

NSQF QUALIFICATION FILE

NSDA Reference
To be added by NSDA

Draughtsman Mechanical -
REVISED

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Directorate General of Training (DGT)
Government of India, Ministry of Skill Development and Entrepreneurship,
Shram Shakti Bhavan, Rafi Marg
New Delhi-110001

Name and address of submitting body:

Directorate General of Training (DGT)
Government of India, Ministry of Skill Development and Entrepreneurship,
Shram Shakti Bhavan, Rafi Marg
New Delhi-110001

Name and contact details of individual dealing with the submission

Name: Shri Deepankar Mallick

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

Address if different from above:

Tel number(s): 011-23710485

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

List of documents submitted in support of the Qualifications File

1. Competency-based curriculum (Annexure 1)
2. Advertisements of different organisations for posts relevant to NTC in the trade
3. Placement figures of few ITIs

SUMMARY

Qualification Title	'Draughtsman Mechanical '		
Qualification Code	N/A		
Nature and purpose of the qualification	National Trade Certificate; to train the 10 th class pass students in 'Draughtsman Mechanical ' trade and thus changing a non-worker to worker		
Body/bodies which will award the qualification	National Council for Vocational Training (NCVT)		
Body which will accredit providers to offer courses leading to the qualification	National Council for Vocational Training (NCVT) affiliates the ITIs on the basis of accreditation by Quality Council of India (QCI).		
Body/bodies which will carry out assessment of learners	National Council for Vocational Training (NCVT)		
Occupation(s) to which the qualification gives access	<p>On successful completion of this course, the candidates shall be gainfully employed as:</p> <ul style="list-style-type: none"> • Mechanical Draughtsman, Tracer, Designer of mechanical parts in Production & Manufacturing industries. • In Infrastructure and defence organizations. • In public sector industries and private industries in India & abroad. • Draughtsman Mechanical have a wide scope of Employability ranging from self-employment, contractual employment to Industrial jobs. 		
Licensing requirements	N/A		
Level of the qualification in the NSQF	Level 5		
Anticipated volume of training/learning required to complete the qualification	S. No.	Course Element	Notional Training Hours
	1	Professional Skill (Trade Practical)	2209
	2	Professional Knowledge (Trade Theory)	510
	3	Workshop Calculation & Science	170
	4	Engineering Drawing	255
	5	Employability Skills	110
	6	Library & Extracurricular activities	146
	7	Project work	240
	8	Revision & Examination	520
		Total	4160*
	The major change is the addition of revision component approximately 360 hours, hence there is increase in the total no of notional hours.		
Entry requirements and/or recommendations	Passed 10th Class with Science and Mathematics under 10+2 system of Education or its equivalent		

<p>Progression from the qualification</p>	<ul style="list-style-type: none"> • Can appear in 10+2 examination through National Institute of Open Schooling (NIOS) for acquiring higher secondary certificate and can go further for General/ Technical education • Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC) • Can join Crafts Instructor Training Scheme (CITS) in the relevant trade after which they will be employed in ITI/ Vocational Training Institute as instructor • Can join as skilled worker in the relevant industry • can become supervisor after doing diploma in relevant branch of Engineering 		
<p>Planned arrangements for the Recognition of Prior learning (RPL)</p>	<ol style="list-style-type: none"> 1. At present the students who have passed 10th class with minimum 3 years' experience in relevant field can appear for NCVT theory and practical semester examination directly. 2. The students who have passed SCVT examination in 'Draughtsman Mechanical ' trade can also appear for the NCVT Examination in the relevant semester and Trade directly. 		
<p>International comparability where known</p>	<ol style="list-style-type: none"> 1. Existence of any official document suggesting the comparability of the qualification with the qualifications in other countries is not known. 2. However, ITI passed out trainees are getting employment in many Gulf countries, European countries, Australia, New Zealand, Singapore etc. 		
<p>Date of planned review of the qualification.</p>	<p>January 2023</p>		
<p>Formal structure of the qualification</p>			
<p>Title of component and identification code.</p>	<p>Mandatory/ Optional</p>	<p>Estimated size (learning hours)</p>	<p>Level</p>
<p>Semester – I</p>			
<p>(i) Construct different Geometrical figures using drawing Instruments.</p>	<p>Mandatory</p>	<p>240</p>	<p>5</p>
<p>(ii) Draw orthographic Projections giving proper dimensioning with title block and heading using appropriate line type and scale.</p>	<p>Mandatory</p>	<p>160</p>	<p>4</p>
<p>(iii) Construct free hand sketches of simple machine parts with correct proportions.</p>	<p>Mandatory</p>	<p>40</p>	<p>4</p>
<p>(iv) Construct plain scale, comparative scale, diagonal scale and vernier scale.</p>	<p>Mandatory</p>	<p>80</p>	<p>4</p>
<p>(v) Draw Sectional views showing orthographic projections.</p>	<p>Mandatory</p>	<p>60</p>	<p>4</p>

(vi)	Develop surface and interpenetration of solid in orthographic projection.	Mandatory	200	5
(vii)	Draw isometric projection from orthographic views (and vice-versa) and draw oblique projection from orthographic views.	Mandatory	160	4
Semester – II				
(viii)	Draw and indicate the specification of different types of fasteners, welds and locking devices as per SP-46:2003	Mandatory	170	4
(ix)	Acquire basic knowledge on tools and equipment of Allied trades viz. Fitter, Turner, Machinist, Sheet Metal Worker, Welder, Foundry man, Electrician and Maintenance Motor Vehicles.	Mandatory	110	4
(x)	Draw different types of gears, couplings and bearings with tolerance dimension and indicating surface finish symbol.	Mandatory	420	5
(xi)	Create 2D objects on CAD drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt.	Mandatory	170	5
Semester – III				
(xii)	Construct projection views of geometrical figures with dimension and annotation on CAD in model space and viewport in layout space.	Mandatory	110	5
(xiii)	Draw detail and assembly drawing of machine parts viz., Pulleys, Pipe fittings, Gears and Cams applying range of cognitive and practical skills.	Mandatory	60	4
(xiv)	Construct drawing of engine parts with detailed and assembly in template layout applying quality concept in CAD.	Mandatory	62	4
(xv)	Create 3D solid by switching to 3D modeling workspace in CAD, generate views, Print Preview and Plotting.	Mandatory	60	5
Semester – IV				
(xvi)	Construct detailed and assembled drawing applying conventional sign & symbols.	Mandatory	279	5
(xvii)	Prepare drawing of machine part by	Mandatory	93	5

	measuring with gauges and measuring instruments.			
(xviii)	Draw a machine shop layout considering process path and ergonomics (human factor).	Mandatory	10	4
(xix)	Create and plot assembly and detail views of machine part with Dimensions, Annotations, Title Block and Bill of materials in SolidWorks/AutoCAD Inventor/ 3D Modeling.	Mandatory	170	5
(xx)	Create production drawing of machine part.	Mandatory	255	5
Generic Learning Outcomes				
(xxi)	Recognize & comply safe working practices, environment regulation and housekeeping.	Mandatory	20	4
(xxii)	Understand and explain different mathematical calculation & science in the field of study including basic electrical. [Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure]	Mandatory	25	5
(xxiii)	Interpret specifications, different engineering drawing and apply for different application in the field of work. [Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical & electronic symbol]	Mandatory	15	4
(xxiv)	Select and ascertain measuring instrument and measure dimension of components and record data.	Mandatory	55	5
(xxv)	Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	Mandatory	35	5
(xxvi)	Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available	Mandatory	15	5

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	resources.			
(xxvii)	Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	Mandatory	10	5
(xxviii)	Understand and apply basic computer working, basic operating system and uses internet services to get accustomed & take benefit of IT developments in the industry.	Mandatory	15	4

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

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

SECTION 1
ASSESSMENT

Body/Bodies which will carry out assessment:

National Council for Vocational Training (NCVT)

How will RPL assessment be managed and who will carry it out?

1. At present the students who have passed 10th class with minimum 3 years' experience can appear for NCVT theory and practical semester examination directly.
2. The students who have passed SCVT examination in 'Draughtsman Mechanical' trade can also appear for the NCVT Examination in the relevant semester and Trade directly. NCVT will carry out the assessment and State Directorates advertise in newspapers for informing the prospective candidates.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

(1) Assessment process:

The assessment for the semester-based qualification is carried out by conducting formative assessments, and end-of-semester examinations. The internal assessments for theory subjects and practical are conducted by the concerned instructors 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 sessional marks are awarded to them. Theory and practical examinations are conducted in Trade theory, Workshop Calculation & Science, Engineering Drawing and Employability Skills. The question papers for the theory Examinations contain objective type questions. Trade practical examinations are conducted by the respective State Governments. However, the question papers for the Trade practical are prepared by NCVT.

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

Marking Pattern		
Sl. No.	Subject for the trade test	Maximum marks for the each subject
a)	Practical	300
b)	Trade Theory	200 Objective type Written test of 200 marks (Trade Theory 150 marks & Employability Skills 50 marks)
c)	Employability Skills	
d)	Work shop Calculation and Science.	100 Objective Type Written test of 100 marks

		(Engineering Drawing 50 marks & Work shop Calculation and Science 50 marks)
e)	Internal assessment	100
TOTAL:		600

(2) Minimum pass marks:

40% for each Theory Examination and 25% for each part/section of the Examination separately, and 60% marks for each Trade practical Examination.

(3) Testing and certifications for the course:

- OMR sheet based question paper.
- A panel of expert paper setters, who are graduates in the concerned field with minimum 5-7 years experience, is prepared for setting question papers for the Trade. The panel is vetted by the Member Secretary, NCVT.
- Paper setters are appointed from the panel after the approval of the competent authority for setting the question paper.
- The question papers are then moderated by the Board of Moderation to see if the paper is set as per the requirement and syllabus.
- The manuscripts of the moderated question papers are sent to Government Printing Presses for printing.
- Printed question papers, packed in sealed covers, are despatched to Banks/Police Stations for keeping in safe custody.
- The question papers are handed over to the Chairman/Principal of the Testing Centre two hours before the commencement of the Examination.
- An Examination Board consisting of representatives of industry/Employer/State Government are set up to supervise and monitor the conduct of Examinations at every Centre.
- Theory and practical Examinations are carried out with invigilators/examiners with the overall supervision of the Examination Board.
- Examiners called for evaluation of practical should have minimum technical qualification of a Diploma in the respective engineering field. However, when diploma holders not available, the qualification is suitably relaxed.
- Examiners for practical Examinations are appointed preferably from Polytechnics/ Engineering colleges/ Industry of repute/ Government Departments or from amongst retired qualified personnel possessing requisite qualifications and sufficient experience in the trade/discipline.
- Each State Directorate prepares a panel of Examiners according to the norms as mentioned above and the Examiners are appointed from the panel.
- Flying squads from State Governments as well as the Central Government are constituted to check malpractices during the conduct of Examinations.
- OMR based answer sheets are evaluated by the third party evaluator only. Third party evaluator is selected for three years by open bidding process.
- Evaluation of every practical examination is carried out by the concerned examiner (from industry/ polytechnics) with the overall supervision of the Examination Board in a free and fair manner as per the assessment criteria.
- Till 2014, the marks were compiled by the State Governments as per NCVT guidelines and the results were declared by the State Governments. At present, the marks are compiled by NCVT on its portal www.ncvtmis.gov.in and the results are declared by the State Governments.

- The successful trainees are awarded National Trade Certificates.

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 assessable 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 assessable 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 assessable/ 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 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 and language skills 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
- Evaluation of Theory Examinations is done by third-party agency. Third party evaluator is selected for three years by open bidding process.
- Trade Practical is examined by External Examiner (as explained above).

Please attach any documents giving further information about assessment and/or RPL.

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

ASSESSMENT EVIDENCE

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

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

Title of Component: Draughtsman Mechanical

Generic Assessable Outcome:

GENERIC LEARNING/ASSESSABLE OUTCOME	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
1. Recognize & comply with safe working practices, environment regulation and housekeeping.	1.1 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.
	1.2 Recognize and report all unsafe situations according to site policy.
	1.3 Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1.4 Identify, handle and store/ dispose of dangerous goods and substances according to site policy and procedures following safety regulations and requirements.
	1.5 Identify and observe site policies and procedures with regard to illness or accident.
	1.6 Identify safety alarms accurately.
	1.7 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.
	1.8 Identify and observe site evacuation procedures according to site policy.
	1.9 Identify Personal Protective Equipment (PPE) and use the same as per related working environment.
	1.10 Identify basic first aid and use them under different circumstances.
	1.11 Identify different fire extinguisher and use the same as per requirement.
	1.12 Identify environmental pollution & contribute to the avoidance of instances of environmental pollution.
	1.13 Deploy environmental protection legislation & regulations.
	1.14 Take opportunities to use energy and materials in an environmentally friendly manner.
	1.15 Avoid waste and dispose waste as per procedure.
	1.16 Recognize different components of 5S and apply the same in the working environment.
2. Work in a team, understand and practice soft skills, technical English to communicate with required clarity.	2.1 Obtain sources of information and recognize information.
	2.2 Use and draw up technical drawings and documents.
	2.3 Use documents and technical regulations and occupationally related provisions.
	2.4 Conduct appropriate and target oriented discussions with higher authority and within the team.
	2.5 Present facts and circumstances, possible solutions & use

	English special terminology.
	2.6 Resolve disputes within the team.
	2.7 Conduct written communication.
3. Demonstrate knowledge of concept and principles of basic arithmetic, algebraic, trigonometric, statistics, co-ordinate system and apply knowledge of specific area to perform practical operations.	3.1 Semester examination to test basic skills on arithmetic, algebra, trigonometry and statistics.
	3.2 Their applications will also be assessed during execution of assessable outcome and also tested during theory and practical examination.
4. Understand and explain basic science in the field of study including basic electrical, and hydraulics & pneumatics.	4.1 Semester examination to test basic skills on science in the field of study including basic electrical and hydraulics & pneumatics.
	4.2 Their applications will also be assessed during execution of assessable outcome and also tested during theory and practical examination.
5. Read and apply engineering drawing for different application in the field of work.	5.1 Semester examination to test basic skills on engineering drawing.
	5.2 Their applications will also be assessed during execution of assessable outcome and also tested during theory and practical examination.
6. Understand and explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day-to-day work to improve productivity & quality.	6.1 Semester examination to test the concept in productivity, quality tools and labour welfare legislation.
	6.2 Their applications will also be assessed during execution of assessable outcome.
7. Explain energy conservation, global warming and pollution and contribute in day-to-day work by optimally using available resources.	7.1 Semester examination to test knowledge on energy conservation, global warming and pollution.
	7.2 Their applications will also be assessed during execution of assessable outcome.
8. Explain personnel	8.1 Semester examination to test knowledge on personnel finance, entrepreneurship.

finance, entrepreneurship and manage/organize related task in day-to-day work for personal & societal growth.	8.2 Their applications will also be assessed during execution of assessable outcome.
9. Understand and apply basic computer working, basic operating system and uses internet services to get accustomed & take benefit of IT developments in the industry.	9.1 Semester examination to test knowledge on basic computer working, basic operating system and uses internet services.
	9.2 Their applications will also be assessed during execution of assessable outcome.

Specific Assessable Outcomes:

SPECIFIC LEARNING/ASSESSABLE OUTCOME	
SEMESTER-I	
LEARNING/ ASSESSABLE OUTCOME	ASSESSMENT CRITERIA
10. Construct different Geometrical figures using drawing Instruments.	10.1 Perform assignment using drawing instruments: Draw straight and parallel lines, triangles, polygons, circles, parallelogram, angle bi-sector and line bi-sector.
	10.2 Construct regular polygons (up to 8 sides) on equal base.
	10.3 Layout a A3 drawing sheet as per Sp -46 : 2003 with margin and name plate.
	10.4 Fold a sheet of A0 size for filing Cabinets or binding as per SP: 46-2003
	10.5 Write block letters & numerals in single & double stroke.
	10.6 Write name of the drawing title on heading at centre alignment in double stroke 5:4 block letter.
	10.7 Draw a sample title block as used in industry.
	10.8 Label a drawing views showing the types of line are used.
	10.9 Construct ellipse, parabola & hyperbola.
	10.10 Construct involutes, cycloid curves, helix & spiral.
11. Draw Orthographic Projections giving proper dimensioning with title	11.1 Generate views in orthographic projection by placing object between horizontal and vertical plane of axes.
	11.2 Generate side view of laminar objects in different inclination on VP and HP by auxiliary vertical plane.

block using appropriate line type and scale.	11.3	Provide dimension on object as per SP-46:2003
	11.4	Draw orthographic projection of points, lines and plain laminar figures.
	11.5	Draw orthographic projection of solids viz. prism, cones, pyramids and their frustums in 1 st angle and 3 rd angle method.
12. Construct free hand sketches of simple machine parts with correct proportions.	12.1	Sketch Free hand drawing viz. straight lines, curved lines polygons, circles, elliptical figures with irregular contour.
	12.2	Sketch free hand of a machine part such as tool post of a Lathe, Bench Vice, Cutting Tools, Bolts, Studs & Nuts, gland, Pipe Flange, Hand Wheel, Crane hook, Steel bracket.
	12.3	Give dimensions of machine parts in accordance with as specified proportion.
13. Construct plain scale, comparative scale, diagonal scale and vernier scale.	13.1	Draw different types of scales.
	13.2	Find out R.F of the scale; calculate the length of scale on drawing.
	13.3	Construct Scale- plain scales, diagonal scales.
	13.4	Comparative scales, vernier scale & scale of chords and apply RF in drawing.
14. Draw sectional views showing orthographic projections.	14. 1	Sketch Conventional signs and symbols for section.
	14. 2	Draw sectional views with adjacent object showing cutting plane and direction of view.
	14. 3	Sketch different types of section lines and abbreviations for different materials as per SP-46:2003.
	14. 4	Draw Orthographic drawing of solids (viz., cube, prisms, cone and pyramids) finding out the true shape surfaces cut by oblique planes.
15. Develop surface and interpenetration of solid in orthographic projection.	15. 1	Develop the surface of cylinder, prisms, cone, pyramids and their frustum.
	15. 2	Draw development of an oblique cone with elliptical base.
	15. 3	Draw the development of a 45°single cut pipe elbow, 3-pieces pipe elbow, a pipe hole through it, bucket and a funnel.
	15. 4	Draw development of solids intersecting each other.
	15. 5	Draw orthographic projection of interpenetrated two prisms with their axes intersecting at different angles.
	15. 6	Draw orthographic projection of interpenetrated cone, cylinder & pyramids intersecting each other.
	15. 7	Draw the curves of intersection of cylinder penetrating in a sphere and a cylinder offset from their center.
16. Draw isometric projection from orthographic views	16. 1	Construct an Isometric scale to a given length.
	16. 2	Draw the isometric projection of regular solids.

(and vice-versa) and draw oblique projection from orthographic views.	16.3	Draw the isometric views for the given solids with hollow and cut sections.
	16.4	Draw the orthographic views of hanger, bracket & support from their isometric view.
	16.5	Draw isometric view of machine elements (viz. V-block, Angle plate, Sliding block, Journal bearing).
	16.6	Draw oblique projection of circular lamina in receding axis at 30° & 45°.
	16.7	Draw oblique projection of crank lever and V-block.
SEMESTER-II		
17. Draw and indicate the specification of different types of fasteners, welds and locking devices as per SP-46:2003.	17.1	Draw different Screw threads with SP-46:2003 conventions.
	17.2	Draw bolts, studs, nuts, washers and other fasteners as per SP-46:2003 conventions.
	17.3	Draw different locking arrangement of nuts, machine screws, caps screw set screw as per convention.
	17.4	Draw a half sectional view of a coupler nut.
	17.5	Draw eye foundation bolt, rag foundation bolt and Lewis foundation bolt.
	17.6	Draw welded joints giving welding symbols in welded structures.
	17.7	Draw section of welded steel structural column & bracket fabricated by plate.
	17.8	Draw keys, cotters, circlips and pins as per convention.
	17.9	Draw different types of pipe fittings and pipe joints (flanged, welded, threaded, socket and spigot).
	17.10	Draw structural steel sections with dimension as per IS specification.
	17.11	Draw rivets and riveted joints with conventional specification.
	17.12	Draw a double strap, double riveted zig-zag butt joint.
18. Acquire basic knowledge on tools and equipments and their application in Allied trades viz. Fitter, Turner, Machinist, Sheet Metal Worker, Welder, Foundry man, Electrician and Maintenance Motor Vehicles.	18.1	Identify different types of fitters hand tools, use centre punch different types of files, calipers, hacksaws, chisels and hammers.
	18.2	Identify Plain turning , stepped turning ,Taper turning with different method.
	18.3	Identify and use of jigs and fixtures Simple operations on milling machine such as plain milling and key way cutting.
	18.4	Check how to mark out castings and forgings, setting up and operation of shaping, slotting and planing machines.
	18.5	Identify and use of hand tools such as planishing hammers, stakes, mallet, bricks prick punch etc. evaluate development of surfaces.
	18.6	Identify the hand tools used in gas and electric welding of object according to drawing.
	18.7	Acquaint with different types of mould, cores and core dressing and use of moulding tools.

	18.8	Identify the measuring instruments, machinery and panels used in electrician trade. Electrical and electronic symbols used in simple wiring diagrams.
	18.9	Identify different parts of IC Engines (Both spark ignition & compression ignition in 2 stroke & 4 stroke engines).
19. Construct different types of gears, couplings and bearings with tolerance dimension and indicating surface finish symbol.	19. 1	Draw the diagram illustrating basic size deviations and tolerances.
	19. 2	Draw symbols for machining and surface finishes (grades and micron values).
	19. 3	Draw the system of indication of geometrical tolerances of form and position as per standard.
	19. 4	Draw muff coupling, flanged coupling, friction grip coupling, pin type flexible coupling, universal coupling, Oldham's coupling, claw coupling, cone friction clutch.
	19. 5	Draw details and assembly of simple bearing and foot step bearing, Plummer Block and self-aligning bearing (swivel bearing).
	19. 6	Construct tooth profile of a spur gear above 30 teeth.
	19. 7	Draw two spur gears and bevel gears in mesh.
20. Perform computer application and create 2D objects on CAD drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt.	20. 1	Perform file management in Windows operating system.
	20. 2	Create, save and print a document, worksheet and pdf file.
	20. 3	Start drawing in CAD from: new, template wizard and existing drawing file.
	20. 4	Select Drawing limit of the CAD drawing space.
	20. 5	Select proper setting of ribbon and toolbars, choice of workspace, scale.
	20. 6	Draw object in CAD drawing space using commands from icons in the ribbon, from menu bar, from floating toolbar and by typing command at the command prompt.
	20. 7	Use functional keys to access certain commands.
	20. 8	Input or locate point by Absolute Coordinate system, PolarCo-ordinate System and Relative Co-ordinate System.
	20. 9	Create geometrical figures using draw tools.
SEMESTER-III		
21. Construct projection views of geometrical figures with dimension and annotation on CAD in model space and viewport in layout space.	21. 1	Draw object CAD drawing space using line, polyline, polygon, circle, rectangle, arc, ellipse commands.
	21. 2	Modify object using Break, Erase, Trim, Offset, Fillet, Chamfer, Commands.
	21. 3	Manage object using Move, Copy, Array, Insert Block, Make Block, Scale, Rotate, Hatch Commands.
	21. 4	Create templates, Insert drawings, Layers, Modify
	21. 5	Layer properties.
	21. 6	Provide dimension, annotation on object and customize different Dimension and Text styles.

	21. 7	Construct orthographic drawing using shortcut keyboard command.
	21. 8	Construct isometric drawing of machine blocks.
	21. 9	Create viewports in layout space to view drawings in model space.
22. Draw in CAD detail and assembly Drawing of machine parts viz., Pulleys, Pipe fittings, Gears and Cams applying range of cognitive and practical skills.	22. 1	Draw Pulleys-solid, stepped built up and pulley with different types of arms, rope pulleys, belt pulleys.
	22. 2	Draw Pipe fittings: tee, flanges, unions, valves. Different types of pipes layout systems. Different types of pipe joints.
	22. 3	Draw gears such as spurs helical, bevel & worm, worm and worm wheel.
	22. 4	Draw Cams with different motions to followers, different types of follower and involute tooth profile of a gear.
23. Construct drawing of engine parts with detailed and assembly in template layout applying quality concept in CAD.	23. 1	Draw Eccentrics, Piston, Cross Head, Connecting rod of I.C. Engines with the application of tolerances using CAD.
	23. 2	Construct detailed drawing of an air valve and a fuel injector of IC engine.
24. Create 3D solid by switching to 3D modeling workspace in CAD, generate views, Print Preview and Plotting	24. 1	Identify 3D toolbars, menus, co-ordinate system by switching 3D modeling workspace.
	24. 2	Identify three axes of the object.
	24. 3	Change origin to create aligned objects under supervision.
	24. 4	Create 3D solid objects using command from 3D primitives, Extrude, Revolve, subtract, union. Create 3D drawing by changing User co-ordinate systems.
	24. 5	Annotate and dimension of the 3D model.
	24. 6	Generate orthographic views from model space to layout space.
	24. 7	Generate Print preview and Plotting.
	24. 8	Customize page set up, Print preview and Plotting of 3D drawing.
SEMESTER-IV		
25. Construct detailed and assembled drawing applying conventional sign & symbols using CAD.	25. 1	Construct detailed drawing of a lever safety valve.
	25. 2	Construct detailed drawing of a gate valve.
	25. 3	Construct detailed drawing of a blow off cock.
	25. 4	Create library folder containing blocks of Hydraulic and pneumatic conventional signs and symbols.
	25. 5	Draw a sectional view of a hydraulic jack and a pneumatic valve actuator.
	25. 6	Draw detailed view of a volute casing centrifugal pump.
	25. 7	Draw assembled and detailed drawing of tool post of a lathe.
	25. 8	Construct detailed & assembly drawing of tail stock and

	<p>revolving centre.</p> <p>25. 9 Construct detailed drawing of a milling fixture.</p> <p>25. 10 Construct detailed & assembly drawing of shaper tool head slide.</p> <p>25. 11 Draw a simple drilling jig for drilling holes in a given component.</p>
	<p>25. 12 Draw Press Tool giving nomenclature of each part and dies & punches.</p> <p>25. 13 Construct detailed drawing of a simple carburettor.</p> <p>25. 14 Construct detailed and assembly drawing of a simple pressure vessel.</p>
26. Prepare drawing of machine part by measuring with gauges and measuring instruments.	<p>26. 1 Identify proper measuring tools and gauges to measure the part.</p> <p>26. 2 Check the accuracy of the instruments.</p> <p>26. 3 Measure with the help of different types of gauges, such as plug, snap, thread, taper, measuring instruments etc.</p> <p>26. 4 Prepare detailed drawing of a C-clamp or machine vice.</p>
27. Draw a machine shop layout considering process path and ergonomics (human factor).	<p>27. 1 Draw a machine shop layout of small production industry showing process path from raw material inflow to finished product store.</p> <p>27. 2 Draw walk-way inside the workshop.</p>
28. Create and plot assembly and detail views of machine part with Dimensions, Annotations, Title Block and Bill of materials in SolidWorks/AutoCAD Inventor/ 3D Modeling.	<p>28. 1 Draw 3D solid figures by Sketching features & applied features.</p> <p>28. 2 Sketch an angle plate and a block – Create / Modify constraints.</p> <p>28. 3 Create a sketch of a new part.</p> <p>28. 4 Create 3D solid and edit solid.</p> <p>28. 5 Create a new assembly, Insert components into an assembly, add mates (degree of freedom) and perform components configuration in an assembly.</p> <p>28. 6 Create a 3D model putting: Driving dimensions, Bill of materials, Driven (Reference) Dimensions and Annotations.</p> <p>28. 7 Prepare drawings & detailing: Named views, standard 3views, auxiliary views, section views and detail views.</p> <p>28. 8 Create a 3D transition figure.</p> <p>28. 9 Create 3D model by annotating Holes and Threads, centrelines, symbols and leaders.</p> <p>28. 10 Create simulation.</p> <p>28. 11 Plot the 3D model.</p>
29. Create production drawing	<p>29. 1 Create a simple Drill jig with Part model and assembly-detailing.</p>

of machine part.	29. 2	Create a screw jack with Part model and assembly-detailing.
	29. 3	Create a check list by self-assessment and provide Revision mark by noting in the Revision table.

Means of assessment 1

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Means of assessment 2

Pass/Fail

The minimum pass percentage is 40% for each Theory Examination and 25% for each part/section of the Examination separately, and 60% marks for each Trade practical Examination.

NSQF QUALIFICATION FILE

Draughtsman Mechanical -
REVISED

SECTION 2 **EVIDENCE OF LEVEL**

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

OPTION A

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Process	<p>Requires Well Developed Skill</p> <ul style="list-style-type: none"> • Draw detail and assembly drawing of machine parts viz., Pulleys, Pipe fittings, Gears and Cams applying range of cognitive and practical skills. • Construct drawing of engine parts with detailed and assembly in template layout applying quality concept in CAD. • Create 3D solid by switching to 3D modelling workspace in CAD, generate views, Print Preview and Plotting. • Construct detailed and assembled drawing applying conventional sign & symbols. • Prepare drawing of machine part by measuring with gauges and measuring instruments. • Draw a machine shop layout considering process path and ergonomics (human factor). • Create and plot assembly and detail views of machine part with Dimensions, Annotations, Title Block and Bill of materials in Solid Works/AutoCAD Inventor/ 3D Modelling. • Create production drawing of machine part. 	<p>The learner requires to demonstrate a well-developed skill for example " Create 3D solid by switching to 3D modelling workspace in CAD, generate views, Print Preview and Plotting, Draw a machine shop layout considering process path and ergonomics (human factor). " as indicated in the learning outcomes to achieve the best possible finished drawing by applying conventional and latest drawing tools and softwares.</p>	5

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>Clear choice of procedures in familiar context</p> <ul style="list-style-type: none"> • Construct different Geometrical figures using drawing Instruments. • Draw orthographic Projections giving proper dimensioning with title block and heading using appropriate line type and scale. • Construct free hand sketches of simple machine parts with correct proportions. • Construct plain scale, comparative scale, diagonal scale and vernier scale. • Draw Sectional views showing orthographic projections. • Develop surface and interpenetration of solid in orthographic projection. • Draw isometric projection from orthographic views (and vice-versa) and draw oblique projection from orthographic views. • Draw and indicate the specification of different types of fasteners, welds and locking devices as per SP-46:2003 • Acquire basic knowledge on tools and equipment of Allied trades viz. Fitter, Turner, Machinist, Sheet 	<p>The learner requires to apply clear choice of procedures in familiar context as indicated in the learning outcomes. In all these learning outcomes the learner has to apply ones knowledge and decide what Drawing Tools and Processes to be utilized to achieve desirable Drawing and plan as per requirements and resources available.</p> <p>Hence NSQF Level is 5 for this descriptor</p>	

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>Metal Worker, Welder, Foundry man, Electrician and Maintenance Motor Vehicles.</p> <ul style="list-style-type: none"> • Draw different types of gears, couplings and bearings with tolerance dimension and indicating surface finish symbol. • Create 2D objects on CAD drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt. • Construct projection views of geometrical figures with dimension and annotation on CAD in model space and viewport in layout space. 		
Professional knowledge	<p>Knowledge of facts in a field of work or study</p> <ul style="list-style-type: none"> • Importance of safety and general precautions observed in the industry/shop floor. • Nomenclature, description and use of drawing instruments & various equipments used in drawing office. • Lay out and designation of a drawing sheet as per Sp -46 : 2003 • Definition of ellipse, parabola, hyperbola. • Methods of obtaining orthographic view. • Orthographic projection. • First angle and third angle projection. 	<p>The learner requires to demonstrate knowledge of facts, principles, processes and general concepts, in a field of work or study which is Nomenclature, description and use of Drawing Instruments & Various equipments used in Drawing, First and Third angle projection, Types of sectional views & their uses. Cutting plane and its representation, Screw threads, terms nomenclature, types of screw thread, proportion and their uses, threads as per SP-46:2003 conventions , Difference between Isometric drawing & Isometric projection, 3D Modelling, CAD etc,</p>	5

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> Types of sectional views & their uses. Cutting plane and its representation. Definition of development, its need in industry & different method of developing the surfaces. Definition of Intersection & interpenetration curves. Common method to find out the curve of interpenetration. Screw threads, terms nomenclature, types of screw thread, proportion and their uses, threads as per SP-46:2003 conventions. Types of bolts, nuts and studs, and their proportion, uses. <p>Knowledge of Principles and general concepts in a field of work or study.</p> <ul style="list-style-type: none"> Principle of isometric projection and Isometric drawing. Methods of isometric projection and dimensioning. Isometric scale. Difference between Isometric drawing & Isometric projection. Selection of views for construction of orthographic drawings for clear description of the object. Principle and types of oblique projection. Advantage of oblique projection over isometric Projection. 	<p>The learner requires to demonstrate knowledge of principle in the concept of Drawing and Projection, and various aspects of Isometric and Orthographic Drawing by use of conventional and Modern Drawing Tools and Softwares.</p> <p>Hence NSQF Level is 5 for this descriptor</p>	

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> • Knowledge of different pipe materials and specifications of Steel, W.I. & PVC pipes. • Brief description of different types of pipe joints. • Pipe threads. • Introduction to 3D modelling, • 3D primitives (viz. box, sphere, cylinder, mesh and poly-solids), solid figure by extrude, revolve, sweep and loft command, solid editing: fillet, offset, taper, shell and slice command. • Setting of User co-ordinate Systems, Rotating, Print preview and Plotting. • Working principle of valves and their description. • Knowledge of simple stationary fire tube boiler, boiler mountings. Function and purpose of blow off cock. <p>Knowledge of processes in a field of work or study</p> <ul style="list-style-type: none"> • Different types of keys (Heavy duty and Light duty) cotters, splined shaft, pins and circlips. • Calculation of sizes and proportions of keys. • Drawing of Line, polyline, ray, polygon, circle, rectangle, arc, ellipse using different options. • Trim, Offset, Fillet, Chamfer, Arc and Circle under modify commands. • Creating templates, Inserting drawings, Layers, Modify Layers. 		

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> • Format dimension style, creating new dimension style, Modifying styles in dimensioning. • Writing text on dimension line and on leader. • Edit text dimension. • Knowledge of shortcut keyboard command. Customization of keyboard command. • Customization of drafting settings, changing orthographic snap to isometric snap. 		
Professional skill	<ul style="list-style-type: none"> • Construct different Geometrical figures using drawing Instruments. • Draw orthographic Projections giving proper dimensioning with title block and heading using appropriate line type and scale. • Construct free hand sketches of simple machine parts with correct proportions. • Construct plain scale, comparative scale, diagonal scale and vernier scale. • Draw Sectional views showing orthographic projections. • Develop surface and interpenetration of solid in orthographic projection. • Draw isometric projection from orthographic views (and vice-versa) and draw oblique projection from orthographic views. 	The learning outcomes for example 'Draw orthographic Projections giving proper dimensioning with title block and heading using appropriate line type and scale, Draw isometric projection from orthographic views (and vice-versa) and draw oblique projection from orthographic views, Draw and indicate the specification of different types of fasteners, welds and locking devices as per SP-46:2003, Create 2D objects on CAD drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt, Create 3D solid by switching to 3D modelling workspace in CAD, generate views, Print Preview and Plotting' require cognitive and practical skills to accomplish tasks that involve understanding requirements; then as per requirements deciding which operations/procedure/tools will achieve desired result; planning the sequence of operations to maximum	5

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> • Draw and indicate the specification of different types of fasteners, welds and locking devices as per SP-46:2003 • Acquire basic knowledge on tools and equipment of Allied trades viz. Fitter, Turner, Machinist, Sheet Metal Worker, Welder, Foundry man, Electrician and Maintenance Motor Vehicles. • Draw different types of gears, couplings and bearings with tolerance dimension and indicating surface finish symbol. • Create 2D objects on CAD drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt. • Construct projection views of geometrical figures with dimension and annotation on CAD in model space and viewport in layout space. • Draw detail and assembly drawing of machine parts viz., Pulleys, Pipe fittings, Gears and Cams applying range of cognitive and practical skills. • Construct drawing of engine parts with detailed and assembly in template layout applying quality concept in CAD. • Create 3D solid by switching to 3D modelling 	<p>effectiveness; constantly checking and reviewing plan, etc , all of which involve problem solving and decision making.</p> <p>These are done by selecting and applying basic methods like, Constructing a plain scale, comparative scale, diagonal scale and vernier scale, Develop surface and interpenetration of solid in orthographic projection and Draw Sectional views showing orthographic projections etc.</p> <p>Hence NSQF Level is 5 for this descriptor</p>	

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>workspace in CAD, generate views, Print Preview and Plotting.</p> <ul style="list-style-type: none"> • Construct detailed and assembled drawing applying conventional sign & symbols. • Prepare drawing of machine part by measuring with gauges and measuring instruments. • Draw a machine shop layout considering process path and ergonomics (human factor). • Create and plot assembly and detail views of machine part with Dimensions, Annotations, Title Block and Bill of materials in Solid Works/AutoCAD Inventor/ 3D Modelling. • Create production drawing of machine part. 		
Core skill	<p>Desired Mathematical Skills</p> <ul style="list-style-type: none"> • Measure dimensions as per drawing • Ensure dimensional accuracy of assembly by using different instruments/gauges. • Measure dimension of the components & record data to analyse the with given drawing/measurement • Mark as per specification applying desired mathematical calculation and observing standard procedure. 	<p>The learning outcomes for example 'Measure dimension of the components & record data' and 'Mark as per specification' display the learning outcomes where the learner needs to display desired mathematical skill; understanding of social, political; and some skill of collecting and organising information, communication.</p> <p>Hence NSQF Level is 5 for this descriptor</p>	5

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> Measure all dimensions in accordance with standard specifications and tolerances. <p>Understanding of social/political</p> <ul style="list-style-type: none"> Understand and explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth. <p>Organising information and communication</p> <p>Interpret & use company and technical communication</p> <ul style="list-style-type: none"> 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. 		

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Responsibility	<ul style="list-style-type: none"> Construct different Geometrical figures using drawing Instruments. Draw orthographic Projections giving proper dimensioning with title block and heading using appropriate line type and scale. Construct free hand sketches of simple machine parts with correct proportions. Construct plain scale, comparative scale, diagonal scale and vernier scale. Draw Sectional views showing orthographic projections. Develop surface and interpenetration of solid in orthographic projection. Draw isometric projection from orthographic views (and vice-versa) and draw oblique projection from orthographic views. Draw and indicate the specification of different types of fasteners, welds and locking devices as per SP-46:2003 Acquire basic knowledge on tools and equipment of Allied trades viz. Fitter, Turner, Machinist, Sheet Metal Worker, Welder, Foundry man, Electrician and Maintenance Motor Vehicles. 	<p>The role of Draughtsman Mechanical is independently responsible to perform the work as per specifications followed by analysis of what needs to be done based on their understanding of various Drawing tools, Develop Orthographic and Isometric Projection and construct a 2D/3D Drawing of Different Mechanical Components used in Production & Manufacturing in conjunction with various principles and standards to achieve desired outcome. This is indicated in all the learning outcomes.</p> <p>Hence NSQF Level is 4 for this descriptor</p>	4

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> • Draw different types of gears, couplings and bearings with tolerance dimension and indicating surface finish symbol. • Create 2D objects on CAD drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt. • Construct projection views of geometrical figures with dimension and annotation on CAD in model space and viewport in layout space. • Draw detail and assembly drawing of machine parts viz., Pulleys, Pipe fittings, Gears and Cams applying range of cognitive and practical skills. • Construct drawing of engine parts with detailed and assembly in template layout applying quality concept in CAD. • Create 3D solid by switching to 3D modelling workspace in CAD, generate views, Print Preview and Plotting. • Construct detailed and assembled drawing applying conventional sign & symbols. • Prepare drawing of machine part by measuring with gauges and measuring instruments. • Draw a machine shop layout considering process 		

NSQF QUALIFICATION FILE

Draughtsman Mechanical - REVISED

Title/Name of qualification/component: Draughtsman Mechanical			Level: 5
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>path and ergonomics (human factor).</p> <ul style="list-style-type: none"> • Create and plot assembly and detail views of machine part with Dimensions, Annotations, Title Block and Bill of materials in Solid Works/AutoCAD Inventor/ 3D Modelling. • Create production drawing of machine part. 		

**SECTION 3
EVIDENCE OF NEED****What evidence is there that the qualification is needed?**

The Draughtsman Mechanical pass-outs will be mainly absorbed as Mechanical Draughtsman, Tracer, Designer of mechanical parts in the industries of Production & Manufacturing sector. The trade forms a part of the Recruitment Rules of major Employers like BHEL, SAIL, Ordnance Factory Board, Indian Railways etc.

Placement records from few ITIs are enclosed.

What is the estimated uptake of this qualification and what is the basis of this estimate?

The employment prospect for this qualification is very high. There is also high demand for starting the training programme on this trade amongst new institutes. As of now the total seating capacity of the training programme is 10608 (including 30% supernumeraries) approximately in 451 ITIs.

What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?

The qualification is a long term course of two years originally designed and approved by NCVT for the Craftsmen Training Scheme and is in existence for the last 60 years. NCVT has been entrusted with the responsibilities of prescribing standards and curricula for craftsmen training, advising Government of India on the overall policy and programmes, conducting All India Trade Tests and awarding National Trade Certificates.

No existing course is available with same content and duration.

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?

- Mentor Council (MC) for the Production and Manufacturing sector was formed in 2014 to review the curriculum of this qualification under the sector.
- CSTARI, the research wing of DGT, reviews and updates the qualification, in consultation with industries and other 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.

Please attach any documents giving further information about any of the topics above.

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

SECTION 4 **EVIDENCE OF PROGRESSION**

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?

- Qualifying trainee will obtain an NCVT Certificate in Draughtsman Mechanical trade which gives the following options of progression to the trainee:
 - 1) Can appear in 10+2 examination through National Institute of Open Schooling (NIOS) for acquiring higher secondary certificate and can go further for General/ Technical education.
 - 2) Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC)
 - 3) Can join Crafts Instructor Training Scheme (CITS) in the relevant trade after which they will be employed in ITI/ Vocational Training Institute as instructor
 - 4) Can join as skilled worker in the relevant industry
 - 5) Can take Lateral entry to Diploma in Mechanical/ Production/ Industrial Engineering, as permitted by State Boards of Technical Education.
 - 6) can become supervisor after doing diploma in relevant branch of Engineering

Please attach any documents giving further information about any of the topics above.

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