NSQF Qualification File Approved in 22nd NSQC, dated - 25/08/22
Rationalized in 24th NSQC Meeting – NCVET – Dated 17.11.2022

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

NCVET Code

2022/CCM/CGSC/06612

Name and address of submitting body:

Capital Goods Skill Council
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Name and contact details of individual dealing with the submission

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Position in the organisation: COO & Acting CEO

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List of documents submitted in support of the Qualifications File

1. Qualification Pack
2. Model Curriculum
3. Industry Validations

NSQF Qualification File Approved in 22nd NSQC, dated - 25/08/22
Rationalized in 24th NSQC Meeting – NCVET – Dated 17.11.2022

SUMMARY

1	**Qualification Title**	Stainless Steel Fabricator
2	**Qualification Code**	CSC/Q0307
3	**NCO code and occupation**	NCO-2015/7212.0200, Fabrication, Fitting and Assembly
4	**Nature and purpose of the qualification**	This is a Qualification Pack (QP) containing National Occupational Standards for the job role – Stainless Steel Fabricator The main purpose of the qualification is to get unemployed people into work and to upgrade the skills of people already in work. The qualification will help them gain the appropriate process and technical knowledge, critical thinking and decision-making skills related to a Stainless Steel Fabricator.
5	**Body/bodies which will award the qualification**	Capital Goods Skill Council (CGSC)
6	**Body which will accredit providers to offer courses leading to the qualification**	Capital Goods Skill Council (CGSC)
7	**Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)**	Yes
8	**Occupation(s) to which the qualification gives access**	Fabrication, Fitting and Assembly
9	**Job description of the occupation**	The incumbent in the job designs, cuts, forms, welds, joins, polishes and finishes the stainless steel structure/ component/ product as per work requirements. The individual also performs quality checks and ensures correct installation of the fabricated structure at the worksite, as per required standards.
10	**Licensing requirements**	N/A
11	**Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)**	NA

12	**Level of the qualification in the NSQF**	5
13	**Anticipated volume of training/learning required to complete the qualification**	600 hours
14	**Indicative list of training tools required to deliver this qualification**	Some of the training tools that can be used for the curriculum include: Hammer, Chisel set, Centre punch 9mm x 127mm, Dividers 20 cm, Wire brush 15 cm x 3.7 mm, Spark lighter, Number punch 6 mm and letter punch 6 mm, Scriber 15 cm, Tongs holding Steel rule, Screw driver set, Hacksaw frame adjustable 30 cm, Magnifying glass 15 cm, Weld measuring gauge fillet and butt, file set, Steel tape 182 cm flexible in case, Try square Rubber hose clips, Spindle key (for opening cylinder valve), Pressure regulator oxygen double stage, Pressure regulator acetylene regulator, Tip cleaner, Outfit spanner Power hacksaw, Portable grinder Power source, MMAW, TIG and MIG welding set Dye penetrant test kit, Ultrasonic testing kit, Magnetic particle testing kit, X-ray testing kit Ag4 grinding, wolf grinding, hand air grinding Power tool cables ,Chisel, drilling tools , jigs & fixtures , ropes , manual lifts , blocks & tables , straps , bolts , clamps, Cutting tools, hacksaws; hammers; punches; screwdrivers; sockets; wrenches; spanners; scrapers , measuring tools(rules/tapes, dividers/trammels, scribers, punches, scribing blocks, squares, protractor, depth/internal/external micrometres, callipers (Vernier, inside and outside, depth), gauges (height Vernier, feeler, bore/hole, slip, radius/profile, thread, plug), stick micrometres, dial stand and comparator, vee block with u-clamp) , , Hand Tools , Power tools , PPE , Drawing Tools , Cutting Machines , Hand Grinders etc. Personal Protective Equipment, such as Overalls, Safety Glasses, Safety Shoes, Mask, etc. Cleaning Equipment and Materials like, Sanitizer, Soap, etc.
15	**Entry requirements and/or recommendations**	10th Class Pass with 4 years relevant experience OR 12th pass with 1 year (NTC or NAC or NITC)

		OR 12th Grade pass with 2 years relevant experience OR Certified in NSQF-L4 Materials - Engineer with 3 years relevant experience OR Completed 3 year diploma (mechanical) after 10th with 1 year relevant experience OR Completed 1st year of 2 year of diploma (after 12th) OR Completed 1st year of UG (UG Certificate) OR Pursuing 2nd year of UG
16	**Progression from the qualification**	This entry should refer to one or more of the following: Master Fabricator – Stainless Steel
17	**Planned arrangements for the Recognition of Prior Learning (RPL)**	- Response to market forces for RPL. - RPL assessments will be the same as our normal assessments.
18	**International comparability was known**	Not Yet Established
19	**Date of the planned review of the qualification.**	25/08/2025
20	**Formal structure of the qualification**	

	Title of component and identification code.	**Mandatory/ Optional**	**Estimated size (learning hours)**	**Level**
i)	CSC/N1335: Follow the health and safety practices at work	Mandatory	60	3
ii)	CSC/N0310: Plan and prepare for stainless steel fabrication	Mandatory	60	5
iii)	CSC/N0311: Perform cutting and forming tasks for stainless steel fabrication	Mandatory	55	5
iv)	CSC/N0312: Perform pre-	Mandatory	30	5

	welding operations for stainless steel fabrication			
v)	CSC/N0204: Manually weld carbon and low alloy steels by using Metal Arc Welding (MMAW)/ Shielded Metal Arc Welding (SMAW)	Mandatory	75	3
vi)	CSC/N0212: Perform Tungsten Inert Gas (TIG) Welding on metals	Mandatory	75	4
vii)	CSC/N0209: Manually weld metals by using MIG/MAG welding	Mandatory	75	4
viii)	CSC/N0313: Perform finishing and installation of fabricated stainless steel structure	Mandatory	50	5
ix)	DGT/VSQ/N0102 - Employability Skills (60 hours)	Mandatory	60	4
	OJT	Mandatory		
	Total		**600**	

Please attach any document giving further detail about the structure of the qualification – e.g., a Curriculum Document or a Qualification Pack.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

1. Qualifications Pack- Stainless Steel Fabricator

SECTION 1
ASSESSMENT

21	**Body/Bodies which will carry out the assessment:** • *Multi Skills Assessors Guild (MSAG)* • *Ginger Webs Pvt. Ltd.* • *IIW* • *Cleveratti Skills Pvt. Ltd.* More Assessment Agencies are being empanelled to cover a wider geographical area
22	**How will the RPL assessment be managed and who will carry it out?** *RPL will be based on the same approved Qualification Pack and Assessment Criteria mentioned in the Qualification Pack and will be carried out as per the normal CGSC assessment process. The Training Partner or any other authority as prescribed by the Steering Committee will identify and counsel candidates eligible for RPL through mobilization camps and advertisements. The mobilized candidates can be counselled, oriented about the standardized NSQF framework, and based on their existing competency, will be mapped against the suitable level of the concerned Job role for assessments. The candidates enrolled will be assessed by the Assessment Agency affiliated with the Sector Skill Council on the basis of assessment criteria decided by the Sector Skill Council (SSC). The candidate will need to pass the minimum assessment criteria of a particular QP decided by the SSC. Successfully assessed candidates with a valid Aadhaar or alternate ID (as per process) will be eligible for QP-NOS based Certification.*
23	**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.** *The emphasis is on 'learning-by-doing and practical demonstration of skills and knowledge based on the performance criteria. The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency as per the performance and assessment criteria mentioned in the Qualification Pack. The assessment papers are also checked for the various outcome-based parameters such as quality, time taken, precision, tools & equipment requirement etc. The assessment sets are then reviewed by CGSC officials for consistency. The assessments are designed to assess maximum parts during the practical hands-on work. The technical limitations at the training centres are taken care of in theory and*

viva. Criteria such as the use of a lift to pick heavy objects or selection of fire extinguishers during a fire are also assessed under theory/viva.

The assessment agencies are instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with their assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise the impartiality of the assessments. The assessment agencies are instructed to ideally have assessors with a minimum of 15 years of industry experience as an ITI graduate/ minimum of 10 years of industry experience as a diploma engineer and a minimum of 5 years of industry experience as a graduate engineer.

The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to CGSC Assessment Framework, competency-based assessments, assessors guide etc.

The assessors are provided with an assessor's guide developed by the Subject Matter Expert of the assessment agency as per the assessment framework. The assessment guides are developed to ensure the maximum possible consistency in the assessment by different assessors and elaborate on the following

1. *Qualification Pack Structure*
2. *Guidance for the assessor to conduct theory, practical and viva assessments*
3. *Guidance for trainees to be given by the assessor before the start of the assessments.*
4. *Guidance on assessments process, practical brief with steps of operations practical observation checklist and mark sheet*
5. *Viva guidance for uniformity and consistency across the batch.*
6. *Guidance on assessment evidence collection*

2. *A sample format of the Assessment Guide for* Technician Instrumentation *are attached. Similar Assessor Guides are developed and shared with the assessors before the start of the assessments as standard practices for all assessments by CGSC. The Sample of Assessor Guide is attached as Annexure 4*

The assessment results are backed by the evidence collected by assessors.

1. *The assessor needs to collect a copy of the attendance for the training done under the scheme. The attendance sheets are signed and stamped by the In-charge/ Head of the Training Centre.*

2. *The assessor needs to verify the authenticity of the candidate by*

	checking their photo ID card issued by the institute as well as any Photo ID card issued by the Central Government. The same needs to be mentioned in the attendance sheet. In case of suspicion, the assessor should authenticate and cross verify the trainee's credentials in the enrolment form. 3. *The assessor needs to punch the trainee's roll number on all the test pieces. Different sections can have alpha numbering. For example, if a student's roll number is 123 then the three pieces can be numbered and punched as 123a, 123b and 123c.* 4. *The assessor needs to take a photograph of all the students along with the assessor standing in the middle and with the centre name/banner at the back as evidence.* 5. *The assessor needs to carry a camera to click photographs of the trainees working on the job and give the theory exam, as evidence.* 6. *The assessor also needs to carry a photo ID card.* 7. *The assessor also needs to take the photographs as evidence from appropriate angels/sides of the final workpiece/ job submitted by the trainee. This evidence is signed by the trainee at the time of submission of the job piece.* 8. *The assessor needs to measure the dimensions and finish of the submitted workpiece as per the tolerance or standards mentioned in the assessment guide.* *The details on the assessment framework are elaborated in CGSC Protocol for Accreditation of Assessment Agencies and Assessment Framework.*

Please attach any documents giving further information about the assessment and/or RPL.
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

ASSESSMENT EVIDENCE

Complete a grid for each component as listed in "Formal structure of the qualification" in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – i.e., Learning Outcomes to be assessed, assessment criteria and the means of assessment.

24. Assessment evidences

Title of Component:

Job Role	Stainless Steel Fabricator
Qualification Pack	CSC/Q0307, v2.0
Sector Skill Council	Capital Goods

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack (QP) will be created by the Sector Skill Council (SSC). Each performance criteria (PC) will be assigned Theory and Skill/Practical marks proportional to its importance in NOS.
2. The assessment will be conducted online through assessment providers authorised by SSC.
3. Format of questions will include a variety of styles suitable to the PC being tested such as multiple-choice questions, fill in the blanks, situational judgment test, simulation and programming test.
4. To pass a QP, a trainee should pass each individual NOS. Standard passing criteria for each NOS is 70%.

Title of NOS/Unit/Component:

CSC/N1335

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain personal health and safety	**7**	**12**	**-**	**-**
PC1. follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask	2	3	-	-
PC2. check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them	1	2	-	-
PC3. select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions	1	2	-	-
PC4. follow the recommended techniques while lifting and moving heavy objects to avoid injury	1	3	-	-
PC5. follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment	2	2	-	-

Assist in hazard management	**4**	**10**	-	-
PC6. identify existing and potential hazards at work	1	1	-	-
PC7. assess the potential risks and injuries associated with the identified hazards	1	3	-	-
PC8. coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards	1	3	-	-
PC9. handle hazardous materials safely and store them in the designated storage	1	3	-	-
Check the first aid box, firefighting and safety equipment	**3**	**7**	**-**	**-**
PC10. check the first aid box to ensure it is updated with the relevant first aid supplies	1	2	-	-
PC11. check and test the firefighting and various safety equipment to ensure they are in usable condition	1	3	-	-
PC12. coordinate with the supervisor for the repair and replacement of firefighting and safety equipment	1	2	-	-
Assist in waste management	**3**	**8**	**-**	**-**
PC13. segregate waste into appropriate categories	1	3	-	-
PC14. recycle the recyclable waste appropriately	1	3	-	-
PC15. dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations	1	2	-	-
Follow the fire safety guidelines	**3**	**12**	**-**	**-**
PC16. use the appropriate type of fire extinguisher to extinguish different types of fires safely	1	4	-	-
PC17. follow the recommended practices for a safe rescue during a fire emergency	1	4	-	-
PC18. coordinate with the fire department to request assistance to extinguish a serious fire	1	4	-	-
Follow the emergency and first-aid procedures	**7**	**12**	**-**	**-**
PC19. follow the organisational health and safety guidelines during workplace emergencies	1	2	-	-

to ensure own and co-workers' safety				
PC20. follow the recommended practices to minimise loss to organisational property during an emergency	1	3	-	-
PC21. follow the recommended procedure to free a person from electrocution	1	2	-	-
PC22. administer appropriate first aid to the injured personnel	1	2	-	-
PC23. perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest	1	2	-	-
PC24. coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation	2	1	-	-
Carry out relevant documentation and review	**3**	**9**	**-**	**-**
PC25. carry out appropriate documentation following a health and safety incident at work, including all the required information	1	3	-	-
PC26. coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident	1	3	-	-
PC27. assist in implementing appropriate changes to improve the health and safety conditions at work	1	3	-	-
NOS Total	**30**	**70**	**-**	**-**

CSC/N0310

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan and prepare for stainless steel fabrication	**30**	**50**	**-**	**20**
PC1. obtain and customize the designs/sketches/ drawings/purchase order, to ensure compliance to local conditions, customer and site requirements (Local conditions: e.g. natural drainage, natural cleaning, allows easy reach and access)	3	5	-	1
PC2. identify project requirements by interpreting the drawings, sketches and job orders	2	4	-	1

PC3. evaluate the feasibility of the structure to be fabricated	2	4	-	1
PC4. identify appropriate materials, parts, equipment, method and environmental conditions that affectthe properties of the fabricated structure	5	3	-	4
PC5. determine the process flow and sequence of operations to be performed for fabrication	2	3	-	1
PC6. identify the type and grade of stainless steel to be used in the fabrication process (Types of stainless steel: austenitic, duplex, ferritic, martensitic, etc.) (Grades of stainless steel: 200,300and 400 etc. series of stainless steel)	2	3	-	2
PC7. select and arrange the right material, equipment, fixtures, accessories, equipment and consumables as per the SOP and job requirements	4	7	-	2
PC8. prepare bill of materials (BoM) specifying the type, quantity and nature/grade of materials asper task requirements and submit to the concerned department or vendor (Bill of Materials (BoM): part number; description of materials/parts such as size, thickness, length; number ofsets; quantity per set; type of operation; weight, rate etc.)	2	4	-	2
PC9. perform measurements at the worksite using correct tools and materials for stainless steel fabrication	2	5	-	2
PC10. prepare plan and schedule to meet the project target and give instructions to team about the processes required to be performed for achieving the same	3	6	-	2
PC11. design a single-angle truss and use T-sections as per application and site requirements	3	6	-	2
NOS Total	**30**	**50**	**-**	**20**

CSC/N0311

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for cutting of stainless steel	**9**	**14**	**-**	**6**
PC1. identify the cutting and forming work to be done by interpreting the engineering drawing, Welding Procedure Specification (WPS) and job orders	1	2	-	-
PC2. select the appropriate method, equipment and material for cutting and forming of the stainless steel sheet as per SOP/WI	2	2	-	2
PC3. check the tools, measuring instruments and equipment for any defects before use	2	3	-	1
PC4. prepare the stainless steel sheet for marking out by cleaning, removing burrs and sharp edges and applying marking out medium on it	2	3	-	1
PC5. use a range of marking out equipment and mark the dimensions on the stainless steel sheet by applying an appropriate method of marking out as per the instructions received	1	2	-	1
PC6. clamp or secure the sheet to ensure perfect cut as per required setup and machinery	1	2	-	1
Perform cutting operations	**10**	**16**	**-**	**7**
PC7. cut and shape the sheet to the required specification by performing appropriate cutting operations and techniques	2	3	-	2
PC8. obtain First Part Approval (FPA) from the supervisor for the first part cut as per standard operating procedure	1	2	-	-
PC9. perform drilling using stainless steel specified drill bits at right angles, by applying adequate pressure and maintaining a steady speed	2	3	-	1
PC10. select and use manual shears and shearing machines for cutting stainless steel sheets as per the grade and thickness of Stainless steel sheet/plate	2	3	-	1

PC11. set the shears, adjust for blade clearance and derate the shears against their nominal capacity to compensate for the power requirements as per the thickness of stainless steel (Blade clearance: depends on plate thickness and material strength)	2	3	-	2
PC12. perform abrasive cutting using appropriate discs for cut-off operations on small section sizes, thin plate material and applications involving straight-line cutting (Discs: aluminium oxide discs, rubber-based discs, vitrified/resinous-bonded discs, dedicated discs)	1	2	-	1
Perform forming operations	**7**	**12**	**-**	**4**
PC13. use a hydraulic bending machine for bending of stainless steel sheets/pipes by applying adequate pressure and as per application requirements	2	3	-	1
PC14. use manual bending technique by applying adequate pressure to form the required shape and nature of application (Nature of application: pipe, sheet, solid section etc.)	2	3	-	1
PC15. apply pressing/stamping technique using appropriate tool and die punches to provide the required shape	2	4	-	2
PC16. cut the workpiece into appropriate blanks	1	2	-	-
Perform post cutting activities	**4**	**8**	**-**	**3**
PC17. cut stainless steel workpiece using plasma cutting and laser cutting techniques in coordination with concerned personnel	2	4	-	2
PC18. remove the chips and bursts completely after cutting operations to avoid gaps between joints (Chips and bursts: deburring; adjustment of fitments, hand files, rotating machine, hand tools (such as grinder))	1	2	-	-

PC19. use an appropriate industry accepted lubricant for blanking, piercing and punching and rotating parts of machinery used in stainless steel fabrication	1	2	-	1
NOS Total	**30**	**50**	**-**	**20**

CSC/N0312

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform pre-welding operations for stainless steel fabrication	**30**	**50**	**-**	**20**
PC1. select appropriate weld procedure/technique that allows minimum penetration of weld metal into carbon (steel and adequate fusion) and as per SOP/WI	3	2	-	2
PC2. select a filler rod with required alloy content as per the type of weld, properties of the weldmetal and grade of stainless steel being used	3	5	-	2
PC3. bevel and provide slopes at the edge of stainless steel plate as per task requirements	3	5	-	2
PC4. clean the weld surface thoroughly to avoid contamination that could result in hot cracking	3	5	-	2
PC5. clamp or secure the stainless steel plate/sheet tightly to ensure accurate welding as per task requirements	2	4	-	2
PC6. set the welding machine and its parameters as per the type of welding and scope of application	3	5	-	3
PC7. perform tacking to ensure proper jointing of the structures to be fabricated	3	6	-	2
PC8. ensure correct dilution levels and composition of filler metal with base material	2	3	-	1

PC9. apply appropriate backing technique for stainless steel to avoid crevices, voids and oxidationusing copper, aluminium, argon (in GTAW) and/or nitrogen	3	7	-	2
PC10. maintain the carbon steel dilution of the stainless steel weld metal to a minimum	3	5	-	1
PC11. wear appropriate personal protective equipment (PPE) while working for stainless steelfabrication	2	3	-	1
NOS Total	**30**	**50**	**-**	**20**

CSC/N0204

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for welding operations	**13**	**19**	**-**	**7**
PC1. identify the work to be done and product specifications by interpreting the product drawing, Welding Procedure Specification (WPS) and job orders	1	2	-	1
PC2. identify the tools, welding machines, measuring instruments, accessories, consumables and input materials (i.e. carbon, low alloy steel etc.) as per the requirements mentioned in WPS or drawing	3	2	-	2
PC3. select and arrange the right material, equipment, fixtures, accessories, welding torch and consumables i.e. electrode, filler wire, shielding gas etc. as per the SOP and job requirements	2	3	-	1
PC4. check the input material, tools and equipment for any defects and that they are as per the required quality standards	2	3	-	1
PC5. prepare the work area for the welding activities	1	1	-	-
PC6. prepare the materials (i.e. plate(1.5 - 24mm)/ sheet (1.5mm)) and joint for welding process	1	1	-	1
PC7. set the MMAW machine and its parameters as per the WPS and SOP	1	2	-	1

PC8. re-dry electrodes as per electrode classification requirement	1	1	-	-
PC9. install the work pieces and fixture on the apparatus and align them with the electrodes as per the job requirements	1	2	-	-
PC10. verify set up by running test weld on the specimen (scrap plate)	-	1	-	-
Perform MMAW/SMAW operations	**11**	**20**	**-**	**8**
PC11. follow safety precautions during welding work as per SOP and organizational guidelines	-	1	-	-
PC12. start the MMAW machine for welding operations	1	2	-	-
PC13. strike and maintain a stable arc by using correct technique (i.e. scratch start, tapping techniques) and to avoid welding defects	1	2	-	1
PC14. perform MMAW welding process as per SOP and tack weld the joint at appropriate intervals to produce joints of the specified quality, dimensions and profile	2	4	-	2
PC15. produce fillet and grove joints in 1F/1G, 2F/2G and 3F/ 3G welding positions as specified in WPS by using single or multi-run welds	2	4	-	2
PC16. ensure correct angle of torch, travel speed, direction of weld and feed during the welding operation	1	1	-	1
PC17. maintain proper bead sequence with respect to groove/fillet configurations and positions	-	1	-	-
PC18. monitor the welding process parameters (air pressure, electrode force, electrode distance, gas flow etc.) are within standards by reading the various gauges and correct them if not within standards	1	1	-	1
PC19. measure the final welded piece and compare with the dimensions as prescribed in the WPS and engineering drawing	1	1	-	1
PC20. remove extra material, slag etc. by using brush, chipping hammers, grinders etc.,	1	1	-	-

from the welded piece				
PC21. hammer the work piece to get the desired shape, if there are any welding bulges/distortions	1	1	-	-
PC22. shut down the welding equipment and remove the workpiece after completion of welding activities	-	1	-	-
Perform post-welding operations	**6**	**11**	-	**5**
PC23. check the work pieces as per the work instructions for product quality	1	2	-	1
PC24. identify various weld defects by conducting visual inspection, destructive and non-destructive tests on the work pieces	2	3	-	2
PC25. separate the defective pieces which can be repaired/ reworked and pieces which are beyond repair	1	1	-	1
PC26. clean and store all the tools, machine and equipment after completion of work	1	2	-	1
PC27. dispose scrap or waste material in accordance with the company policies and environmental regulations	1	1	-	-
PC28. report to the supervisor about any problems faced or anticipated during the complete process	-	1	-	-
NOS Total	**30**	**50**	**-**	**20**

CSC/N0212

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for welding operations	**14**	**19**	**-**	**8**
PC1. identify the work to be done and product specifications by interpreting the product drawing, Welding Procedure Specification (WPS) and job orders	1	2	-	1
PC2. identify the tools, welding machines, measuring instruments, accessories, consumables and input materials (carbon	2	2	-	2

steel, low alloy steel) as per the requirements mentioned in WPS or drawing				
PC3. select and arrange the right material, equipment, fixtures, accessories, welding torch and consumables (i.e. electrode, filler wire, shielding gas etc.) as per the SOP and job requirements	2	3	-	1
PC4. check the input material, tools and equipment for any defects and that they are as per the required quality standards	2	3	-	1
PC5. plan the welding activities before starting the actual process as per WPS	1	-	-	-
PC6. set the TIG welding machine and its parameters as per the WPS and SOP	1	1	-	-
PC7. prepare the materials (i.e. sheet (less than 1.5 mm), plate (8 mm), pipe/tube) and joint for welding process	1	1	-	1
PC8. install the work pieces and fixture on the apparatus and align them with the electrodes as per the job requirements	1	2	-	1
PC9. ensure that electrodes distance, contact area, pressure, application etc. are maintained as specified in Work Instructions (WI)	1	2	-	-
PC10. set pre-purge with shielding gas as required	1	1	-	1
PC11. prepare tungsten electrode by sharpening or balling to desired tip shape	1	1	-	-
PC12. verify set up by running test weld on the specimen (scrap plate)	-	1	-	-
Perform Tungsten Inert Gas (TIG) Welding operations	**10**	**19**	**-**	**8**
PC13. follow safety precautions during welding work as per SOP and organizational guidelines	-	1	-	-
PC14. start the TIG welding machine for welding operations	1	2	-	-

PC15. use correct technique for starting the arc (i.e. (using HF (high frequency) unit, scratching the electrode on the job material, lifting the electrode immediately after touching the job material)	1	2	-	1
PC16. perform TIG welding process using appropriate welding techniques as per SOP and tack weld the joint at appropriate intervals to produce joints of the specified quality, dimensions and profile	2	4	-	2
PC17. ensure correct angle of torch, travel speed, direction of weld and feed during the welding operation	1	1	-	1
PC18. monitor the welding process parameters (air pressure, electrode force, electrode distance, gas flow etc.) are within standards by reading the various gauges and correct them if not within standards	1	1	-	1
PC19. produce joints of the specified dimensional accuracy and required weld quality which is equivalent to level B of ISO 5817	2	4	-	2
PC20. use both methods to produce the various joints i.e. with filler wire and without filler wire (autogenously)	-	1	-	-
PC21. measure the final welded piece and compare with the dimensions as prescribed in the WPS and engineering drawing	1	1	-	1
PC22. remove extra material, slag etc. by using brush, chipping hammers, grinders etc., from the welded piece	1	1	-	-
PC23. shut down the welding equipment and remove the workpiece after completion of welding activities	-	1	-	-
Perform post-welding operations	**6**	**12**	-	**4**
PC24. check the work pieces as per the work instructions for product quality	1	2	-	1

PC25. identify various weld defects by conducting visual inspection, destructive and non-destructive tests on the work pieces	1	3	-	2
PC26. separate the defective pieces which can be repaired/ reworked and pieces which are beyond repair	1	1	-	1
PC27. clean and store all the tools, machine and equipment after completion of work	1	2	-	-
PC28. dispose scrap or waste material in accordance with the company policies and environmental regulations	1	1	-	-
PC29. check the machine operations for any malfunctions/defects in the component and immediately inform the supervisor/ maintenance team for correction	1	2	-	-
PC30. report to the supervisor about any problems faced or anticipated during the complete process	-	1	-	-
NOS Total	**30**	**50**	**-**	**20**

CSC/N0209

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for welding operations	**15**	**21**	**-**	**7**
PC1. identify the work to be done and product specifications by interpreting the product drawing, Welding Procedure Specification (WPS) and job orders	1	2	-	1
PC2. identify the tools, MIG welding machines, measuring instruments, accessories, consumables and input materials (i.e. ferrous metals/materials: carbon steel, stainless steel etc.) as per the requirements mentioned in WPS or drawing	3	2	-	1

PC3. select and arrange the right material, equipment, fixtures, accessories, welding torch and consumables i.e. electrode, filler wire, shielding gas etc. as per the SOP and job requirements	2	3	-	1
PC4. check the input material, tools and equipment for any defects and that they are as per the required quality standards	2	3	-	1
PC5. prepare the work area for welding activities	1	1	-	-
PC6. prepare the materials (i.e. sheet (less than 1.5 mm), plate, structural section, pipe/tube, other forms) and joint for welding process	1	1	-	1
PC7. clean wire feeder and torch tip	-	1	-	-
PC8. set the MIG welding machine and its parameters i.e. wire feed rate, amperage, gas flow rate etc. as per the WPS and SOP	1	2	-	1
PC9. connect and adjust regulators and flow meters to cylinders	1	1	-	-
PC10. choose appropriate mode of metal transfer	1	1	-	-
PC11. set pre-purge with shielding gas as required	1	1	-	1
PC12. install the work pieces and fixture on the apparatus and align them with the electrodes as per the job requirements	1	2	-	-
PC13. verify set up by running test weld on the specimen (scrap plate)	-	1	-	-
MIG/MAG Welding operations	**8**	**17**	**-**	**8**
PC14. follow safety precautions during welding work as per SOP and organizational guidelines	-	1	-	-
PC15. start the MIG welding machine for welding operations	1	2	-	-
PC16. perform MIG welding process in all welding positions as per SOP and tack	2	4	-	2

weld the joint at appropriate intervals to produce joints of the specified quality, dimensions and profile				
PC17. adjust wire stick-out as per requirement	1	1	-	1
PC18. produce joints of the required quality and of specified dimensional accuracy which achieve a weld quality equivalent to Level C of ISO 5817	1	4	-	2
PC19. ensure correct angle of torch, travel speed, direction of weld and feed during the welding operation	1	1	-	1
PC20. monitor the welding process parameters (air pressure, electrode force, electrode distance, gas flow etc.) are within standards by reading the various gauges and correct them if not within standards	1	1	-	1
PC21. measure the final welded piece and compare with the dimensions as prescribed in the WPS and engineering drawing	1	1	-	1
PC22. remove extra material, slag etc. by using brush, chipping hammers, grinders etc., from the welded piece	-	1	-	-
PC23. shut down the welding equipment and remove the workpiece after completion of welding activities	-	1	-	-
Perform post-welding operations	**7**	**12**	-	**5**
PC24. check the work pieces as per the work instructions for product quality	1	2	-	1
PC25. identify various weld defects by conducting visual inspection, destructive and non-destructive tests on the work pieces	2	3	-	2
PC26. separate the defective pieces which can be repaired/ reworked and pieces which are beyond repair	1	1	-	1
PC27. clean and store all the tools, machine and equipment after completion of work	1	2	-	1

PC28. dispose scrap or waste material in accordance with the company policies and environmental regulations	1	1	-	-
PC29. check the machine operations for any malfunctions/defects in the component and immediately inform the supervisor/maintenance team for correction	1	2	-	-
PC30. report to the supervisor about any problems faced or anticipated during the complete process	-	1	-	-
NOS Total	**30**	**50**	**-**	**20**

CSC/N0313

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Finish stainless steel structures	**18**	**31**	**-**	**13**
PC1. assemble the fabricated components as perdesign drawings and specifications	2	4	-	2
PC2. inspect the welded joints in the fabricated structure to check for welding imperfections	2	4	-	1
PC3. clean the weld area using mechanical, chemical and other standard cleaning methodsas per standard operating procedure (SOP)	2	3	-	2
PC4. use flapper wheel abrasives for deburringand finishing the fabricated structures	2	3	-	1
PC5. apply relevant treatment techniques in theareas of hot weld deposit to restore the full passivity and corrosion resistance of the weld	3	5	-	2
PC6. test the weldments and their tensilestrength using appropriate techniques	2	4	-	2
PC7. perform buffing to smoothen the surface ofthe workpiece and ensure fine finishing as per the required application	2	3	-	1

PC8. operate appropriate grinding and polishingequipment to achieve desired finishing on the structure	2	3	-	1
PC9. dispatch the fabricated structure as per standard practice and/or organisational SOP	1	2	-	1
Install fabricated structures	**8**	**13**	**-**	**5**
PC10. check if the site ready for installation	2	3	-	1
PC11. assemble and join the parts and/or structures to be Installed at the worksite in co-ordination with installation team	3	5	-	2
PC12. erect, align and level the stainless steel structure/s	3	5	-	2
Perform post installation activities	**4**	**6**	**-**	**2**
PC13. provide instructions and guidelines for theupkeep of the stainless steel structure/s to the user/customer	2	3	-	1
PC14. secure and maintain the fabrication equipment and machinery	2	3	-	1
NOS Total	**30**	**50**	**-**	**20**

DGT/VSQ/N0102: Employability Skills (60 Hours)

S. No	Module Name	Assessment Marks
1.	Introduction to Employability Skills	2
2.	Constitutional values - Citizenship	2
3.	Becoming a Professional in the 21st Century	6
4.	Basic English Skills	6
5.	Career Development & Goal Setting	3
6.	Communication Skills	4
7.	Diversity & Inclusion	2
8.	Financial and Legal Literacy	5
9.	Essential Digital Skills	8

10.	Entrepreneurship	4
11.	Customer Service	3
12.	Getting ready for Apprenticeship & Jobs	5
	Total	**50**

Means of assessment 1 *Proctored online assessments (LAN and Web-based), carried out using a variety of question formats applicable for linear/ adaptive methodologies; performance criteria being assessed via situation judgement tests, simulations, code writing, psychometrics and multiple-choice questions, etc.*
Means of assessment 2 Presently not considered.
Pass/Fail *To pass a QP, a trainee should pass each NOS. The standard passing criteria for each NOS is 70%*

SECTION 2

25. EVIDENCE OF LEVEL

itle/Name of qualification/component: Stainless Steel Fabricator		**Level: 5**	
NSQF Domain	**Key requirements of the job role**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
Process	**Wide-ranging specialized theoretical learning requirements** • Process of preparing the fitting and fabrication equipment • Process of conducting fitting and fabrication • Process of carrying out fault management • Process of inspecting the workpiece for quality check • Process of segregation and storage of output	The job involves a range of theoretical understanding and practical skills as can be seen from the job requirements given in the adjacent cell. The skills include setting, adjusting and operating fitting and fabrication apparatus and carrying out fitting and fabrication activities on given work piece	5
Professional knowledge	• Understand the concepts of fitting and fabrication. • Knowledge of relevant tools and equipment for conducting fitting and fabrication process. • Knowledge of fitting and fabrication process. • Able to understand how to minimise risks from the hazards associated with carrying out fitting and fabrication	As indicated by the knowledge and understanding requirements mentioned in the adjacent cell, the job holder needs to have a wide range of information for fabrication of component by fitting and fabrication process.	5
Professional skill	• Plan the fitting and fabrication activities and prepare the appropriate schedules • Perform the operational/function checks • Carry out relevant documentation manually	As indicated by the performance criteria in the adjacent cell, the job holder needs to have wide-ranging practical skills for fabrication of component by fitting and fabrication activities.	5

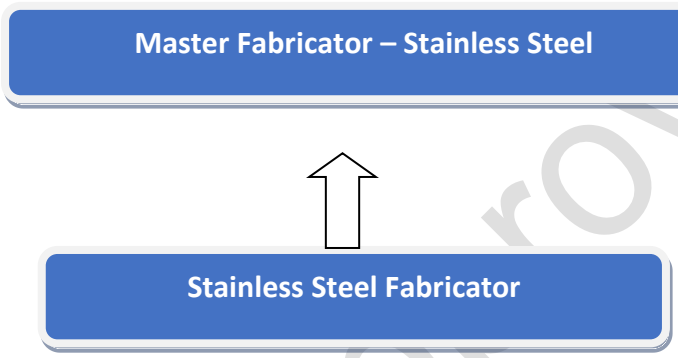
itle/Name of qualification/component: Stainless Steel Fabricator			**Level: 5**
NSQF Domain	**Key requirements of the job role**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
	and/ or electronically • Determine the cutting, welding and assembling parameters • Operate cutting, forming and welding apparatus for fabrication activities		
Core skill	**Logical and mathematical skills** • Follow the technical specification and appropriate procedures. • Perform work-related calculations **Collecting and organising information** • Use the standard templates and tools for documenting work • Collect the relevant information concerning the fitting and fabrication activities and carry out the appropriate documentation.	The job holder requires logical and relevant skills for conducting welding, fitting and fabrication activities. As indicated by the performance criteria in the adjacent cell, the job involves conducting the welding, fitting and fabrication on various stainless steel as per drawing and job order requirement.	5
Responsibility	• Responsible for determining the work requirements. • Responsible for planning the cutting and forming activities. • Responsible for carrying out MMAW, TIG and MIG welding. • Responsible for installation and testing of the fabricated steel structure. • Responsible for preparing and updating the relevant documents.	he incumbent on the job roles carrying out fitting and fabrication operations like measuring, marking out, sawing, grinding, drilling, chiseling, threading, tapping, scraping, manual lapping and inspecting of components in order to fit a component as per specifications. It also involves various types of welding as per given instructions and under supervision.	5

SECTION 3
EVIDENCE OF NEED

26	**What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?** While collecting data from the relevant companies for the occupational map, we also took feedback from the industry concerning the qualification packs being revised. This was largely based on the volume of people required, a quantitative and qualitative shortfall that the industry feels they face. The governing council of CGSC gave final approval and endorsement for the same. The improvement in the industrial policies and better ranking in the World Bank Doing Business indicator has been the key factors behind the improving FDI scenario in India. As per the Global Investment Trade Monitor 2019 report by UNCTAD, India remained among the top 20 recipients of FDI investment globally in 2019. The report further stated India as the major driver of the FDI growth in the South Asian economy which recorded a 10 per cent increase in FDI reaching up to $60 billion. India's FDI inflow grew by almost 16 per cent in 2019 bringing it up to $49 billion. Turnover of the capital goods industry is estimated to have reached US$ 70.00 billion by 2017 and is estimated to grow to US$ 115.17 billion by 2025. The industry grew 21.1 per cent year-on-year between Apr-Sep 2020. The capital goods sector is the base of many industries, thus an essential component of manufacturing. With a total market size of US$ 92 billion and production valued at US$ 32 billion, the Capital Goods sector today contributes to 12% of India's manufacturing output and 1.8% to GDP. The capital goods industry is estimated to have employed 2.8 million people in 2017, which is set to see further growth. Although there is a potential of propelling the sector to approximately INR 7 lakh crore over the next 4- 5 years, the sector is currently facing insufficient off-take due to a lack of domestic and global demand. CII has a National Committee on Capital Goods and Engineering having representation of over 35 leading companies and 6 sub-sector associations An industry-determined specification of performance sets out the skills, knowledge and attitudes required to work effectively in employment. For employers, the **Stainless Steel Fabricator** Qualification standards offer: ▪ a means of assessing occupational competence objectively, including knowledge and understanding of the subject ▪ a guide for job descriptions and recruitment requirements ▪ a basis for staff appraisals ▪ a systematic approach to analysing training needs ▪ an opportunity to improve overall company performance by developing a better-trained, better-equipped and more effective workforce.

	To employees and freelancers, the **Stainless Steel Fabricator** Qualification standards provide: ▪ a means for recognizing the ability ▪ a means for determining gaps in knowledge, experience and skills ▪ an objective process for identifying training needs ▪ performance indicators and a guide to effectiveness and efficiency. One of the most valuable uses of the occupational standards is in the assessment of a person's performance within a particular job. Because the standards are based on the industry's requirements for ability, skills and knowledge, they provide an objective and directly relevant measure for employers and employees alike. The Qualification Pack shall also help conduct Recognition of Prior Learning **Stainless Steel Fabricator**
27	**Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences** In place.
28	**What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?** *This is the revised version of the already NSQC approved QP. The revision has been undertaken as the QP is going to expire soon.*
29	**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?** • *Agencies have been appointed by the SSC to interact with training providers to gather feedback in implementation.* • *Monitoring of results of assessments* • *Employer feedback will be sought post-placement* • *A formal review is scheduled in a three-year time* *The above data is used to update the Qualification and this revision is published annually. Nonetheless, if major feedback is received prior to the planned review period, the change is considered in consultation with the industry council.*

SECTION 4
EVIDENCE OF PROGRESSION

30	**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?** *Career path in the capital goods sector is generally in terms of activities done & ownership of responsibility because they are primarily salaried employee/ entrepreneurship roles.* **Annexure 1: Career Map of Stainless Steel Fabricator** 

Please attach any documents giving further information about any of the topics above.
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.