

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.

Model Curriculum to be added which will include the following:

- **Indicative list of tools/equipment to conduct the training:** Enclosed with curricula
- **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.

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- **Distribution of training duration into theory/practical/OJT component:**
Indicated in the curriculum.
2. Curriculum for Core Skills (Training Methodology Workshop Calculation & Science and Engineering Drawing).

SUMMARY

1	Qualification Title	'Draughtsman Mechanical (CITS)'
2	Qualification Code, if any	DGT/4014
3	NCO code and occupation	2356.0100-Manual Training Teacher/Craft Instructor 3118.0401-Draughtsperson Mechanical 3118.0402 - Draughtsman, Mechanical
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.
8	Occupation(s) to which the qualification gives access	<ul style="list-style-type: none">• Manual Training Teacher/Craft Instructor• Draughtsperson Mechanical• Draughtsman Mechanical
9	Job description of the occupation	The individual will be able to impart theoretical instructions, demonstrate practical skills, evaluate and grade trainees of Draughtsman Mechanical trade in industrial workshops, ITIs/Vocational Training Institutes etc.

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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	Sl. No.	Course Element	Notional Training Hours
		1	Professional Skill (Trade Practical)	640
		2	Professional Knowledge (Trade Theory)	240
		3	Workshop Calculation	120
		4	Workshop Science	80
		4	TM Practical	320
		5	TM Theory	200
			Total	1600
14	Indicative list of training tools required to deliver this qualification	As per "Infrastructure" heading at SI No. 8 of curriculum		
15	Entry requirements and/or recommendations and minimum age	<p>Degree in appropriate branches of Mechanical/ Production Engineering from AICTE/ UGC recognized Engineering College/ University.</p> <p style="text-align: center;">OR</p> <p>Diploma in appropriate branches of Mechanical/Production Engineering from AICTE/ recognized board / Institution.</p> <p style="text-align: center;">OR</p> <p>National Trade Certificate in the Draughtsman (Mechanical) trade or related trades.</p> <p style="text-align: center;">OR</p> <p>National Apprenticeship Certificate in the Draughtsman (Mechanical) or related</p>		

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		trades. Minimum age 18 years as on first day of academic session		
16	Progression from the qualification (Please show Professional and academic progression)	An Individual can proceed for:		
		<u>Professional</u>	<u>Academic</u>	
		<ul style="list-style-type: none"> • Technical Instructor in a vocational training Institute/ technical Institution • Supervisor in Industries 	<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 3yrs experience may appear for final examination after completion of e-learning in POT.		
18	International comparability where known (research evidence to be provided)	NOT KNOWN		
19	Date of planned review of the qualification.	5 Yrs from the date of approval		
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 (TT)				
(i)	Demonstrate safe working practices,	16	6	5

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	environment regulation, housekeeping and to communicate technical English with required clarity.			
(ii)	Demonstrate the basic B.I.S. & International standards, conventional representation of metals.	16	6	5
(iii)	Construct orthographic projection giving proper dimensioning.	32	12	6
(iv)	Illustrate sectional view and development view with dimension.	32	12	6
(v)	Create & indicate the specification of different types of fasteners as per SP-46:2003.	32	12	6
(vi)	Construct different types of key, cotters joint, pin & construct and types of belts, pulleys, gear and coupling.	32	12	6
(vii)	Demonstrate drawing with tolerance dimension, indicating machining & surface roughness symbol and then evaluate.	16	6	6
(viii)	Illustrate detail & assembly drawing of machine parts, all types of bearing, engine parts, pumps, valves conventional sign & symbol.	112	42	6
(ix)	Prepare drawing of machine parts by measuring with gauges & measuring instrument.	16	6	6
(x)	Prepare drawing of different types of press tool parts with tolerance dimension & basic knowledge on tools.	32	12	6
(xi)	Demonstrate basic knowledge on tools, equipment & their application in allied trade, Viz. Sheet metal work, Welder (G & E), Fitter, Mechanical motor vehicle, Turner, Machinist.	176	66	6
(xii)	Explain computer application & creation of 2D, 3D object on CAD software, solid modeling & surface modeling by SOLIDWORK software and assess the output.	80	30	6
(xiii)	Demonstrate CNC machines and conduct exercises on overview of programming and	48	18	6

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	operation of CNC.			
Engineering Technology (ET)				
(i)	Demonstrate workshop calculation and principles to perform practical operations.	-	120	6
(ii)	Explain workshop science in the field of study including simple equipment.	-	80	6
Training Methodology (TM)				
(i)	Plan & prepare the learners for the class using basics of educational psychology & motivational 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 programs.	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		

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.																																											
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, Engineering Technology 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:																																											
		<table border="1" data-bbox="280 1529 1399 2051"> <thead> <tr> <th rowspan="2">Sl. No</th> <th rowspan="2">Subject</th> <th rowspan="2">Mark s</th> <th rowspan="2">Internal Assess ment</th> <th rowspan="2">Full Mark s</th> <th colspan="2">Pass Marks</th> </tr> <tr> <th>Exam</th> <th>Internal Assess ment</th> </tr> </thead> <tbody> <tr> <td rowspan="2">1.</td> <td rowspan="2">Trade Technology</td> <td>Trade Theory</td> <td>100</td> <td>40</td> <td>140</td> <td>40</td> <td>24</td> </tr> <tr> <td>Trade Practical</td> <td>200</td> <td>60</td> <td>260</td> <td>120</td> <td>36</td> </tr> <tr> <td rowspan="2">2.</td> <td rowspan="2">Workshop Cal. & Sc.</td> <td>Workshop Cal.</td> <td>50</td> <td>25</td> <td>75</td> <td>20</td> <td>15</td> </tr> <tr> <td>Workshop Sc.</td> <td>50</td> <td>25</td> <td>75</td> <td>20</td> <td>15</td> </tr> </tbody> </table>						Sl. No	Subject	Mark s	Internal Assess ment	Full Mark s	Pass Marks		Exam	Internal Assess ment	1.	Trade Technology	Trade Theory	100	40	140	40	24	Trade Practical	200	60	260	120	36	2.	Workshop Cal. & Sc.	Workshop Cal.	50	25	75	20	15	Workshop Sc.	50	25	75	20	15
Sl. No	Subject	Mark s	Internal Assess ment	Full Mark s	Pass Marks																																							
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1.	Trade Technology	Trade Theory	100	40	140	40	24																																					
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2.	Workshop Cal. & Sc.	Workshop Cal.	50	25	75	20	15																																					
		Workshop Sc.	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 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 and Training Methodology.
- While Trade Theory and Trade Practical are used for assessing Trade-related jobs, Workshop Calculation and Workshop Science is used to test trainee's numerical skills and Training Methodology is used to test teaching skills.
- In addition to demonstration of theory and practical knowledge,

	<p>overall personalities of the trainees are also assessed.</p> <p>Quality assurance activities:</p> <ul style="list-style-type: none"> • Question papers are set by external paper setters/ software generated. • Evaluation of Theory Examinations in Trade, Workshop Calculation & Workshop Science, 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: Draughtsman Mechanical

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.		

ASSESSMENT CRITERIA WITH LEARNING OUTCOME	
LEARNING OUTCOME	ASSESSMENT CRITERIA
TRADE TECHNOLOGY (TT)	
1. Demonstrate safe working practices, environment regulation, housekeeping and to communicate technical English with required clarity.	Demonstrate the basic knowledge of Personal Protective Equipment (PPE).
	Demonstrate basic life support training method.
	Prepare various documents for industrial requirements using the methods of recording information.
	Explain health, safety and environment guidelines, legislations & regulations.
	Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner.
	Ensure safety procedure as per standard norms.
2. Demonstrate the basic B.I.S. & International standards, conventional representation of metals.	Demonstrate necessary calculation or spacing to drawing sheet dimensions of various components / parts of drawing.
	Demonstrate the Construction of the conventional break viz. Shaft or round bar, pipes, rolled shape, bar of rectangular or square cross- section & wood scantling.
	Illustrate the conventional representation of common features viz. internal thread, external thread, slotted hole, etc based on basic B.I.S & International standards.
	Evaluate creation of different types of section lines and abbreviations of metal, non- metal, liquid etc. in section form as per SP-46:2003.
	Observe safety precautions while working on drawing sheet.
3. Construct orthographic projection giving proper dimensioning.	Illustrate convention of the dimension in required scale to drawing in drawing sheet.
	Interpret drawing requirement such as types of orthographic projection symbol.
	Evaluate drafting principal to produce drawing sheet showing elevations, plans and end views.
	Assess appropriate dimension system rule to draw the required

	drawing as per the standard practices.
	Check the different types of line uniformly.
	Demonstrate dimension placing system and other reference that follow the required conventions.
	Observe safety norms.
4. Illustrate sectional view and development view with dimension.	Evaluate Sketching of Conventional signs and symbols for section.
	Assess sectional views with adjacent object showing cutting plane and direction of view.
	Demonstrate drafting principal to produce drawing sheet showing sectional elevations, plans and end views.
	Illustrate the development of the surface of cylinder, prisms, cone, pyramids and their frustum.
	Check development of an oblique cone with elliptical base.
	Create orthographic projection of interpenetrated cone, cylinder & pyramids intersecting each other.
	Check the drawing as per types of line & place of dimension system as per SP-46:2003.
5. Create & indicate the specification of different types of fasteners as per SP-46:2003.	Construct different Screw threads with SP-46:2003 conventions.
	Create types of bolts, studs, nuts, washers and other fasteners as per SP-46:2003 conventions.
	Illustrate different locking arrangement of nuts, machine screws, caps screw set screw as per convention.
	Assess the foundation bolt viz. eye, rag and Lewis.
	Check dimensioning of rivets and riveted joints with conventional specification.
6. Construct different types of key, cotters joint, pin & construct & types of belts, pulleys, gear and coupling.	Illustrate the keys, cotter joint & pin as per convention.
	Construct tooth profile of a spur gear, rake & pinion gear.
	Create different types of pulleys.
	Demonstrate working drawing of coupling and knuckle joint.
	Check appropriate dimension system rule to draw the required drawing as per the standard practices.
7. Demonstrate drawing with tolerance dimension, indicating machining & surface roughness symbol and	Demonstrate appropriate denotations for continual & details on drawing.
	Demonstrate working drawing dimension within tolerance limit, indicating the machine & surface symbol.
	Ensure that all details for preparation of drawing are available

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then evaluate.	and in order.
	Assess the project sheets as per drawing and maintain for future references.
	Ensure safety precautions while working on drawing sheet.
8. Illustrate detail & assembly drawing of machine parts, all types of bearing, engine parts, pumps, valves conventional sign & symbol.	Evaluate necessary calculation or spacing to drawing sheet dimensions of machine part detail & assembly drawing.
	Demonstrate drafting principal to produce drawing sheet showing sectional elevations plans and different types of views.
	Assess all types of bearing, engine parts, pumps & valves details & assembly drawing.
	Analyse table to denote the name, dimensions, materials, quantity, remarks of various parts or components as per drawing requirement.
	Demonstrate appropriate dimension system rule to draw the required drawing as per the standard practices.
	Check the drawing by different types of line use as per SP-46: 2003.
9. Prepare drawing of machine parts by measuring with gauges & measuring instrument.	Assess machine parts according to drawing.
	Demonstrate the tools for measurement by different gauges.
	Choose proper gauge for proper size of job.
	Apply safety measures as per standard for measuring by gauges.
	Observe safety norms for drawing.
10. Construct types of press tool parts with tolerance dimension & basic knowledge on tools	Demonstrate press tool parts for functional application.
	Make available the functionality hand tools.
	Construct the detail and assembly drawing of different types of press tool part.
	Ensure that all details for preparation of drawing are available and are in order.
	Monitor tolerance dimension placing system and other reference that follow the required conventions.
11. Demonstrate basic knowledge on tools, equipment & their application in allied	Demonstrate different types of tool , equipment & functional application
	Check functionality of machine.
	Identify different works and tool holding devices for functional

trade, Viz. Sheet metal work, Welder (G & E), Fitter, Mechanical motor vehicle, Turner, Machinist.	application.
	Perform the job as per set standard limits & tolerance.
	Observe safety norms.
12. Explain computer application & creation of 2D, 3D object on CAD software, solid modeling & surface modeling by SOLIDWORK software and assess the output.	Ensure application of advance CAD commands e.g. layers, block, insert, group, divide, measure, design center, text gradient, dimension style, leader, layouts, model space, view ports.
	Generate line segment in AutoCAD importing data from Excel worksheet.
	Explain brief details of AUTOCAD 3D modelling.
	Illustrate simple 3D drawings through AUTOCAD.
	Generate assemble of parts by 3D modelling on AUTOCAD.
	Generate 3 views from 3D models.
	Brief about of details of SOLIDWORKS software.
	Create simple sketcher, part modelling by SOLIDWORKS.
	Illustrate the assembly modelling & surface modelling of SOLIDWORKS software.
	Assess drawing view, sheet metal & produce data management of SOLIDWORKS software.
Check for relevant and appropriate symbol as per drawing requirement to provide details in the drawings.	
13. Demonstrate CNC machines and conduct exercises on overview of programming and operation of CNC.	Demonstrate tools for CNC turning and milling system.
	Explain advantages of CNC turning and milling system.
	Explain classification of CNC turning and milling system.
	Demonstrate part programming & simulation of CNC turning and milling system.
ENGINEERING TECHNOLOGY	
1. Demonstrate workshop calculation and principles to perform practical operations.	Test skills on calculation of workshop arithmetic, mensuration, algebra, trigonometry and plotting of graphs.
	Applications will be assessed during execution of assessable outcome related to Draughtsman (mechanical) trade and will also be tested during theory and practical examination.
2. Explain workshop science in the field of study including simple	Assess skills on science in the field of study including electricity, stress, strain, shear force, friction etc.
	Applications will be assessed during execution of assessable

equipment.	outcome related to Draughtsman (mechanical) and will also be tested during theory and practical examination.
TRAINING METHODOLOGY	
1. Plan & prepare the learners for the <i>class</i> 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 Kinaesthetic 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 nonverbally.	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 the training program.	Use various instructional Technologies viz. OHP, Digital Camera, LCD projector, smart board etc.
	Plan and design charts, transparencies, slides, posters, mock-ups etc.
	Conduct micro teaching sessions.
6. Design written instructional materials	Plan & prepare different WIM viz. Operation sheet, Job sheet, Information Sheet, Assignment Sheet, Experiment Sheet,

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required for imparting training.	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 Distance learning programmes.	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.
	Install and commission equipments at Spokes level.
12. Conduct competency-based training using LO/QP/ NOS and	Interpret one LO, QP, NOS for NSQF alignment.
	Explain learning outcomes.
	Identify different roles of NSDA, NSDC and SSC.

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NSQF guidelines.	
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.

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SECTION 2

25. EVIDENCE OF LEVEL

Title/Name of qualification/component: DRAUGHTSMAN MECHANICAL 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">• Construct orthographic projection giving proper dimensioning.• Construct different types of key, cotters joint, pin & construct & types of belts, pulleys, gear and coupling.• Prepare drawing of machine parts by measuring with gauges & measuring instrument.	<p>As per the learning outcomes, the learner is expected to prepare drawing including orthographic projections of different machine components after true measurement with gauges and measuring instrument, on the other hand also draw the construction of different type of joints used in machineries.</p> <p>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 and non standard practices.</p> <p>Hence NSQF Level 6 is justified for this</p>	6

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Title/Name of qualification/component: DRAUGHTSMAN MECHANICAL Level: 6			
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
		descriptor.	
Professional knowledge	<p>Factual & theoretical knowledge in broad contexts within the field of work or study</p> <ul style="list-style-type: none"> • Contract of development surface drawing of prisms, cylinder, pyramids, cone and their frustum, 3- pieces pipe elbow, a pipe hole through it, a bucket and a funnel diametric drawing & orthographic projection. • Construct of assembly and details of drawing of screw jack. • Sketching of different types of gauges such as plug, snap, thread, taper etc. • Demonstration on plain, step, boring and taper turning, thread cutting. 	<p>The learner is expected to possess the knowledge about preparation of a perfect drawing of mechanical components with proper dimensions including tolerance and indication of machining and surface roughness symbols</p> <p>The learner is also expected to know in broad context about description of major components used in workshops and function of different instruments used in measurement.</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

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Title/Name of qualification/component: DRAUGHTSMAN MECHANICAL Level: 6			
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Professional skill	<p>A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</p> <ul style="list-style-type: none"> • Prepare drawing of different types of press tool parts with tolerance dimension & basic knowledge on tools. • Evaluate computer application & create 2D, 3d object on CAD software, solid molding& surface molding by SOLIDWORK software • Evaluate working drawing with tolerance dimension, indicating machining & surface roughness symbol. 	<p>The learning outcomes for example 'Prepare drawing of different types of press tool parts with tolerance dimension & basic knowledge on tools', 'Evaluate computer application & create 2D, 3d object on CAD software, solid molding& surface molding by SOLIDWORK software 'etc. requires a range of cognitive and practical skills to accomplish tasks and generate solutions to specific problems in this field of work. It involves understanding requirements, then decide the operations/procedure/tools which will achieve desired results; plans the sequence of operations to maximize efficiency/effectiveness; review & monitoring etc. all of which involves problem solving and decision making.</p> <p>Hence NSQF Level 6 is justified for this descriptor.</p>	6
Core skill	<p>Reasonably good in mathematical calculation</p> <ul style="list-style-type: none"> • Demonstrate workshop calculation and 	<p>The learning outcomes for example 'Demonstrate workshop calculation and principles to perform practical operations', 'Explain</p>	6

NSQF QUALIFICATION FILE

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

Draughtsman Mechanical (CITS)

Title/Name of qualification/component: DRAUGHTSMAN MECHANICAL Level: 6			
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>principles to perform practical operations.</p> <p>Understanding of social/political environment</p> <ul style="list-style-type: none"> • Explain workshop science in the field of study including simple equipment. <p>Collecting, Organising information and logical communication</p> <ul style="list-style-type: none"> • Design written instructional materials and implement for imparting training. 	<p>workshop science in the field of study including simple equipment' display the attributes where the learner needs to display reasonably good expertise in mathematical calculation as the learner is expected to test the skills on arithmetic, algebra, mensuration etc.</p> <p>The trainee is supposed to design written instructional materials and implement the understanding of social, political environment and some skill of collecting and organising information and deliver logical communication.</p> <p>Hence NSQF Level is 6justifiedfor this descriptor.</p>	
Responsibility	<p>Responsibility for own workand learning and full responsibility for other's works and learning</p> <ul style="list-style-type: none"> • Illustrate detail & assembly drawing of machine parts, all types of bearing, engine 	<p>The learner is able to guide, monitor, assess andreview the work performed by the team members and ensures effective operation and maintenance of Trade oriented machineries/equipment. He/she is able to demonstrate possible solutions and check tasks</p>	6

NSQF QUALIFICATION FILE**Approved in 25th NSQC, Dated: 25th June, 2020***Draughtsman Mechanical (CITS)*

Title/Name of qualification/component: DRAUGHTSMAN MECHANICAL Level: 6			
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>parts, pumps, valves conventional sign & symbol.</p> <ul style="list-style-type: none">• Demonstrate basic knowledge on tools, equipment & their application in allied trade, Viz. Sheet metal work, Welder (G & E), Fitter, Mechanical motor vehicle, Turner, Machinist.• Evaluate basic knowledge on tools, equipment & their application in allied trade, Viz. CNC.	<p>within the team; communicates logically.</p> <p>The learner plans and organizes assigned work; detects & resolves issues during execution in his field of work.</p> <p>Hence NSQF Level is 6is justified for this descriptor.</p>	

SECTION 3

EVIDENCE OF NEED

<p>26</p>	<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="331 577 1385 1933"> <thead> <tr> <th data-bbox="331 577 619 723"> <p>Basis</p> </th> <th data-bbox="619 577 1385 723"> <p>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</p> </th> </tr> </thead> <tbody> <tr> <td data-bbox="331 723 619 1317"> <p>Need of the qualification</p> </td> <td data-bbox="619 723 1385 1317"> <p>The Capital Goods & Manufacturing sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labourintensive 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 1317 619 1653"> <p>Industry Relevance</p> </td> <td data-bbox="619 1317 1385 1653"> <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 1653 619 1865"> <p>Usage of the qualification</p> </td> <td data-bbox="619 1653 1385 1865"> <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 1865 619 1933"> <p>Estimated uptake</p> </td> <td data-bbox="619 1865 1385 1933"> <p>27248</p> </td> </tr> </tbody> </table>	<p>Basis</p>	<p>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</p>	<p>Need of the qualification</p>	<p>The Capital Goods & Manufacturing sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labourintensive 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>	<p>Industry Relevance</p>	<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>	<p>Usage of the qualification</p>	<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>	<p>Estimated uptake</p>	<p>27248</p>
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<p>27</p>	<p>Recommendation from the concerned Line Ministry of the</p>										

	<p>Government/Regulatory Body. To be supported by documentary 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 an DGT Certificate(NCIC) in DRAUGHTSMAN MECHANICAL trade which gives the following options of progression to the trainee: <ol style="list-style-type: none"> i) Can join as technical Instructor in a vocational institute/ technical Institution. ii) Can join as a supervisor in Industries.
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NSQF QUALIFICATION FILE

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

Draughtsman Mechanical (CITS)

NSQC Approved