

# ISA CCST Exam Content Comparison Document for 2019 Exam Update

## CCST Domains (2019)

1. Calibration, Maintenance, Repair, and Troubleshooting
2. Project Planning, Start-up, and Commissioning
3. Documentation
4. Supervision, Management, and Administration

## CCST Domains by Level (2019)

Domain	Average Percent of Exam Questions		
	Level I	Level II	Level III
1: Calibration, Maintenance, Repair, and Troubleshooting	75%	64%	20%
2: Project Planning, Start-up, and Commissioning	15%	19%	14%
3: Documentation	10%	11%	17%
4: Supervision, Management, and Administration	0%	6%	49%

**CCST Level I, II, III Examination Content Outline**

<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<b>Total Number of Tasks</b>	<b>24</b>	<b>31</b>	<b>34</b>
<b>0100</b>	<b>Calibration, Maintenance, Repair, and Troubleshooting</b>			
0101	Calibrate a device by using appropriate test standards, recommended procedures, and manufacturer's specifications on instrument data sheets in order to record as-found readings, evaluate as-found readings against specified tolerance, make calibration adjustments as required, and record as-left data.	<b>X</b>	<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Test/calibration equipment</li> <li>• Electrical test equipment</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Methods for instrument identification</li> </ul>			
0102	Assess the condition of a device through documentation review, inspection, and testing in order to make adjustments to maintain device performance and accuracy to determine the need for any repairs.	<b>X</b>	<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Instrument repair/replace procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Data sheets</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> </ul>			
0103	Apply predictive, preventive, and corrective maintenance methods for instruments and devices to minimize device failures and process downtime.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Maintenance techniques</li> <li>• Mechanical fundamentals</li> <li>• Electrical fundamentals</li> <li>• Calibration procedures</li> <li>• Normal and abnormal operating conditions</li> <li>• Instrument manufacturer specifications</li> <li>• Test/calibration equipment</li> </ul>			
0104	Examine all pertinent documentation to determine which device(s) of the control loop could be causing observed discrepancies in order to prepare a plan of corrective action.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• P&amp;IDs</li> </ul>			

**CCST Level I, II, III Examination Content Outline**

<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Normal and abnormal operating conditions</li> <li>• Site loop check procedures</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Control charts</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Troubleshooting techniques</li> </ul>			
0105	Obtain applicable documents required to perform device calibration, testing, troubleshooting, and maintenance, and review the documents for accuracy and completeness.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Calibration procedures</li> <li>• Data sheets</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• P&amp;IDs</li> <li>• Methods for instrument identification</li> <li>• Test/calibration equipment</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> </ul>			
0106	Perform repairs on instruments and devices by following proper industry protocol, appropriate safety and operating procedures, and manufacturer's recommendations in order to return the devices to service.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• P&amp;IDs</li> <li>• Instrument repair/replacement procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Methods for instrument identification</li> <li>• Data sheets</li> <li>• Operating manuals and procedures</li> <li>• Mechanical fundamentals</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>			
0107	Prepare for removal and decontamination of a device from operational service by reviewing the safety data sheets (SDS), appropriate personal protective equipment (PPE), and safety procedures.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Decontamination procedures</li> <li>• Instrument repair/replacement procedures</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Safety data sheets (SDS)</li> </ul>			
0108	Select the correct testing equipment by using existing documentation, appropriate calibration procedures, and visual inspection in order to calibrate the device.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Test/calibration equipment</li> <li>• Instrument repair/replacement procedures</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> </ul>			
0109	Use documentation and field inspection to verify that appropriate utilities and equipment are available and operational in order to safely and effectively perform device testing.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Electrical fundamentals</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Troubleshooting techniques</li> <li>• Safety practices</li> <li>• Fundamentals of schematic diagrams</li> <li>• Electrical test equipment</li> </ul>			
0110	Apply the proper fittings, terminations, and electrical barriers for instruments and devices by utilizing the correct procedures in accordance with local regulatory codes and standards to maintain safety in hazardous environments.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Mechanical fundamentals</li> <li>• Instrument repair/replacement procedures</li> <li>• Standards and regulatory codes</li> </ul>			
0111	Use appropriate testing equipment to measure and detect electrical and/or process values to ensure proper loop installation and performance.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electrical fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Methods for instrument identification</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> </ul>			
0112	Perform multistep troubleshooting methodology while performing testing of equipment or processes.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Electrical systems</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> <li>• Troubleshooting techniques</li> </ul>			
0113	Evaluate control system tuning by observing system response to changes in controller parameters, and adjust PID tuning parameters to provide proper system response.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> <li>• Industrial control/process control system fundamentals</li> <li>• Troubleshooting techniques</li> <li>• Control tuning principles</li> </ul>			
0114	Isolate a process component from an operational system by following maintenance documentation and appropriate safety and operating procedures in order to perform maintenance functions.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Mechanical fundamentals</li> <li>• Electrical fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• P&amp;IDs</li> <li>• Electrical test equipment</li> <li>• Instrument repair/replacement procedures</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>			
0115	Evaluate industrial network devices by using network diagnostic tools to ensure proper performance.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical test equipment</li> </ul>			

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	<ul style="list-style-type: none"> <li>• Troubleshooting techniques</li> <li>• Networking fundamentals</li> </ul>			
0116	Review and coordinate a plan of corrective action for control systems that are causing observed discrepancies.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Normal and abnormal operating conditions</li> <li>• Implementation of action plans</li> <li>• Maintenance techniques</li> <li>• Organizational planning and scheduling techniques</li> <li>• Troubleshooting techniques</li> <li>• P&amp;IDs</li> <li>• Control charts</li> <li>• Supervisory techniques</li> </ul>			
0117	Identify basic networking devices to effectively troubleshoot communication problems by using standard networking commands.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Fundamentals of schematic diagrams</li> <li>• Electrical drawings</li> <li>• Site documentation procedures</li> <li>• Troubleshooting techniques</li> <li>• Networking fundamentals</li> </ul>			
0118	Assign network device addresses by using network addressing tools to ensure proper communications throughout the network.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Electrical systems</li> <li>• Fundamentals of schematic diagrams</li> <li>• Site documentation procedures</li> <li>• Networking fundamentals</li> </ul>			
0119	Apply basic cybersecurity practices and principles to protect industrial control systems.	<b>X</b>	<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Cybersecurity fundamentals</li> <li>• Standards and regulatory codes</li> </ul>			
0120	Configure, maintain, troubleshoot, repair, and replace existing wireless transmitters to ensure proper communications.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Networking fundamentals</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> </ul>			
0121	Wear appropriate PPE required for each hazard risk category, consistent with ARC flash ratings, to avoid bodily harm or death.	<b>X</b>	<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Safety hazards</li> </ul>			

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	<ul style="list-style-type: none"> <li>• Safety practices</li> <li>• Standards and regulatory codes</li> </ul>			
0122	Troubleshoot and repair the most common types of networks.	<b>X</b>		
	Knowledge of: <ul style="list-style-type: none"> <li>• Networking fundamentals</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• Troubleshooting techniques</li> </ul>			
<b>0200</b>	<b>Project Planning, Start-up, and Commissioning</b>			
0201	Field verify the as-built condition of the installed control system through visual observation and comparison with applicable project documentation, and redline documentation as needed to provide information for further verification and update by engineering/maintenance to maintain accurate instrumentation records.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Electrical fundamentals</li> <li>• Drafting techniques</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Project management</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> </ul>			
0202	Inspect the loop components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Electrical fundamentals</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Project management</li> </ul>			
0203	Use appropriate simulation equipment to verify proper loop functionality by simulating a controller's measured variable value.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> <li>• Instrument manufacturer specifications</li> <li>• Operating manuals and procedures</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> <li>• Traceability (NIST)</li> </ul>			
0204	Manage site personnel during start-up to identify and correct problems that might arise during the commissioning of control systems.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Basic knowledge of PLC terminology</li> <li>• Fundamentals of fiber optics</li> <li>• Network communication protocols</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Fundamentals of pneumatics</li> <li>• Electronic fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Implementation of action plans</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• P&amp;IDs</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> <li>• Supervisory techniques</li> <li>• Troubleshooting techniques</li> </ul>			
0205	Verify final control element functionality by changing the values of the manipulated variables using the controller mode and output functions.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Control charts</li> <li>• Final elements</li> <li>• Front-end elements</li> <li>• Function of each loop component</li> <li>• Implementation of action plans</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Normal and abnormal operating conditions</li> <li>• Electrical/controls drawings</li> <li>• Operator interface</li> <li>• P&amp;IDs</li> <li>• Site loop check procedures</li> <li>• Process control systems</li> </ul>			
0206	Examine all pertinent documentation in order to identify the proper operation of a control system and devices to provide a baseline against which to evaluate problems.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> </ul>			



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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Mathematics</li> <li>• Calibration sheets</li> <li>• Data sheets</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Fundamentals of pneumatics</li> <li>• Electrical/controls drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Physical sciences</li> <li>• Operating manuals and procedures</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> </ul>			
0207	Inspect the control system components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.	<b>X</b>	<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Front-end elements</li> <li>• Data sheets</li> <li>• Fundamentals of schematic diagrams</li> <li>• Fundamentals of pneumatics</li> <li>• Mechanical drawings</li> <li>• Electrical/controls drawings</li> <li>• Methods for instrument identification</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Front-end elements</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> </ul>			
0208	Specify the optimal type of network required by an application.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Network communication protocols</li> <li>• Fundamentals of fiber optics</li> <li>• Electronic fundamentals</li> <li>• Final elements</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Standards and regulatory codes</li> <li>• Site documentation procedures</li> <li>• Networking fundamentals</li> </ul>			
<b>0300</b>	<b>Documentation</b>			
0301	Provide data, reports, and technical support for regulatory agencies to satisfy regulatory compliance requirements.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Control charts</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Normal and abnormal operating conditions</li> <li>• Site documentation procedures</li> <li>• Standards and regulatory codes</li> <li>• Traceability (NIST)</li> </ul>			
0302	Document network device addresses and physical layout to ensure that there are no conflicts and that information remains current.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Drafting techniques</li> <li>• Electrical/controls drawings</li> <li>• Electronic fundamentals</li> <li>• SCADA components</li> <li>• Network communication protocols</li> <li>• Site documentation procedures</li> <li>• Networking fundamentals</li> </ul>			
0303	Document calibration, maintenance, troubleshooting, and repair by using appropriate forms, calibration labels, and/or electronic records to provide a permanent record of changes and device history.	<b>X</b>	<b>X</b>	
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Calibration procedures</li> <li>• Data sheets</li> <li>• Implementation of action plans</li> <li>• Instrument repair/replacement procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Methods for instrument identification</li> <li>• Site documentation procedures</li> <li>• Test/calibration equipment</li> <li>• Maintenance techniques</li> <li>• Traceability (NIST)</li> </ul>			
0304	Utilize system documentation and symbology to effectively troubleshoot instrumentation, control loops, and systems.	<b>X</b>	<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Electrical/controls drawings</li> <li>• Mechanical drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Troubleshooting techniques</li> <li>• Maintenance techniques</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
0305	Collect, organize, and maintain industrial network data and manage information to ensure system integrity and optimize network performance.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> <li>• Fundamentals of schematic diagrams</li> <li>• Network equipment manufacturer specifications</li> <li>• Mathematics</li> <li>• Normal and abnormal operating conditions</li> <li>• Troubleshooting techniques</li> <li>• Network communication protocols</li> <li>• Fundamentals of fiber optics</li> <li>• Networking fundamentals</li> </ul>			
0306	Identify all pertinent documentation required for an addition/modification of a control system, and update if necessary.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electrical/controls drawings</li> <li>• Site loop check procedures</li> <li>• SCADA components</li> <li>• Drafting</li> <li>• Fundamentals of schematic diagrams</li> <li>• Mechanical drawings</li> <li>• Project management</li> <li>• System Design Documentation (SDD)</li> <li>• Functional Requirement Specifications (FRS)</li> <li>• Management of Change (MOC)</li> <li>• Site documentation procedures</li> </ul>			
0307	Review project as-built drawings and verify redlined documentation to verify the accuracy of current drawings for final approval.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Drafting techniques</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Instrument drawings</li> <li>• Network drawings</li> <li>• Methods for instrument identification</li> <li>• P&amp;IDs</li> <li>• Site documentation procedures</li> </ul>			
<b>0400</b>	<b>Supervision, Management, and Administration</b>			
0401	Identify electrical classification or other hazards in an area, and determine appropriate procedures to be followed for safe and effective operation in that area.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
	<ul style="list-style-type: none"> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Instrument manufacturer specifications</li> <li>• Intrinsically safe equipment/area classification rated equipment</li> <li>• Standards and regulatory codes</li> </ul>			
0402	Administer/coordinate work orders to facilitate proper calibration, repair, and maintenance.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Instrument manufacturer specifications</li> <li>• Instrument data sheets</li> <li>• Traceability (NIST)</li> <li>• Test/calibration equipment</li> <li>• Maintenance techniques</li> <li>• Loop sheets</li> <li>• Original equipment manufacturer (OEM) manual</li> <li>• Site loop check procedures</li> <li>• Organizational planning and scheduling techniques</li> </ul>			
0403	Coordinate the removal and decontamination of a device from operational service by reviewing the safety data sheets (SDS), appropriate personal protective equipment (PPE), and safety procedures.		<b>X</b>	<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Decontamination procedures</li> <li>• Safety data sheets (SDS)</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Local and site-specific standards</li> <li>• Implementation of action plans</li> <li>• Operating manuals and procedures</li> </ul>			
0404	Coordinate with all affected personnel to isolate a process component from an operational system in order to perform testing or maintenance.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Instrument manufacturer specifications</li> <li>• Equipment manufacturer specifications</li> <li>• Organizational planning and scheduling techniques</li> <li>• Verification of documentation upgrades</li> <li>• Site safety practices</li> <li>• Site operating procedures</li> <li>• Site maintenance procedures</li> </ul>			
0405	Utilize an existing tracking system for the receipt, storage, and issuing of instruments on-site in order to control resources.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Organizational planning and scheduling techniques</li> <li>• Methods for instrument identification</li> <li>• Project management</li> </ul>			

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<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
0406	Develop preventive, predictive, and corrective maintenance procedures for instruments and devices to minimize device failures and process downtime.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Maintenance techniques</li> <li>• Instrument manufacturer specifications</li> <li>• Operating manuals and procedures</li> <li>• Traceability (NIST)</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Instrument data sheets</li> </ul>			
0407	Develop procedures for the use of simulation and test equipment to verify proper loop functionality, calibration, and maintenance.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Maintenance techniques</li> <li>• Operating manuals and procedures</li> <li>• Site loop check procedures</li> <li>• Test/calibration equipment</li> <li>• Instrument manufacturer specifications</li> <li>• Calibration sheets</li> <li>• Site calibration procedures</li> <li>• Site safety practices</li> </ul>			
0408	Review and maintain calibration, maintenance, troubleshooting, and repair documents to provide a permanent, accurate, and complete record of change and device history.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Traceability (NIST)</li> <li>• Site documentation procedures</li> <li>• Calibration sheets</li> <li>• Data sheets</li> <li>• Instrument manufacturer specifications</li> </ul>			
0409	Ensure that all documents are complete and accurate and that they comply with recommended procedures.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Site maintenance procedures</li> <li>• Site calibration procedures</li> <li>• Traceability (NIST)</li> </ul>			
0410	Ensure that applicable safety practices are followed and that personnel are informed of possible hazards related to the tasks.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Job safety analysis (JSA)</li> <li>• Safety data sheets (SDS)</li> <li>• Decontamination procedures</li> <li>• Supervisory techniques</li> </ul>			

**CCST Level I, II, III Examination Content Outline**

<b>Code</b>	<b>Task</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
0411	Monitor related project costs, schedules, and resources to identify deviations from a project plan.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Project management</li> <li>• Organizational planning and scheduling techniques</li> </ul>			
0412	Participate in control project planning to coordinate project resources and personnel, and ensure that all affected personnel are aware of their responsibilities.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Project management</li> <li>• Organizational planning and scheduling techniques</li> <li>• Supervisory techniques</li> </ul>			
0413	Update and maintain certified testing equipment, documentation, recommended procedures, and out-of-tolerance reporting to facilitate the operation of instruments and devices necessary for safety and quality assurance.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration standards</li> <li>• Calibration sheets</li> <li>• Traceability (NIST)</li> <li>• Test equipment manufacturer specifications</li> <li>• Site documentation procedures</li> </ul>			
0414	Use product quality and process data to evaluate control system performance and make recommendations to optimize process efficiency, reliability, and safety.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> <li>• Normal and abnormal operating conditions</li> <li>• Instrument manufacturer specifications</li> <li>• Safety practices</li> <li>• Site documentation procedures</li> </ul>			
0415	Verify that training and certifications of relevant personnel are current and appropriately filed in compliance with procedures.			<b>X</b>
	Knowledge of: <ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Site training programs</li> <li>• Supervisory techniques</li> </ul>			

## CCST Level I - Technician

### CCST Level I Performance Domains and Test Specifications (2019)

Task by Domain	Average Percent of Exam Questions
<b>Domain 1: Calibration, Maintenance, Repair, and Troubleshooting</b>	<b>75%</b>
0101	5%
0102	4%
0103	4%
0104	4%
0105	5%
0106	5%
0107	4%
0108	5%
0109	4%
0110	4%
0111	5%
0112	4%
0114	5%
0117	3%
0119	3%
0120	2%
0121	6%
0122	3%
<b>Domain 2: Project Planning, Start-up, and Commissioning</b>	<b>15%</b>
0201	3%
0202	4%
0203	4%
0207	4%
<b>Domain 3: Documentation</b>	<b>10%</b>
0303	5%
0304	5%

## CCST Level I - Technician

### 2019 Exam Content Outline

Task	Description
<b>0100</b>	<b>Calibration, Maintenance, Repair, and Troubleshooting</b>
0101	Calibrate a device by using appropriate test standards, recommended procedures, and manufacturer's specifications on instrument data sheets in order to record as-found readings, evaluate as-found readings against specified tolerance, make calibration adjustments as required, and record as-left data.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Test/calibration equipment</li> <li>• Electrical test equipment</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Methods for instrument identification</li> </ul>
0102	Assess the condition of a device through documentation review, inspection, and testing in order to make adjustments to maintain device performance and accuracy to determine the need for any repairs.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Instrument repair/replace procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Data sheets</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> </ul>
0103	Apply predictive, preventive, and corrective maintenance methods for instruments and devices to minimize device failures and process downtime.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Maintenance techniques</li> <li>• Mechanical fundamentals</li> <li>• Electrical fundamentals</li> <li>• Calibration procedures</li> <li>• Normal and abnormal operating conditions</li> <li>• Instrument manufacturer specifications</li> <li>• Test/calibration equipment</li> </ul>
0104	Examine all pertinent documentation to determine which device(s) of the control loop could be causing observed discrepancies in order to prepare a plan of corrective action.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• P&amp;IDs</li> <li>• Normal and abnormal operating conditions</li> <li>• Site loop check procedures</li> <li>• Calibration procedures</li> </ul>



## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Control charts</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Troubleshooting techniques</li> </ul>
0105	Obtain applicable documents required to perform device calibration, testing, troubleshooting, and maintenance, and review the documents for accuracy and completeness.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Calibration procedures</li> <li>• Data sheets</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• P&amp;IDs</li> <li>• Methods for instrument identification</li> <li>• Test/calibration equipment</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> </ul>
0106	Perform repairs on instruments and devices by following proper industry protocol, appropriate safety and operating procedures, and manufacturer's recommendations in order to return the devices to service.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• P&amp;IDs</li> <li>• Instrument repair/replacement procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Methods for instrument identification</li> <li>• Data sheets</li> <li>• Operating manuals and procedures</li> <li>• Mechanical fundamentals</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>
0107	Prepare for removal and decontamination of a device from operational service by reviewing the safety data sheets (SDS), appropriate personal protective equipment (PPE), and safety procedures.
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Decontamination procedures</li> <li>• Instrument repair/replacement procedures</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Safety data sheets (SDS)</li> </ul>
0108	Select the correct testing equipment by using existing documentation, appropriate calibration procedures, and visual inspection in order to calibrate the device.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Test/calibration equipment</li> <li>• Instrument repair/replacement procedures</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> </ul> Instrument manufacturer specifications
0109	Use documentation and field inspection to verify that appropriate utilities and equipment are available and operational in order to safely and effectively perform device testing.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Electrical fundamentals</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Troubleshooting techniques</li> <li>• Safety practices</li> <li>• Fundamentals of schematic diagrams</li> <li>• Electrical test equipment</li> </ul>
0110	Apply the proper fittings, terminations, and electrical barriers for instruments and devices by utilizing the correct procedures in accordance with local regulatory codes and standards to maintain safety in hazardous environments.
	Knowledge of: <ul style="list-style-type: none"> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Mechanical fundamentals</li> <li>• Instrument repair/replacement procedures</li> <li>• Standards and regulatory codes</li> </ul>
0111	Use appropriate testing equipment to measure and detect electrical and/or process values to ensure proper loop installation and performance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electrical fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Methods for instrument identification</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> </ul>
0112	Perform multistep troubleshooting methodology while performing testing of equipment or processes.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Electrical systems</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Troubleshooting techniques</li> </ul>
0114	Isolate a process component from an operational system by following maintenance documentation and appropriate safety and operating procedures in order to perform maintenance functions.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Mechanical fundamentals</li> <li>• Electrical fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• P&amp;IDs</li> <li>• Electrical test equipment</li> <li>• Instrument repair/replacement procedures</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>
0117	Identify basic networking devices to effectively troubleshoot communication problems by using standard networking commands.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Fundamentals of schematic diagrams</li> <li>• Electrical drawings</li> <li>• Site documentation procedures</li> <li>• Troubleshooting techniques</li> <li>• Networking fundamentals</li> </ul>
0119	Apply basic cybersecurity practices and principles to protect industrial control systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Cybersecurity fundamentals</li> <li>• Standards and regulatory codes</li> </ul>
0120	Configure, maintain, troubleshoot, repair, and replace existing wireless transmitters to ensure proper communications.
	Knowledge of: <ul style="list-style-type: none"> <li>• Networking fundamentals</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> </ul>
0121	Wear appropriate PPE required for each hazard risk category, consistent with ARC flash ratings, to avoid bodily harm or death.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Standards and regulatory codes</li> </ul>
0122	Troubleshoot and repair the most common types of networks.
	Knowledge of: <ul style="list-style-type: none"> <li>• Networking fundamentals</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• Troubleshooting techniques</li> </ul>

**CCST Level I, II, III Examination Content Outline**

<b>Task</b>	<b>Description</b>
<b>0200</b>	<b>Project Planning, Start-up, and Commissioning</b>
0201	Field verify the as-built condition of the installed control system through visual observation and comparison with applicable project documentation, and redline documentation as needed to provide information for further verification and update by engineering/maintenance to maintain accurate instrumentation records.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Electrical fundamentals</li> <li>• Drafting techniques</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Project management</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> </ul>
0202	Inspect the loop components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Electrical fundamentals</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Project management</li> </ul>
0203	Use appropriate simulation equipment to verify proper loop functionality by simulating a controller's measured variable value.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> <li>• Instrument manufacturer specifications</li> <li>• Operating manuals and procedures</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> <li>• Traceability (NIST)</li> </ul>
0207	Inspect the control system components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.
	Knowledge of: <ul style="list-style-type: none"> <li>• Front-end elements</li> <li>• Data sheets</li> <li>• Fundamentals of schematic diagrams</li> <li>• Fundamentals of pneumatics</li> </ul>

**CCST Level I, II, III Examination Content Outline**

<b>Task</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Mechanical drawings</li> <li>• Electrical/controls drawings</li> <li>• Methods for instrument identification</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Front-end elements</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> </ul>
<b>0300</b>	<b>Documentation</b>
0303	Document calibration, maintenance, troubleshooting, and repair by using appropriate forms, calibration labels, and/or electronic records to provide a permanent record of changes and device history.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Calibration procedures</li> <li>• Data sheets</li> <li>• Implementation of action plans</li> <li>• Instrument repair/replacement procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Methods for instrument identification</li> <li>• Site documentation procedures</li> <li>• Test/calibration equipment</li> <li>• Maintenance techniques</li> <li>• Traceability (NIST)</li> </ul>
0304	Utilize system documentation and symbology to effectively troubleshoot instrumentation, control loops, and systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Electrical/controls drawings</li> <li>• Mechanical drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Troubleshooting techniques</li> <li>• Maintenance techniques</li> </ul>

## CCST Level II - Specialist

### CCST Level II Performance Domains and Test Specifications (2019)

Task by Domain	Average Percent of Exam Questions
<b>Domain 1: Calibration, Maintenance, Repair, and Troubleshooting</b>	<b>64%</b>
0101	4%
0102	4%
0103	4%
0104	4%
0105	4%
0106	4%
0107	3%
0108	4%
0109	3%
0110	4%
0111	4%
0112	4%
0113	2%
0114	4%
0115	2%
0117	2%
0119	2%
0120	2%
0121	4%
<b>Domain 2: Project Planning, Start-up, and Commissioning</b>	<b>19%</b>
0201	2%
0202	3%
0203	3%
0204	2%
0205	3%
0206	3%
0207	3%
<b>Domain 3: Documentation</b>	<b>11%</b>
0301	3%
0303	4%
0304	4%
<b>Domain 4: Supervision, Management, and Administration</b>	<b>6%</b>
0401	3%
0403	3%

**CCST Level II - Specialist**

**2019 Exam Content Outline**

<b>Task</b>	<b>Description</b>
<b>0100</b>	<b>Calibration, Maintenance, Repair, and Troubleshooting</b>
0101	Calibrate a device by using appropriate test standards, recommended procedures, and manufacturer's specifications on instrument data sheets in order to record as-found readings, evaluate as-found readings against specified tolerance, make calibration adjustments as required, and record as-left data.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Test/calibration equipment</li> <li>• Electrical test equipment</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Methods for instrument identification</li> </ul>
0102	Assess the condition of a device through documentation review, inspection, and testing in order to make adjustments to maintain device performance and accuracy to determine the need for any repairs.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Instrument repair/replace procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Data sheets</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> </ul>
0103	Apply predictive, preventive, and corrective maintenance methods for instruments and devices to minimize device failures and process downtime.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Maintenance techniques</li> <li>• Mechanical fundamentals</li> <li>• Electrical fundamentals</li> <li>• Calibration procedures</li> <li>• Normal and abnormal operating conditions</li> <li>• Instrument manufacturer specifications</li> <li>• Test/calibration equipment</li> </ul>
0104	Examine all pertinent documentation to determine which device(s) of the control loop could be causing observed discrepancies in order to prepare a plan of corrective action.
	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• P&amp;IDs</li> <li>• Normal and abnormal operating conditions</li> <li>• Site loop check procedures</li> <li>• Calibration procedures</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Control charts</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Troubleshooting techniques</li> </ul>
0105	Obtain applicable documents required to perform device calibration, testing, troubleshooting, and maintenance, and review the documents for accuracy and completeness.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Calibration procedures</li> <li>• Data sheets</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• P&amp;IDs</li> <li>• Methods for instrument identification</li> <li>• Test/calibration equipment</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> </ul>
0106	Perform repairs on instruments and devices by following proper industry protocol, appropriate safety and operating procedures, and manufacturer's recommendations in order to return the devices to service.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• P&amp;IDs</li> <li>• Instrument repair/replacement procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Methods for instrument identification</li> <li>• Data sheets</li> <li>• Operating manuals and procedures</li> <li>• Mechanical fundamentals</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>
0107	Prepare for removal and decontamination of a device from operational service by reviewing the safety data sheets (SDS), appropriate personal protective equipment (PPE), and safety procedures.
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Decontamination procedures</li> <li>• Instrument repair/replacement procedures</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Safety data sheets (SDS)</li> </ul>
0108	Select the correct testing equipment by using existing documentation, appropriate calibration procedures, and visual inspection in order to calibrate the device.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Test/calibration equipment</li> <li>• Instrument repair/replacement procedures</li> </ul>



## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> </ul>
0109	Use documentation and field inspection to verify that appropriate utilities and equipment are available and operational in order to safely and effectively perform device testing.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Electrical fundamentals</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Troubleshooting techniques</li> <li>• Safety practices</li> <li>• Fundamentals of schematic diagrams</li> <li>• Electrical test equipment</li> </ul>
0110	Apply the proper fittings, terminations, and electrical barriers for instruments and devices by utilizing the correct procedures in accordance with local regulatory codes and standards to maintain safety in hazardous environments.
	Knowledge of: <ul style="list-style-type: none"> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Mechanical fundamentals</li> <li>• Instrument repair/replacement procedures</li> <li>• Standards and regulatory codes</li> </ul>
0111	Use appropriate testing equipment to measure and detect electrical and/or process values to ensure proper loop installation and performance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electrical fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Methods for instrument identification</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> </ul>
0112	Perform multistep troubleshooting methodology while performing testing of equipment or processes.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Electrical systems</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Troubleshooting techniques</li> </ul>
0113	Evaluate control system tuning by observing system response to changes in controller parameters, and adjust PID tuning parameters to provide proper system response.
	Knowledge of: <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> <li>• Industrial control/process control system fundamentals</li> <li>• Troubleshooting techniques</li> <li>• Control tuning principles</li> </ul>
0114	Isolate a process component from an operational system by following maintenance documentation and appropriate safety and operating procedures in order to perform maintenance functions.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Mechanical fundamentals</li> <li>• Electrical fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• P&amp;IDs</li> <li>• Electrical test equipment</li> <li>• Instrument repair/replacement procedures</li> <li>• Safety hazards</li> <li>• Safety practices</li> </ul>
0115	Evaluate industrial network devices by using network diagnostic tools to ensure proper performance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical test equipment</li> <li>• Troubleshooting techniques</li> <li>• Networking fundamentals</li> </ul>
0117	Identify basic networking devices to effectively troubleshoot communication problems by using standard networking commands.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Fundamentals of schematic diagrams</li> <li>• Electrical drawings</li> <li>• Site documentation procedures</li> <li>• Troubleshooting techniques</li> <li>• Networking fundamentals</li> </ul>
0119	Apply basic cybersecurity practices and principles to protect industrial control systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Cybersecurity fundamentals</li> <li>• Standards and regulatory codes</li> </ul>
0120	Configure, maintain, troubleshoot, repair, and replace existing wireless transmitters to ensure proper communications.
	Knowledge of:

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Networking fundamentals</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> </ul>
0121	Wear appropriate PPE required for each hazard risk category, consistent with ARC flash ratings, to avoid bodily harm or death.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Standards and regulatory codes</li> </ul>
<b>0200</b>	<b>Project Planning, Start-up, and Commissioning</b>
0201	Field verify the as-built condition of the installed control system through visual observation and comparison with applicable project documentation, and redline documentation as needed to provide information for further verification and update by engineering/maintenance to maintain accurate instrumentation records.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Electrical fundamentals</li> <li>• Drafting techniques</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Project management</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> </ul>
0202	Inspect the loop components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical systems</li> <li>• Electrical fundamentals</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Project management</li> </ul>
0203	Use appropriate simulation equipment to verify proper loop functionality by simulating a controller's measured variable value.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> <li>• Instrument manufacturer specifications</li> <li>• Operating manuals and procedures</li> <li>• Site documentation procedures</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> <li>• Traceability (NIST)</li> </ul>
0204	Manage site personnel during start-up to identify and correct problems that might arise during the commissioning of control systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Basic knowledge of PLC terminology</li> <li>• Fundamentals of fiber optics</li> <li>• Network communication protocols</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Fundamentals of pneumatics</li> <li>• Electronic fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Implementation of action plans</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• P&amp;IDs</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> <li>• Supervisory techniques</li> <li>• Troubleshooting techniques</li> </ul>
0205	Verify final control element functionality by changing the values of the manipulated variables using the controller mode and output functions.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Control charts</li> <li>• Final elements</li> <li>• Front-end elements</li> <li>• Function of each loop component</li> <li>• Implementation of action plans</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Normal and abnormal operating conditions</li> <li>• Electrical/controls drawings</li> <li>• Operator interface</li> <li>• P&amp;IDs</li> <li>• Site loop check procedures</li> <li>• Process control systems</li> </ul>
0206	Examine all pertinent documentation in order to identify the proper operation of a control system and devices to provide a baseline against which to evaluate problems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> <li>• Mathematics</li> <li>• Calibration sheets</li> <li>• Data sheets</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Fundamentals of pneumatics</li> <li>• Electrical/controls drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Physical sciences</li> <li>• Operating manuals and procedures</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> </ul>
0207	Inspect the control system components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.
	Knowledge of: <ul style="list-style-type: none"> <li>• Front-end elements</li> <li>• Data sheets</li> <li>• Fundamentals of schematic diagrams</li> <li>• Fundamentals of pneumatics</li> <li>• Mechanical drawings</li> <li>• Electrical/controls drawings</li> <li>• Methods for instrument identification</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Front-end elements</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> </ul>
<b>0300</b>	<b>Documentation</b>
0301	Provide data, reports, and technical support for regulatory agencies to satisfy regulatory compliance requirements.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Control charts</li> <li>• Normal and abnormal operating conditions</li> <li>• Site documentation procedures</li> <li>• Standards and regulatory codes</li> </ul> Traceability (NIST)
0303	Document calibration, maintenance, troubleshooting, and repair by using appropriate forms, calibration labels, and/or electronic records to provide a permanent record of changes and device history.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Calibration procedures</li> <li>• Data sheets</li> <li>• Implementation of action plans</li> <li>• Instrument repair/replacement procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Methods for instrument identification</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Test/calibration equipment</li> <li>• Maintenance techniques</li> <li>• Traceability (NIST)</li> </ul>
0304	Utilize system documentation and symbology to effectively troubleshoot instrumentation, control loops, and systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Electrical/controls drawings</li> <li>• Mechanical drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Troubleshooting techniques</li> <li>• Maintenance techniques</li> </ul>
<b>0400</b>	<b>Supervision, Management, and Administration</b>
0401	Identify electrical classification or other hazards in an area, and determine appropriate procedures to be followed for safe and effective operation in that area.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Instrument manufacturer specifications</li> <li>• Intrinsically safe equipment/area classification rated equipment</li> <li>• Standards and regulatory codes</li> </ul>
0403	Coordinate the removal and decontamination of a device from operational service by reviewing the safety data sheets (SDS), appropriate personal protective equipment (PPE), and safety procedures.
	Knowledge of: <ul style="list-style-type: none"> <li>• Decontamination procedures</li> <li>• Safety data sheets (SDS)</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Local and site-specific standards</li> <li>• Implementation of action plans</li> <li>• Operating manuals and procedures</li> </ul>

## CCST Level III - Master

## CCST Level III Performance Domains and Test Specifications (2019)

Task by Domain	Average Percent of Exam Questions
<b>Domain 1: Calibration, Maintenance, Repair, and Troubleshooting</b>	<b>20%</b>
0101	2%
0102	2%
0113	2%
0115	2%
0116	3%
0118	2%
0119	3%
0121	4%
<b>Domain 2: Project Planning, Start-up, and Commissioning</b>	<b>14%</b>
0204	3%
0205	3%
0206	3%
0207	3%
0208	2%
<b>Domain 3: Documentation</b>	<b>17%</b>
0301	3%
0302	2%
0304	4%
0305	2%
0306	3%
0307	3%
<b>Domain 4: Supervision, Management, and Administration</b>	<b>49%</b>
0401	4%
0402	4%
0403	3%
0404	4%
0405	3%
0406	3%
0407	3%
0408	4%
0409	4%
0410	5%
0411	3%
0412	3%
0413	3%
0414	3%
0415	3%

**CCST Level III - Master**

**2019 Exam Content Outline**

<b>Task</b>	<b>Description</b>
<b>0100</b>	<b>Calibration, Maintenance, Repair, and Troubleshooting</b>
0101	Calibrate a device by using appropriate test standards, recommended procedures, and manufacturer's specifications on instrument data sheets in order to record as-found readings, evaluate as-found readings against specified tolerance, make calibration adjustments as required, and record as-left data.
	Knowledge of: <ul style="list-style-type: none"> <li>• Test/calibration equipment</li> <li>• Electrical test equipment</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Mathematics</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Function of each loop component</li> <li>• Operating manuals and procedures</li> <li>• Methods for instrument identification</li> </ul>
0102	Assess the condition of a device through documentation review, inspection, and testing in order to make adjustments to maintain device performance and accuracy to determine the need for any repairs.
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Instrument repair/replace procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Data sheets</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Function of each loop component</li> </ul>
0113	Evaluate control system tuning by observing system response to changes in controller parameters, and adjust PID tuning parameters to provide proper system response.
	Knowledge of: <ul style="list-style-type: none"> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Normal and abnormal operating conditions</li> <li>• P&amp;IDs</li> <li>• Industrial control/process control system fundamentals</li> <li>• Troubleshooting techniques</li> <li>• Control tuning principles</li> </ul>
0115	Evaluate industrial network devices by using network diagnostic tools to ensure proper performance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical test equipment</li> <li>• Troubleshooting techniques</li> <li>• Networking fundamentals</li> </ul>
0116	Review and coordinate a plan of corrective action for control systems that are causing observed discrepancies.
	Knowledge of:



## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Normal and abnormal operating conditions</li> <li>• Implementation of action plans</li> <li>• Maintenance techniques</li> <li>• Organizational planning and scheduling techniques</li> <li>• Troubleshooting techniques</li> <li>• P&amp;IDs</li> <li>• Control charts</li> <li>• Supervisory techniques</li> </ul>
0118	Assign network device addresses by using network addressing tools to ensure proper communications throughout the network.
	Knowledge of: <ul style="list-style-type: none"> <li>• Operating manuals and procedures</li> <li>• Electrical systems</li> <li>• Fundamentals of schematic diagrams</li> <li>• Site documentation procedures</li> <li>• Networking fundamentals</li> </ul>
0119	Apply basic cybersecurity practices and principles to protect industrial control systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Cybersecurity fundamentals</li> <li>• Standards and regulatory codes</li> </ul>
0121	Wear appropriate PPE required for each hazard risk category, consistent with ARC flash ratings, to avoid bodily harm or death.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Standards and regulatory codes</li> </ul>
<b>0200</b>	<b>Project Planning, Start-up, and Commissioning</b>
0204	Manage site personnel during start-up to identify and correct problems that might arise during the commissioning of control systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Basic knowledge of PLC terminology</li> <li>• Fundamentals of fiber optics</li> <li>• Network communication protocols</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> <li>• Pneumatic test equipment</li> <li>• Fundamentals of pneumatics</li> <li>• Electronic fundamentals</li> <li>• Fundamentals of schematic diagrams</li> <li>• Implementation of action plans</li> <li>• Operating manuals and procedures</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• P&amp;IDs</li> <li>• Industrial control/process control system fundamentals</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Supervisory techniques</li> <li>• Troubleshooting techniques</li> </ul>
0205	Verify final control element functionality by changing the values of the manipulated variables using the controller mode and output functions.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Control charts</li> <li>• Final elements</li> <li>• Front-end elements</li> <li>• Function of each loop component</li> <li>• Implementation of action plans</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Normal and abnormal operating conditions</li> <li>• Electrical/controls drawings</li> <li>• Operator interface</li> <li>• P&amp;IDs</li> <li>• Site loop check procedures</li> <li>• Process control systems</li> </ul>
0206	Examine all pertinent documentation in order to identify the proper operation of a control system and devices to provide a baseline against which to evaluate problems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> <li>• Mathematics</li> <li>• Calibration sheets</li> <li>• Data sheets</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Fundamentals of pneumatics</li> <li>• Electrical/controls drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Physical sciences</li> <li>• Operating manuals and procedures</li> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Electrical test equipment</li> </ul>
0207	Inspect the control system components through visual observation to verify that the components are correctly installed in accordance with applicable documentation to ensure safe and efficient device operation.
	Knowledge of: <ul style="list-style-type: none"> <li>• Front-end elements</li> <li>• Data sheets</li> <li>• Fundamentals of schematic diagrams</li> <li>• Fundamentals of pneumatics</li> <li>• Mechanical drawings</li> <li>• Electrical/controls drawings</li> <li>• Methods for instrument identification</li> </ul>

**CCST Level I, II, III Examination Content Outline**

<b>Task</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Instrument manufacturer specifications</li> <li>• Mechanical fundamentals</li> <li>• Front-end elements</li> <li>• Industrial control/process control system fundamentals</li> <li>• Site documentation procedures</li> </ul>
0208	Specify the optimal type of network required by an application.
	Knowledge of: <ul style="list-style-type: none"> <li>• Industrial control/process control system fundamentals</li> <li>• Network communication protocols</li> <li>• Fundamentals of fiber optics</li> <li>• Electronic fundamentals</li> <li>• Final elements</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Standards and regulatory codes</li> <li>• Site documentation procedures</li> <li>• Networking fundamentals</li> </ul>
<b>0300</b>	<b>Documentation</b>
0301	Provide data, reports, and technical support for regulatory agencies to satisfy regulatory compliance requirements.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Control charts</li> <li>• Normal and abnormal operating conditions</li> <li>• Site documentation procedures</li> <li>• Standards and regulatory codes</li> <li>• Traceability (NIST)</li> </ul>
0302	Document network device addresses and physical layout to ensure that there are no conflicts and that information remains current.
	Knowledge of: <ul style="list-style-type: none"> <li>• Drafting techniques</li> <li>• Electrical/controls drawings</li> <li>• Electronic fundamentals</li> <li>• SCADA components</li> <li>• Network communication protocols</li> <li>• Site documentation procedures</li> <li>• Networking fundamentals</li> </ul>
0304	Utilize system documentation and symbology to effectively troubleshoot instrumentation, control loops, and systems.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electronic fundamentals</li> <li>• Function of each loop component</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Electrical/controls drawings</li> <li>• Mechanical drawings</li> <li>• Normal and abnormal operating conditions</li> <li>• Industrial control/process control system fundamentals</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Site loop check procedures</li> <li>• Troubleshooting techniques</li> <li>• Maintenance techniques</li> </ul>
0305	Collect, organize, and maintain industrial network data and manage information to ensure system integrity and optimize network performance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> <li>• Fundamentals of schematic diagrams</li> <li>• Network equipment manufacturer specifications</li> <li>• Mathematics</li> <li>• Normal and abnormal operating conditions</li> <li>• Troubleshooting techniques</li> <li>• Network communication protocols</li> <li>• Fundamentals of fiber optics</li> <li>• Networking fundamentals</li> </ul>
0306	Identify all pertinent documentation required for an addition/modification of a control system, and update if necessary.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration sheets</li> <li>• Electrical/controls drawings</li> <li>• Site loop check procedures</li> <li>• SCADA components</li> <li>• Drafting</li> <li>• Fundamentals of schematic diagrams</li> <li>• Mechanical drawings</li> <li>• Project management</li> <li>• System Design Documentation (SDD)</li> <li>• Functional Requirement Specifications (FRS)</li> <li>• Management of Change (MOC)</li> <li>• Site documentation procedures</li> </ul>
0307	Review project as-built drawings and verify redlined documentation to verify the accuracy of current drawings for final approval.
	Knowledge of: <ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Drafting techniques</li> <li>• Fundamentals of schematic diagrams</li> <li>• Instrument manufacturer specifications</li> <li>• Mechanical drawings</li> <li>• Electrical drawings</li> <li>• Instrument drawings</li> <li>• Network drawings</li> <li>• Methods for instrument identification</li> <li>• P&amp;IDs</li> <li>• Site documentation procedures</li> </ul>
<b>0400</b>	<b>Supervision, Management, and Administration</b>
0401	Identify electrical classification or other hazards in an area, and determine appropriate procedures to be followed for safe and effective operation in that area.
	Knowledge of:

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Electrical fundamentals</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Instrument manufacturer specifications</li> <li>• Intrinsically safe equipment/area classification rated equipment</li> <li>• Standards and regulatory codes</li> </ul>
0402	Administer/coordinate work orders to facilitate proper calibration, repair, and maintenance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Instrument manufacturer specifications</li> <li>• Instrument data sheets</li> <li>• Traceability (NIST)</li> <li>• Test/calibration equipment</li> <li>• Maintenance techniques</li> <li>• Loop sheets</li> <li>• Original equipment manufacturer (OEM) manual</li> <li>• Site loop check procedures</li> <li>• Organizational planning and scheduling techniques</li> </ul>
0403	Coordinate the removal and decontamination of a device from operational service by reviewing the safety data sheets (SDS), appropriate personal protective equipment (PPE), and safety procedures.
	Knowledge of: <ul style="list-style-type: none"> <li>• Decontamination procedures</li> <li>• Safety data sheets (SDS)</li> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Local and site-specific standards</li> <li>• Implementation of action plans</li> <li>• Operating manuals and procedures</li> </ul>
0404	Coordinate with all affected personnel to isolate a process component from an operational system in order to perform testing or maintenance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Instrument manufacturer specifications</li> <li>• Equipment manufacturer specifications</li> <li>• Organizational planning and scheduling techniques</li> <li>• Verification of documentation upgrades</li> <li>• Site safety practices</li> <li>• Site operating procedures</li> <li>• Site maintenance procedures</li> </ul>
0405	Utilize an existing tracking system for the receipt, storage, and issuing of instruments on-site in order to control resources.
	Knowledge of: <ul style="list-style-type: none"> <li>• Organizational planning and scheduling techniques</li> <li>• Methods for instrument identification</li> <li>• Project management</li> </ul>
0406	Develop preventive, predictive, and corrective maintenance procedures for instruments and devices to minimize device failures and process downtime.
	Knowledge of: <ul style="list-style-type: none"> <li>• Maintenance techniques</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Instrument manufacturer specifications</li> <li>• Operating manuals and procedures</li> <li>• Traceability (NIST)</li> <li>• Calibration procedures</li> <li>• Calibration sheets</li> <li>• Instrument data sheets</li> </ul>
0407	Develop procedures for the use of simulation and test equipment to verify proper loop functionality, calibration, and maintenance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Maintenance techniques</li> <li>• Operating manuals and procedures</li> <li>• Site loop check procedures</li> <li>• Test/calibration equipment</li> <li>• Instrument manufacturer specifications</li> <li>• Calibration sheets</li> <li>• Site calibration procedures</li> <li>• Site safety practices</li> </ul>
0408	Review and maintain calibration, maintenance, troubleshooting, and repair documents to provide a permanent, accurate, and complete record of change and device history.
	Knowledge of: <ul style="list-style-type: none"> <li>• Traceability (NIST)</li> <li>• Site documentation procedures</li> <li>• Calibration sheets</li> <li>• Data sheets</li> <li>• Instrument manufacturer specifications</li> </ul>
0409	Ensure that all documents are complete and accurate and that they comply with recommended procedures.
	Knowledge of: <ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Site maintenance procedures</li> <li>• Site calibration procedures</li> <li>• Traceability (NIST)</li> </ul>
0410	Ensure that applicable safety practices are followed and that personnel are informed of possible hazards related to the tasks.
	Knowledge of: <ul style="list-style-type: none"> <li>• Safety hazards</li> <li>• Safety practices</li> <li>• Job safety analysis (JSA)</li> <li>• Safety data sheets (SDS)</li> <li>• Decontamination procedures</li> <li>• Supervisory techniques</li> </ul>
0411	Monitor related project costs, schedules, and resources to identify deviations from a project plan.
	Knowledge of: <ul style="list-style-type: none"> <li>• Project management</li> <li>• Organizational planning and scheduling techniques</li> </ul>
0412	Participate in control project planning to coordinate project resources and personnel, and ensure that all affected personnel are aware of their responsibilities.
	<ul style="list-style-type: none"> <li>• Knowledge of:</li> <li>• Project management</li> </ul>

## CCST Level I, II, III Examination Content Outline

Task	Description
	<ul style="list-style-type: none"> <li>• Organizational planning and scheduling techniques</li> <li>• Supervisory techniques</li> </ul>
0413	Update and maintain certified testing equipment, documentation, recommended procedures, and out-of-tolerance reporting to facilitate the operation of instruments and devices necessary for safety and quality assurance.
	Knowledge of: <ul style="list-style-type: none"> <li>• Calibration standards</li> <li>• Calibration sheets</li> <li>• Traceability (NIST)</li> <li>• Test equipment manufacturer specifications</li> <li>• Site documentation procedures</li> </ul>
0414	Use product quality and process data to evaluate control system performance and make recommendations to optimize process efficiency, reliability, and safety.
	Knowledge of: <ul style="list-style-type: none"> <li>• Control charts</li> <li>• Normal and abnormal operating conditions</li> <li>• Instrument manufacturer specifications</li> <li>• Safety practices</li> <li>• Site documentation procedures</li> </ul>
0415	Verify that training and certifications of relevant personnel are current and appropriately filed in compliance with procedures.
	Knowledge of: <ul style="list-style-type: none"> <li>• Site documentation procedures</li> <li>• Site training programs</li> <li>• Supervisory techniques</li> </ul>