

NSQF QUALIFICATION FILE

Approved in 24th NSQC Dated 27th Feb, 2020

NSDA Code

2020/CCM/DGT/03670

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
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New Delhi – 110012.

Name and contact details of individual dealing with the submission

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

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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:

1. Indicative list of tools/equipment to conduct the training: Enclosed with curriculum
2. Trainers qualification: Indicated in the curriculum
3. 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.

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4. 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).

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5. SUMMARY

1	Qualification Title	'WELDER(PIPE)'
2	Qualification Code, if any	DGT/1085
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(Pipe) and will enable the trainee to fuse metal parts together using welding rod and oxygen acetylene flame; examine parts to be welded, clean portion to be joined, hold them together by some suitable device and if necessary make narrow groove to direct flow of molten metal to strengthen joint. It is 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	<ul style="list-style-type: none"> • 7233.0400 - Mechanic, Diesel Engine • 7212.0100 – Welder, Gas • 7212.0200 – Welder, Electric • 7212.0300 – Welder, Machine • 7212.0400 – Gas Cutter • 7212.0500 – Brazer
9	Job description of the	The individual operates gas or electric

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	occupation	welding machine to join metal parts by fusion. Sets machine for operation by igniting burners and adjusting flames or by switching on current. Regulates flow of gas or current and adjusts machine according to material to be welded. Checks cooling system and adjusts movement of conveyor, if any etc.		
10	Licensing requirements	NOT REQUIRED		
11	Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)	NOT APPLICABLE		
12	Level of the qualification in the NSQF	Level 3		
13	Anticipated volume of training/learning required to complete the qualification	Sl. No.	Course Element	Notional Training Hours
		1	Professional Skill (Trade Practical)	1000
		2	Professional Knowledge (Trade Theory)	280
		3	Workshop Calculation & Science	80
		4	Engineering Drawing	80
		5	Employability Skills	160
			Total	1600
14	Indicative list of training tools required to deliver this qualification	As per Annexure I of curriculum.		
15	Entry requirements and/or recommendations and minimum age	Passed 8th class examination. Minimum age 14years as on first day of academic session.		
16	Progression from the qualification (Please show	An Individual can proceed for:		

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	Professional and academic progression)	Professional <ul style="list-style-type: none"> • Technician • Senior Technician • Supervisor • Manager • Entrepreneur 	Technical / Academic	
17	Arrangements for the Recognition of Prior learning (RPL)	<ul style="list-style-type: none"> • Yes (For more details refer “Guidelines for Private candidate” in DGT website MIS portal). 	<div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto;"></div> ATS CITS Diploma/ Advance Diploma (Vocational)	
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)	Join MS plates by SMAW in different positions.	25	7	3
(ii)	Join MS sheet by Gas welding in different positions following safety precautions.	50	14	3
(iii)	Perform straight, bevel & circular cutting on MS plate by Oxy-acetylene cutting process.	225	63	3
(iv)	Perform different types of MS pipe joints by Gas welding (OAW).	50	14	3
(v)	Weld different types of MS pipe joints by SMAW.	50	14	3

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(vi)	Perform welding of Stainless steel, Cast iron, Aluminium and Brass by OAW.	25	7	3
(vii)	Perform Arc gauging on MS plate.	50	14	3
(viii)	Perform Plasma cutting.	25	7	3
(ix)	Carry out single V groove welds on MS plates by SMAW in 1G, 2G, 3G and 4G positions.	150	42	3
(x)	Carry out single V groove welds on MS pipes by SMAW in 1G, 2G, 5G and 6G positions.	50	14	3
(xi)	Perform Root pass welds in Weld single Vee butt joints on schedule 40 pipes in 1G, 2G and 5G positions by GTAW.	150	42	3
(xii)	Perform Root pass welds in Weld single Vee butt joints on schedule 60 pipes and schedule 80 pipes in 6G positions by GTAW and intermediate and cover pass weld by SMAW.	100	28	3
(xiii)	Perform single Vee butt joint welding on MS pipes by GMAW in 1G position.	25	7	3
(xiv)	Carry out Dimensional inspection and testing of weldments.	25	7	3
CORE SKILL				
EMPLOYABILITY 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		20	3

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	day to day work by optimally using available resources.			
(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 & SCIENCE				
(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	

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21	<p>Body/Bodies which will carry out assessment: Controller of Examinations, DGT</p>
22	<p>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:</p> <p>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:</p> <p>Category I: Ex-trainees (successful pass-outs) of ITI</p> <p>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.</p> <p>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.</p> <p>Category II: 'Ex-trainees (successful pass-outs) and current trainees under CoE scheme</p> <p>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.</p> <p>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.</p> <p>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</p>

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	<p>registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State.</p> <p>Category III: SCVT Candidates (admitted till August 2018 session)</p> <p>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'.</p> <p>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'.</p> <p>Category IV: Other Candidates (candidate not falling in any of the above 3 categories, including SCVT trainees enrolled from admission session 2019 onwards)</p> <p>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.</p> <p>B. Applicant should be minimum 21 years of age on the date of submission of application. There is no upper age limit.</p> <p>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.</p> <p>For detail and updated information please refer to DGT web portal.</p>
23	<p>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.</p> <p>(1) Assessment process:</p> <p>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</p>

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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

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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.

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(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.

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LEARNING OUTCOME WITH ASSESSMENT CRITERIA:

LEARNING OUTCOME (TRADE SPECIFIC)	
LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Join MS sheet by Gas welding in different positions following safety precautions.	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.

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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.
	Inspect the welded joint visually for root penetration, uniformity of bead and surface defects.
6. Weld Stainless steel, Cast iron, Aluminium and Brass by OAW.	Plan and prepare the pieces for welding.
	Select the type and size of filler rod and flux, size of nozzle, gas pressure, preheating method and temperature as per requirement.
	Set and tack plates as per drawing.
	Deposit the weld maintaining appropriate technique and safety aspects.
	Cool the welded joint by observing appropriate cooling method. Use post heating as per requirement.
	Clean the joint and inspect the weld for its uniformity and different types of surface defects.
7. Perform Arc gouging on MS.	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.

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8. Perform Plasma cutting.	Plan and mark on MS plate surface for straight/bevel cutting.
	Set the plasma cutting machine.
	Set the marked plate properly on cutting table.
	Perform the Plasma cutting on M.S plate by Plasma cutting maintaining proper techniques and all safety aspects.
	Clean the cutting burrs and inspect the cut surface for soundness of cutting.
9. Carry out single V groove welds on MS plates by SMAW in 1G, 2G, 3G and 4G positions.	Prepare, set and tack weld the plates as per drawing.
	Select size of SMAW electrode welding current as per requirement.
	Set up the tacked joint in specific position.
	Deposit the root pass weld by SMAW in 1G, 2G, 3G and 4G positions on a separate pair of joints adapting proper welding technique and safety aspects.
	Carry out visual inspection to ensure quality of root pass weld.
	Deposit the intermediate and cover pass welds by SMAW in 1G,2G,3G and 4G positions adapting proper welding technique and safety aspects.
	Inspect the weld by visual inspection and correct defects if any.
10. Carryout single V groove welds on MS pipes by SMAW in 1G, 2G, 5G and 6G positions.	Prepare, schedule 40 pipes and tack the pieces as per drawing.
	Select size of SMAW electrode, welding current as per requirement.
	Set up and tack weld the joints.
	Deposit the root pass weld by SMAW in 1G, position adapting proper welding technique and safety aspects.
	Carry out LP test to ensure quality of root pass weld.
	Deposit the intermediate and cover pass welds by SMAW in 1G position adapting proper welding technique and safety aspects.
	Clamp the pipes in 2G,5G and 6G positions and carry out root pass welds.
	Inspect the root pass welds by visual inspection and correct defects if any.

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	Deposit the intermediate and cover pass welds by SMAW in 1G,2G,5G and 6G positions adapting proper welding technique and safety aspects.
11. Perform Root pass weld on single Vee butt joints on schedule 40 pipes in 1G, 2G and 5G positions by GTAW.	Prepare schedule 40 pipes as per drawing.
	Set the GTAW machine and select the type of welding current, size and type of tungsten electrode, size of nozzle, gas flow rate and welding current as per requirement.
	Set and tack the piece as per drawing.
	Deposit the root pass weld in 1G position maintaining proper technique and safety aspects.
	Clamp the pipes and deposit the root pass weld in 2G position maintaining proper technique and safety aspects.
	Clamp the pipes and deposit root pass weld in 5G position maintaining proper technique and safety aspects.
	Clean and inspect the root pass welds for quality of welding.
12. Perform Root pass on weld single Vee butt joints on schedule 60 and schedule 80 pipes in 6G positions by GTAW and intermediate and cover pass weld by SMAW.	Prepare, schedule 60 pipes and schedule as per drawing.
	Set the GTAW machine and select the type of welding current, size and type of tungsten electrode, size of nozzle, gas flow rate and welding current as per requirement.
	Set and tack the piece as per drawing.
	Clamp the pipe and deposit the root pass weld in 6G position maintaining proper technique and safety aspects.
	Clean and inspect the root pass welds for quality of welding by LP test.
	Deposit the intermediate and cover pass welds by SMAW in 6G position adapting proper welding technique and safety aspects.
	Clean and inspect the weld for quality of welding.
	Prepare, schedule 80 pipes and schedule as per drawing.
	Set the GTAW machine and select the type of welding current, size and type of tungsten electrode, size of nozzle, gas flow rate and welding current as per requirement.
	Set and tack the piece as per drawing.
	Clamp the pipe and deposit the root pass weld in 6G position maintaining proper technique and safety aspects.
	Clean and inspect the root pass welds for quality of welding

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	by LP test.
	Deposit the intermediate and cover pass welds by SMAW in 6G position using Low hydrogen type of electrode and adapting proper welding technique and safety aspects.
	Clean and inspect the weld for quality of welding.
13. Perform single Vee butt joint welding on MS pipes by GMAW in 1G position.	Prepare, schedule 40 and schedule 60 pipes as per drawing.
	Set GMAW machine and select size of electrode wire, welding voltage, gas flow rate and wire feed rate as per requirement.
	Set and tack the piece by as per drawing.
	Deposit the root pass weld in 1G position maintaining proper technique and safety aspects.
	Deposit the cover pass welds in 1G position maintaining proper technique and safety.
	Inspect the joint for soundness of weld.
14. Carry out Dimensional inspection and testing of weldments.	Plan and select the job and clean the surface thoroughly.
	Carry out dimensional inspection of weldments.
	Carry out visual inspection of welds.
	Select the appropriate non destructive testing methods and carry out Non destructive testing of welds adapting standard operating procedure.
	Prepare Bend test specimen and carry out bend test according to codes and standards.
	Accept/reject the job based on test result.

LEARNING OUTCOME (CORE SKILL)	
LEARNING OUTCOMES	ASSESSMENT CRITERIA
EMPLOYABILITY SKILLS	

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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 of 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 and technical communication.	Obtain sources of information and recognize information.
	Use and draw up technical drawings and documents.

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	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	Explain the basic hardware of personal computer.

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applications and internet to take benefit of IT developments in the industry.	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. 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.

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25. EVIDENCE OF LEVEL

OPTION A

Title/Name of qualification/component: WELDER(PIPE)		Level: 3	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	<p>Requires limited range of activities, routine & predictable</p> <ul style="list-style-type: none"> Carry out single V groove welds on MS pipes by SMAW in 1G, 2G, 5G and 6G positions. Perform Root pass welds in Weld single Vee butt joints on schedule 40 pipes in 1G, 2G and 5G positions by GTAW. Perform single Vee butt joint welding on MS pipes by GMAW in 1G position. 	<p>In all the learning outcomes for example ‘Carry out single V groove welds on MS pipes by SMAW in 1G, 2G, 5G and 6G positions.’ and ‘PerformRoot pass welds in Weld single Vee butt joints on schedule 40 pipes in 1G, 2G and 5G positions by GTAW.’, the learner will be required to choose appropriate products, equipments, procedures as per the requirement of the job. The above tasks require limited range of activities which are routine type & predictable to achieve the tolerance level and accuracy demanded as per the job.</p> <p>Thus the NSQF level as per this descriptor will be 3.</p>	3
Professional	Knowledge of Basic facts, process and	The learner is expected to possess the basic	3

NSQF QUALIFICATION FILE

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Title/Name of qualification/component: WELDER(PIPE)		Level: 3	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
knowledge	<p>principle applied in trade of employment</p> <ul style="list-style-type: none"> • Welding procedure for complicated pipe joint, T-joints with intersection. • Pipe welding position 1G, 2G, 5G & 6G. • Welding metallurgy - weld stress. • Power source - Wire feeder -Electrode wires - shielding gases. • Types of welding defects, cause and remedy. • Requirement for qualification in different codes. 	<p>knowledge about procedures for welding of thin wall pipes in downhill position, for welding pipes in 2G position. He/she should know about importance of preheating, post heating and post weld heat treatment, distortion and control, correction of distorted section, types of metal transfer and welding parameters, non destructive testing methods etc.</p> <p>The above knowledge possessed by the learner are the basic facts, process and principles applied in this trade of employment.</p> <p>Hence NSQF Level 3 is justified for this Descriptor.</p>	
Professional skill	<ul style="list-style-type: none"> • Perform different types of MS pipe joints by Gas welding (OAW). 	The learner is expected to perform structural pipe welding butt joint on MS pipe 0 50 and 3mm	3

NSQF QUALIFICATION FILE

Approved in 24th NSQC Dated 27th Feb, 2020

Title/Name of qualification/component: WELDER(PIPE)		Level: 3	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> Weld different types of MS pipe joints by SMAW. Perform Arc gauging on MS plate. Carry out Dimensional inspection and testing of weldments. 	<p>WT in 1G position , pipe welding 45 ° angle joint on MS pipe 0 50 and 3mm WT, square Butt & Lap joint on M.S. sheet 2 mm thick by brazing, single "V" butt joint C.I. plate 6mm thick in flat position etc.</p> <p>To perform the above task the learner has to recall & demonstrate practical skills which are routine & repetitive in narrow range of application. Hence NSQF Level 3 is justified for this descriptor.</p>	
Core skill	<p>Communication written and oral, with minimum required clarity</p> <ul style="list-style-type: none"> Interpret & use formal and technical communication. <p>Basic Arithmetic and algebraic principles</p> <ul style="list-style-type: none"> Explain science in the field of study including simple machine. 	<p>The learner is able to communicate orally & in written using simple English language, has active listening skills. Works as a team player and able to explain technical terms with minimum required clarity. The learner is able to perform basic mathematical calculations like addition, subtraction, multiplication etc. He/she is able to perform the job complying environment regulation and housekeeping by applying safe</p>	3

NSQF QUALIFICATION FILE

Approved in 24th NSQC Dated 27th Feb, 2020

Title/Name of qualification/component: WELDER(PIPE)		Level: 3	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>Understanding of social/political</p> <ul style="list-style-type: none"> Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth. 	<p>working practices. Maintains energy conservation, prevents global warming & pollution by optimally using available resources in day to day work.</p> <p>Hence NSQF Level 3 is justified for this descriptor.</p>	
Responsibility	<ul style="list-style-type: none"> Perform Root pass welds in Weld single Vee butt joints on schedule 60 pipes and schedule 80 pipes in 6G positions by GTAW and intermediate and cover pass weld by SMAW. Perform straight, bevel & circular cutting on MS plate by Oxy-acetylene cutting process. Perform Root pass welds in Weld single Vee butt joints on schedule 40 pipes in 1G, 2G and 5G positions by GTAW. 	<p>The learner is expected to know the appropriate remedial action required for specific defect and thus is responsible for own work within defined limit. He/she is able to follow and perform work assigned to him/her and detect & resolve issues during execution. Thus the learner is responsible for own work. Also demonstrates possible solutions and agree tasks within the team. The learner is able to recognize & comply safe working practices under close supervision of the supervisor.</p> <p>Therefore NSQF Level 3 is justified for this descriptor.</p>	3

NSQF QUALIFICATION FILE**Approved in 24th NSQC Dated 27th Feb, 2020****SECTION 3****EVIDENCE OF NEED**

26	<p>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?</p> <table border="1" data-bbox="339 562 1390 1711"> <thead> <tr> <th data-bbox="339 562 627 707">Basis</th> <th data-bbox="627 562 1390 707">In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</th> </tr> </thead> <tbody> <tr> <td data-bbox="339 707 627 1088">Need of the qualification</td> <td data-bbox="627 707 1390 1088">Capital Goods And 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 labor 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 data-bbox="339 1088 627 1514">Industry Relevance</td> <td data-bbox="627 1088 1390 1514">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 data-bbox="339 1514 627 1637">Usage of the qualification</td> <td data-bbox="627 1514 1390 1637">The Proposed qualification will create skilled Technician for various establishments in different Sectors.</td> </tr> <tr> <td data-bbox="339 1637 627 1711">Estimated uptake</td> <td data-bbox="627 1637 1390 1711">The present seating capacity is 399.</td> </tr> </tbody> </table>	Basis	In case of other Awarding Bodies (Institutes under Central Ministries and states departments)	Need of the qualification	Capital Goods And 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 labor 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.	Industry Relevance	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.	Usage of the qualification	The Proposed qualification will create skilled Technician for various establishments in different Sectors.	Estimated uptake	The present seating capacity is 399.
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27	<p>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences.</p> <p>The qualification originally designed for Craftsman Training Scheme is in existence for many years and approved by DGT (Regulatory Body) under</p>										

NSQF QUALIFICATION FILE

Approved in 24th NSQC Dated 27th Feb, 2020

	Ministry of Skill Development and Entrepreneurship, Govt. of India.
28	<p>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</p> <p>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.</p>
29	<p>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</p> <ul style="list-style-type: none"> • 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	<p>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</p> <p>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.</p> <pre> graph LR A[Technician] --> B[Senior Technician] B --> C[Supervisor] C --> D[Manager] B --> E[Entrepreneur] </pre>
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