CNC Machining Pro

Exam Preparation Documentation

Part 2 - Lathe

2024

Test Taker first and last name:

Test Taker number:

Test Taker company:

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Final Examination Overview - ICATT CNC Machining Professional

Final examination: Part 1

Weighting: 40 %

Areas of examination

Practical task provided by ICATT - Completed in-company, with required documentation prepared prior to test day – exam site testing includes planning, evaluation and inspection, followed by a presentation and oral examination

Weighting: 50 %

Time suggested: does not include conversion and documentation to submit: 6 h

– Planning exercise*
Weighting: 10 %
Time allotted: 30 min

– Execution**
Weighting: 80 %
Time allotted (in company): 5-6 h

– Inspection
Weighting: 10 %
Time allotted: 30 min

Presentation and Oral examination:

Weighting: total % combined with execution

Presentation: 10 min

Oral examination: 20 min

*The planning exercise and inspection protocol takes place after the written exam. Total time permitted for both: 1h

**Execution weighting includes
- Evaluation of final product
- Documentation submitted
- Presentation
- Oral examination

Written examination

Weighting: 50 %

Time permitted: 1.5 h

– Part A (50%):
23 multiple choice questions
3 of which can be deselected
6 of which cannot be deselected

– Part B (50%):
8 short answer questions
No deselection possible

Final examination: Part 2

Weighting: 60 %

Areas of examination

Practical task provided by ICATT - Completed in-company, with required documentation prepared prior to test day – exam site testing includes planning, evaluation and inspection, followed by a presentation and oral examination

Weighting: 50 %

Time suggested: does not include conversion and documentation to submit: 14 h includes pre-fabrication and final

– Planning exercise*
Weighting: exam site 10%
Time allotted: 30 min

– Execution**
Weighting: 70%
Time allotted (in company): 5-6 h

– Inspection
Weighting: exam site 20%
Time allotted: 30 min

Presentation and Oral examination:

Weighting: total % combined with execution

Presentation: 10 min

Oral examination: 20 min

*The planning exercise and inspection protocol takes place after the written exam. Total time permitted for both: 1h

**Execution weighting includes
- Evaluation of final product
- Documentation submitted
- Presentation
- Oral examination

Written examination

– Production Technology
– Task and Functional analysis
– OSHA and Workers Rights

Weighting: 50 %

Time permitted: 4 h 15 min

Project 1 ALL
Time permitted: 105 min
Weighting 50%

Production Technology
Task and Functional Analysis
2 x Part A:
14 multiple choice questions
3 of which can be deselected

2 x Part B:
4 short answer questions
No deselection possible

Project 2 Turning OR Project 3 Milling
Time permitted: 105 min
Weighting 50%
Production Technology
Part A:
14 multiple choice questions
No deselection possible

Part B:
4 short answer questions
No deselection possible

Task and functional analysis
CNC Program

– OSHA and Worker's Rights

Time permitted: 45 min
Weighting: 20 %

20 multiple choice questions
5 of which can be deselected

4 short answer questions
1 of which can be deselected

AHK Final Examination Part 2 – Summer 2024	
Standard Preparation List for the Apprenticeship Training Company	**CNC Machining Professional Lathe Systems**

Instead of the items listed, alternatively comparable customary tools, measuring and auxiliary equipment can be used. **Items marked with a – in the center column are NOT necessary for this examination.**

I Quality measuring equipment that must be provided by the training company for each test taker:

1.	1 Caliper gauge, Form A	150 mm	DIN 862
2.	1 Caliper gauge, Form B	150 mm	DIN 862
3.	1 Caliper gauge, Form C	135 mm	DIN 862
4.	1 Outside micrometer	0-25 25-50 50-75mm	
5.	1 Depth micrometer	0-25 25-50 50-75mm	
6.	1 Bevel protractor or universal		
7.	1 Beveled steel square	—	

II Tools that must be provided by the training company for each test taker:

1.	1 Marking tool		
2.	1 Center punch		
3.	1 Fitter's hammer	300 g	DIN 1041
4.	1 Rubber or plastic hammer		
5.	1 Flat file	150-1	DIN 7261
6.	1 Triangular file	150-1	DIN 7261
7.	1 File brush or file cleaner		
8.	1 Three square scraper or manual		
9.	1 sharpening stone or hand lapping		

III Auxiliary equipment that must be provided by the training company for each test taker:

1. 1 Safety glasses
2. 1 Hair net, or hair pulled back safely so that it does not fall in face or near equipment
3. 1 Book of tables (to be provided by the test taker)
4. Non-programmable calculator not connected to a network without possibility of communicating with others (to be provided by test taker)

IV Test equipment that must be provided by the company for 1 to 5 test takers:
Items marked with a – in the center column are NOT necessary for this examination.

1.	1 Morse taper ring gauge	A4 (if you do not have it, use alternative gauging techniques)	DIN 229/Sheet 2
2.	1 Morse spindle taper plug gauge	4 (if you do not have it, use alternative gauging techniques)	DIN 229/Sheet 1
3.	1 Inside micrometer with measuring jaw	5-55mm	
4.	1 Three-point inside micrometer **OR** 1 inside micrometer (measuring accuracy of 0.01mm) for Ø32H7, Ø38, Ø40, Ø40H7	25-30 30-40 40-50mm 18-50mm with adjustment	
5.	1 Outside micrometer	—	
6.	1 Block gauge set	0-100 mm	
7.	1 Thread limit ring gauge or thread limit roller gauge (go/no-go)	M30 X 1.5	
8.	1 Thread limit plug gauge (go/no-go)	M30 X 1.5	

Note: Measuring equipment can be in analog or digital form. Instead of the items listed, alternatively comparable customary tools, measuring and auxiliary equipment can be used.

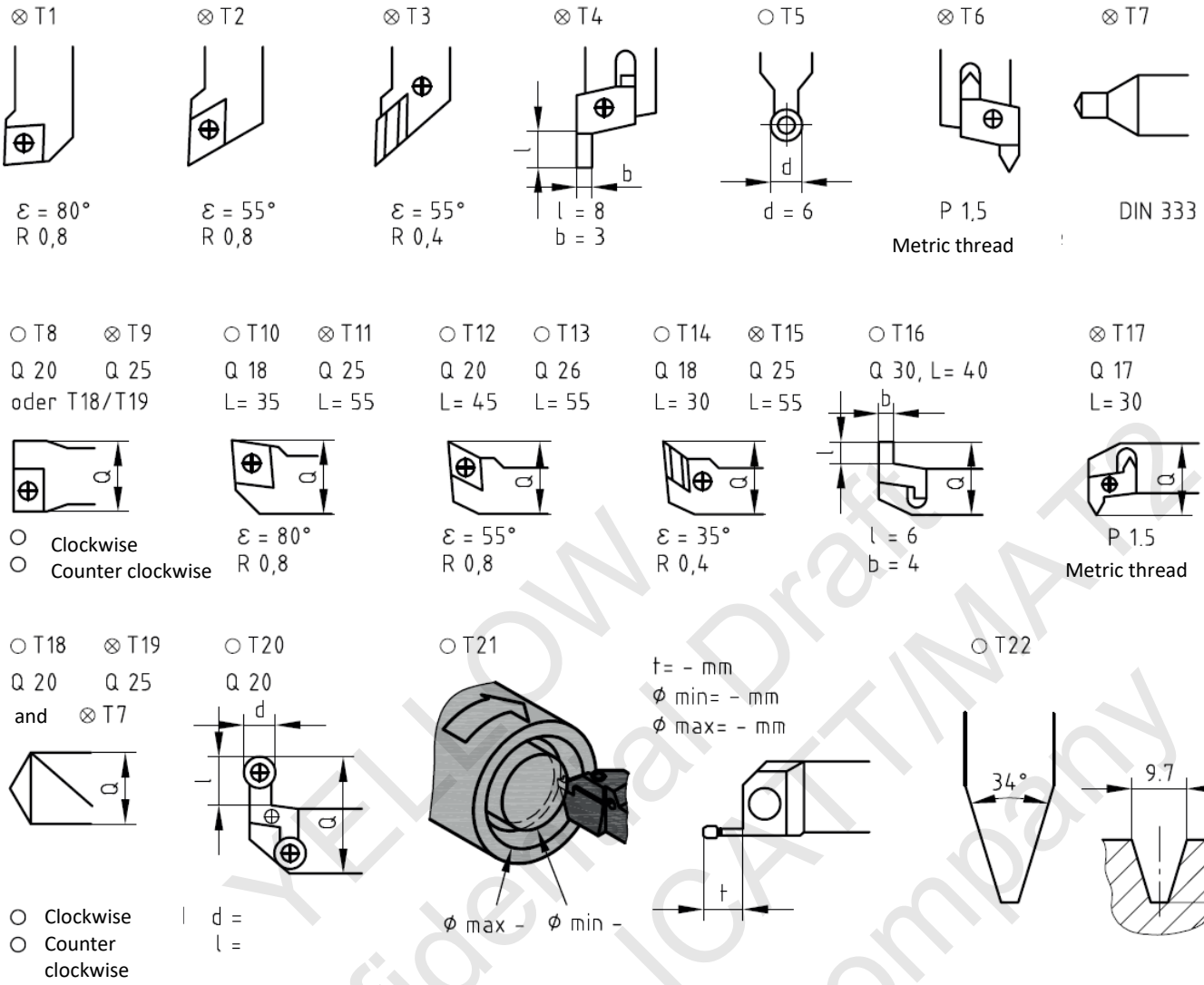
V Tools for manual material processing that must be provided for 1 to 5 test takers:
Items marked with a — in the center column are NOT necessary for this examination.

1.	1 Set of marking stamps (Arabic numerals)	3 mm	
2.	1 Allen key	—	ISO 2936
3.	1 Screwdriver for slotted screws	—	DIN 911
4.	1 Tongs for circlip	—	DIN 5254

VI Tools for material processing that must be provided for each test taker:

Items marked with a – or sizes crossed out in the center column are NOT necessary for this examination.

1.	1 Center drill	A2.5	DIN 333
2.	1 Twist drill	—	
3.	1 Countersink 90º or NC spot drill	—	
4.	**Lathe tool: Lathe tool, shank depends on equipment**		
4.1	1 Molded lathe tool for thread undercut DIN 76-A outside, thread pitch	1.5 mm	DIN 76 – A
4.2	Molded lathe tool for thread undercut DIN 76-C inside, thread pitch	—	DIN 76 – C
4.3	1 Molded lathe tool for outside relief groove	E 0.8 X 0.3	DIN 509
4.4	1 Molded lathe tool for inside relief groove	—	DIN 509
4.5	1 Molded lathe tool for outside lock groove	—	



Items marked with an ⊗ above are expected to be needed for the manufacturing of the parts.

In the case that the examination is assigned and performed as an in-company project, extensive planning and implementation documentation will be provided by the GACC Midwest as the administering organization and must be thoroughly completed to present to the exam board prior to assigned examination time. As an in-company project, tooling may vary significantly from tooling listed in the yellow preparation documentation provided here and alternative tooling must be documented in the planning and implementation documentation. The tools may not be pre-set in the tool holder. The completed practical project must also be prepared and presented. You will also inspect your project with your own measuring tools according to the exam requirements on exam day.

The DIN specifications of the tool refer to the HSS, as an alternative carbide can also be used. It is possible to use comparable standard tools, inspection equipment and work equipment as an alternative to the listed items.

AHK Final Examination Part 2 – Summer 2024	
Material provision list	**CNC Machining Professional Lathe Systems**

General Information

The semi-finished products must correspond to the specified standards.[1)] During preparation, the adjacent general tolerances must be complied with. Non-underlined dimensions are final dimensions (surface $\sqrt{Rz}$ 16). Underlined dimensions are raw dimensions, which are subject to change during the test. For the surfaces with an asterisk (*), the labeled dimensions apply $\sqrt{}$.
Projection method 1 applies to drawings ( ).

General tolerance per ISO 2768

Toler-ance class	from 0.5 to 3	over 3 to 6	over 6 to 30	over 30 to 120	over 120 to 400
Avg.	±0.1	±0.1	±0.2	±0.3	±0.5

Note: In the United States, it is acceptable to use US equivalent material to what is listed. It is also acceptable to mill or turn a part down to the proper metric dimensions listed although the drawings may indicate that it should not be. Tolerances should still be followed, and the equivalent material must be used.

I Semi-finished products that every test taker must supply and prepare to the following specifications:

1. 1 Round material 60 x 107 EN 10278 11SMn30+C
2. 1 Round material 60 x 52 EN 754 EN AW - AlMgSiPb
3. 1 Round material 60 x 42 EN 12164 CuZn40Pb2

In the case that the examination is assigned and performed as an in-company project, the material or equivalent must be prepared according to the attached drawings and fabricated prior to final project distribution April 12th, 2024. If there are no drawings attached then there is no pre-fabrication to be completed prior to doing the final project, only the gathering of tools and properly dimensioned materials.

This yellow preparation documentation is a resource for material, hardware, expected tooling, and measuring equipment for your final exam project. Extensive planning and implementation documentation can be found on the ICATT Apprentice resource page by the GACC Midwest as the administering organization and must be thoroughly completed to present along with your project to the exam board at your assigned written examination time on June 5th. On your written exam day, you will also inspect your project with your own measuring tools according to the exam requirements. Be sure to also have tools for disassembly if necessary.