NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

NSDA Code
2020/CCM/DGT/03672

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Directorate General of Training (DGT)
Government of India, Ministry of Skill Development and Entrepreneurship,
1st and 2nd Floor, CIRTES Building
Next to Pusa ITI, Pusa Campus
New Delhi – 110012.

Name and address of submitting body:

Directorate General of Training (DGT)
Government of India, Ministry of Skill Development and Entrepreneurship,
1st and 2nd Floor, CIRTES Building
Next to Pusa ITI, Pusa Campus
New Delhi – 110012.

Name and contact details of individual dealing with the submission

Name: Shri Deepankar Mallick

Position in the organisation: Deputy Director General (C & P)

Address if different from above:

Tel number(s): 011-25847035

E-mail address: deepankar.mallick60@nic.in

List of documents submitted in support of the Qualifications File

1. Competency-based curriculum with following details:

Model Curriculum to be added which will include the following:

a) Indicative list of tools/equipment to conduct the training: Enclosed with curriculum
b) Trainers qualification: Indicated in the curriculum
c) Lesson Plan: All DGT curricula are designed indicating specific practical to be carried out during training along with details of trade theory. Based on this the concerned instructor prepares the Lesson Plan and demonstration plan with support of IMPs developed by NIMI,DGT.
d) Distribution of training duration into theory/practical/OJT component:Indicated in the curriculum.

2.Curriculum for Core Skills (Workshop calculation & science, Engineering Drawing and Employability Skills)

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

- **SUMMARY**

1	**Qualification Title**	**'WELDER (WELDING & INSPECTION)'**
2	**Qualification Code, if any**	**DGT/1098**
3	**NCO code and occupation**	7212.0100 – Welder, Gas 7212.0200 – Welder, Electric 7212.0300 – Welder, Machine 7212.0400 – Gas Cutter 7212.0500 – Brazer
4	**Nature and purpose of the qualification (Please specify whether qualification is short term or long term)**	Prepare skilled Technician to undertake the job roles of Welder (Welding & Inspection) and will enable the trainee to fuse metal parts together and examines parts to be welded using welding machinery equipment in factories, workshops, business and residential premises etc. It is a long term qualification.
5	**Body/bodies which will award the qualification**	Directorate General of Training (DGT).
6	**Body which will accredit providers to offer courses leading to the qualification**	Directorate General of Training (DGT) accredits the Training providers (ITIs/ NSTIs/ MSTIs/ BTCs/ BTPs / Industries / Establishments).
7	**Whether accreditation/affiliation norms are already in place or not , if applicable (if yes, attach a copy)**	Yes. The accreditation/ affiliation norms and any amendments made from time to time are available on DGT web portal.
8	**Occupation(s) to which the qualification gives access**	• 7212.0100 – Welder, Gas • 7212.0200 – Welder, Electric • 7212.0300 – Welder, Machine • 7212.0400 – Gas Cutter • 7212.0500 – Brazer
9	**Job description of the occupation**	Welder (Welding & Inspection) will be able to Join MS sheets / plates by gas welding / SMAW / GTAW in different positions and does inspection using different methods like Bend test, tensile test, hardness test &

<table>
<tr><td></td><td></td><td>Impact test, dye penetrant inspection, ultrasonic flaw detector etc.</td></tr>
<tr><td>10</td><td>Licensing requirements</td><td>NOT REQUIRED</td></tr>
<tr><td>11</td><td>Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)</td><td>NOT APPLICABLE</td></tr>
<tr><td>12</td><td>Level of the qualification in the NSQF</td><td>Level 3</td></tr>
<tr><td>13</td><td>Anticipated volume of training/learning required to complete the qualification</td><td>
<table>
<tr><th>Sl. No.</th><th>Course Element</th><th>Notional Training Hours</th></tr>
<tr><td>1</td><td>Professional Skill (Trade Practical)</td><td>1000</td></tr>
<tr><td>2</td><td>Professional Knowledge (Trade Theory)</td><td>280</td></tr>
<tr><td>3</td><td>Workshop Calculation & Science</td><td>80</td></tr>
<tr><td>4</td><td>Engineering Drawing</td><td>80</td></tr>
<tr><td>5</td><td>Employability Skills</td><td>160</td></tr>
<tr><td></td><td>Total</td><td>1600</td></tr>
</table>
</td></tr>
<tr><td>14</td><td>Indicative list of training tools required to deliver this qualification</td><td>As per Annexure-I of curriculum.</td></tr>
<tr><td>15</td><td>Entry requirements and/or recommendations and minimum age</td><td>Passed 8th Class examination.

Minimum age 14 years as on first day of academic session.</td></tr>
<tr><td>16</td><td>Progression from the qualification (Please show Professional and academic progression)</td><td>An Individual can proceed for:
<table>
<tr><td>Professional
Technician
Senior Technician
Supervisor
Manager
Entrepreneur</td><td>Technical / Academic

ATS
CITS

Diploma/ Advance Diploma (Vocational)</td></tr>
</table>
</td></tr>
</table>

17	**Arrangements for the Recognition of Prior learning (RPL)**	Yes (For more details refer "Guidelines for Private candidate" in DGT website MIS portal).
18	**International comparability where known (research evidence to be provided)**	--------
19	**Date of planned review of the qualification.**	5 Yrs from the Date of Approval

20 Formal structure of the qualification

Mandatory components

	Title of component and identification code/NOSs/ Learning Outcomes	**Estimated size (learning hours)**		**Level**
		Skills	**Knowledge**	
	TRADE SPECIFIC			
(i)	Perform joining of MS sheet by Gas welding in different positions following safety precautions.	75	21	3
(ii)	Join MS plate by SMAW in different positions.	125	35	3
(iii)	Perform straight, bevel & circular cutting on MS plate by Oxy-acetylene cutting process	75	21	3
(iv)	Perform different types of MS pipe joints by Gas welding (OAW)	75	21	3
(v)	Weld different types of MS pipe joints by SMAW	75	21	3
(vi)	Join Aluminium &Stainless Steel sheets by GTAW in different position	250	70	3
(vii)	Perform Arc gauging on MS plate	25	7	3
(viii)	Join MS sheets/ plates by GMAW in various positions using different modes of metal transfer	25	7	3
(ix)	Perform visual inspection / testing of welded joint	25	7	3
(x)	Perform destructive Inspection of metal by using different methods like, Bend test, tensile test, hardness test and	50	14	3

	Impact test etc			
(xi)	Perform surface defects inspection by Dye penetrant Inspection	50	14	3
(xii)	Perform sub surface inspection by Magnetic particle testing method	25	7	3
(xiii)	Perform sub surface inspection by Ultrasonic Flaw detector of weldments	75	21	4
(xiv)	Perform Interpretation of Radiographic films of weldments	50	14	4
CORE SKILLS				
EMPLOYBILITY SKILLS				
(i)	Apply safe working practices.	-	20	3
(ii)	Comply with environment regulation and housekeeping.	-	20	3
(iii)	Interpret & use formal and technical communication.	-	20	3
(iv)	Apply the concept in productivity & quality management in day to day work to improve productivity & quality.	-	20	3
(v)	List and interpret various acts of labour welfare legislation.	-	20	3
(vi)	Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	-	20	3
(vii)	Explain personnel finance, entrepreneurship and manage/ organize related task in day to day work for personal & societal growth.	-	20	3
(viii)	Utilize basic computer applications and internet to take benefit of IT developments in the industry.	-	20	3
WORKSHOP CALCULATION & SC				
(i)	Demonstrate basic mathematical concept and principles to perform practical operations.	-	40	3
(ii)	Explain basic science in the field of study including simple machine.	-	40	3

ENGINEERING DRAWING				
(i)	Read and apply engineering drawing for different application in the field of work.	-	80	3
	Total	**1600**		-

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

SECTION 1
ASSESSMENT

21	**Body/Bodies which will carry out assessment:** Controller of Examinations, DGT
22	**How will RPL assessment be managed and who will carry it out?** DGT will carry out the RPL assessment following the below mentioned eligibility criteria for Trainee: Applicants aspiring to appear as Private Candidates in the AITT under CTS for award of NTC, have been categorized based on their educational background and experience. Subsequently 'Private Candidates' may be admitted under one of the following categories. Category wise 'eligibility criteria' for appearing as 'Private Candidate' in AITT under CTS has been listed below: Category I: Ex-trainees (successful pass-outs) of ITI A. Ex-trainees of ITI who already possess NTC in one of the trades under CTS, are eligible for applying as Private candidate for an allied trade, provided he/ she fulfils all the conditions regarding educational qualification etc. prescribed for that allied trade. B. In addition, the applicant should possess minimum of 1 year experience (as on date of submission of application) post the date of AITT result declaration in the desired allied trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State. Category II: 'Ex-trainees (successful pass-outs) and current trainees under CoE scheme A. The applicant should have the minimum prescribed entry qualification and should fulfil eligibility criteria for the desired trade under CTS, in which he/she intends to appear for AITT as Private Candidate. CoE candidates must register as 'Private Candidate' under CTS in the relevant/mapped CTS trade only. B. There should be a minimum gap of 1 year between successful completions of CoE training i.e. from the date of result declaration to the date of submission of application for 'Private Candidate' certification. C. During this gap of 1 year, the candidate must have undergone Industry training or gained experience in desired trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the

	concerned State. Category III: SCVT Candidates (admitted till August 2018 session) A. No special provisions have been made for SCVT Trainees to enrol as 'Private Candidate'. Going forward, SCVT trainees have been granted equivalence vide G.S.R 186(E) dated 2nd March 2017 for undergoing apprenticeship training under the Apprentices Act 1961 to obtain 'NAC'. B. Only for SCVT trainees admitted till August 2018 batch, provision has been made for obtaining NTC by appearing in AITT under 'Private Candidate'. Such trainees will continue to be governed by old guidelines for 'Private Candidate'. Category IV: Other Candidates (candidate not falling in any of the above 3 categories, including SCVT trainees enrolled from admission session 2019 onwards) A. The applicant should have the minimum prescribed entry qualification and should fulfil eligibility criteria for the relevant trade under CTS, in which he/she desires to appear for AITT as Private Candidate. B. Applicant should be minimum 21 years of age on the date of submission of application. There is no upper age limit. C. The applicant should possess minimum of 3 years' experience (on the date of submission of application) in the relevant trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State. (For detail and updated information please refer to DGT web portal.)
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.** **(1) Assessment process:** The assessment for the qualification is carried out by conducting formative assessments, and end of year examinations (Summative). The formative assessments in respect of each Learning Outcome for practical and related theory are conducted by the concerned instructors for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees. This formative assessment is primarily carried out by collecting evidence of competence gained by the trainees by evaluating them at work based on assessment criteria, asking questions

and initiating formative discussions to assess understanding and by evaluating records and reports. Summative assessment is carried out by All India Trade Test on Trade Theory, Trade practical, Workshop Calculation & Science, Engineering Drawing and Employability Skills. The question papers for the theory Examinations contain objective type questions.

The marking pattern and distribution of marks for the qualification are as under:

Marking Pattern			
Sl. No.	Type of assessment	Subject for the trade test	Marks
1	Summative Assessment	Practical	250
2		Trade Theory	100
3		Employability Skills	50
4		Workshop Calculation and Science.	50
5		Engineering Drawing	50
6	Formative assessment based on Learning Outcomes		200
		TOTAL:	700

(2) Minimum pass marks:

The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. There will be no Grace marks.

Testing and certifications for the course:
Controller of examinations, DGT carries out the assessment and issues National Trade Certificate (NTC) following the norms and guidelines issued by the Directorate from time to time.

Overall assessment strategy:

	Assessment of the qualification evaluates trainees to show that they can integrate knowledge, skills and values for carrying out relevant tasks as per the defined learning outcomes and assessment criteria. The trainees may choose the preferred language for assessment. The underlying principle of assessment is fairness and transparency. While assessing the trainee, assessor is directed to assess as per the defined assessment criteria against the learning outcomes. The evidence of the competence acquired by the trainees can be obtained by conducting theory and practical examinations, observing the trainees at work, asking questions and initiating discussions to assess, understand and evaluate records and reports. The ultimate objective of the assessment is to assess the candidates as per the defined assessment criteria for the learning outcomes. **Specific Arrangements for assessment:** • Assessment is outcome-based. • There are formative and summative assessments in Theory and Practical. • Assessment is carried out in Trade theory, Trade Practical, Workshop Calculation and Science, Engineering Drawing and Employability Skills. • While Trade Theory and Trade Practical are used for assessing Trade-related jobs, Workshop Calculation and Science is used to test trainee's numerical and logical skills, Drawing is used to test the ability of the trainee to draw and read sketches and Employability skills is used to test the communication, professional language, leadership, entrepreneurship and team-work abilities of the trainee. • In addition to demonstration of theory and practical knowledge, trainees get a chance to present total personality. **Quality assurance activities:** Question papers are set by external paper setters/ software generated. Evaluation of Theory Examinations in Trade, Workshop Calculation & Science, Engineering Drawing and Employability Skill is done by third-party agency. Trade Practical is examined by External Examiner.

24. Assessment evidences

Title of Component: Formative Assessment Breakup
(on half yearly average of the learning assessment covered)

Means of assessment

Assessment will be evidence based comprising the following for each Learning Outcome:

Serial No.	Terminal Competency	Maximum Weightage (%)
1	Safety consciousness	15
2	Workplace hygiene	5
3	Attendance/ Punctuality	10
4	Ability to follow Manuals/ Written instructions	5
5	Application of Knowledge	10
6	Skills to handle tools / equipment/ Instruments/ Devices	10
7	Economical use of materials	5
8	Working Strategy	10
9	Quality in workmanship/ Performance	15
10	VIVA	15
	Total Maximum Weightage (%)	100

Pass/Fail

The minimum pass percentage is 60% marks for formative assessment.

ASSESSMENT CRITERIA

LEARNING OUTCOME (TRADE SPECIFIC)	
LEARNING OUTCOME	**ASSESSMENT CRITERIA**
1. Perform joining ofMS sheets by Gas welding in different positions.	Plan and select the nozzle size, working pressure type of flame, filler rod as per requirement.
	Prepare, set and tack the pieces as per drawing.
	Setting up the tacked joint in specific position.
	Deposit the weld following proper welding technique and safety aspect.
	Carry out visual inspection to ascertain quality weld joint.
2. Join MS plates by SMAW in different positions.	Plan and select the type & size of electrode, welding current, type of edge preparation etc. as per requirement.
	Prepare, set and tack the pieces as per drawing.
	Set up the tacked pieces in specific position.
	Deposit the weld maintaining appropriate arc length, electrode angle, welding speed, weaving technique and safety aspects.
	Clean the welded joint thoroughly.
	Carry out visual inspection for appropriate weld joint.
	Inspect the weld using DPT/MPT.
3. Perform straight, bevel & circular cutting on MS plate by Oxy-acetylene cutting process.	Plan and mark on MS plate surface for straight/bevel/circular cutting.
	Select the nozzle size and working pressure of gases as per requirement.
	Set the marked plate properly on cutting table.
	Perform the straight and bevel cutting operation maintaining proper techniques and all safety aspects.
	Perform the circular cutting operation by using profile cutting machine maintaining proper techniques and all safety aspects.
	Clean the cutting burrs and inspect the cut surface for soundness of cutting.
4. Perform different types of MS pipe joints by Gas welding (OAW).	Plan and prepare the development for a specific type of pipe joint.
	Mark and cut the MS pipe as per development.
	Select the size of filler rod, size of nozzle, working pressure etc.
	Set and tack the pieces as per drawing.

	Deposit the weld bead maintaining proper technique and safety aspects.
	Inspect the welded joint visually for poor penetration, uniformity of bead and surface defects.
5. Weld different types of MS pipe joints by SMAW.	Plan and prepare the development for a specific type of pipe joint.
	Mark and cut the MS pipe as per development.
	Select the electrode size and welding current for welding.
	Set and tack the pieces as per drawing.
	Deposit the weld bead maintaining proper technique and safety aspects.
	Insect the welded joint visually for root penetration, uniformity of bead and surface defects.
6. Join Aluminum &Stainless Steel sheets by GTAW in different position.	Select power source as per material, size and type of Tungsten electrode, welding current, gas nozzle size, gas flow rate and filler rod size as per requirement.
	Prepare, set and tack the pieces as per drawing.
	Set up the tacked joint in specific position.
	Deposit the weld by adapting proper welding technique and safety aspects.
	Carry out visual inspection to ensure quality of welded joint.
	Inspect the weld using Dye-penetration Test (DPT)/Magnetic particle Test (MPT).
	Identify the materials and measuring instruments.
	Carry out butt & fillet welds on sheet metals.
	Mark on plates on structural sections- I, L, C etc.
	Perform gas cutting of MS plate, I section and channels profile cutting.
	Perform root run welding by using backing strip.
	Install GTAW welding plant.
	Carry out beading by TIG.
	Carry out square butt and corner joint on MS by TIG.
	Perform butt, T and corner joint on SS sheet.
	Carry out straight line beads on MS plate by CO2 welding.
	Carry out lap T and corner joint on MS plate by CO2 welding.
	Carry out single V –butt joint by CO2 welding.
	Develop pipe weld joint and fit up on elbow and T-joint.
	Perform pipe joint root welding by TIG.

7. Perform Arc gauging on MS plate.	Plan and select the size of electrode for Arc gouging.
	Select the polarity and current as per requirement.
	Perform gouging adapting proper gouging technique.
	Clean and check to ascertain the required stock removed.
8. Join MS sheets/ plates by GMAW in various positions using different modes of metal transfer.	Select size of electrode wire, welding voltage, gas flow rate, wire feed rate as per requirement.
	Prepare, set and tack the pieces as per drawing.
	Set up the tacked joint in specific position.
	Deposit the weld adapting proper welding technique and safety aspects.
	Carry out visual inspection to ensure quality of welded joint.
	Inspect the weld using Dye-penetration (DPT)/Magnetic particle Test (MPT).
9. Perform visual inspection of welded joint.	Clean the welded joint thoroughly.
	Carry out visual inspection to ascertain quality of weld joint.
	Locate and mark out visual defects if any for repair.
	Record the observation in the Inspection report.
10. Perform destructive Inspection of metal by using different methods like, Bend test, tensile test, hardness test and Impact test etc.	Cut the welded joint to the required size.
	Prepare the specimen according to the testing method.
	Test with the DT method.
	Record the observation in the Inspection report.
11. Perform surface defects inspection by Dye penetrantInspection.	Clean the welded joint thoroughly.
	Carry out visual inspection to ascertain quality of weld joint.
	Locate and mark out visual defects if any for repair.
	Record the observation in the Inspection report.
12. Perform sub surface inspection by Magnetic particle testing method.	Clean the welded joint thoroughly.
	Carry out visual inspection to ascertain quality weld joint.
	Select the appropriate testing methods.
	Perform testing of welded joints adapting standard operating procedure.
	Accept/reject the job based on test result.
13. Perform sub surface	Clean the welded joint thoroughly.

inspection by Ultrasonic Flaw detector of weldments.	Carry out visual inspection to ascertain quality weld joint.
	Select the appropriate testing methods.
	Perform testing of welded joints adapting standard operating procedure.
	Use correct angle probes as per metals and its density.
	Save the graph image for reference.
	Accept/reject the job based on test result.
14. Interpret Radio graphic films of weldment.	Clean the welded joint thoroughly.
	Carry out visual inspection to ascertain quality weld joint.
	Select the appropriate testing methods.
	Accept/reject the job based on test result.

LEARNING OUTCOME(CORE SKILL)	
LEARNING OUTCOME	**ASSESSMENT CRITERIA**
EMPLOYBILITY SKILLS	
1. Apply safe working practices	Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements and according to site policy.
	Recognize and report all unsafe situations according to site policy.
	Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	Identify, handle and store / dispose off dangerous goods and substances according to site policy and procedures following safety regulations and requirements.
	Identify and observe site policies and procedures in regard to illness or accident.
	Identify safety alarms accurately.
	Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	Identify and observe site evacuation procedures according to site policy.
	Identify Personal Protective Equipment (PPE) and use the same as per related working environment.
	Identify basic first aid and use them under different circumstances.
	Identify different fire extinguisher and use the same as per requirement.
2. Comply with environment regulation and housekeeping	Identify environmental pollution & contribute to the avoidance of instances of environmental pollution.
	Deploy environmental protection legislation & regulations
	Take opportunities to use energy and materials in an environmentally friendly manner.
	Avoid waste and dispose waste as per procedure
	Recognize different components of 5S and apply the same in the working environment.
3. Interpret & use formal	Obtain sources of information and recognize information.

and technical communication.	Use and draw up technical drawings and documents.
	Use documents and technical regulations and occupationally related provisions.
	Conduct appropriate and target oriented discussions with higher authority and within the team.
	Present facts and circumstances, possible solutions &use English special terminology.
	Resolve disputes within the team.
	Conduct written communication.
4. Apply the concept in productivity & quality management in day to day work to improve productivity & quality.	Explain the concept of productivity and apply during execution of job.
	Explain the concept of quality tools and apply during execution of job.
5. List and interpret various acts of labour welfare legislation.	Explain basic concept of labour welfare legislation, adhere to responsibilities and remain sensitive towards such laws.
	Knows benefits guaranteed under various acts.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	Explain the concept of energy conservation, global warming, pollution and utilize the available resources optimally & remain sensitive to avoid environment pollution.
	Explain standard procedure for disposal of waste.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	Explain personnel finance and entrepreneurship.
	Explain role of various schemes and institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non-financing support agencies to familiarize with the policies/ programmes, procedure & the available scheme.
	Prepare a report to become an entrepreneur for submission to financial institutions.
8. Utilize basic computer applications and internet to take benefit of IT developments in the industry.	Explain the basic hardware of personal computer.
	Use common application software viz., word, excel, power point etc., in day to day work.
	Awareness about useful internet websites, search relevant information pertaining to the assigned tasks.

WORKSHOP CALULATION & SCIENCE	
1. Demonstrate basic mathematical concept and principles to perform practical operations.	Solve different problems like phase angle, etc. with the help of a calculator.
	Demonstrate conversion of Fraction to Decimal and vice versa.
	Explain BCD code, conversion from decimal to binary and vice-versa, all other conversions.
2. Understand and explain basic science in the field of study including simple machine.	Explain concept of basic science related to the field such as Material science, Mass, weight, density, speed, velocity, heat & temperature, force, motion, pressure, heat treatment, centre of gravity, friction.
	Explain levers and its types.
	Explain relationship between Efficiency, velocity ratio and Mechanical Advantage.
	Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	Solve simple problems on lifting tackles like crane-Solution of problems with the aid of vectors.
ENGINEERING DRAWING	
1. Read and apply engineering drawing for different application in the field of work.	Read & interpret the information on drawings and apply in executing practical work.
	Read &analyse the specification to ascertain the material requirement, tools and assembly/maintenance parameters.
	Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

SECTION 2
25. EVIDENCE OF LEVEL

OPTION A

Title/Name of qualification/component: Welder (Welding & Inspection)			**Level: 3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomesrelate to the NSQF level descriptors**	**NSQF Level**
Process	**Require limited range of activities routine and predictable** • Perform joining of MS sheet by Gas welding in different positions. • Join MS plate by SMAW in different positions. • Perform straight, bevel & circular cutting on MS plate by Oxy-acetylene cutting process. • Perform different types of MS pipe joints by Gas welding (OAW). • Perform destructive Inspection of metal by using different methods like, Bend test, tensile test, hardness test and Impact test etc.	The learner requires working inlimited range of activities routine and predictable for example 'Perform joining of MS sheet by Gas welding in different positions ', and 'Perform straight, bevel & circular cutting on MS plate by Oxy-acetylene cutting process'. The learner requires to apply routine set of activities procedures in familiar context for example Perform different types of MS pipe joints by Gas welding (OAW)', and 'Perform destructive Inspection of metal by using different methods like, Bend test, tensile test, hardness test and Impact test etc'. In all these learning outcomes the learner has to apply one's knowledge in limited range of activities to either meet the client's requirement or identify fault and decide how to rectify it as per the layout and	3

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

Title/Name of qualification/component: Welder (Welding & Inspection)			**Level: 3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomesrelate to the NSQF level descriptors**	**NSQF Level**
		conditions available. Hence NSQF Level is 3 for this descriptor.	
Professional knowledge	**Basic facts,process andprinciple applied intrade ofemployment** • Different process of metal joining methods: Bolting, riveting, soldering, brazing, seaming etc. • Oxy-Acetylene Cutting Equipment principle, parameters and application. • Distortion in arc & gas welding and methods employed to minimize distortion. • Outline of various subjects to be covered Quality and its definition Inspection methods. • Types of Welding defects (Cracks, Inclusions, Incomplete penetration, Lack of fusion, Under cut, Burn through, Overlap etc.)	The learner requires demonstrating knowledge of basic facts, principles, processes and general concepts, in the field of work or study which aredifferent process of metal joining, metal cutting equipment, types of welding defects, repair etc. Hence NSQF Level is 3 for this descriptor.	3
Professional skill	• Join Aluminium &Stainless Steel sheets by GTAW in different position. • Join MS sheets/ plates by GMAW in various positions using different modes of	The learner develops the skill of setting oxy-actetylene welding equipment, lighting and setting of flame, join Aluminium & Stainless Steel sheets welding by GTAW and	3

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

Title/Name of qualification/component: Welder (Welding & Inspection)			**Level: 3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomesrelate to the NSQF level descriptors**	**NSQF Level**
	metal transfer. • Perform visual inspection / testing of welded joint. • Perform destructive Inspection of metal by using different methods like, Bend test, tensile test, hardness test and Impact test etc. • Perform surface defects inspection by Dyepenetrant Inspection.	dimensional inspection of weldments using weld measuring gauges. He acquires the skill to operate detector on weldments of various metals. To perform the above task the learner has to recall & demonstrate practical skills which are routine & repetitive in narrow range of application, using appropriate rule and tool with quality concepts. Hence NSQF Level is 3 for this descriptor.	
Core skill	**Skill of basic arithmetic and algebraic principles** • Demonstrate basic mathematical concept and principles to perform practical operations. • Explain basic science in the field of study including simple machine. **Basic understanding of social and natural environment** • Apply the concept in productivity & quality	The learning outcomes for example Demonstrate knowledge of concept and principles of basic arithmetic, algebraic calculations and apply knowledge of specific area to perform practical operations' and 'Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources' display the learning outcomes where the learner needs to display desired mathematical skill; understanding of social,	3

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

Title/Name of qualification/component: Welder (Welding & Inspection)			**Level: 3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomesrelate to the NSQF level descriptors**	**NSQF Level**
	management in day to day work to improve productivity & quality. • Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources. • Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth. **Communication written and oral, with minimum required clarity** • Utilize basic computer applications and internet to take benefit of IT developments in the industry.	political; and some skill of collecting and organising information, communication. Hence NSQF Level is 3 for this descriptor.	
Responsibility	• Perform Arc gauging on MS plate. • Perform sub surface inspection by Magnetic particle testing method. • Perform sub surface inspection by Ultrasonic Flaw detector of weldments. • Perform Interpretation of Radiographic films of weldments.	The learner is expected to inspect the welding job done on pipes through visual inspection and destructive Inspection of metal by using different methods like, Bend test, tensile test, hardness test and Impact test etc. He is responsible to "Perform sub surface inspection by Magnetic particle testing method" and "Perform sub surface inspection by Ultrasonic Flaw detector of	3

NSQF QUALIFICATION FILE
Approved in 24th NSQC Dated 27th Feb, 2020

Title/Name of qualification/component: Welder (Welding & Inspection)			**Level: 3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomesrelate to the NSQF level descriptors**	**NSQF Level**
		weldments." Thus the learner is responsible for own work within defined limit and as per the level descriptors he works under close supervision for completion of the learning outcomes. Hence NSQF Level is 3 for this descriptor.	

SECTION 3
EVIDENCE OF NEED

<table>
<tr><td>26</td><td>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?
<table>
<tr><th>Basis</th><th>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</th></tr>
<tr><td>Need of the qualification</td><td>Capital Goods & Manufacturing Sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labour intensive and there are many emerging trends in this sector.
Hence the qualification has been designed keeping in view to cater to the ever-increasing demand of skilled manpower in consultation with stakeholders.</td></tr>
<tr><td>Industry Relevance</td><td>The job role defined for the qualification is as per the National Classification of Occupations 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. Moreover, the training is imparted in ITIs/NSTIs/MSTIs/BTC/ BTPs/ Industries / Establishments etc. where such requirement is available. This justifies the qualification is very much relevant for industry.</td></tr>
<tr><td>Usage of the qualification</td><td>The Proposed qualification will create skilled Technician for various establishments in different Sectors.</td></tr>
<tr><td>Estimated uptake</td><td>The present seating capacity is 126.</td></tr>
</table></td></tr>
<tr><td>27</td><td>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences.

The qualification, originally designed for Craftsman Training Scheme is in existence for many years and approved by DGT (Regulatory Body) under</td></tr>
</table>

	Ministry of Skill Development and Entrepreneurship, Govt. of India.
28	**What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification** The qualification is originally designed and approved by DGT for the Craftsman Training Scheme and is in existence for many years. No such duplicate qualification of same duration and competencies exists.
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? Specify the review process here** • The research wing of CSTARI & DGT reviews and updates the qualification, in consultation with industries and other stakeholders, on a regular basis by conducting trade committee meetings. • DGT will monitor any duplicity by comparing existing qualifications with upcoming ones in the National Qualifications Register (NQR) and relevant sectors.

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?** ***Show the career map here to reflect the clear progression*** On completion of the training the trainee will have an opportunity to move in vertical/horizontal pathways to promote to higher designations. The learner can further undergo other specialised courses to excel in the relevant field.