

NSQF QUALIFICATION FILE

Version 6: Draft of 08 March 2016

NSDA Reference

To be added by NSDA

Turner

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,
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New Delhi-110001

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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

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SUMMARY

Qualification Title	'Turner'		
Qualification Code	DGT/1013		
Nature and purpose of the qualification	National Trade Certificate; to train the 10th class pass students in 'Turner' 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>After successful completion the passed out trainee</p> <ol style="list-style-type: none"> 1. Can work in the industry as skilled turner. 2. Can work in the field of basic fitting, lathe, drilling, Inspection & measurement observing safety precautions. 3. Can perform all the turning operations on lathe & perform simple programming & operations on a CNC lathe. 4. Can handle different type of Fire extinguishers & personal protective equipment. 		
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*
<p>*The major change is the addition of revision component of approximately 360 hours, hence there is increase in the total no of notional hours.</p>			

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Entry requirements and/or recommendations	Passed 10th Class with Science and Mathematics under 10+2 system of Education or its equivalent		
Progression from the qualification	<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 take admission in diploma course in notified branches of Engineering by lateral entry • Can join as semi-skilled worker in the industry and can become supervisor after doing part-time diploma in relevant branch of Engineering • Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC) after which they will be employed in industry as skilled worker and can become supervisor after doing part-time diploma in relevant branch of Engineering • Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs. 		
Planned arrangements for the Recognition of Prior learning (RPL)	<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 'Turner' trade can also appear for the NCVT Examination in the relevant semester and Trade directly. 		
International comparability where known	<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. 		
Date of planned review of the qualification.	January 2020		
Formal structure of the qualification			
	Mandatory/ Optional	Estimated size (learning hours)	Level
Semester – I			
(i) Plan and organize the work to make job as per specification applying different types of basic fitting operations & check for dimensional accuracy. [Basic Fitting Operation – Marking, Hack sawing, filing, drilling, taping etc.]	Mandatory	190	5
(ii) Set different shaped jobs on different chuck and demonstrate conventional lathe machine operation observing standard	Mandatory	60	4

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(iii)	<p>operation practice. [Different chucks: - 3 jaws & 4 jaws, different shaped jobs: - round, hexagonal, square]</p> <p>Prepare different cutting tool to produce jobs to appropriate accuracy by performing different turning operations. [Different cutting tool – V tool, side cutting, parting, thread cutting (both LH & RH), Appropriate accuracy: - ± 0.06mm, Different turning operation – Plain, facing, drilling, boring (counter & stepped), grooving, Parallel Turning, Step Turning, parting, chamfering, U -cut, Reaming, internal recess, knurling.</p>	Mandatory	370	4
(iv)	<p>Test the alignment of lathe by checking different parameters and adjust the tool post. [Different parameters – Axial slip of main spindle, true running of head stock, parallelism of main spindle, alignment of both the centres.]</p>	Mandatory	35	5
Semester – II				
(v)	<p>Set different components of machine & parameters to produce taper/ angular components and ensure proper assembly of the components. [Different component of machine: - Form tool, Compound slide, tail stock offset, taper turning attachment. Different machine parameters- Feed, speed, depth of cut.]</p>	Mandatory	100	5
(vi)	<p>Set the different machining parameter & tools to prepare job by performing different boring operations. [Different machine parameter- Feed, speed & depth of cut; Different boring operation – Plain, stepped & eccentric]</p>	Mandatory	100	5
(vii)	<p>Set the different machining parameters to produce different threaded components applying method/ technique and test for proper assembly of the components. [Different thread: - BSW, Metric, Square, ACME, Buttress.]</p>	Mandatory	400	5
(viii)	<p>Set the different machining parameter & lathe accessories to produce components applying techniques and rules and check the accuracy. [Different machining parameters: - Speed, feed & depth of cut; Different lathe accessories: - Driving Plate, Steady rest, dog carrier and different</p>	Mandatory	35	5

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	centres.]			
(ix)	Plan and perform basic maintenance of lathe & grinding machine and examine their functionality.	Mandatory	35	5
Semester – III				
(x)	Plan & set the machine parameter to produce precision engineering component to appropriate accuracy by performing different turning operation. [Appropriate accuracy - $\pm 0.02\text{mm}$ / C40 (proof turning); Different turning operation – Plain turning, taper turning, boring threading, knurling, grooving, chamfering etc.]	Mandatory	160	5
(xi)	Set & Produce components on irregular shaped job using different lathe accessories. [Different Lathe accessories: - Face plate, angle plate]	Mandatory	65	5
(xii)	Plan and set the machine using lathe attachment to produce different utility component/ item as per drawing. [Different utility component/ item – Crank shaft (single throw), stub arbour with accessories etc.]	Mandatory	160	5
(xiii)	Set the machining parameters and produce & assemble components by performing different boring operations with an appropriate accuracy. [Different boring operation – eccentric boring, stepped boring; appropriate accuracy - $\pm 0.05\text{mm}$]	Mandatory	130	5
(xiv)	Calculate to set machine setting to produce different complex threaded component and check for functionality. [Different complex threaded component- Half nut, multi start threads (BSW, Metric & Square)]	Mandatory	160	5
Semester – IV				
(xv)	Set (both job and tool) CNC turn centre and produce components as per drawing by preparing part programme.	Mandatory	380	5
(xvi)	Manufacture and assemble components to produce utility items by performing different operations & observing principle of interchangeability and check functionality. [Utility item: - screw jack/ vice spindle/ Box nut, Marking block, drill chuck, collet chuck etc.; different operations: - threading (Square, BSW, ACME, Metric), Thread on	Mandatory	160	4

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	taper, different boring (Plain, stepped)]			
(xvii)	Make a process plan to produce components by performing special operations on lathe and check for accuracy. [Accuracy - $\pm 0.02\text{mm}$ or proof machining & $\pm 0.05\text{mm}$ bore; Special operation – Worm shaft cutting (shaft) boring, threading etc.]	Mandatory	100	5
Generic Learning Outcomes				
(xviii)	Recognize & comply safe working practices, environment regulation and housekeeping.	Mandatory	45	4
(xix)	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	170	5
(xx)	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	255	5
(xxi)	Select and ascertain measuring instrument and measure dimension of components and record data.	Mandatory	40	4
(xxii)	Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	Mandatory	25	5
(xxiii)	Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	Mandatory	15	5
(xxiv)	Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	Mandatory	15	5
(xxv)	Plan and organize the work related to the	Mandatory	50	5

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occupation			

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 in relevant field can appear for NCVT theory and practical semester examination directly.
2. The students who have passed SCVT examination in 'Turner' 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
c)	Employability Skills	Objective type Written test of 200 marks (Trade Theory 150 marks & Employability Skills 50 marks)
d)	Work shop Calculation and Science.	100
e)	Engineering Drawing	Objective Type Written test of 100 marks (Engineering Drawing 50 marks & Work shop Calculation and Science 50 marks)

f)	Internal assessment	100
TOTAL:		700

(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.
- 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 only. 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: Turner

Assessable Outcomes and Assessment Criteria

GENERIC LEARNING/ ASSESSABLE OUTCOME	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
1. Recognize & comply 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.
	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 off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1. 5. Identify and observe site policies and procedures in 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 Productive 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 avoidance of same.
	1. 13. Take opportunities to use energy and materials in an environmentally friendly manner
	1. 14. Avoid waste and dispose waste as per procedure
	1. 15. Recognize different components of 5S and apply the same in the working environment.
2. Understand, explain different mathematical calculation & science in the field of study including basic electrical and apply in day to	2.1 Explain concept of basic science related to the field such as Material science, Mass, weight, density, speed, velocity, heat & temperature, force, motion, pressure, heat treatment, centre of gravity, friction.
	2.2 Measure dimensions as per drawing

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<p>day work. [Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure]</p>	2.3 Use scale/ tapes to measure for fitting to specification.
	2.4 Comply given tolerance.
	2.5 Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	2.6 Ensure dimensional accuracy of assembly by using different instruments/gauges.
	2.7 Explain basic electricity, insulation & earthing.
<p>3. 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]</p>	3. 1. Read & interpret the information on drawings and apply in executing practical work.
	3. 2. Read & analyse the specification to ascertain the material requirement, tools, and machining /assembly /maintenance parameters.
	3. 3. Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.
<p>4. Select and ascertain measuring instrument and measure dimension of components and record data.</p>	4.1 Select appropriate measuring instruments such as micrometers, vernier calipers, dial gauge, bevel protector and height gauge (as per tool list).
	4.2 Ascertain the functionality & correctness of the instrument.
	4.3 Measure dimension of the components & record data to analyse the with given drawing/measurement.
<p>5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.</p>	5.1 Explain the concept of productivity and quality tools and apply during execution of job.
	5.2 Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	5.3 Knows benefits guaranteed under various acts
<p>6. Explain energy conservation, global warming and pollution and contribute in</p>	6.1 Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment

day to day work by optimally using available resources.	pollution.
	6.2 Dispose waste following standard procedure.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	7. 1.Explain personnel finance and entrepreneurship.
	7. 2.Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	7. 3.Prepare Project report to become an entrepreneur for submission to financial institutions.
8. Plan and organize the work related to the occupation.	8. 1.Use documents, drawings and recognize hazards in the work site.
	8. 2.Plan workplace/ assembly location with due consideration to operational stipulation
	8. 3.Communicate effectively with others and plan project tasks
	8. 4.Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.

SPECIFIC OUTCOME	
<u>Semester-I</u>	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
9. Plan and organize the work to make job as per specification applying different types of basic fitting operations & check for dimensional accuracy. <i>[Basic Fitting Operation – Marking, Hack sawing, filing, drilling, tapping etc.]</i>	9. 1 Plan & Identify tools, instruments and equipments for marking and make this available for use in a timely manner.
	9. 2 Select raw material and visual inspect for defects.
	9. 3 Mark as per specification applying desired mathematical calculation and observing standard procedure.
	9. 4 Measure all dimensions in accordance with standard specifications and tolerances.
	9. 5 Identify Hand Tools for different fitting operations and make these available for use in a timely manner.
	9. 6 Prepare the job for Hacksawing, chiselling, filing, drilling, tapping, grinding.
	9. 7 Perform basic fitting operations viz., Hacksawing, filing, drilling, tapping and grinding to close tolerance as per specification to make the job.
	9. 8 Observe safety procedure during above operation as

	per standard norms and company guidelines.
	9. 9 Check for dimensional accuracy as per standard procedure.
	9. 10 Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.
10. Set different shaped jobs on different chuck and demonstrate conventional lathe machine operation observing standard operation practice. <i>[Different chucks: - 3 jaws & 4 jaws, different shaped jobs: - round, hexagonal, square]</i>	10.1 Identify and acquaint with lathe machine operation with its components.
	10.2 Identify different work holding devices and acquaint with functional application of each device.
	10.3 Mount the appropriate work holding device and check for its functional usage to perform turning operations.
	10.4 Set the job on chuck as per shape.
	10.5 Set the lathe on appropriate speed & feed.
	10.6 Operate the lathe to demonstrate lathe operation, observing standard operating practice.
	10.7 Observe safety procedure during above operation as per standard norms and company guidelines.
11. Prepare different cutting tool to produce jobs to appropriate accuracy by performing different turning operations. <i>[Different cutting tool – V tool, side cutting, parting, thread cutting (both LH & RH), Appropriate accuracy: - ±0.06mm, Different turning operation – Plain, facing, drilling, boring (counter & stepped), grooving, Parallel Turning, Step Turning, parting, chamfering, U -cut, Reaming, internal recess, knurling.</i>	11.1 Identify cutting tool materials used on lathe machine as per the specification and their application.
	11.2 Plan and Grind cutting tools
	11.3 Measure the tool angles with gauge and Bevel protractor as per tool signature.
	11.4 Mount the job and set machine parameter.
	11.5 Perform turning operations viz., <i>facing, Parallel Turning, Step Turning, chamfering, grooving, U -cut, parting, drilling, boring (counter & stepped), Reaming, internal recess and knurling to make component as per specification.</i>
	11.6 Check accuracy/ correctness of job using appropriate gauge and measuring instruments for their functional requirement.
	11.7 Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.
12. Test the alignment of lathe by checking different parameters and adjust the tool post. <i>[Different parameters – Axial slip of main spindle, true running of head stock, parallelism of</i>	12. 1. Plan for testing alignment of lathe
	12. 2. Select appropriate items and tools for testing the alignment.
	12. 3. Demonstrate possible solutions and agree tasks within the team.
	12. 4. Perform testing of alignment and adjust the tool post as per instruction of machine manual/ standard testing procedure.
	12. 5. Check for desired functionality.

<p><i>main spindle, alignment of both the centres.]</i></p>	<p>12. 6. Record the different parameters in a standard format.</p>
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Semester-II	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
<p>13. Set different components of machine & parameters to produce taper/ angular components and ensure proper assembly of the components. <i>[Different component of machine: - Form tool, Compound slide, tail stock offset, taper turning attachment. Different machine parameters- Feed, speed, depth of cut.]</i></p>	<p>13. 1. Plan and select appropriate method to produce taper/ angular components.</p>
	<p>13. 2. Evaluate angles to set up the tool and machine component for machining.</p>
	<p>13. 3. Demonstrate possible solutions and agree tasks within the team.</p>
	<p>13. 4. Produce taper/ angular components as per standard operating procedure.</p>
	<p>13. 5. Check accuracy/ correctness of job using appropriate gauge and measuring instruments for their functional requirement.</p>
	<p>13. 6. Assemble the components to ascertain functionality.</p>
<p>14. Set the different machining parameter & tools to prepare job by performing different boring operations. <i>[Different machine parameter- Feed, speed & depth of cut; Different boring operation – Plain, stepped & eccentric]</i></p>	<p>14.1 Plan for different boring (Plain, stepped & eccentric), Select appropriate tools and counter balance while holding the work piece as per requirement.</p>
	<p>14.2 Set the different machining parameters as per requirement.</p>
	<p>14.3 Demonstrate possible solutions within the team.</p>
	<p>14.4 Set job and produce component following the standard operating procedure.</p>
	<p>14.5 Measure with instruments/gauges as per drawing.</p>
	<p>14.6 Comply with safety rules when performing the above operations.</p>
	<p>14.7 Avoid wastage, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.</p>
<p>15. Set the different machining parameters to produce different threaded components applying method/ technique and test for proper assembly of the components. <i>[Different thread: - BSW, Metric, Square, ACME, Buttress.]</i></p>	<p>15. 1. Plan and select appropriate method to produce threaded components.</p>
	<p>15. 2. Plan and prepare thread cutting tool in compliance to standard thread parameters.</p>
	<p>15. 3. Produce components as per drawing.</p>
	<p>15. 4. Check accuracy/ correctness of job using appropriate gauge and measuring instruments for their functional requirement and suit to male /female part.</p>
	<p>15. 5. Test the proper assembly of the threaded components.</p>
<p>16. Set the different</p>	<p>16. 1. Identify different lathe accessories of lathe machine as</p>

machining parameter & lathe accessories to produce components applying techniques and rules and check the accuracy. <i>[Different machining parameters: - Speed, feed & depth of cut; Different lathe accessories: - Driving Plate, Steady rest, dog carrier and different centres.]</i>	per functional application.
	16. 2. Mount appropriate lathe accessories to set up a job for machining.
	16. 3. Observe safety/ precaution during mounting the accessories.
	16. 4. Check for the alignment of accessories to machine as per standard procedure.
	16. 5. Set the machining parameter and produce the component applying technique/ machine.
	16. 6. Check the accuracy of the component using instruments.
17. Plan and perform basic maintenance of lathe & grinding machine and examine their functionality.	17. 1. Plan for periodic and preventive maintenance of lathe/ grinding machine.
	17. 2. Select appropriate items and tools for maintenance.
	17. 3. Demonstrate possible solutions and agree tasks within the team.
	17. 4. Perform maintenance as per schedule of machine manual.
	17. 5. Check for desired functionality.
<u>Semester - III</u>	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
18. Plan & set the machine parameter to produce precision engineering component to appropriate accuracy by performing different turning operation. <i>[Appropriate accuracy - ±0.02mm/ C40 (proof turning); Different turning operation – Plain turning, taper turning, boring, threading, knurling, grooving, chamfering etc.]</i>	18. 1. Plan and select appropriate method to produce components.
	18. 2. Grind form cutting tool.
	18. 3. Set the machine parameters.
	18. 4. Produce components by performing different turning operations as per standard operating procedure and as per drawing.
	18. 5. Check accuracy/ correctness of job using appropriate gauge and measuring instruments.
19. Set & Produce components on irregular shaped job using different lathe accessories. <i>[Different Lathe accessories: - Face plate, angle plate]</i>	19. 1. Plan and select appropriate method to produce irregular shaped components with internal taper turning.
	19. 2. Work out different parameters to set up the tool for machining.
	19. 3. Set the lathe accessories and mount the job.
	19. 4. Produce components as per standard operating procedure by using appropriate tools.

	19. 5. Check accuracy/ correctness of job using appropriate gauge and measuring instruments.
20. Plan and set the machine using lathe attachment to produce different utility component/ item as per drawing. <i>[Different utility component/ item – Crank shaft (single throw), stub arbour with accessories etc.]</i>	20. 1. Select appropriate tools and plan for turning and counter balance while holding the work piece as per requirement.
	20. 2. Comply with safety rules when performing the above operations.
	20. 3. Demonstrate possible solutions within the team.
	20. 4. Set the lathe attachment as per requirement and produce component observing standard operating procedure.
	20. 5. Measure with instruments/gauges as per drawing.
21. Set the machining parameters and produce & assemble components by performing different boring operations with an appropriate accuracy. <i>[Different boring operation – eccentric boring, stepped boring; appropriate accuracy - ±0.05mm]</i>	21. 1. Plan for different boring (Plain, stepped & eccentric) and counter balance while holding the work piece as per requirement and select appropriate tools.
	21. 2. Set the different machining parameters as per requirement.
	21. 3. Demonstrate possible solutions within the team.
	21. 4. Set job and produce component following the standard operating procedure.
	21. 5. Measure with instruments/gauges as per drawing.
	21. 6. Comply with safety rules when performing the above operations.
	21. 7. Avoid wastage, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.
22. Calculate to set machine setting to produce different complex threaded component and check for functionality. <i>[Different complex threaded component- Half nut, multi start threads (BSW, Metric & Square)]</i>	22. 1. Plan and select appropriate method to produce components with multi start threading.
	22. 2. Prepare appropriate tool for generating required thread form.
	22. 3. Calculate and set machine
	22. 4. Mount the job and turn multi start thread (male and female).
	22. 5. Check accuracy/ correctness of job using appropriate gauge and measuring instruments.
	22. 6. Match the male & female component for checking for functionality
Semester - IV	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
23. Set (both job and tool) CNC turn centre and produce components as per drawing by preparing part programme.	23. 1. Plan and prepare part programme as per drawing, simulate for it's correctness with appropriate software.
	23. 2. Prepare tooling layout and select tools as required
	23. 3. Demonstrate possible solution within the team.
	23. 4. Set selected tools on to the machine
	23. 5. Test/Dry run the part programme on the machine

	<p>23. 6. Set up the job and machine the component as per standard operating procedure involving parallel, step, taper, drilling, boring, radius, grooving and threading operations, etc.</p> <p>23. 7. Check accuracy/ correctness of job using appropriate gauge and measuring instruments.</p> <p>23. 8. Observe safety/ precaution during machining.</p> <p>23. 9. Avoid wastage, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.</p>
<p>24. Manufacture and assemble components to produce utility items by performing different operations & observing principle of interchangeability and check functionality. <i>[Utility item: - screw jack/ vice spindle/ Box nut, Marking block, drill chuck, collet chuck etc.; different operations: - threading (Square, BSW, ACME, Metric), Thread on taper, different boring (Plain, stepped)]</i></p>	<p>24. 1. Plan and select tools and materials for the part components and make this available for use in a timely manner.</p> <p>24. 2. Produce part components as per drawing</p> <p>24. 3. Check for accuracy of all the part components and suitability to the higher assembly.</p> <p>24. 4. Assemble all the part components as per the guide lines given in the drawing.</p> <p>24. 5. Check for functionality of the screw jack, vice spindle/ Box nut, marking block, drill chuck, collet chuck etc., as per standard operating procedure.</p> <p>24. 6. Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.</p>
<p>25. Make a process plan to produce components by performing special operations on lathe and check for accuracy. <i>[Accuracy - ±0.02mm or proof machining & ±0.05mm bore; Special operation – Worm shaft cutting (shaft) boring, threading etc.]</i></p>	<p>25. 1. Plan and select appropriate method to produce components with worm gear cutting.</p> <p>25. 2. Prepare appropriate tool for producing required worm shaft.</p> <p>25. 3. Set the job and turn worm shaft, match for accurate fitting with female gauge.</p> <p>25. 4. Check accuracy/ correctness of job using appropriate gauge and measuring instruments.</p>

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.

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Turner

SECTION 2

EVIDENCE OF LEVEL

NSQF QUALIFICATION FILE

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OPTION A

Title/Name of qualification/component: Turner		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"> Plan and organize the work to make job as per specification applying different types of basic fitting operations & check for dimensional accuracy. [Basic Fitting Operation – Marking, Hack sawing, filing, drilling, taping etc.] Test the alignment of lathe by checking different parameters and adjust the tool post. [Different parameters – Axial slip of main spindle, true running of head stock, parallelism of main spindle, alignment of both the centres.] Set different components of machine & parameters to produce taper/ angular components and ensure proper assembly of the components. [Different component of machine: - Form tool, Compound slide, tail stock offset, taper turning attachment. Different machine parameters- Feed, speed, depth of cut.] Set the different machining parameter & tools to prepare job by performing different boring operations. [Different machine parameter- Feed, speed & depth of cut; Different boring operation – Plain, stepped & eccentric] Set the different machining parameters to produce different threaded components applying method/ technique and test for proper assembly of the components. 	<p>The learner requires to demonstrate a well-developed skill for example ‘Test the alignment of lathe’, ‘Set different components of lathe machine’ and ‘Set different machining parameters’ as indicated in the learning outcomes to achieve the tolerance levels and accuracy demanded as per the job.</p>	5

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>[Different thread: - BSW, Metric, Square, ACME, Buttress.]</p> <ul style="list-style-type: none"> Set the different machining parameter & lathe accessories to produce components applying techniques and rules and check the accuracy. [Different machining parameters: - Speed, feed & depth of cut; Different lathe accessories: - Driving Plate, Steady rest, dog carrier and different centres.] Set & Produce components on irregular shaped job using different lathe accessories. [Different Lathe accessories: - Face plate, angle plate] Set the machining parameters and produce & assemble components by performing different boring operations with an appropriate accuracy. [Different boring operation – eccentric boring, stepped boring; appropriate accuracy - $\pm 0.05\text{mm}$] <p>Clear choice of procedures in familiar context</p> <ul style="list-style-type: none"> Plan and organize the work to make job as per specification applying different types of basic fitting operations & check for dimensional accuracy. [Basic Fitting Operation – Marking, Hack sawing, filing, drilling, taping etc.] Test the alignment of lathe by checking different parameters and adjust the tool post. [Different parameters – Axial slip of main spindle, true running of head stock, parallelism of main spindle, alignment of both the centres.] 	<p>The learner requires to apply clear choice of procedures in familiar context for example 'Test the alignment of lathe' and 'Set the different</p>	

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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"> Set different components of machine & parameters to produce taper/ angular components and ensure proper assembly of the components. [Different component of machine: - Form tool, Compound slide, tail stock offset, taper turning attachment. Different machine parameters- Feed, speed, depth of cut.] Set the different machining parameter & tools to prepare job by performing different boring operations. [Different machine parameter- Feed, speed & depth of cut; Different boring operation – Plain, stepped & eccentric] Set the different machining parameters to produce different threaded components applying method/ technique and test for proper assembly of the components. [Different thread: - BSW, Metric, Square, ACME, Buttress.] Set the different machining parameter & lathe accessories to produce components applying techniques and rules and check the accuracy. [Different machining parameters: - Speed, feed & depth of cut; Different lathe accessories: - Driving Plate, Steady rest, dog carrier and different centres.] Plan and perform basic maintenance of lathe & grinding machine and examine their functionality. Plan & set the machine parameter to produce precision engineering component to appropriate accuracy by performing different turning operation. [Appropriate accuracy - $\pm 0.02\text{mm}$/ C40 (proof turning); Different turning 	<p>machining parameter & lathe accessories' . In all these learning outcomes the learner has to apply one's knowledge to decide what needs to be done to either choose appropriate process or method, tools and sequence of operations to achieve desired features on the component; set the job and tool in the machine by understanding the job from the design; identify a fault and decide how to rectify it; plan as per requirements and resources available, etc</p> <p>Hence NSQF Level is 5 for this descriptor</p>	

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>operation – Plain turning, taper turning, boring threading, knurling, grooving, chamfering etc.]</p> <ul style="list-style-type: none"> • Set & Produce components on irregular shaped job using different lathe accessories. [Different Lathe accessories: - Face plate, angle plate] • Plan and set the machine using lathe attachment to produce different utility component/ item as per drawing. [Different utility component/ item – Crank shaft (single throw), stub arbour with accessories etc.] • Set the machining parameters and produce & assemble components by performing different boring operations with an appropriate accuracy. [Different boring operation – eccentric boring, stepped boring; appropriate accuracy - $\pm 0.05\text{mm}$] • Set (both job and tool) CNC turn centre and produce components as per drawing by preparing part programme. 		
Professional knowledge	<p>Knowledge of facts in a field of work or study</p> <ul style="list-style-type: none"> • Trade tools specifications. • Machines and accessories, • Safety precautions to be observed in a sheet metal workshop, sheet and sizes, • Commercial sizes and various types of metal sheets, coated sheets and their uses as per BIS specifications. • Various types of metal joints, their selection and 	<p>The learner requires to demonstrate knowledge of facts, principles, processes and general concepts, in a field of work or study which is Machining and mechanical work , etc.</p> <p>Hence NSQF Level is 5 for this descriptor</p>	5

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>application, tolerance for various joints, their selection & application.</p> <ul style="list-style-type: none"> • Different standard systems of fits and limits. British standard system, BIS system • Classification of lathe in Function and construction of different parts of Lathe. • Lathe specifications, and constructional features. • Lathe cutting tools- Nomenclature of single point & multipoint cutting tools • Machining Processes • Pipes and pipe fitting- commonly used pipes. Pipe schedule and standard sizes. • Pneumatic actuators:- Types, Basic operation, Force, Stroke length, Single-acting and double-acting cylinders • Programming – sequence, formats, different codes and words. • Co-ordinate system points and simulations <p>Knowledge of Principles and general concepts in a field of work or study</p> <ul style="list-style-type: none"> • Physical properties of engineering metal: colour, weight, structure, and conductivity, magnetic, fusibility, specific gravity. Mechanical properties: ductility, malleability hardness, brittleness, toughness, tenacity, and elasticity • Mass, Unit of Mass, Weight, difference between mass and 		

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>weight, Density, unit of density, specific gravity of metals.</p> <ul style="list-style-type: none"> • Tool life, quality of a cutting material. • Interchangeability: Necessity in Engg, field definition, BIS. Definition, types of limit, terminology of limits and fits-basic size, actual size, deviation, high and low limit, zero line, tolerance zone • Wrought iron- : properties and uses. Steel: plain carbon steels, types, properties and uses • the importance of keeping the work free from rust and corrosion. • Calculation involved – depth, core dia., pitch proportion etc. of Acme thread. • Calculation involved depth, core dia., pitch proportion, use of buttress thread. • Calculation involving modified rake and clearance angles of lathe tool at above and below the center height. Subsequent effect of tool setting. • CNC technology basics: Difference between CNC and conventional lathes. Advantages and disadvantages of CNC machines over conventional machines. • Cutting parameters- cutting speed, feed rate , depth of cut, constant surface speed, limiting spindle speed, tool wear, tool life, relative effect of each cutting parameter on tool life • Process planning & sequencing, tool layout & selection and 		

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Title/Name of qualification/component: Turner		Level: 5	
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>cutting parameters selection.</p> <ul style="list-style-type: none"> • Tool Nose Radius Compensation (G41/42) and its importance (TNRC). • Interchangeability meaning, procedure for adoption, quality control procedure for quality production • 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 <p>Knowledge of processes in a field of work or study</p> <ul style="list-style-type: none"> • Drilling processes: common type (bench type, pillar type, radial type), gang and multiple drilling machine. • Types of Joints-Butt and fillet as per BIS SP: 46-1988 specifications. Gases and gas cylinder description, kinds, main difference and uses. • Setting up parameters for ARC welding machines-selection of Welding electrodes. • Various turning procedures, their tools and types – drilling, knurling, reaming, boring, taper turning, etc. • Cutting speed, feed, turning time, depth of cut calculation, cutting speed chart (tungsten carbide tool) etc. • Different types of attachments used in lathe. 		

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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"> • Various procedures of thread measurement thread screw pitch gauge. • Method of expressing tolerance as per BIS Fits: Definition, types, description of each with sketch. Vernier height gauge: material construction, parts, graduations (English & Metric) uses, care and maintenance. • Methods of use, care and maintenance of various trade related tools and machines • Tool selection based on different requirements • Maintenance - Total productive maintenance, -Autonomous maintenance, Routine maintenance • Possible causes for assembly failures and remedies. • Assembling techniques such as aligning, bending, fixing, mechanical jointing, threaded jointing, sealing, and torquing • Various heat treatment methods -normalizing, annealing, hardening and tempering, purpose of each method, tempering colour chart. • Installation, maintenance and overhaul of machinery and engineering equipment 		
Professional skill	<ul style="list-style-type: none"> • Plan and organize the work to make job as per specification applying different types of basic fitting operations & check for dimensional accuracy. [Basic Fitting Operation – 	The learning outcomes for example 'Plan and perform basic maintenance of lathe & grinding machine' and 'Set the different machining	5

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>Marking, Hack sawing, filing, drilling, taping etc.]</p> <ul style="list-style-type: none"> • Test the alignment of lathe by checking different parameters and adjust the tool post. [Different parameters – Axial slip of main spindle, true running of head stock, parallelism of main spindle, alignment of both the centres.] • Set different components of machine & parameters to produce taper/ angular components and ensure proper assembly of the components. [Different component of machine: - Form tool, Compound slide, tail stock offset, taper turning attachment. Different machine parameters- Feed, speed, depth of cut.] • Set the different machining parameter & tools to prepare job by performing different boring operations. [Different machine parameter- Feed, speed & depth of cut; Different boring operation – Plain, stepped & eccentric] • Set the different machining parameters to produce different threaded components applying method/ technique and test for proper assembly of the components. [Different thread: - BSW, Metric, Square, ACME, Buttress.] • Set the different machining parameter & lathe accessories to produce components applying techniques and rules and check the accuracy. [Different machining parameters: - Speed, feed & depth of cut; Different lathe accessories: - Driving Plate, Steady rest, dog carrier and different centres.] • Plan and perform basic maintenance of lathe & grinding 	<p>parameter & tools to prepare job by performing different boring operations' 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 effectiveness; constantly checking and reviewing plan, etc , all of which involve problem solving and decision making. These are done by selecting and applying basic methods, tools, materials and information.</p> <p>Hence NSQF Level is 5 for this descriptor</p>	

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>machine and examine their functionality.</p> <ul style="list-style-type: none"> Plan & set the machine parameter to produce precision engineering component to appropriate accuracy by performing different turning operation. [Appropriate accuracy - $\pm 0.02\text{mm}$/ C40 (proof turning); Different turning operation – Plain turning, taper turning, boring threading, knurling, grooving, chamfering etc.] Set & Produce components on irregular shaped job using different lathe accessories. [Different Lathe accessories: - Face plate, angle plate] Plan and set the machine using lathe attachment to produce different utility component/ item as per drawing. [Different utility component/ item – Crank shaft (single throw), stub arbour with accessories etc.] Set the machining parameters and produce & assemble components by performing different boring operations with an appropriate accuracy. [Different boring operation – eccentric boring, stepped boring; appropriate accuracy - $\pm 0.05\text{mm}$] Set (both job and tool) CNC turn centre and produce components as per drawing by preparing part programme. 		
Core skill	<p>Desired Mathematical Skills</p> <ul style="list-style-type: none"> Measurement, line standard and end standard, steel rule-different types, graduation and limitation Calculate to set machine setting to produce different 	The learning outcomes for example 'Measurement, line standard and end standard, steel rule-different types, graduation and limitation' and 'Mark as per	5

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Title/Name of qualification/component: Turner		Level: 5	
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>complex threaded component and check for functionality.</p> <ul style="list-style-type: none"> • Understand, explain different mathematical calculation & science in the field of study including turning and apply in day to day work • Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work. • Mark as per specification applying desired mathematical calculation and observing standard procedure • Calculation involved to find Out drill size (Metric and Inch). • calculation involved-speed feed R.P.M. • Chain gear formula calculation. • Different methods of forming threads. Calculation involved in finding core dia., gear train (simple gearing) calculation. Calculations involving driver-driven, lead screw pitch and thread to be cut. • Calculation involving pitch related to ISO profile. Conventional chart for different profiles, metric, B.A., Withworth, pipe etc. Calculation involving gear ratios and gearing (Simple & compound gearing). Screw thread micrometer and its use. • Calculation involving gear ratios metric threads cutting on inch L/S • Calculation involving tool Thickness, core dia., pitch proportion, depth of cut etc. of sq. thread. 	<p>specification applying desired mathematical calculation and observing standard procedure' 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>	

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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"> • Calculation involved – depth, core dia., pitch proportion etc. of Acme thread. • Calculation involved depth, core dia., pitch proportion, use of buttress thread. • Calculation involving modified rake and clearance angles of lathe tool at above and below the center height. Subsequent effect of tool setting. • Cutting speed, feed, turning time, depth of cut calculation, cutting speed chart (tungsten carbide tool) etc • Setting of a lathe calculation for required change wheel <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> <ul style="list-style-type: none"> • Interpret & use company and technical communication • Conduct appropriate and target oriented discussions with higher authority and within the team. • Present facts and circumstances, possible solutions & use 		

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>English special terminology.</p> <ul style="list-style-type: none"> Resolve disputes within the team Conduct written communication. 		
Responsibility	<ul style="list-style-type: none"> Plan and organize the work to make job as per specification applying different types of basic fitting operations & check for dimensional accuracy. Set different shaped jobs on different chuck and demonstrate conventional lathe machine operation observing standard operation practice. Prepare different cutting tool to produce jobs to appropriate accuracy by performing different turning operations. Test the alignment of lathe by checking different parameters and adjust the tool post. Set different components of machine & parameters to produce taper/ angular components and ensure proper assembly of the components. Set the different machining parameter & tools to prepare job by performing different boring operations Set the different machining parameters to produce different threaded components applying method/ technique and test for proper assembly of the components. Set the different machining parameter & lathe accessories to produce components applying techniques and rules and 	<p>The role of a turner is independently responsible to perform the work as per specifications and their own analysis of what needs to be done based on their understanding of various turning, basic fitting and other mechanical working processes, principles and standards. This is indicated in all the learning outcomes.</p> <p>Hence NSQF Level is 4 for this descriptor</p>	4

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>check the accuracy.</p> <ul style="list-style-type: none"> • Plan and perform basic maintenance of lathe & grinding machine and examine their functionality. • Plan & set the machine parameter to produce precision engineering component to appropriate accuracy by performing different turning operation. • Set & Produce components on irregular shaped job using different lathe accessories. • Plan and set the machine using lathe attachment to produce different utility component/ item as per drawing. • Set the machining parameters and produce & assemble components by performing different boring operations with an appropriate accuracy. • Calculate to set machine setting to produce different complex threaded component and check for functionality. • Set (both job and tool) CNC turn centre and produce components as per drawing by preparing part programme. • Manufacture and assemble components to produce utility items by performing different operations & observing principle of interchangeability and check functionality. • Make a process plan to produce components by performing special operations on lathe and check for accuracy. 		

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

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 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 37,552(including 30% supernumeraries) approximately in 670 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 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 the Government of India on the overall policy and programmes, conducting All India Trade Tests and awarding National Trade Certificates.

The qualifications of other bodies are of small duration, are specific and cater to specific job roles whereas this qualification prepares the trainee for multiple job roles like Lathe operator, CNC operator and Machining technician etc.

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 Turner trade which gives the following options of progression to the trainee:
 - i) National Apprenticeship Certificate or
 - ii) National Craft Instructor Certificate or
 - iii) lateral entry to Diploma in Mechanical/ Production/ Industrial Engineering, as permitted by State Boards of Technical Education.
 - iv) Can join as semi-skilled worker in the industry and can become supervisor after doing part-time diploma in relevant branch of Engineering
- 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.

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.