

CITS

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

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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:

- **Indicative list of tools/equipment to conduct the training:** Enclosed with curriculum
- **Trainers qualification:** Indicated in the curriculum
- **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 Reference Books and IMPs developed by DGT.
- **Distribution of training duration into theory/practical/OJT component:** Indicated in the curriculum.

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2. Curriculum for Core Skills (Training Methodology Workshop Calculation & Science and Engineering Drawing).

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SUMMARY

1	Qualification Title	‘PLUMBER’
2	Qualification Code, if any	DGT/4013
3	NCO code and occupation	2356.0100 – Manual Training Teacher/Craft Instructor/ NA 7126.0101 – Plumber, General 7126.0102 – Plumber, Operations 7126.0103 – Plumber, General-Installation and Repair 7126.0104 – Plumber, General Helper 7126.0105 – Plumber, General Assistant 7126.0106 – Plumber, Maintenance and Servicing Assistant 7126.0107 – Plumber, Maintenance and Servicing 7126.0201 – Pipe Layer/Plumber Pipeline 7126.0301 – Pipe Fitter 7126.9900 – Plumbers and Pipe Fitters, Other/ NA 7212.0101– Plumber (Welder)/Plumbing (Sanitary Fixtures) Fitter Assistant 7212.0102 – Plumber (Welder) Assistant 7233.1301– Plumber (Pumps and E/M Mechanic)
4	Nature and purpose of the qualification (Please specify whether qualification is short term or long term)	Prepare competent Instructors to impart training in relevant trade at various ITIs/ NSTI/ MSTI BTC/ BTPs and other technical institutions. 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.
7	Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)	Yes. The accreditation/ affiliation norms are available in DGT web portal.

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8	Occupation(s) to which the qualification gives access	<ul style="list-style-type: none"> • Manual Training Teacher/Craft Instructor • Plumber, General • Plumber, Operations • Plumber, General-Installation and Repair • Plumber, General Helper • Plumber, General, General Assistant • Plumber, Maintenance and Servicing Assistant • Plumber, Maintenance and Servicing • Pipe Layer/Plumber Pipeline • Pipe Fitter • Plumbers and Pipe Fitters • Plumber (Welder)/Plumbing (Sanitary Fixtures) Fitter Assistant • Plumber (Welder) Assistant • Plumber (Pumps and E/M Mechanic) 																								
9	Job description of the occupation	The individual will be able to impart theoretical instructions, demonstrate practical skills, evaluate and grade trainees of Plumber trade in industrial workshops, ITIs/Vocational Training Institutes 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 6																								
13	Anticipated volume of training/learning required to complete the qualification	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d9ead3;"> <th style="text-align: center;">Sl. No.</th> <th style="text-align: center;">Course Element</th> <th style="text-align: center;">Notional Training Hours</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Professional Skill (Trade Practical)</td> <td style="text-align: center;">640</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Professional Knowledge (Trade Theory)</td> <td style="text-align: center;">240</td> </tr> <tr> <td style="text-align: center;">3</td> <td>W Sc/ Cal</td> <td style="text-align: center;">80</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Engineering Drawing</td> <td style="text-align: center;">120</td> </tr> <tr> <td style="text-align: center;">5</td> <td>TM Practical</td> <td style="text-align: center;">320</td> </tr> <tr> <td style="text-align: center;">6</td> <td>TM Theory</td> <td style="text-align: center;">200</td> </tr> <tr> <td></td> <td style="text-align: center;">Total</td> <td style="text-align: center;">1600</td> </tr> </tbody> </table>	Sl. No.	Course Element	Notional Training Hours	1	Professional Skill (Trade Practical)	640	2	Professional Knowledge (Trade Theory)	240	3	W Sc/ Cal	80	4	Engineering Drawing	120	5	TM Practical	320	6	TM Theory	200		Total	1600
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14	Indicative list of training tools required to deliver this qualification	As per “Infrastructure” heading at serial no. 8 of curriculum	
15	Entry requirements and/or recommendations and minimum age	<p>Degree in appropriate branches of Mechanical/ Civil Engineering from AICTE/UGC recognized Engineering College / University.</p> <p style="text-align: center;">OR</p> <p>Diploma in appropriate branches of Mechanical/ Civil Industrial Engineering from AICTE/ recognized board / Institution.</p> <p style="text-align: center;">OR</p> <p>National Trade Certificate in Plumber or related trades.</p> <p style="text-align: center;">OR</p> <p>National Apprenticeship Certificate in Plumber or related trades.</p> <p>Minimum age 18 years as on first day of academic session</p>	
16	Progression from the qualification (Please show Professional and academic progression)	<p>An Individual can proceed for:</p> <p style="text-align: center;">Professional</p> <ul style="list-style-type: none"> • Technical Instructor in a vocational training Institute/ technical Institution • Supervisor in Industries 	<p style="text-align: center;">Academic</p> <ul style="list-style-type: none"> • Diploma • Advance Diploma (Vocational) • Degree • PG
17	Arrangements for the Recognition of Prior learning (RPL)	Instructors of relevant trade with 3 yrs experience may appear for final examination after completion of e-learning in POT	
18	International comparability where known (research evidence to be provided)	-	
19	Date of planned review of the	5 Yrs from the date of approval	

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	qualification.			
20	Formal structure of the qualification			
	Mandatory components			
Sl. No.	Title of component and identification code/ NOSs/ Specific Learning outcomes	Estimated size (learning hours)		Level
		Prof. Skill	Prof. Knowledge	

Trade Technology

(i)	Follow workshop safety measures and monitor job as per specification applying different types of basic fitting operation and check for dimensional accuracy by using steel rule, calliper etc.[Basic Fitting operation- marking, hack sawing, chiselling, filing,, drilling, reaming, taping, off-hand grinding etc. accuracy \pm 0.25mm].	16	6	5
(ii)	Demonstrate the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation – marking, Hack sawing, Chiselling, Filing, Drilling, Taping and grinding etc. Accuracy: \pm 0.25mm].	16	6	5
(iii)	Demonstrate Inner & Outer Thread cutting on Metal & Studs and thread cutting on different types of pipes & fittings accessories.	16	6	6
(iv)	Review various wood jointing with carpenter's tools.	16	6	6
(v)	Demonstrate the Cutting of Pipes of different Dia in different angle and Joining of pipes by Gas & Arc welding. Soldering and Brazing.	32	12	6
(vi)	Construct a Masonry brick wall and RCC casting. Demonstrate Brick wall cutting for concealing pipe line.	32	12	6
(vii)	Monitor Cutting and Bending of Pipes using Plumber's tools and equipments.	32	12	6
(viii)	Check & Evaluate various types of PVC	32	12	6

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	pipe joint by different methods and heat process or Welding.			
(ix)	Review Installation and maintenance of different Electric pump.	32	12	6
(x)	Construct complete pipe line circuit with different types of Joints and demonstrate fixing of cocks & valve on Pipe line.	32	12	6
(xi)	Perform water analysis test, Water Pressure test and demonstrate Water distribution system by using Pipe line	16	6	6
(xii)	Plan & execute fitting, fixing & laying installation of hot & cold water pipe line and symboling.	16	6	6
(xiii)	Demonstrate & assess installation of Kitchen, Sanitary Fittings and Testing of Drainage line	48	18	6
(xiv)	Examine and remove Leakage of pipe line as per site Water supply pipe line and Drainage Pipe line layout.	48	18	6
(xv)	Construct inspection chamber, manhole, gutter, septic tank, sock pit etc.& Layout of soil pipe.	48	18	6
(xvi)	Analyze & install Rain Water Harvesting.	32	12	6
(xvii)	Monitor repairing & reconditioning, scraping & painting of sanitary fittings, Pipe line.	16	6	6
(xviii)	Perform Fittings of Water heater and arrange supply of hot & cold water.	16	6	6
(xix)	Assemble and Repair different types of Pump.	32	12	6
(xx)	Evaluate Maintenance & Repair of Tank, waste fittings and Fixing of the Sensor system.	32	12	6
(xxi)	Assess & test the Pressure of pipe and repair leakage.	32	12	6
(xxii)	Monitor Fitting of Hydrants & Sprinklers.	16	6	6
(xxiii)	Draw Estimate and Execute of Plumbing system.	32	12	6
Engineering Technology				
(i)	Demonstrate basic mathematical concept and principles to perform practical		40	6

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	operations.			
(ii)	Explain basic science in the field of study including simple machines.		40	6
(iii)	Apply engineering drawing for different application in the field of work.		120	6
Training Methodology				
(i)	Plan & prepare the learners for the class using basics of educational psychology & motivating techniques.	24	15	5
(ii)	Analyze the syllabus of the Course.	16	10	6
(iii)	Plan & prepare the training session using various methods viz. 4 step method, question & questioning technique etc.	24	15	6
(iv)	Communicate effectively with the trainees both verbally and nonverbally.	24	15	5
(v)	Use Instructional Technology & facilitate the training program.	16	10	6
(vi)	Design written instructional materials and implement for imparting training.	24	15	6
(vii)	Assess, evaluate and certify the tests.	24	15	6
(viii)	Organize workshop and classroom learning observing instructional methods.	24	15	6
(ix)	Counsel & mentor the trainees by identifying their Strength & Weaknesses.	24	15	6
(x)	Develop Entrepreneurship skills.	24	15	6
(xi)	Apply ICT & Internet in training (computer based training) and various types of Distance learning programmes.	24	15	6
(xii)	Conduct competency-based training using LO/QP/ NOS and NSQF guidelines.	24	15	6
(xiii)	Apply Adult Learning Principles.	24	15	6
(xiv)	Develop and implement continuous professional development plan.	24	15	6
Total		1600		

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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? Instructors of relevant trade with 3 yrs experience may appear for final examination after completion of e-learning in POT and carried out by respective NSTIs under DGT.

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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:

Assessment and Certification of all the trainees will be carried out as per Directorate General of Training (DGT) norms for the trade theory including practical portion conducted in NSTI/IToT workshop. The assessment for the qualification is carried out by conducting formative assessments and summative assessment (end-of-year examination). The internal assessment for each learning outcome is carried out by the concerned trainer for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees. This internal 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, and internal assessment marks are awarded to them. Theory and practical examinations are conducted in Trade Technology, Workshop Science & Calculation, Engineering Drawing and Training Methodology. The question papers for the theory Examinations contain objective type questions. The practical examination at the end of training is conducted at NSTI / IToTs and the marks are uploaded in the portal accordingly.

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

Sl.	Subject	Marks	Internal	Full	Pass Marks
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No.				Assessment	Marks	Exam	Internal Assessment
1.	Trade Technology	Trade Theory	100	40	140	40	24
		Trade Practical	200	60	260	120	36
2.	Engineering Technology	Workshop Cal. & Sc.	50	25	75	20	15
		Engineering Drawing	50	25	75	20	15
3.	Training Methodology	TM Practical	200	30	230	120	18
		TM Theory	100	20	120	40	12
Total Marks			700	200	900	360	120

(2) Minimum pass marks:

The minimum pass percent for Trade Practical, TM practical Examinations and Formative assessment is 60% & for all other subjects is 40%. There will be no Grace marks.

(3) Testing and certifications for the course:

Controller of examinations, DGT carries out the assessment and issues National Craft Instructor Certificates (NCIC) 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 and impart 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 formative

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discussions to assess understanding and evaluating 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 Technology, Engineering Technology & Training Methodology.
- While Trade Theory and Trade Practical are used for assessing Trade-related jobs, Workshop Calculation and Science is used to test trainee's numerical skills, Drawing is used to test the ability of the trainee to draw and read sketches and Training Methodology is used to test teaching skills.
- In addition to demonstration of theory and practical knowledge, overall personality of the trainees is also assessed.

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 Training Methodology is done by third-party agency.
- Trade Practical is examined by External Examiner.

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24. Assessment evidence

Title of Component: Plumber

Means of assessment		
Assessment will be evidence based comprising the following for each Learning Outcome:		
Serial No.	Terminal Competency	Maximum Weightage (%)
1	Safety Consciousness & Workplace Hygiene	15
2	Attendance/ Punctuality	5
3	Planning of assigned task	20
4	Execution of planned work	25
5	Quality of Performance	20
6	VIVA	15
	Total Maximum Weightage (%)	100
Pass/Fail		
The minimum pass percentage is 60% marks for formative assessment.		

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ASSESSMENT CRITERIA WITH LEARNING OUTCOME	
LEARNING OUTCOME	ASSESSMENT CRITERIA
TRADE TECHNOLOGY	
1. Follow workshop safety measures and monitor job as per specification applying different types of basic fitting operation and check for dimensional accuracy by using steel rule, calliper etc.[Basic Fitting operation- marking, hack sawing, chiselling, filing,, drilling, reaming, tapping, off-hand grinding etc. accuracy±0.25mm].	Plan & identify tools, instruments and equipment for marking and make this available for use in a timely manner.
	Demonstrate raw material and visual inspection for defects.
	Illustrate as per specification applying desired mathematical calculation and observing standard procedure.
	Demonstrate all dimensions in accordance with standard specifications and tolerances.
	Identify hand tools for different fitting operations and make these available for use in a timely manner.
	Demonstrate the job for Hacksawing, chiselling, filing, drilling, tapping, grinding.
	Demonstrate basic fitting operations viz., Hacksawing, filing, drilling, tapping and grinding to close tolerance as per specification to make the job.
	Demonstrate safety procedure during above operation as per standard norms and company guidelines.
	Check for dimensional accuracy as per standard procedure.
Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.	
2. Demonstrate the work to make job as per	Demonstrate Identification of tools, instruments and equipments for marking and make this available for use in a

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specification applying different types of basic fitting operation and Check for dimensional accuracy. [Basic fitting operation – marking, Hacksawing, Chiseling, Filing, Drilling, Taping and Grinding etc. Accuracy: ± 0.25mm]	timely manner.
	Select different raw material and inspect visually for defects.
	Demonstrate the appropriate mark as per specification applying desired mathematical calculation and observing standard procedure.
	Demonstrate all dimensions in accordance with standard specifications and tolerances.
	Operate Hand Tools for different fitting operations and make these available for use in a timely manner.
	Operate the job for Hack sawing, chiselling, filing, drilling, tapping, grinding.
	Perform basic fitting operations viz., Hack sawing, filing, drilling, tapping and grinding to close tolerance as per specification to make the job.
	Observe & follow safety procedure during above operation as per standard norms and company guidelines.
	Check for dimensional accuracy as per standard procedure.
	Plan & demonstrate avoidance of waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.
3. Demonstrate Inner & Outer Thread cutting on Metal & Studs and thread cutting on different types of pipes & fittings accessories.	Explain Hand Tools for Plumber work.
	Select Hand Tools for Cutting Inner thread and Outer thread.
	Use the pipe fittings accessories.
	Perform Inner thread cutting as per drawing.
	Perform Outer thread cutting as per drawing.
	Demonstrate preparation of Pipe line circuit with fittings as per drawing.
	Observe safety procedure during thread cutting as per standard norms and company guidelines.
	Check and verify the job as per drawing.
4. Review various wood jointing with carpenter's tools.	Identify & select the woods and describe their characters.
	Demonstrate use of Carpenter's hand Tools.
	Prepare the job as per drawing.
	Observe safety procedure during wood cutting, sawing, chiseling. Plan as per standard norms and company guidelines.
	Check and verify the job as per drawing.
5. Demonstrate the Cutting of Pipes of different Dia	Demonstrate different components/parts of Gas (oxy-acetylene) machine, collect desired information and set each

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in different angle and Joining of pipes by Gas & Arc welding. Soldering and Brazing.	components/parts as per standard procedure.
	Observe safety/ precaution during operation.
	Demonstrate selection of appropriate material & plan for gas cutting & joining operation.
	Demonstrate Cutting & joining of metal parts / mechanical components as per specification observing standard procedure.
	Check cut portion/ joined part to ascertain proper welding.
	Demonstrate use of hand tools for Soldering and Brazing.
	Demonstrate marking and develop various forms as per drawing using sheet metals.
	Demonstrate making of simple items with sheet metal as per drawing.
	Perform Soldering and Brazing.
	Observe & follow safety procedure during operation
Check and verify the job as per drawing.	
6. Construct a Masonry brick wall and RCC casting. Demonstrate Brick wall cutting for concealing pipe line.	Demonstrate use of different types of Mason's hand tools.
	Analyze & select the Construction materials.
	Make a simple construction of different type of Brick joints with mortar.
	Demonstrate preparation of a job related to masonry work and RCC casting as per drawing.
	Check & verify the job as per drawing.
7. Monitor Cutting and Bending of Pipes using Plumber's tools and equipments	Demonstrate use of different types of Plumber's hand tools.
	Demonstrate care & maintenance of hand tools.
	Demonstrate cutting of pipe with Pipe cutter.
	Demonstrate working of Bending Machine and accessories.
	Assess the desired bend on pipe as per drawing.
Check the job as per Drawing.	
8. Check & Evaluate various types of PVC pipe joint by different methods and heat process or Welding.	Demonstrate use of different types of PVC Pipe.
	Demonstrate working of Electric Welding Machine and accessories for PVC pipes
	Demonstrate Simple joint of PVC pipe by Welding Machine.
	Evaluate making of job with PVC fittings and pipe as per drawing.
	Observe safety procedure during operation.
9. Review installation and maintenance of different	Demonstrate selection of the pump and inspect for defects.
	Select the tools, instrument and equipment for the pump

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Electric pump.	installation and repairing.
	Check and calculate output of the pumps.
	Install pump observing standard procedure and method as per specification using appropriate tools and raw material.
	Check performance of the pump.
10. Construct complete pipe line circuit with different types of Joints and demonstrate fixing of cocks & valve on Pipe line.	Demonstrate Identification of different types of Joints.
	Demonstrate Identification & selection of different types of tools /Joints.
	Demonstrate making of a Flange joint as per drawing.
	Demonstrate making of a Detachable joint as per drawing.
	Demonstrate making of a Spigot & Socket joint as per drawing.
	Demonstrate making of a Socket joint as per drawing.
	Demonstrate use of GI fittings.
	Demonstrate application of Cocks & Valves.
	Select Tools for fixing of fittings with GI pipe, Cocks & Valves.
	Observe making of a simple job on GI Pipe with fittings, Cocks, and Valves as per drawing.
Check & verify the job as per drawing.	
11. Perform water analysis test, Water Pressure test and demonstrate Water distribution system by using Pipe line.	Demonstrate preparation of water for test.
	Prepare water analysis kits.
	Demonstrate testing procedure of water for pH, TDS, temperature as per requirements.
	Prepare Hydraulic Pressure Test Machine.
	Demonstrate Pressure test on Cistern and Tank.
Check and verify test result .	
12. Plan & execute fitting, fixing & laying installation of hot & cold water pipe line and symboling.	Demonstrate identification of tools, instrument & equipments for desired work and make this available for use in a timely manner.
	Demonstrate installation of pipe line for distribution of hot & cold water according to drawing.
	Demonstrate installation of hot water system & solar water heating system in accordance with standard specification and drawing.
	Observe & follow safety procedure during desired operation as per standard norms and schedule drawing.
	Check different parameters and functionality of the system.
13. Demonstrate & assess installation of Kitchen,	Demonstrate identification of tools, instrument & equipments for desired work and make this available for use in a timely

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Sanitary Fittings and Testing of Drainage line.	manner.
	Demonstrate fixing of Kitchen Sink, Hand Wash Basin in wall.
	Demonstrate fitting of Urinal, Pan, Commode.
	Demonstrate fitting of waste Pipe and Drainage Pipe.
	Demonstrate identification of tools and equipment for testing pipe line.
	Test pipe line observing standard procedure.
	Observe & comply safety precaution during operation.
14. Examine and remove Leakage of pipe line as per site Water supply pipe line and Drainage Pipe line layout.	Demonstrate identification of tools and equipment for testing pipe line.
	Demonstrate preparation of the job for different testing for pipe line.
	Test pipe line observing standard procedure.
	Observe & comply safety precaution during operation.
	Identify the leakage pipe & repair the same.
	Remove pipe leakages as per standard procedure.
	Observe safety procedure during desired operation as per standard norms.
Check performance after removal of leakages.	
15. Construct inspection chamber, manhole, gutter, septic tank, sock pit etc. & Layout of soil pipe.	Demonstrate use of tools and equipment for desired purpose and make this available for use in a timely manner.
	Select raw materials and inspect for defect.
	Demonstrate marking as per drawing applying desired mathematical calculation and observing standard procedure.
	Demonstrate construction of inspection chamber, manhole, gutter, septic tank, socket etc. as per drawing.
	Measure all dimensions in accordance with standard specification and tolerance.
	Observe & comply safety procedure during desired operation as per standard norms.
	Check for dimensional accuracy as per standard procedure.
16. Analyze & install Rain Water Harvesting.	Explain Rain Water Harvesting.
	Demonstrate use of tools and equipment for desired purpose and make this available for use in a timely manner.
	Demonstrate rain water Gutter.
	Demonstrate Outlet and grounding of the Pipe line.
	Demonstrate Supply of water using various types Pipe Fittings.
	Test pipe line observing standard procedure.
	Observe safety precaution during operation.

17. Monitor repairing & reconditioning, scraping & painting of sanitary fittings, Pipe line.	Demonstrate use of tools, instrument & equipments for desired work and make this available for use in a timely manner.
	Demonstrate cleaning of sanitary pipe line and remove corrosion from pipe line.
	Explain corrosion from pipe line and perform scraping & painting of pipe line in accordance with standard guidelines.
	Plan & execute replacement of broken or cracked sanitary fitting.
	Observe safety procedure during desired operation as per standard norms and schedule drawing.
	Check different parameters and functionality of the system.
18. Perform Fittings of Water heater and arrange supply of hot & cold water.	Demonstrate use of tools, instrument & equipments for desired work and make this available for use in a timely manner.
	Plan for Installation of pipe line for distribution of hot & cold water according to drawing.
	Demonstrate installation of hot water system & solar water heating system in accordance with standard specification and drawing.
	Observe safety procedure during desired operation as per standard norms and schedule drawing.
	Check different parameters and functionality of the system.
19. Assemble and Repair different types of Pump.	Select the pump and inspect for defects.
	Select the tools, instrument and equipment for the pump installment and repairing.
	Check and identify default parts of the pumps.
	Demonstrate installation of pump Observing standard procedure and method as per specification using appropriate tools and raw material.
	Check performance of the pump.
20. Evaluate Maintenance & Repair of Tank, waste fittings and Fixing of the Sensor system.	Demonstrate use of tools, instrument & equipments for desired work and make this available for use in a timely manner.
	Demonstrate cleaning and maintenance of the Tank or Sump.
	Demonstrate fixing of the sensor system in Sanitary fittings.
	Observe safety procedure during desired operation as per standard norms.
	Check for dimensional accuracy as per standard procedure.
21. Assess & test the	Demonstrate use of tools, instrument & equipments for desired

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Pressure of pipe and repair leakage.	work and make this available for use in a timely manner.
	Explain calculation of pressure test in pipe line.
	Explain about Hydraulic pressure test machine.
	Demonstrate preparation of the job for testing for pipe line by Hydraulic pressure test machine .
	Observe safety precaution during operation.
	Identify the leakage in pipe & repair.
	Remove pipe leakages as per standard procedure.
	Observe safety procedure during desired operation as per standard norms.
	Check performance after removal of leakages.
22. Monitor Fitting of Hydrants & Sprinklers.	Demonstrate use of tools, instrument & equipments for desired work and make this available for use in a timely manner.
	Explain about Hydrant.
	Demonstrate fitting of Hydrant.
	Observe safety precaution during operation.
	Explain about Sprinkler.
	Demonstrate fitting of Sprinkler.
	Observe safety precaution during operation.
Check performance for dimensional accuracy as per standard procedure.	
23. Draw, Estimate and Execute of Plumbing system.	Explain plumbing drawing.
	Explain about 2D CAD.
	Explain Features and application for creating a drawing by 2D CAD.
	Check performance for dimensional accuracy as per drawing.
	Explain about Estimating in plumbing system as per drawing.
	Check Estimate as per drawing.
ENGINEERING TECHNOLOGY	
1. Demonstrate mathematical concept and principles to perform practical operations.	Test skills on arithmetic, algebra, trigonometry and statistics.
	Applications will be assessed during execution of assessable outcome and will also be tested during theory and practical examination.
2. Explain science in the field of study including simple machines.	Test skills on science in the field of study including electronic components, electric wiring & earthing, DC machines, transformer, Control Panel, Domestic Appliances etc.

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	Applications will be assessed during execution of assessable outcome and will also be tested during theory and practical examination.
3. Apply engineering drawing for different application in the field of work.	<p>Test skills on engineering drawing.</p> <p>Applications will be assessed during execution of assessable outcome and will also be tested during theory and practical examination.</p>
TRAINING METHODOLOGY	
1. Plan & prepare the learners for the class using basics of educational psychology & motivating techniques.	Implement techniques based on psychological parameters like Personality, Aptitude, Skills, values and Potentials.
	Use different experiments on theories of learning by the different psychologists and their effect in learning situation and relation with Laws of learning.
	Demonstrate on Modality Learning (Auditory, Visual and Kinesthetic modality).
	Set Questionnaire on personality development for assessing the psychological attributes.
	Motivate trainees for the training session.
2. Analyse the syllabus of the Course.	Select salient points on designing a training curriculum.
	Analyse a sample syllabus.
	Discuss Elements of skills, Outlines of a syllabus.
	Make project work on making break up of syllabus and list of topics - Video show/PPT of ADDIE Model.
	Design schedule of instructions.
	Construct a sample course using principles of teaching.
3. Plan & prepare the training session using various methods viz. 4 step method, question & questioning technique etc.	Set questions on different levels of learning in psychomotor domain according to Bloom Taxonomy.
	Demonstrate the steps of imparting skills.
	Prepare lesson plan and demonstration plan using 4 Step methods.
	Use questioning techniques.
4. Communicate effectively with the trainees both verbally and non-verbally.	Identify the process of communication.
	Use verbal & non-verbal communication to convey messages, pre-listening activity and respond to them.
	Communicate effectively with the trainees in training session.
5. Use Instructional Technology & facilitate	Use various instructional Technologies viz. OHP, Digital Camera, LCD projector, smart board etc.

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the training program.	Plan and design charts, transparencies, slides, posters, mock-ups etc.
	Conduct micro teaching sessions.
6. Design written instructional materials and implement for imparting training.	Plan & prepare different WIM viz. Operation sheet, Job sheet, Information Sheet, Assignment Sheet, Experiment Sheet, Experiment Sheet, Final Job Check Sheet etc.
	Maintain various records viz. Daily Dairy, Progress Chart, Theory & Practical records etc.
7. Assess, evaluate and certify the tests.	Identify different types of test & its necessity.
	Set different types of question on different levels of learning in cognitive domain according to Bloom Taxonomy.
	Set an ideal question paper & evaluate.
	Apply various evaluation techniques & marking schemes.
	Undertake competence based assessment as per standards.
	Conduct formative assessment and summative assessment.
8. Organize workshop and classroom learning observing instructional methods.	Carry out management of Workshop & Class room.
	Demonstrate group teaching and learning.
	Explain housekeeping & safety rules in Instructional area.
	Conduct debate on quality Concept & 5'S.
9. Counsel & mentor the trainees by identifying their Strength & Weaknesses.	Handle trainee's grievances.
	Boost Morale of trainees.
	Conduct SWOT analysis for identifying their Strength & Weaknesses.
	Plan and Prepare the parameters for skills required to become a good trainer.
	Write a good CV.
10. Develop Entrepreneurship skills.	Use effective leadership Traits.
	Apply Stress management techniques.
	Plan & Use Time management techniques.
	Interpret the sequence of operation for setting up a small business from the flow sequence diagram
	Analyze the impact of quality and list the importance of quality.
11. Apply ICT & Internet in training (computer based training) and various types of	Use internet, Email application, Fax etc.
	Prepare transparency sheet with the help of computer.
	Prepare Slides by Power Point.
	Conduct Interactive Class on Video Conference.

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Distance learning programmes.	Install and commission equipments at Spokes level.
12. Conduct competency-based training using QP/ NOS and NSQF guidelines	Interpret one NSQF, QP, NOS etc. Explain learning outcomes. Identify different roles of NSDA, NSDC and SSC.
13. Apply Adult Learning Principles.	Apply adult learning in simulated environment. Identify various factors affecting adult learning Use role plays using the principles of adult learning. Apply techniques to create and maintain a positive learning environment.
14. Develop and implement continuous professional development plan.	Develop a professional development plan to enhance professional capabilities. Implement CPD in instructor career.

SECTION 2

25. EVIDENCE OF LEVEL

Title/Name of qualification/component: Plumber			Level: 6
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	<p>Demands wide range of specialized technical skill, clarity of knowledge and practice in broad range of activity involving standard non standard practices</p> <ul style="list-style-type: none"> Follow workshop safety measures and monitor job as per specification applying different types of basic fitting operation and check for dimensional accuracy by using steel rule, calliper etc.[Basic Fitting operation- marking, hack sawing, chiselling, filing,, drilling, reaming, taping, off-hand grinding etc. accuracy±0.25mm]. Demonstrate the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation – marking, Hack sawing, Chiselling, Filing, Drilling, Taping and grinding etc. Accuracy: ± 0.25mm]. Demonstrate Inner & Outer Thread cutting 	<p>As per the learning outcomes, the learner is expected to prepare layout, assemble, install and maintain sanitary fittings and fixtures, sewage and drainage systems, heating and sanitary systems, gas and water pipe lines etc. Receives instructions from Sanitary Engineer or Civil Engineer regarding lay out of pipes, gas or water mains, position of fixtures and fittings, etc. The learner is also expected to plan, organise and supervise the work for achieving the desired output as per given specifications.</p> <p>The above tasks performed by the learner demands wide range of specialized technical skills, clarity of knowledge and practice in broad range of activity involving standard practices.</p> <p>Hence NSQF Level 6 is justified for this descriptor.</p>	6

NSQF QUALIFICATION FILE

Approved in 25th NSQC, Dated: 25th June, 2020

PLUMBER CITS

Title/Name of qualification/component: Plumber			Level: 6
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	on Metal & Studs and thread cutting on different types of pipes & fittings accessories.		
Professional knowledge	<p>Factual & theoretical knowledge in broad contexts within the field of work or study</p> <ul style="list-style-type: none"> Review various wood jointing with carpenter's tools. Demonstrate the Cutting of Pipes of different Dia in different angle and Joining of pipes by Gas & Arc welding. Soldering and Brazing. Construct a Masonry brick wall and RCC casting. Demonstrate Brick wall cutting for concealing pipe line. Monitor Cutting and Bending of Pipes using Plumber's tools and equipments. 	<p>The learner is expected to possess the knowledge about basic as well as advance plumbing, sanitary fitting in domestic and as well as commercial and industrial area. The learner here makes layout as per preliminary layout of a building. Design the plumbing line as well as the sanitary fixtures to be fitted. Also the learner demonstrates the layman to make jointing, soldering, Gas and Arc welding as per requirement.</p> <p>The above professional knowledge possessed by the learner are the factual & theoretical knowledge in broad context required in this field of work or study.</p> <p>Hence NSQF Level is 6 for this descriptor.</p>	6
Professional skill	<ul style="list-style-type: none"> Check & Evaluate various types of PVC pipe joint by different methods and heat process or Welding. 	<p>The learning outcomes for example 'Check & Evaluate various types of PVC pipe joint by different methods and heat process or Welding',</p>	6

Title/Name of qualification/component: Plumber			Level: 6
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> Review Installation and maintenance of different Electric pump. Construct complete pipe line circuit with different types of Joints and demonstrate fixing of cocks & valve on Pipe line. Perform water analysis test, Water Pressure test and demonstrate Water distribution system by using Pipe line. Plan & execute fitting, fixing & laying installation of hot & cold water pipe line and symboling. 	<p>'Perform Water analysis test, Water Pressure test and demonstrate Water distribution system by using Pipe line' needs a good depth of knowledge about the subject and also the practicality and difficulties faced during execution of work. The learner here possess fair bit of knowledge how to demonstrate and monitor the overall execution of plumbing process.</p> <p>Hence NSQF Level 6 is justified for this descriptor.</p>	
Core skill	<p>Reasonably good in mathematical calculation and understanding of social/political</p> <ul style="list-style-type: none"> Demonstrate mathematical concept and principles to perform practical operations. Explain science in the field of study including simple machines. <p>Reasonably good in data collecting organizing information and logical communication</p>	<p>The learning outcomes for example "Demonstrate mathematical concept and principles to perform practical operations" and "Communicate effectively with the trainees both verbally and non-verbally" displays the need where the learner is required to be reasonably good in mathematical calculation, needs to possess sound understanding of associated social & political issues, data collecting, organising information and logical communication in order to analyze and solve problems.</p>	6

Title/Name of qualification/component: Plumber			Level: 6
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> Communicate effectively with the trainees both verbally and non-verbally. Plan & prepare the training session using various methods viz. 4 step method, question & questioning technique etc. 	Hence NSQF Level is 6 for this descriptor.	
Responsibility	<ul style="list-style-type: none"> Demonstrate & assess installation of Kitchen, Sanitary Fittings and Testing of Drainage line. Examine and remove Leakage of pipe line as per site Water supply pipe line and Drainage Pipe line layout. Construct inspection chamber, manhole, gutter, septic tank, sock pit etc.& Layout of soil pipe. Analyze & install Rain Water Harvesting. Monitor repairing & reconditioning, scraping & painting of sanitary fittings, Pipe line. Perform Fittings of Water heater and arrange supply of hot & cold water. Assemble and Repair different types of Pump. 	<p>The learner is able to guide, monitor, assess and review the work performed the team members and ensures effective operations of planning and execution of Sanitary works. He/she is able to demonstrate possible solutions to specific problems and check tasks within the team; communicates logically.</p> <p>While designing and supervising the task of plumbing work in different areas, he should be well aware of the domain of his expertise and act according to the best of his knowledge. The learner plans and organizes assigned work; detects & resolves issues during execution in his field of work.</p> <p>Hence NSQF Level is 6 is justified for this</p>	6

Title/Name of qualification/component: Plumber			Level: 6
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> • Evaluate Maintenance & Repair of Tank, waste fittings and Fixing of the Sensor system. • Assess & test the Pressure of pipe and repair leakage. • Monitor Fitting of Hydrants & Sprinklers. • Draw, Estimate and Execute of Plumbing system. 	descriptor.	

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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"> <thead> <tr> <th data-bbox="331 555 619 696">Basis</th> <th data-bbox="619 555 1382 696">In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 696 619 1249">Need of the qualification</td> <td data-bbox="619 696 1382 1249"> <p>The Plumbing Sector has a significant presence of organized, skilled, semi 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.</p> <p>Hence the qualification has been designed keeping in view to cater to the ever increasing demand of skilled Instructors for Technicians in consultation with stakeholders.</p> <p>The Proposed qualification is running in various NSTIs since very long.</p> </td> </tr> <tr> <td data-bbox="331 1249 619 1585">Industry Relevance</td> <td data-bbox="619 1249 1382 1585"> <p>The job role defined for the qualification is as per the National Qualification of Occupation 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 industry where such facilities/ infrastructure are available.</p> </td> </tr> <tr> <td data-bbox="331 1585 619 1800">Usage of the qualification</td> <td data-bbox="619 1585 1382 1800"> <p>The Proposed qualification will cater to ever increasing demands of Trained Instructors/Workshop Supervisor and the course has been designed as per demand of the industry/vocational institutions.</p> </td> </tr> <tr> <td data-bbox="331 1800 619 1868">Estimated uptake</td> <td data-bbox="619 1800 1382 1868">36660</td> </tr> </tbody> </table>	Basis	In case of other Awarding Bodies (Institutes under Central Ministries and states departments)	Need of the qualification	<p>The Plumbing Sector has a significant presence of organized, skilled, semi 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.</p> <p>Hence the qualification has been designed keeping in view to cater to the ever increasing demand of skilled Instructors for Technicians in consultation with stakeholders.</p> <p>The Proposed qualification is running in various NSTIs since very long.</p>	Industry Relevance	<p>The job role defined for the qualification is as per the National Qualification of Occupation 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 industry where such facilities/ infrastructure are available.</p>	Usage of the qualification	<p>The Proposed qualification will cater to ever increasing demands of Trained Instructors/Workshop Supervisor and the course has been designed as per demand of the industry/vocational institutions.</p>	Estimated uptake	36660
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27	<p>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary</p>										

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	<p>evidences.</p> <p>This qualification is recommended by DGT (Regulatory Body) under Ministry of Skill Development and Entrepreneurship.</p>
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 Craftsmen Instructor Training Scheme and is in existence for many years and is especially designed to suit the requirements of vocational training. 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 various stakeholders, on a regular basis by conducting trade committee meetings. • DGT will keep on doing continuous comparative study in the trade by referring to relevant upcoming qualifications 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?</p> <p><i>Show the career map here to reflect the clear progression</i></p> <ul style="list-style-type: none"> • Qualifying trainee will obtain DGT Certificate (NCIC) in Plumber trade which gives the following options of progression to the trainee: <ul style="list-style-type: none"> i) Can join as technical Instructor in a VT Institute/ technical Institution. ii) Can join as a supervisor in Industries.
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