspection and ensure site readiness</li> <li>• Provide Technical Support for installation and commissioning of control panel, field devices, wiring and interconnections</li> <li>• Troubleshoot and Rectify identified errors</li> <li>• Enable and troubleshoot control loops</li> <li>• Assist in performing control loop tuning</li> <li>• Assist in customer acceptance test and closure of issues</li> <li>• Achieve productivity, quality and safety standards as per company's norms</li> </ul>	Laptop, white board, marker, projector, Automation and Mechatronics lab, Software, Industry visit
4	<p><b>Wiring Drawings of Control Panels</b></p> <p><b>Theory Duration</b></p>	<p>Able to perform:</p> <ul style="list-style-type: none"> <li>• Basic AutoCAD Commands</li> <li>• Read AutoCAD drawings of Panel and Wiring</li> </ul>	Laptop, white board, marker, projector, AutoCAD

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	(hh:mm) 08:00 <b>Practical Duration</b> (hh:mm) 24:00 <b>Corresponding NOS Code</b> IAS/N2000 IAS/N2001	<ul style="list-style-type: none"> <li>Edit and create AutoCAD drawings of Panel wiring</li> </ul>	
5	<b>Electrical Safety</b>  <b>Theory Duration</b> (hh:mm) 08:00 <b>Practical Duration</b> (hh:mm) 08:00 <b>Corresponding NOS Code</b> IAS/N2000 IAS/N2001	<p>Practices:</p> <ul style="list-style-type: none"> <li>Use of Rubber soled Shoes, Gloves and Goggles where necessary</li> <li>Measure Conductivity of Water</li> <li>Install, use, troubleshoot MCBs, ELCBs, Fuses, SFUs</li> <li>Design and build Earthing Pit</li> <li>Assemble Earthing Plates &amp; Strips</li> </ul>	Laptop, white board, marker, projector, Electrical safety accessories, Electrical switchgear, Conductivity meter, Earth pit and its components
6	<b>Tools &amp; Equipment</b>  <b>Theory Duration</b> (hh:mm) 06:00 <b>Practical Duration</b> (hh:mm) 10:00 <b>Corresponding NOS Code</b> IAS/N2000 IAS/N2001	<p>Knows and applies:</p> <ul style="list-style-type: none"> <li>Using a Multi-meter for Current, voltage (AC/DC), Resistance &amp; Continuity measurements</li> <li>Using a tester</li> <li>Using a Tong-Tester</li> <li>Using Pliers and Wire Stripper</li> <li>Screw Driver Set (All terminal types)</li> <li>Use of Allen Key Set</li> <li>Using a Power Drill (Drill bits)</li> <li>Using Insulation Tape</li> <li>Using Wire Lugs</li> <li>Using a soldering Iron</li> <li>Using a Megger</li> <li>Using Wrenches, Hammer, Wire bender etc.</li> <li>Using a Ladder</li> <li>Using Shielded cable tools</li> <li>Using LAN cable tools</li> </ul>	Laptop, white board, marker, projector, Tool sets, Meter sets, Wires, Cables, Terminals, Sockets, etc.
7	<b>Professional Skills</b>  <b>Theory Duration</b> (hh:mm) 08:00 <b>Practical Duration</b>	<p>Able to:</p> <ul style="list-style-type: none"> <li>Understand and document application Requirements</li> <li>Generate I/O Summary &amp; BOQ</li> <li>Prepare RFQs</li> </ul>	Laptop, white board, marker, projector, MS Office software, eMail, Printer, MS



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	(hh:mm) 08:00 <b>Corresponding NOS Code</b> IAS/N2000 IAS/N2001	<ul style="list-style-type: none"> <li>• Prepare &amp; Read Job sheets</li> <li>• Prepare indents, invoices and Maintenance logs</li> <li>• Prepare Project management plan</li> <li>• Use MS Excel &amp; MS Word for planning and Record keeping</li> <li>• Prepare As-built documentation, Ferrule list</li> <li>• Share and delegate of Tasks</li> <li>• Prepare Task Reports</li> <li>• Prepare and email documents, reports and escalation reports</li> </ul>	Project / Open Project software
8	<b>Coordination With Different Stakeholders</b>  <b>Theory Duration</b> (hh:mm) 20:00 <b>Practical Duration</b> (hh:mm) 24:00 <b>Corresponding NOS Code</b> IAS/N2002	Able to interact with client to: <ul style="list-style-type: none"> <li>• Understand stakeholders' needs.</li> <li>• Identify solution options that meet client needs and present these to the client with pros and cons.</li> <li>• Enquire about integration scope and interfaces.</li> <li>• Develop detailed design of the solution, cost and time.</li> <li>• Finalize ordering in coordination with sales team.</li> <li>• Finalize specifications of the User Acceptance test.</li> <li>• Prepare Project Plan and share with the client.</li> <li>• Inform client about site requirements.</li> <li>• Coordinate installation and commissioning of the solution at site</li> <li>• Demonstrate the system performance at the site and get client report of acceptance.</li> <li>• Maintain communication with the client about usability and other issues and provide timely resolution.</li> </ul> Able to coordinate with the Sales team: <ul style="list-style-type: none"> <li>• Understand the client account, organization goals and high level needs of the client.</li> </ul>	Laptop, white board, marker, projector, MS Office / Open Office software, email, Printer

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Identify and meet important stakeholders in the client organization</li> <li>• Identify solution options that meet client needs with pros and cons.</li> <li>• Provide technical specifications and the cost/time estimates.</li> <li>• Assist the sales team to win the order.</li> <li>• Share system performance at the site and client report of acceptance.</li> <li>• Share client feedback and resolve issues if any.</li> <li>• Coordinate with the sales team about service contract and AMC</li> </ul> <p>Able to coordinate with other Teams and Departments in the Organization:</p> <ul style="list-style-type: none"> <li>• Prepare detailed BOQ and share with the Purchase department.</li> <li>• Coordinate with the Purchase department to finalize vendors and subcontractors.</li> <li>• Share Project Specifications and Plan and with concerned departments/ groups in the organization such as Purchase, Fabrication, Assembly, Software, Testing and Documentation etc.</li> <li>• Receive parts and spares from stores and deposit unused material to stores.</li> <li>• Coordinate with the Integration and Testing team for factory inspection by client.</li> <li>• Coordinate installation and commissioning of the system at site.</li> <li>• Coordinate with Installation and Commissioning team for system performance test at site.</li> <li>• Coordinate with Installation and Commissioning team for the user training.</li> <li>• Share client feedback with all teams and resolve issues if any.</li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>Able to coordinate with vendors and subcontractors selected for fulfilment of the order:</p> <ul style="list-style-type: none"> <li>• Explain the specifications, scope and timelines and ensure that they understand and accept.</li> <li>• Guide / assist vendors technically to ensure quality and timely delivery.</li> <li>• Inspect facilities to ensure that they have the right expertise, infrastructure and capacity to deliver.</li> <li>• Prepare alternate plans in consultation with Procurement department for outsourced work.</li> <li>• Perform intermediate and pre-dispatch tests at vendor premises.</li> <li>• Support vendors to deliver quality products and services in time.</li> </ul> <p>Able to communicate with colleagues:</p> <ul style="list-style-type: none"> <li>• Have clearly defined responsibilities and backup plans for all team members</li> <li>• Share plans, deliverables and expectations with team members</li> <li>• Have regular meetings to share progress, issues and resolutions</li> <li>• Share and celebrate team success</li> <li>• Help new members to settle down and perform</li> <li>• Support team in delivering performance</li> <li>• Resolve inter-personnel conflicts and achieve smooth workflow</li> <li>• Pass on customer complaints to colleagues in respective geographies</li> <li>• Share knowledge and experience gained through every day work</li> </ul> <p>Able to communicate with Supervisor / Manager</p> <ul style="list-style-type: none"> <li>• Communicate with Manager per organization structure and practices to take directions and share solutions and progress.</li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Report problems identified in the field</li> <li>• Escalate customer concerns that are not being handled properly in the field</li> <li>• Resolve personnel issues</li> <li>• Receive feedback on work standards and customer satisfaction</li> <li>• Communicate any potential hazards at a particular location</li> <li>• Deliver work of expected quality despite constraints</li> <li>• Provide feedback to seniors about a happy or dissatisfied customer</li> </ul>	
9	<p><b>Health and Safety in Workplace</b></p> <p><b>Theory Duration</b> (hh:mm) 04:00</p> <p><b>Practical Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> IAS/N2003</p>	<p>Able to:</p> <ul style="list-style-type: none"> <li>• Understand Safety Policy of the company and client</li> <li>• Follow procedures for handling Fire &amp; Hazardous chemicals</li> <li>• Report Incidents</li> <li>• Use Fire Extinguishers A,B,C, ABC</li> <li>• Follow ESD Procedures for handling electronic components</li> <li>• Use Safety Helmets, Ear plugs, Shoes, Gloves, goggles &amp; Safety harnesses.</li> <li>• Use First aid for Electrical Shock &amp; Burn victims</li> <li>• Perform Fire Drills &amp; Evacuation procedures</li> <li>• Use helmet &amp; Respect for Traffic rules</li> <li>• Understand and apply Health Policy</li> <li>• Understand and practice Posture, exercise &amp; diet</li> </ul>	<p>Laptop, white board, marker, projector, Fire Drill accessories, First Aid kit, Protective Gear and accessories</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Total Duration</b></p> <p><b>Theory Duration</b> <b>174:00</b></p> <p><b>Practical Duration</b> <b>282:00</b></p> <p><b>Industry Visit Duration</b> <b>24:00</b></p>	<p><b>Unique Equipment Required:</b></p> <ul style="list-style-type: none"> <li>• Laptop, white board, marker, projector</li> <li>• Basic AC &amp; DC Electrical &amp; Electronics lab.</li> <li>• Automation Lab which includes: Ethernet LAN, PLC, SCADA, HMI, Field Devices, Sensors, Actuator, Control Valves, VFD, Cables – Wiring, Power, Coaxial, LAN, Fibre; Tools, Meters, Software</li> <li>• Mechatronics Lab which included Pneumatic devices, switches, actuators, cylinders, control valves, compressor, piping, hydraulic pump, ports, piping, control elements and accessories.</li> <li>• Electrical safety accessories, Electrical switchgear, Conductivity meter, Earth pit and its components</li> <li>• Tool sets, Meter sets, Wires, Cables, Terminals, Sockets, Panels, Cable tray, Ferrules, Cable Glands, Supporting infrastructure</li> <li>• Meter sets, Wires, Cables, Terminals, Sockets, Supporting infrastructure</li> <li>• Fire Drill accessories, First Aid kit, Protective Gear, ESD accessories</li> <li>• AUTOCAD Software, MS Office / Open Office software, eMail, Printer, MS Project/Open Project</li> <li>• SCADA, PLC, Communication, Networking software</li> </ul>	

**Grand Total Course Duration: 480Hours, 00 Minutes**

### Trainer Prerequisites for Job role: “Industrial Automation Specialist” mapped to Qualification Pack: “IAS/Q8005”

Sr. No.	Area	Details
1	<b>Description</b>	Industrial Automation Specialist provides solutions to automation problems for manufacturing and process industries. The individual is responsible for understanding user application, capturing these, proposing solution alternatives, writing technical specifications, designing and assembling the system, testing and providing technical support for installing and commissioning at customer site and ensure its powering up and proper operation.  The individual provides post installation technical supports for the systems.
2	<b>Personal Attributes</b>	The individual must have interdisciplinary aptitude, pay attention to details, does logical thinking, and has ability to work within the factory and customer sites in a team environment and under deadlines.
3	<b>Minimum Educational Qualifications</b>	B. E. / B. Tech. (Electrical, Electronics, Mechatronics, Instrumentation) , M.Sc. (Electronics)
4a	<b>Domain Certification</b>	Certified for Job Role: “Industrial Automation Specialist” mapped to QP: “IAS/Q8005”. Minimum accepted score is 80%
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102”. Minimum accepted score is 70%.
5	<b>Experience</b>	Relevant industry experience of 2 Years

<b>Job Role</b>	<b>Industrial Automation Specialist</b>
<b>Qualification Pack</b>	<b>IAS/Q8005</b>
<b>Sector Skill Council</b>	<b>INSTRUMENTATION AUTOMATION SURVEILLANCE &amp; COMMUNICATION</b>

### **Guidelines for Assessment**

1. Criteria for assessment for each Qualification Pack will be approved by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions approved by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

<b>Sl. No.</b>	<b>NOS no.</b>	<b>NOS Name</b>	<b>% Weightage</b>
1	IAS/N2000	Design and Develop Automation System	35
2	IAS/N2001	Technical Support for Installation and Commissioning of control panel	30
3	IAS/N2002	Coordination With Different Stakeholders	30
4	IAS/N2003	Health and Safety in Workplace	5
			100%

Assessment outcomes	Assessment Criteria for outcomes	Total Marks (300+200+285+50)	Marks Allocation		
			Out of	Theory	Skill Practical
<b>1. IAS/N2000 Design and Assemble Automation System</b>	PC1. Understand and capture the general value chain of the end user industry	<b>300</b>	3	1	2
	PC2. Understand and capture the manufacturing process/system in the end user industry		4	2	2
	PC3. Understand and capture the equipment used in different stages of the process		3	1	2
	PC4. Understand and capture the critical stages in the process		3	1	2
	PC5. Explain about the possible automation in the existing processes and global trends in automation		4	2	2
	PC6. Capture the client requirement at broad level from the proposal		4	2	2
	PC7. Plan for a site visit to capture detailed requirements		3	1	2
	PC8. Capture the process flow involved and the critical stages in the process during site visit		5	2	3
	PC9. Deduce the safety aspect required in the critical stages of the process		4	2	2
	PC10. Capture the industrial and infrastructure process involved and the integration requirement of the processes		4	2	2
	PC11. Discuss with client and Capture the automation requirement in the control system		5	2	3
	PC12. Capture the purpose for automation and explain to the user about the possible outcomes		5	2	3
	PC13. Collect the details of the equipment installed or to be installed		4	1	3
	PC14. Collect the requirement specification if already prepared by the user and clarify on technical aspects		4	1	3
	PC15. Suggest globally practiced and accepted automation systems if the user is not aware of the technical specifications		4	1	3
	PC16. Capture the sub systems that are involved in the process		4	1	3
	PC17. Capture sensors and actuators requirement.		5	2	3
	PC18. Collect information on process logic		5	2	3
	PC19. Collect information for operator station screens		5	2	3



PC20. Probe the user by asking multiple questions to have clarity on the user requirement	5	2	3
PC21. Summarize the user requirement specifications and confirm with the client on their understanding	10	4	6
PC22. Decide on whether the system can be developed as per the user requirement	5	2	3
PC23. Support the project manager in calculating the time required for each stage to ensure completion of project	4	1	3
PC24. Assist in preparing the work plan with deliverables and timelines	2	1	1
PC25. Explain the expected output to the user	4	1	3
PC26. Develop control system application as per user requirement by following the standard operating procedure (SOP) of the organization	5	2	3
PC27. Apply approved engineering concepts, processes and principles in developing the control panel application	5	2	3
PC28. Use organization approved software (system and application software) to develop the system	4	1	3
PC29. Identify the requirement of indications, switchgears and accessories	5	2	3
PC30. Develop the control circuit drawing	10	4	6
PC31. Prepare general arrangement diagram	5	2	3
PC32. Prepare wiring plans	5	2	3
PC33. Integrate the main process system with the sub-systems as per the user requirement (e.g., using communication protocol)	5	2	3
PC34. Ensure that safety aspect of the process is captured in the design plan	5	2	3
PC35. Send the designed panel diagram for review to the customer	3	1	2
PC36. Ensure timely resolution of issues arising during the application development process	4	1	3
PC37. Elevate any issues as soon as identified to reporting manager	3	1	2
PC38. Get concurrence on function design specifications	2	1	1
PC39. Program PLC as per FD	10	4	6
PC40. Program SCADA Application	10	4	6
PC41. PLC-SCADA Communication	10	4	6
PC42. Complete the application development and get approval of the application developed from the customer engineer	10	4	6
PC43. Calculate the number of days needed for commissioning of the panel at site	10	4	6

	PC44. Create backup copies of all designs developed for control panel and store in a secure location		10	4	6
	PC45. Document the usage of product (product manual) and store them for future references		5	2	3
	PC46. Locate field devices and their interface to PLC		10	4	6
	PC47. Test the system in off line mode using simulator		3	1	2
	PC48. Verify that the system conforms with all the user specifications during testing		4	2	2
	PC49. Rework if there are any issues found and fix them		3	1	2
	PC50. Test for integration of main system with the sub-systems (if applicable)		4	1	3
	PC51. Send the test report for review to the customer		3	1	2
	PC52. Perform Factory Acceptance Test (FAT)		4	2	2
	PC53. Perform site acceptance test plan		3	2	1
	PC54. Ensure timely delivery of the control panel design as per agreed timeline		4	1	3
	PC55. Ensure that total cost and man hours spent is as per the budget planned		4	1	3
	PC56. Ensure compliance with relevant regulations, standards and codes of practices during the usage		4	1	3
	PC57. Ensure compliance of the application with manufacturing requirements and process capabilities analysis of the organization		10	4	6
	PC58. Ensure that the design conforms with normal safety standards		5	2	3
	PC59. Develop reliable panels so that the system does not fail		5	2	3
		<b>Total</b>	<b>300</b>	<b>115</b>	<b>185</b>
<b>2. IAS/N2001 Technical Support for Installation and Commissioning of Control Panel</b>	PC1. Interact with the customer in order to understand and capture the site requirements, readiness and commissioning time schedule	<b>200</b>	5	2	3
	PC2. Plan the commissioning activities in consultation with the installation and commissioning team, based on customers' requirements		4	2	2
	PC3. Understand the design drawing and clarify doubts/issues before going to the site		5	2	3
	PC4. Use prescribed drawings, job instructions or work manuals		4	2	2
	PC5. Check availability of panel and tools required for installation		2	1	1
	PC6. Check availability of resources at customer site		2	1	1
	PC7. Ensure adequacy of working space, access and maintenance facilities at the site		10	4	6

PC8. Supervise technicians to visually check the internal panel wiring and ensure that it is in accordance with the design drawing	5	1	4
PC9. Carry out insulation check of internal panel wiring and devices within the panel	2	1	1
PC10. Ensure that all devices in the panel are dirt free and the packaging has been completely removed	5	2	3
PC11. Check if batteries and chargers have been assembled in accordance with the manufacturers recommended procedures	5	1	4
PC12. Prepare the work sites test report and document for future use	3	1	2
PC13. Ensure required tools for technicians to carry out the commissioning process	5	2	3
PC14. Identify the conductors size and capacity for installation	2	1	1
PC15. Ensure that the panel is positioned as prescribed, following safety norms	4	1	3
PC16. Supervise technicians to connect with attention to socket outlets, switches and protective conductors	5	1	4
PC17. Perform settings as per customer requirements on the equipment in each of the panels	10	3	7
PC18. Test all control system interlocks	10	4	6
PC19. Check each digital control point by comparing the command at the control panel and status of the device that it controls	5	1	4
PC20. Ensure that fuses, switches and other protective devices are labeled correctly	3	1	2
PC21. Instruct to follow grounding and earthing procedures while commissioning	2	1	1
PC22. Instruct to put up danger and warning notices, if necessary	5	1	4
PC23. Ensure to follow company approved standard procedures by technicians in erection and commissioning process	10	3	7
PC24. Test continuity, insulation resistance, functions of all devices, etc., after completion of installation	5	2	3
PC25. Assist technicians for commissioning control panel	10	3	7
PC26. Assist the customer in any tests to carry out on the installed panel	10	3	7
PC27. Use the wiring diagram accurately to meet the specifications	5	1	4
PC28. Ensure that applicable local electrical codes and standards are use	10	3	7

	PC29. Give technical support immediately to the technicians to rectify any errors identified		5	1	4
	PC30. Report defective material or inadequate numbers to seniors		10	3	7
	PC31. Check the physical condition of the instruments		3	1	2
	PC32. Report about inadequate quantity of consumables such as connectors, screws, nuts, etc.		4	1	3
	PC33. Achieve 100% work schedule as planned for the week		3	1	2
	PC34. Achieve 100% compliance Meet 100% daily or monthly target		3	1	2
	PC35. Achieve zero errors in commissioning as per company policy		5	1	4
	PC36. Achieve zero component damage		3	1	2
	PC37. Keep work area clean and organized		3	1	2
	PC38. Identify problems and alert in time		3	1	2
	PC39. with health and safety guidelines and rules		5	2	3
		<b>Total</b>	<b>200</b>	<b>65</b>	<b>135</b>
<b>3. IAS/N2002 Coordination With Different Stakeholders</b>	PC1. Listen to client stakeholders and understand their needs. Note conflicting needs of different stakeholders, if any.		5	2	3
	PC2. Ask questions to clarify points and make sure that there are no significant unknowns about the requirements and the application.		5	2	3
	PC3. Identify different solution options that meet client needs and present these options to the client with pros and cons.		8	4	4
	PC4. Get client preference for the solution.		3	1	2
	PC5. Enquire about other vendors involved in the project and ensure their scope and interfaces are compatible with the proposed solution.		3	1	2
	PC6. Develop detailed design of the solution, cost and time (in consultation with internal teams) and present this to the client stakeholders.		10	4	6
	PC7. Finalize ordering in coordination with the sales team.		3	1	2
	PC8. Finalize specifications of the User Acceptance test with the client.		5	2	3
	PC9. Prepare Project Plan and share with the client.		5	2	3
	PC10. Inform client about site requirements and ensure that it is understood and accepted.		3	1	2
	PC11. Coordinate with the client about site readiness.		5	2	3

	PC12. Coordinate installation and commissioning of the solution at site		5	2	3
	PC13. Demonstrate the system performance at the site and get client report of acceptance.		3	1	2
	PC14. Maintain communication with the client about usability and other issues and provide timely resolution. Obtain feedback and ensure positive outlook.		3	1	2
	PC15. Understand the client account, the organization goals and high level needs of the client from the frontline sales team.		5	2	3
	PC16. Identify and meet important stakeholders in the client organization		3	1	2
	PC17. Discuss different solution options that meet client needs with pros and cons.		5	2	3
	PC18. Provide the technical specifications and the cost/time estimates to the sales team to help them make client proposal.	<b>285</b>	6	3	3
	PC19. Assist the sales team to win the order, by making presentations and with supporting data and documentation.		10	4	6
	PC20. Study the purchase order in detail and make sure that this is in line with the proposal. Point out any discrepancies and resolve.		5	2	3
	PC21. Prepare Specifications and Project Plan and share with the sales team.		3	1	2
	PC22. Keep sales team informed about system performance at the site and client report of acceptance.		3	1	2
	PC23. Share client feedback and resolve issues if any.		5	2	3
	PC24. Coordinate with the sales team about service contract and AMC		5	2	3
	PC25. Communicate and Coordinate with the Project Manager or any other manager if required, per organization structure and practices.		5	2	3
	PC26. Prepare detailed BOQ and share with the Purchase department to facilitate procurement.		5	2	3
	PC27. Coordinate with the Purchase department to finalize vendors and subcontractors.		5	2	3
	PC28. Share Project Specifications and Project Plan and with the concerned departments/ groups in the organization – Purchase, Fabrication, Assembly, Software Development / Programming / Testing and Documentation etc.		6	2	4
	PC29. Share site requirements with the Installation & Commissioning (I&C) team.		3	1	2
	PC30. Receive parts and spares from stores		3	1	2
	PC31. Deposit unused material / faulty material / tools to stores		3	1	2

PC32. Coordinate with the Integration and Testing team for the factory inspection by client, if specified in the order.	5	2	3
PC33. Coordinate factory inspection by the client, and follow up rectifications of shortcomings, if any.	5	2	3
PC34. Coordinate installation and commissioning of the system after receipt confirmed at site.	5	2	3
PC35. Coordinate with installation and commissioning team for system performance test at the site.	5	2	3
PC36. Coordinate with installation and commissioning team for the user training.	5	2	3
PC37. Share client feedback with all teams and resolve issues if any.	5	2	3
PC38. Explain the specifications, scope and timelines of the parts/services to vendors and subcontractors and ensure that they understand and accept.	5	2	3
PC39. Guide / assist the vendors technically as required to ensure quality and timely delivery.	5	2	3
PC40. Inspect vendor / subcontractor facilities to ensure that they have the right expertise, infrastructure and capacity to deliver.	5	2	3
PC41. Prepare alternate plans in consultation with Procurement department for outsourced work.	5	2	3
PC42. Perform intermediate and pre-dispatch tests at vendor premises, if required.	5	2	3
PC43. Support vendors to deliver quality products and services in time.	5	2	3
PC44. Have clearly defined responsibilities and backup plans for all team members	5	2	3
PC45. Share plans, deliverables and expectations with concerned team members	5	2	3
PC46. Have regular team meetings to share progress, issues and resolutions	5	2	3
PC47. Share and celebrate team success	3	1	2
PC48. Help new members to settle down and perform	5	2	3
PC49. Support team members in delivering performance	3	1	2
PC50. Resolve inter-personnel conflicts and achieve smooth workflow	5	2	3
PC51. Pass on customer complaints to colleagues in respective geographical area	5	2	3
PC52. Share knowledge and experience gained through every day work	3	1	2
PC53. Communicate and Coordinate with the Project Manager or any other manager if required, per organization structure and practices.	5	2	3
PC54. Report problems identified in the field	5	2	3

	PC55. Escalate customer concerns that are not being handled properly in the field		5	2	3
	PC56. Resolve personnel issues		5	2	3
	PC57. Receive feedback on work standards and customer satisfaction		5	2	3
	PC58. Communicate any potential hazards at a particular location		5	2	3
	PC59. Deliver work of expected quality despite constraints		5	2	3
	PC60. Provide feedback to seniors about a happy or dissatisfied customer		5	2	3
		<b>Total</b>	<b>285</b>	<b>112</b>	<b>173</b>
<b>4. IAS/N2003 Health and Safety in Workplace</b>	PC1. Comply with general safety procedures followed in the company		3	2	1
	PC2. Follow standard safety procedures while handling an equipment, hazardous material or tool		2	1	1
	PC3. Remove rings or any other metal objects before working on the unit		4	2	2
	PC4. Use safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.		4	1	3
	PC5. Escalate about any hazardous materials or things found in the premises		4	1	3
	PC6. Report about any breach of safety procedure in the company		3	1	2
	PC7. Ensure zero accidents at work		5	2	3
	PC8. Avoid damage of components due to negligence in ESD procedures		4	1	3
	PC9. Regularly participate in fire drills or other safety related workshops organized by the company		5	2	3
	PC10. Ensure no loss for company due to safety negligence		4	1	3
	PC11. Maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials		4	2	2
	PC12. Participate in company organized health sessions such as yoga, physiotherapy or games		4	2	2
	PC13. Handle heavy and hazardous materials with care and using appropriate tools and handling equipment such as trolleys, jacks and ladders		4	2	2
		<b>Total</b>	<b>50</b>	<b>20</b>	<b>30</b>