



# Model Curriculum

## 1. Technician – Installation and Commissioning (Fire Fighting and Safety System)

**SECTOR: STRATEGIC MANUFACTURING**

**SUB-SECTOR: DEFENCE EQUIPMENT, SHIPBUILDING AND SHIP REPAIR, ELECTRONIC SECURITY EQUIPMENT, FIRE FIGHTING AND SAFETY EQUIPMENT  
TECHNICIAN**

**OCCUPATION: INSTALLATION AND COMMISSIONING**

**REF ID: SMC/Q 7601, V1.0**

**NSQF LEVEL: 4**



## Certificate

### CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**STRATEGIC MANUFACTURING SECTOR SKILL COUNCIL**

for the

**MODEL CURRICULUM**

Complying to National Occupational Standards of

**Job Role/Qualification Pack: Technician - Installation and Commissioning (Fire Fighting and Safety Equipment)**  
**QP No: SMC/Q7601, Version 1.0, NSQF Level 4**

Date of Issue: December 23rd, 2016  
Valid Up to\*: August 19th, 2019

\*Valid upto to the next review date of the Qualification Pack or the  
Valid up to 'date mentioned above (whichever is earlier)

Authorised Signatory

Strategic Manufacturing Sector Skill Council



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# Technician – Installation and Commissioning (Fire Fighting and Safety Equipment)

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Technician – Installation and Commissioning (Fire Fighting and Safety Equipment)”, in the “Strategic Manufacturing” Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	<b>Technician – Installation and Commissioning (Fire Fighting and Safety Equipment)</b>		
<b>Qualification Pack Name &amp; Reference ID. ID</b>	Technician – Installation and Commissioning (Fire Fighting and Safety Equipment) and SMC/Q 3101		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	10/ 07/2015
<b>Pre-requisites to Training</b>	10 <sup>th</sup> Standard		
<b>Training Outcomes</b>	<b>After completing this programme, participants will be able to:</b> <ul style="list-style-type: none"><li>• Install the fire fighting system alongwith designated pump / machinery and related circuit / sensors at the premises of the customers (residential / commercial / industrial complex). He will also be able to carry out pre and post installation checks including repair / maintenance during the operation phase.</li></ul>		



This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Technician – Installation and Commissioning (Fire Fighting and Safety Equipment)” Qualification Pack issued by “Strategic Manufacturing Sector Skill Council”.

Sr. No	Module	Key Learning Outcomes	Equipment Required
1	<p><b>Prepare installation and commissioning of Fire Safety System</b></p> <p><b>Theory Duration</b> (hh:mm) 40:00</p> <p><b>Practical Duration</b> (hh:mm) 31:00</p> <p><b>Corresponding NOS Code</b> SMC/ N 7601</p>	<p>The user/individual on the job needs to know and should perform / understand the following:</p> <ul style="list-style-type: none"> <li>• how to extract and use information from customer orders and related specifications in relation to work undertaken.</li> <li>• how to interpret drawings, imperial and metric systems of measurement.</li> <li>• legislation, regulations, standards and codes of practice that are relevant to the systems.</li> <li>• knowledge of various classification of Fires.</li> <li>• different products and their types for fire safety system.</li> <li>• Range of Products: different types of fire suppressors/extinguishers.</li> <li>• accurate and up to date details of systems, sites and customer requirements.</li> <li>• unique requirement of Residential and Educational building</li> <li>• appropriate measurements and record relevant details of site surveyed sites- premises of installations e.g. commercial; industrial; retail; domestic; governmental</li> <li>• what factors that could affect system installation or commissioning</li> <li>• the limits, constraints and capabilities of organisation involved in the operation of systems.</li> <li>• the performance, limitations, and availability of systems, equipment and components specified in the designs <b>specification.</b></li> <li>• fundamentals of electricity such as Ohms law, difference between AC and DC, series and parallel connections.</li> <li>• methods and parameters to check quality of line components.</li> <li>• calibration schedule of all equipment used in inspection activities. Types of tools and instruments used.</li> <li>• fundamental knowledge of electrical components (like resistor, capacitor and coils etc) and instruments (voltmeter, ammeter, multimeter etc).</li> <li>• how to conduct any necessary checks to ensure the equipment integrity, functionality, accuracy, and quality of the installation</li> <li>• how to recognize installation defects and how to address them appropriately</li> <li>• the coding of Fire Extinguisher as per industry standards</li> <li>• fault-finding techniques to be used when the equipment fails to operate correctly.</li> </ul>	<p>1) Tools, Accessories, consumables / expendables &amp; safety equipments</p> <p>2) Infrastructure &amp; Power Supply : -</p> <p>(i) Class room size – 20 ft. x 30 ft.</p> <p>(ii) Electric Power Supply – 220 NAC</p> <p>3) Fire Extinguisher</p> <p>4) Sensors.</p> <p>5) Smoke Alarms</p> <p>6) Emergency lighting circuit bend.</p> <p>7) Sample of luminous marking</p> <p>8) Carbon Monoxide detectors</p> <p>9) Movable gas detectors</p> <p>10) Hydrant Pump</p> <p>11) Hose Holding Trolley</p> <p>12) Measuring equipments : -</p> <p>a. Vernier caliper</p> <p>b. Hardness tester</p> <p>c. Tee Square</p> <p>d. Combination Square</p> <p>e. Protectors.</p> <p>f. Micrometer</p> <p>g. Depth Micrometer.</p> <p>h. Feeler Guage</p> <p>i. Thread &amp; Hole Guage.</p> <p>j. Radius and Profile Guage.</p> <p>k. Temperature measuring instruments</p> <p>l. Pressure guage with multiple adapters</p> <p>m. Residual current tester.</p>



Sr. No	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• the relationship between types of fire and appropriate extinguishing mediums</li> <li>• characteristics of different environments to which the mechanical fire protection solution is being provided</li> <li>• the requirements of different fire certification bodies</li> <li>• types of electrical and fire safety fittings and components.</li> <li>• tools and equipment used in installing, testing and commissioning.</li> <li>• tools to test fire safety systems for and electrical leakage</li> <li>• why it is important to have full and feasible plans in order to carry out efficient and effective installations</li> <li>• how to relate system design specification to the customers' requirements relevant to fire safety system.</li> <li>• the principles of project planning.</li> <li>• how to survey sites to collect information to confirm design and installation.</li> <li>• how to inspect the site and ensure that the site is accessible and free from obstructions or hazards;</li> <li>• record accurate and relevant factors and site characteristics that could impact on specifications and installation</li> <li>• how to plan and co-ordinate the use of resources different types of PPEs to be used</li> <li>• protocols and guidelines for using PPEs</li> <li>• different hazards one can come across</li> <li>• safety and signages required while carrying out the work</li> <li>• how to secure the equipments and tools after work is completed</li> <li>• why you need to identify the presence of electrical supply and how it can be isolated safely</li> <li>• how to interpret system design specification and site information relevant to selecting types of components and products</li> <li>• the importance of leaving the work area and equipment in a safe and clean condition</li> <li>• how to complete checklists and maintain records and documentation</li> <li>• relevant legislation, standards, policies and procedures</li> </ul>	
2	<p><b>Prepare site and install Fire Safety System</b></p> <p><b>Theory Duration (hh:mm)</b></p>	<p>The user/individual on the job needs to know and should be able to perform / understand the following:</p> <ul style="list-style-type: none"> <li>• legislation, regulations, standards and code s of practice that are relevant to the systems</li> <li>• appropriate measurements and record relevant details of site surveyed various types of</li> </ul>	<ol style="list-style-type: none"> <li>1. Portable Hand hold drilling machine</li> <li>2. Clamp Electric Meter</li> <li>3. Multimeter</li> </ol>



Sr. No	Module	Key Learning Outcomes	Equipment Required
	<p>42:00</p> <p><b>Practical Duration</b> (hh:mm) 40:00</p> <p><b>Corresponding NOS Code</b> SMC/ N 7602:</p>	<p>Measuring equipments and measuring instruments.</p> <ul style="list-style-type: none"> <li>• types of sites - premises of installations commercial; industrial; retail; domestic; governmental.</li> <li>• Different products covered iluminous markings, head lamps, fire exit equipment, CO detectors, fixed and portable gas detectors, fire escape ladder, sand bucket, casualty evacuation equipment , hydrant, sprinklers systems</li> <li>• assessment of quantum of work, work planning and checking of stores.</li> <li>• necessary permits to carry out the required work.</li> <li>• relevant details of work activities required to plan a fire safety solution.</li> <li>• how to communicate and agree working arrangements with clients, and third parties where necessary.</li> <li>• how to check the installation job</li> <li>• how to record details of variations from original specification accurately and fully.</li> <li>• how to assess the appropriate equipment, various types of electrical components &amp; wires required</li> <li>• check preparation of the work area</li> <li>• how to use of small drilling machines.</li> <li>• how to use of Tape and Die cutting machines.</li> <li>• carry out small welding/soldering/brazing work at site</li> <li>• installation activities, how to coordinate them</li> <li>• how to match skill requirements for installation with the skills of available personnel</li> <li>• how to check and record for any physical damages to the machine/equipment.</li> <li>• how to compare received product and accessories with product order specification take appropriate action to remedy situations where systems or equipment do not meet their operational requirement</li> <li>• provide test results in the approved format.</li> <li>• comply with relevant health and safety requirements</li> <li>• carry out appropriate tests in accordance with performance requirements</li> <li>• record test results accurately</li> <li>• why one must remove all unwanted items from sites</li> <li>• why it is important to dispose of waste, debris and surplus material.</li> <li>• site characteristics: physical layout, dimensions, structure and use of architectural and similar drawings</li> </ul>	<ol style="list-style-type: none"> <li>4. Portable Hand Hold Cutter</li> <li>5. Soldering Iron</li> <li>6. Brazing Tools</li> <li>7. General tools, set of screw driver's L-N-Key set, hammer iron double end (diamond and flat), wooden mallet.</li> <li>8. Sample of clamps, Nut &amp; Bolts.</li> <li>9. Rivets &amp; rivetings machine.</li> <li>10. Bench vice &amp; portable voice</li> <li>11. one set of fire safety control equipment.</li> <li>12. Protective Gloves.</li> <li>13. Protective welding goggles.</li> <li>14. Apron and other related protective equipments.</li> <li>15. Rules</li> <li>16. Squares</li> <li>17. Vernier caliper</li> <li>18. Hardness tester</li> <li>19. Tri-square</li> <li>20. Combination squares.</li> <li>21. Protractors,</li> <li>22. Micrometers</li> <li>23. Depth Micrometers</li> <li>24. Feeler gauges.</li> <li>25. Bore &amp; hole gauges</li> </ol>





Sr. No	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"><li>• factors that could affect system installation, transmission or operation</li><li>• the limits, constraints and capabilities of organisation involved in the installation and operation of systems.</li><li>• the performance, limitations, and availability of systems, equipment</li><li>• the relationship between types of fire and appropriate extinguishing mediums</li><li>• characteristics of different environments to which the fire safety solution is being provided</li><li>• the requirements of different fire certification bodies</li><li>• associated systems and services: equipment that can be part of the fire protection solution such as fire pumps, water tank, detection panel, and alarms.</li><li>• fault indicators such as burns, tests, broken wires, damaged insulation, etc.</li><li>• calibration schedule of all equipment used in inspection activities.</li><li>• standard procedures how to deal with electric shocks and electrocutions to rescue and minimize damage and harm.</li><li>• tools and equipment used in installation fault detecting equipment.</li><li>• how to recognise when the fitting of various systems is correctly secured.</li><li>• the requirements of safe and secure storage of equipment and materials.</li><li>• how to relate physical locations for system components to technical documents</li><li>• how to safely handle equipment during installation</li><li>• how to test products and system components against their required operating performance and what to do when these requirements are not met</li><li>• why it is important that installed products and system components are free from damage or obstruction</li><li>• how to label installed products and system components in line with the specification</li><li>• the tests relevant to the systems and equipment installed</li><li>• the expected operation of including the expected results of the tests carried out</li><li>• why it is important to make sure test equipment is working properly</li><li>• how and why it is important to test and record against appropriate documentation</li><li>• the purpose of and how test and interpret results</li></ul>	





Sr. No	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>the limits of one's authority and responsibility in taking direct action to deal with equipment that does not meet its operational requirement.</li> <li>how to discuss and negotiate work arrangements with customers to achieve mutual satisfaction</li> <li>how to confirm that systems, their associated equipment and operational performance meet the specification</li> <li>what administration documents are required by the organisation after completed installations and why it is important that these documents are complete and accurate</li> <li>organisation's arrangements for site clearance and restoration, handovers, maintenance, further work and customer complaints</li> <li>the importance of leaving the work area and equipment in a safe and clean condition.</li> </ul>	
3.	<p><b>Carry out testing and commissioning of the installed fire safety system</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p> <p><b>Practical Duration</b> (hh:mm) 42:00</p> <p><b>Corresponding NOS Code</b> <b>SMC/ N7603</b></p>	<p>The user/individual on the job needs to know and should be able to perform / understand the following:</p> <ul style="list-style-type: none"> <li>different products covered in fire safety system Range of products : different types of fire</li> <li>the relationship between types of fire and appropriate extinguishing mediums.</li> <li>assessment of quantum of work for repair / checks, work planning and checking of stores.</li> <li>characteristics of different environments to which the fire safety system is being provided.</li> <li>the principles of operation of the fire safety system.</li> <li>how to confirm to customers the post-installation support that is available to them</li> <li>what documentation needs to be completed on handover and by who</li> <li>who should be in receipt of different items of handover documentation</li> <li>why it is important to maintain positive and professional relationships with customers</li> <li>what you must do to ensure that the solution is ready to be demonstrated and handed over to clients</li> <li>how to give instructions and demonstrations in a supportive, positive, logical and methodical manner</li> <li>how to encourage users to clarify anything that they do not fully understand</li> <li>how to ensure that customer's requirements for a fire safety system have been met</li> <li>the relationship between types of fire and appropriate extinguishing mediums</li> <li>what final tests are required to be carried out</li> </ul>	<ol style="list-style-type: none"> <li>Radius &amp; profile gauges</li> <li>Thread gauges.</li> <li>Meter tape.</li> <li>Tension meters.</li> <li>Multimeters</li> <li>Autocollimator</li> <li>Laser interferometer</li> <li>Right angle/square block</li> <li>Multi-meter,</li> <li>Voltmeter, electrical safety analyser</li> <li>Insulation resistance tester</li> <li>Residual current tester(RCT)</li> <li>Portable appliance tester (PAT)</li> <li>Temperature measuring devices.</li> <li>Pressure measuring devices.</li> </ol>



Sr. No	Module	Key Learning Outcomes	Equipment Required
-		<ul style="list-style-type: none"><li>• how to identify whether any specialist testing of specific equipment is required</li><li>• the capabilities and limitation of the tools and equipment to use for testing</li><li>• why it is important to use the correct tools and equipment</li><li>• why it is important to check that test equipment and measuring equipment is in working order and calibrated where necessary</li><li>• why it is important to set up safe and secure work areas, including for equipment and tools etc</li><li>• how to communicate effectively with customers and any third parties. Before and during commission operations and how to maintain their goodwill.</li><li>• the final tests that are relevant to the mechanical fire protection system being tested.</li><li>• the purpose of, and how to use relevant testing and measuring equipment</li><li>• the limits of your authority and responsibility in taking direct action to deal with equipment that does not meets its operational requirement</li><li>• why it is important to record accurate details of test results and make them available to the relevant person</li><li>• how to discuss and negotiate testing arrangements with customers</li><li>• the tests that are relevant to the systems and equipment being tested the expected operation of systems and equipment being tested, including the expected results of the tests you carry out.</li><li>• the purpose of, and how to use the relevant test equipment</li><li>• what information is needed to confirm that solutions are ready to be commissioned, and from where you obtain this information</li><li>• how to confirm that fire safety system and their performance meet the required operational specification Fault indicators such as burns, tests, broken wires, damaged insulation, etc.</li><li>• the processes and procedures used to bring fire safety system into operation, and why they must be applied, including commissioning documents</li><li>• what actions should be take to minimise disruption to customer and third parties</li><li>• what action to take to deal with problems that arise during commissioning operations</li><li>• details of commissioning records: comprehensive documentation containing all mechanical fire protection solution information,</li></ul>	



Sr. No	Module	Key Learning Outcomes	Equipment Required
		<p>including number of items associated with the solution and any relevant test dates.</p> <ul style="list-style-type: none"> <li>• methods and parameters to check quality.</li> <li>• tools and equipment used in testing, repair and maintenance.</li> <li>• the expected operation of systems and equipment being tested, including the expected results of the tests carried out</li> <li>• why it is important to make sure test equipment is working properly, and calibrated where necessary</li> <li>• how to discuss and negotiate work arrangements with customers to achieve mutual satisfaction</li> <li>• what administration documents are required by the organisation after completed installations and why it is important that these documents are complete and accurate</li> <li>• organisation's arrangements for site clearance and restoration, handovers</li> <li>• comply with relevant health and safety requirements while restoring installation sites</li> <li>• different types of PPEs to be used</li> <li>• protocols and guidelines for PPE</li> <li>• different hazards one can come across</li> <li>• safety and signages required while carrying out the work</li> <li>• how to secure the equipments and tools after work is completed.</li> <li>• the importance of leaving the work area and equipment in a safe and clear condition.</li> </ul>	
4	<p><b>Work effectively with others</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p> <p><b>Practical Duration</b> (hh:mm) 10:00</p> <p><b>Corresponding NOS Code</b> SMC/ N 9101</p>	<p>The user/individual on the job needs to know and should be able to perform the following:</p> <ul style="list-style-type: none"> <li>• importance of effective communication in the workplace.</li> <li>• various people that one is required to communicate and co-ordinate within the organizations.</li> <li>• various components of effective communication.</li> <li>• barriers to effective communication.</li> <li>• importance of tone and pitch in effective communication.</li> <li>• key elements of active listening.</li> <li>• importance of teamwork in organizational and individual success. Value and importance of active listening and assertive communication.</li> <li>• importance of avoiding casual expletives and unpleasant terms while communicating in professional circles</li> <li>• how poor communication practices can disturb people and environment</li> <li>• importance of ethics for professional success</li> <li>• importance of discipline for professional success</li> </ul>	



Sr. No	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• what constitutes disciplined behavior for a working professional</li> <li>• common reasons for interpersonal conflict</li> <li>• importance of developing effective working relationships</li> <li>• expressing and addressing grievances appropriately and effectively.</li> <li>• importance and ways of managing interpersonal conflict effectively</li> <li>• importance of communicating clearly and effectively with people face-to-face, by telephone and in writing</li> <li>• importance of effective working relationships and how these can contribute towards effective working relationships on a day-to-day basis</li> <li>• types of working relationships that help people to work well together and the types of relationships that need to be avoided</li> <li>• how to deal with difficult working relationships with people to sort out problems.</li> </ul>	
5	<p><b>Maintain a healthy, safe and secure working environment</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 05:00</p> <p><b>Corresponding NOS Code</b> SMC/ N 9102</p>	<p>The user/individual on the job needs to know and should be able to understand / perform the following:</p> <ul style="list-style-type: none"> <li>• general rules on hygiene that one must follow.</li> <li>• why correct clothing, footwear and headgear should be worn at all times.</li> <li>• what one should do in case of cuts, grazes and wounds and why it is important.</li> <li>• meaning of “hazards” and “risks”.</li> <li>• health and safety hazards commonly present in the work environment and related precautions</li> <li>• possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</li> <li>• methods of accident prevention</li> <li>• hazards one can deal with oneself and hazards that must be reported to someone else</li> <li>• how to warn other people about hazards and why this is important.</li> <li>• types of emergencies that may happen at the workplace and how to deal with these.</li> <li>• where to find first aid equipment and who the registered first-aider is in the workplace</li> <li>• safe lifting and handling techniques to be followed</li> <li>• other ways of working safely that are relevant to the job and why these are important</li> <li>• precautionary activities to minimize the risk of fire and prevent fire accidents</li> <li>• various causes of fire at the workplace</li> <li>• techniques of using the different fire extinguisher</li> <li>• rescue techniques applied during a fire hazard</li> </ul>	



Sr. No	Module	Key Learning Outcomes	Equipment Required
-		<ul style="list-style-type: none"><li>organization's emergency procedures, in particular for fire, and how one should follow these</li><li>where to find fire alarms and how to set them off</li><li>why one should never approach a fire unless it is safe to do so</li><li>why it is important to follow fire safety laws</li><li>organization's security procedures and why these are important</li><li>where to find all the general health and safety equipment in the workplace.</li><li>various dangers associated with the use of electrical equipment</li><li>preventive and remedial actions to be taken in the case of exposure to toxic materials</li><li>importance of using protective clothing/equipment while working.</li><li>potential injuries and ill health associated with incorrect manual handling.</li><li>personal safety, health and dignity issues relating to the movement of a person by others</li><li>potential impact to a person who is moved incorrectly</li><li>various types of safety signs and what they mean</li><li>appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, eye injuries.</li><li>the correct procedures for dealing with customers in case of emergencies.</li><li>why it is important to report all usual/non-routine incidents to the appropriate person safe working practices while working at various hazardous sites.</li><li>content of written accident report</li></ul>	
	<b>Total Duration 260 Hours</b>  <b>Theory Duration 132:00</b>  <b>Practical Duration 128:00</b>	<b>Unique Equipment Required: NIL</b>	

Grand Total Course Duration: **260 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Strategic Manufacturing Sector Skill Council](#))



## Trainer Prerequisites for Job role: “Technician – Installation and Commissioning (Fire Fighting and Safety Equipment)” mapped to Qualification Pack: “SMC/Q7601, V1.0”

Sr. No.	Area	Details
1	<b>Description</b>	It involves marking out the pipes as per specifications, and then use hand tools, portable power tools, manually operated machine tools and shaping, fabricating, fitting and assembly techniques appropriate to the operations being performed. The candidate will be expected to check the quality of the workpiece, using measuring equipment.
2	<b>Personal Attributes</b>	Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organize own work and identify and solve problems in the course of working. Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness
3	<b>Minimum Educational Qualifications</b>	10th Standard
4a	<b>Domain Certification</b>	Certified for Job Role: “Technician – Fire Fighting and Safety Equipment” mapped to QP: <u>SMC/Q 7601</u> ”. 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 80%.
5	<b>Experience</b>	Minimum 3 years experience is required



## Annexure: Assessment Criteria

<b>Assessment Criteria</b>	
<b>Job Role</b>	<b>Technician – Fire Fighting and Safety Equipment</b>
<b>Qualification Pack</b>	<b>SMC/Q7601, v1.0</b>
<b>Sector Skill Council</b>	<b>Strategic Manufacturing</b>

<b>Sr. No.</b>	<b>Guidelines for Assessment</b>
1	Criteria for assessment for each Qualification Pack will be created 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 each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created 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 QP. The pass percentage will be applicable on a QP in aggregate and not at NOS Level.
6	Each Student at Level – 4 has to pass in skill, Knowledge and Behaviour as the percentage given below in totality.





Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
<b>SMC / N 7601: Prepare for installation and commissioning of Fire Safety System</b>	PC1. Obtain information about the fire safety equipment requirement		3	2	1
	PC2. Ensure that data and information received is complete and correct		3	2	1
	PC3. Determine the requirement of material to be used from job specification		4	3	1
	PC4. Prepare plans of action for installing fire protection solutions that comply with performance requirements, relevant legislation and codes of practice		3	2	1
	PC5. Establish suitable testing arrangements		4	1	3
	PC6. Assess the appropriate equipment, various types of electrical and electronic components & wires required, parts and accessories for the installation		5	2	3
	PC7. Confirm that required tools, equipment and components are available, in good working order, are suitable for the job and comply with relevant health and safety requirements		4	1	2
	PC8. Make sure that relevant measuring equipment is calibrated and in working order		5	2	3
	PC9. Select suitable fixing devices and methods that are appropriate to sites, building structures and materials		4	1	3
	PC10. Establish the procedures to complete the installation		6	4	2
	PC11. identify PPE to be used		4	2	2
	PC12. Survey sites to collect information to confirm design and installation of fire safety system		5	1	4
	PC13. Inspect the site and ensure that the site is accessible and free from obstructions or hazards; ensure the site is suitably prepared for the mechanical equipment installation to take place		5	1	4
	PC14. Ensure that appropriate utilities are available (eg. Gas, water, air, electricity)		4	2	2
	PC15. Record accurate and relevant factors and site characteristics that could impact on specifications and installation		4	2	2
	PC16. Check and record for any physical damages to the machine/equipment		4	1	3
	PC17. Compare received product and accessories with product order specifications		3	1	2
	PC18. Take appropriate action in lieu with manufacturer and customer, in case of any deviations		4	1	3
	PC19. Adhere to protocols and guidelines for personal protective equipment (PPE) and other relevant safety regulations		4	2	2
	PC20. Ensure work area is clean and safe from hazards		3	1	2
	PC21. Work safely in heights and confined spaces		3	0	3



	PC22. Observe safety measures while working on high pressure line/system with steam, compressed air, hydraulic etc.		3	1	2
	PC23. Follow warning and safety signs (danger, out of service, etc.) While working with energized system viz. Electrical systems, steam & gases, chemicals and/or compressed air system etc.		3	1	2
	PC24. Ensure that all tools, equipment and machines are secured at all times		3	1	2
	PC25. Complete checklists and records for preparation installing the fire safety system		4	1	3
	PC26. Comply with relevant legislation, standards, policies and procedures		3	2	1
	<b>Total</b>		<b>100</b>	<b>40</b>	<b>60</b>
<b>2. SMC/ N 7602 Prepare site for installation of fire safety</b>	PC1. Obtain necessary permits to carry out the required work		2	1	1
	PC2. Confirm that all the relevant details of work activities required prepare site a fire safety solution are available, and that they are complete and current		2	1	1
	PC3. Communicate and agree working arrangements with clients, and third parties where necessary, that are mutually acceptable		2	1	1
	PC4. Confirm that all necessary resources (personnel, tools and equipment) will be available when required		2	1	1
	PC5. Anticipate and plan contingency action to deal with any potential problems with work schedules or arrangements		3	1	1
	PC6. Check the installation job specification documentation are available and correct		3	1	2
	PC7. Record details of variations from original specification accurately and fully		3	1	2
	PC8. Assess the appropriate equipment, various types of electrical components & wires required, parts and accessories for the installation		2	0	2
	PC9. Prepare the work area		2	0	2
	PC10. Obtain the PPE required		2	1	1
	PC11. Obtain the appropriate tools, equipment, materials and components parts and accessories: cables, wires, connectors, plugs		2	1	1
	PC12. Check that all tools and machines are fit for purpose and measuring equipments are within calibration date		3	1	2
	PC13. Erect temporary access equipment in line with safe practice, regulations and customers' restrictions		3	1	2
	PC14. Position and mount specified equipment in line with performance requirements, relevant legislation, regulations, guidelines and codes of practice		5	1	4
	PC15. Use suitable tools, fixing devices and methods that are appropriate to the supporting structure and the equipment		3	1	2
	PC16. Make sure that the position of equipment optimises operational maintenance, access and customer requirements		3	1	2



	PC17. Use the correct tools and equipment to position and mount equipment safely for installation of all equipments		2	0	2
	PC18. Fit all products and system components in accordance with the specification to optimise operation and maintenance		4	1	3
	PC19. Use suitable fixing devices and methods that are appropriate to site and building materials		4	1	3
	PC20. Connect all products appropriately		4	0	4
	PC21. Avoid unnecessary damage to building structures and surfaces		3	1	2
	PC22. Make good any damage to building structures or surfaces in line with agreed specifications		3	1	2
	PC23. Report the details to the relevant person of any damage that you cannot repair		2	0	2
	PC24. Remove installation tools and equipment from sites after use, reporting the details to the relevant person of any that are unserviceable		3	0	3
	PC25. Return spare or reusable equipment and materials to their designated locations		3	1	2
	PC26. Dispose of waste, debris and surplus materials in line with approved procedures and relevant regulations, standards and codes of practice		3	1	2
	PC27. Make permanent any temporary site arrangements on completion of installation work		3	1	2
	PC28. Switch on product equipment and carry out check for proper functioning without load		4	1	3
	PC29. Adhere to protocols and guidelines for personal protective equipment (PPE) and other relevant safety regulations		2	1	1
	PC30. Ensure work area is clean and safe from hazards		2	1	1
	PC31. Work safely in heights and confined spaces		2	0	2
	PC32. Observe safety measures while working on high pressure line/system with steam, compressed air, hydraulic etc.		3	1	2
	PC33. Follow warning and safety signs (danger, out of service, etc.) While working with energized system viz. Electrical systems, steam & gases, chemicals and/or compressed air system etc.		2	1	1
	PC34. Ensure that all tools, equipment and machines are secured at all times		3	1	2
	PC35. Complete preparation for installation following workplace procedures		2	1	1
	PC36. Complete checklists and records for preparation for laying down piping systems		2	1	1
	PC37. Comply with relevant legislation, standards, policies and procedures		2	1	1
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
<b>SMC/N 7603: Carry Out testing and commissioning of the installed</b>	PC1. Identify and agree the relevant final testing requirements applicable to the fire safety system, including any specialist testing of specific equipment related to the solution		2	1	1



<b>fire safety system</b>					
	PC2. Ensure that the information that needed to commission the fire safety system is available		<b>2</b>	<b>1</b>	<b>1</b>
	PC3. Establish appropriate communication with customer representatives and third parties		<b>2</b>	<b>1</b>	<b>1</b>
	PC4. Prepare plans of action for commissioning mechanical fire safety solutions that comply with performance requirements, relevant legislation, regulations, guidelines and codes of practice		<b>2</b>	<b>0</b>	<b>2</b>
	PC5. Confirm that required tools, equipment and components are available, in Good working order, are suitable for the job and comply with relevant health and safety requirements		<b>2</b>	<b>1</b>	<b>1</b>
	PC6. Make sure that relevant measuring equipment is calibrated and in Working order		<b>2</b>	<b>1</b>	<b>1</b>
	PC7. Identify the relevant tests that required to carry out on the system		<b>4</b>	<b>1</b>	<b>3</b>
	PC8. Ensure that test equipment is working properly and calibrated where necessary before starting tests		<b>3</b>	<b>1</b>	<b>2</b>
	PC9. Confirm testing arrangements with customers and third parties where necessary, that are mutually acceptable		<b>3</b>	<b>1</b>	<b>2</b>
	PC10. Carry out required tests in line with approved procedures codes of practices		<b>5</b>	<b>0</b>	<b>5</b>
	PC11. Take appropriate action to remedy situations where systems or equipment do not meet their operational requirement		<b>3</b>	<b>0</b>	<b>3</b>
	PC12. Carry out appropriate tests in accordance with performance requirements		<b>3</b>	<b>0</b>	<b>3</b>
	PC13. Record test results accurately and fully, using approved recording methods and formats		<b>3</b>	<b>0</b>	<b>3</b>
	PC14. Provide test results in the approved format to the relevant person, within Agreed timescales		<b>3</b>	<b>0</b>	<b>3</b>
	PC15. Comply with relevant health and safety requirements whilst testing mechanical fire protection solutions		<b>3</b>	<b>1</b>	<b>2</b>
	PC16. Identify any shortfall or discrepancy in the results of the final tests which are not in accordance with the performance requirements		<b>3</b>	<b>1</b>	<b>2</b>



	PC17. Confirm that all system documents have been completed, collated and are available for handing over to the relevant person		2	1	1
	PC18. Confirm that sites are clear of tools, equipment, waste and surplus materials when systems are handed over to customers		2	1	1
	PC19. Give full and accurate information to customers and third parties where necessary about arrangements for handover, maintenance, further work and any enquiries		2	0	2
	PC20. Give the required details of systems and handover arrangements to the concerned person		2	0	2
	PC21. Confirm that equipments and systems have been fully installed and meet the relevant performance requirements				
	PC22. Confirm that all installation documents have been completed, collated and issued as appropriate		3	1	2
	PC23. Take suitable action to minimise potential disruption to customers' and any relevant third party normal work activities		2	1	1
	PC24. Commission the system in line with performance requirements and sequence of operation		4	0	4
	PC25. Take effective action to deal with any problems that arise during commissioning operations		2	0	2
	PC26. Confirm that sites are clear of tools, equipment, waste and surplus materials when solutions are handed over to customers		2	1	1
	PC27. Confirm that all appropriate commissioning records required by the organisation are complete, accurate and passed to the relevant person		2	1	1
	PC28. Give full and accurate information to customers, and third parties where necessary, about arrangements for post-installation support		2	0	2
	PC29. Confirm that any necessary documentation has been completed, collated and is available for handing over to the relevant person		2	1	1
	PC30. Confirm that customers receive information on their responsibilities for		2	1	1



	The fire safety system, as described in performance requirements				
	PC31. Make mutually acceptable arrangements with customers, and third parties where necessary, to instruct users in the use of equipment		2	1	1
	PC32. Make sure that relevant people are informed of intended start and end of instructions, including activation of any alarms		2	1	1
	PC33. Give demonstrations and instructions on the appropriate use of equipment		2	0	2
	PC34. Confirm with customers that their requirements for a fire safety has been achieved		2	1	1
	PC35. Adhere to protocols and guidelines for personal protective equipment (PPE) and other relevant safety regulations		2	1	1
	PC36. Ensure work area is clean and safe from hazards		2	1	1
	PC37. Work safely in trenches, confined spaces and excavated areas		2	1	1
	PC38. Observe safety measures while working on high pressure line/system with steam, compressed air, hydraulic etc.		2	1	1
	PC39. Follow warning and safety signs (danger, out of service, etc.) While working with energized system viz. Electrical systems, steam & gases, chemicals and/or compressed air system etc.		2	1	1
	PC40. Ensure that all tools, equipment and machines are secured at all times		2	1	1
	PC41. Complete checklists and records for preparation for installing fire safety system		2	1	1
	PC42. Comply with relevant legislation, standards, policies and procedures		2	1	1
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
<b>SMC/N 9101: Work effectively with others</b>	PC1. Communicate with other people clearly and effectively		7	2	5
	PC2. Receive information and instructions accurately from the supervisor and fellow workers, getting clarification where required		7	2	5
	PC3. Pass on accurate information to authorized persons who require it and within agreed timescale and confirm its receipt		7	2	5



	PC4. Pass on essential information to other people on timely basis		7	2	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		7	2	5
	PC6. Work in a way that shows respect for other people		7	2	5
	PC7. Carry out any commitments made to other people		6	2	4
	PC8. integrate one's work with other people's work effectively		6	2	4
	PC9. Display helpful behavior by assisting others in performing tasks in a positive manner		6	2	4
	PC10. Identify any problems with team members and other people and take the initiative to solve these problems		7	2	5
	PC11. Follow the organisation's policies and procedure		6	2	4
	PC12. Display active listening skills while interacting with others at work		7	2	5
	PC13. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		7	2	5
	PC14. Demonstrate responsible and disciplined behaviours at the workplace		6	2	4
	PC15. Escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		7	2	5
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
<b>4. SMC/ N 9102: Maintain a safe, hygienic and secure working environment</b>	PC1. Maintain personal health and hygiene	<b>100</b>	4	1	3
	PC2. Wear clean and appropriate clothing, footwear and headgear		4	1	3
	PC3. Follow health and hygiene procedures in all the work at all times		4	1	3
	PC4. Keep a look out for hazards in the workplace		4	1	3
	PC5. Identify any hazards or potential hazards and deal with these correctly		4	1	3
	PC6. Report any accidents or near accidents quickly and accurately to the proper person		4	1	3
	PC7. Follow safety procedures at the workplace		4	1	3
	PC8. Practice emergency procedures correctly		4	0	4
	PC9. Follow the organization's security procedure		4	1	3
	PC10. Use protective clothing/equipment for specific tasks & work conditions		4	1	3
	PC11. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		3	1	2
	PC12. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		3	1	2
	PC13. Inspect for faults, set up and safely use steps and ladders in general use		3	1	2





PC14. Lift heavy objects safely using correct procedures		4	1	3
PC15. Identify common hazard signs displayed in various areas		3	1	2
PC16. Retrieve and/or point out documents that refer to safety at workplace		3	1	2
PC17. Use appropriate fire extinguishers on different types of fires correctly		3	1	2
PC18. Demonstrate rescue techniques applied during fire hazard		3	1	2
PC19. Demonstrate good housekeeping in order to prevent fire hazards		3	1	2
PC20. Demonstrate the correct use of a fire extinguisher		4	1	3
PC21. Demonstrate how to free a person from electrocution, as per laid down procedure		4	1	3
PC22. Administer appropriate first aid to victims where required eg. In case of bleeding, burns, choking, electric shock, poisoning etc.		5	2	3
PC24. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		4	2	2
PC25. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
PC26. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		3	1	2
PC27. Participate in emergency procedures and move injured people and others during an emergency		3	2	1
PC28. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		3	1	2
<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
		<b>100</b>	<b>30</b>	<b>70</b>
<b>Grand Total</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>400</b>
<b><u>Percentage Weightage:</u></b>			<b>100%</b>	<b>100%</b>
<b><u>Minimum Pass% to qualify (aggregate):</u></b>				<b>60%</b>