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Islamabad

DIES AND MOULDS MAKER

ASSESSMENT PACKAGE

National Vocational Certificate Level 3

Version 1 - August, 2019

NAVTTC

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DIES AND MOULDS MAKER

ASSESSMENT PACKAGE

National Vocational Certificate Level 3

Version 1 - August, 2019

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500970	Level: 3	Version:
Competency Standard Title: Perform EDM operations	**Assessment Date (DD/MM/YY):**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (3 hours) (for practical and assessment):** **1. Assessment Task 1:** Operate EDM machine to produce cavity as per provided drawing in Annexure1. **And complete:** **2. Knowledge assessment test (written or oral)** **3. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1:** Operate EDM machine to produce cavity as per provided drawing in Annexure1 Performance Criteria 1: Ensure health and safety. Performance Criteria 2: Set and mount electrode on EDM machine as per specification. Performance Criteria 3: Clamp and set workpiece to produce cavity as per specification. Performance Criteria 4: Set machine parameters to produce cavity according to specification. Performance Criteria 5: Set flushing as per workpiece requirement. Performance Criteria 6: Check and inspect produced cavity as per specification. Performance Criteria 7: Maintain housekeeping after completion of task
	Portfolios required at the time of assessment (if any) for Performance criteria 1 for the evaluation of portfolio: Submit logbook or activity record (practical evidence, project, picture etc.) completed during the training.

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

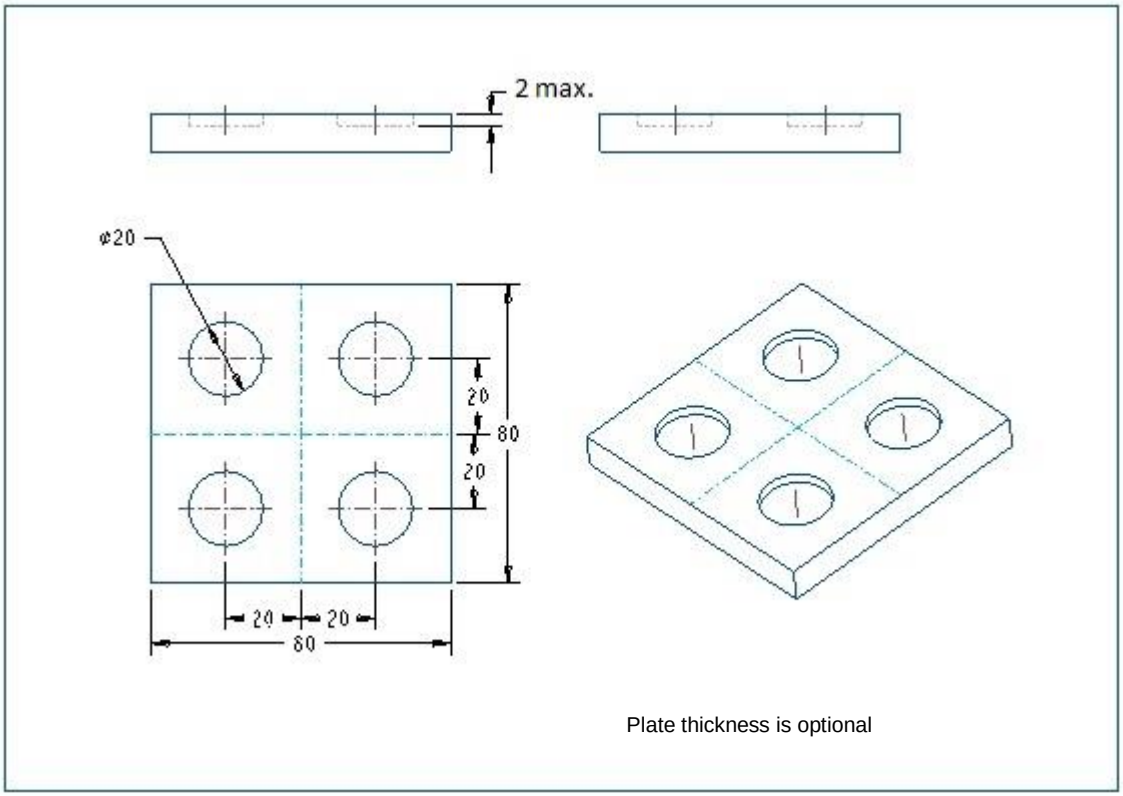
Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: ..... Signature of the Assessor:..... .....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement				✓			

Each Assessment Task (with performance criteria)				
Assessment Task 1	Operate EDM Machine to produce cavity according to provided drawing in annexure1.			
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Ensured health and safety.			
2	Performance criteria 2: Set and mounted electrode on EDM machine as per specification.			
3	Performance criteria 3: Clamped and set workpiece to produce cavity as per specification.			
4	Performance criteria 4: Set machine parameters to produce cavity according to specification.			
5	Performance criteria 5: Set flushing as per workpiece requirement.			
6	Performance criteria 6: Checked and inspect produced cavity as per specification.			
7	Performance criteria 7: Maintained housekeeping after completion of task			
Competent ☐	Not Yet Competent ☐			

Portfolio(if any)		Description of portfolio		
Current☐ Sufficient☐ Authentic☐ Valid☐ Reliable ☐				
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1 for the evaluation of portfolio: Submit logbook or activity record (practical evidence, project, picture etc.) completed during the training.			
Competent ☐		Not Yet Competent ☐		

Annex - A



Sample Drawing

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500970	Level: 3	Version:
Competency Standard Title: Perform EDM operations	**Assessment Date (DD/MM/YY):**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature:..... .....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Perform EDM operations	**Assessment Date (DD/MM/YY):**		

WRITTEN ASSESSMENT

Question	Candidate's answer
1. Enlist two types of materials used for electrode on EDM machine?	Copper Graphite
2. Define two types of sparking gaps?	• Diametric sparking gap • Mean sparking gap
3. Enlist at least three types of flushing used in EDM Operations?	• Direct flushing • Flushing through electrode • Suction flushing • Pulsated flushing
4. Describe role and usage of dielectric oil in EDM operation.	Quick ionization (cathode and anode) Cleaning and flushing of workpiece.
5. Define principle of EDM operation?	Material eroded through electric spark
6. Define the name of scale used for selection of surface finish on EDM machine?	VDI Scale used for textures
7. Define ON time and OFF time in EDM operation.	The time used for sparking ON and OFF during EDM operation
8. What is Arcing in EDM operation?	Contamination of eroded material called Arcing in EDM process

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500971	Level: 3	Version:
Competency Standard Title: Perform wire cut operation	**Assessment Date (DD/MM/YY):**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **1. Assessment Task 1:** Operate wire cut machine to cut profile as per provided drawing in Annexure 1. **And complete:** **2. Knowledge assessment test wWritten or oral)** **3. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1**: Operate wire cut machine to cut profile as per provided drawing in Annexure 1. Performance Criteria 1: Ensure health and safety. Performance Criteria 2: Generate and export 2D drawing on CAD software. Performance Criteria 3: Check tension and alignment of wire. Performance Criteria 4: Clamp and set workpiece to cut profile as per specification. Performance Criteria 5: Generate and execute tool path (program) of profile as per specification and set parameter of machine. Performance Criteria 6: Check workpiece profile as per specification. Performance Criteria 7: Maintain housekeeping after completion of task
	Portfolios required at the time of assessment (if any) for Performance criteria 1 for the evaluation of portfolio: Submit log book or activity record (practical evidence, project, picture etc.) completed during the training.

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: ..... Signature of the Assessor:..... .....

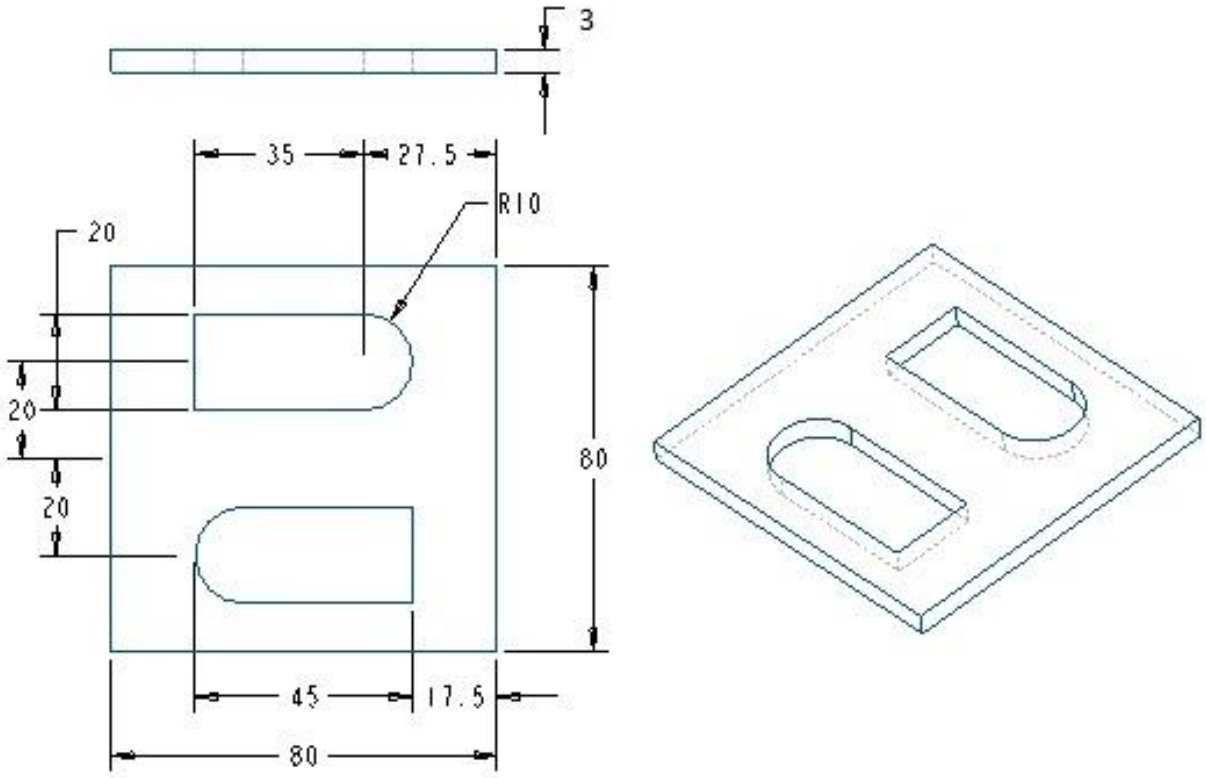
Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement				✓			

Each Assessment Task (with performance criteria)	
Assessment Task 1	Description of assessment task 1 Operate wire cut machine to cut profile as per provided drawing in Annexure 1.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Ensured health and safety.			
2	Performance criteria 2: Generated and export 2D drawing on CAD software.			
3	Performance criteria 3: Checked tension and alignment of wire.			
4	Performance Criteria 4: Clamped and set workpiece to cut profile as per specification.			
5	Performance Criteria 5: Generated and executed tool path (program) of profile as per specification and set parameter of machine.			
6	Performance Criteria 6: Checked workpiece profile as per specification.			
7	Performance Criteria 7: Maintained housekeeping after completion of task			
Competent ☐		Not Yet Competent ☐		

Portfolio(if any)		Description of portfolio		
Current☐ Sufficient☐ Authentic☐ Valid☐ Reliable ☐				
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1 for the evaluation of portfolio: Submit logbook or activity record (practical evidence, project, picture etc.) completed during the training.			
Competent ☐		Not Yet Competent ☐		

Annex - A



Sample Drawing

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500971	Level: 3	Version:
Competency Standard Title: Perform wire cut operation	**Assessment Date (DD/MM/YY):**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly..**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature:..... .....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor: ..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Perform wire cut operation	**Assessment Date (DD/MM/YY):**		

WRITTEN ASSESSMENT

Question	Candidate's answer
9. Write the names of two different wire materials used as tool in wire cutting operation?	Molybdenum and brass
10. Describe two available sizes of wire?	0.18 , 0.2mm & 0.02 mm
11. Describe the usage of magnetic blocks on wire cut machine?	To hold work pieces during cutting operation.
12. Define the impact of tension of wire in wire cutting operation?	The tension mainly creates impact on surface roughness

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500972	Level: 3	Version:
Competency Standard Title: Perform CNC lathe machine operation	**Assessment Date (DD/MM/YY):**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (02 hours) (for practical demonstration & assessment):** **1. Assessment Task 1:** Make a CNC program according to given drawing in Annexure A **2. Assessment Task 2:** Execute the CNC program on CNC Lathe Machine **And complete:** **3. Knowledge assessment test (written or oral)** **4. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1:** Make a CNC program according to given drawing in Annexure A Performance Criteria 1: Generate program as per given specification. Performance Criteria 2: Perform post processing of program.
	Assessment Task 2: Execute the CNC program on CNC Lathe Machine Performance Criteria 1: Follow health & safety rules Performance Criteria 2: Set work piece accordingly. Performance Criteria 3: Set of cutting tools accordingly. Performance Criteria 4: Set machine parameters & execute the program Performance Criteria 5: Maintain housekeeping after completion of task
	Portfolios required at the time of assessment (if any) for Performance criteria 1 for the evaluation of portfolio: Submit note book or practical evidence, completed during this specific module, for relevant activity with drawing/illustration.

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor:..... Assessor's code: ..... Signature of the Assessor:..... .....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement				✓			

Each Assessment Task (with performance criteria)				
Assessment Task 1	Description of assessment task 1 Make a CNC program according to given drawing in Annexure A			
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Generated program as per given specification			
2	Performance criteria 2: Performed post processing of program			
Competent ☐	Not Yet Competent ☐			

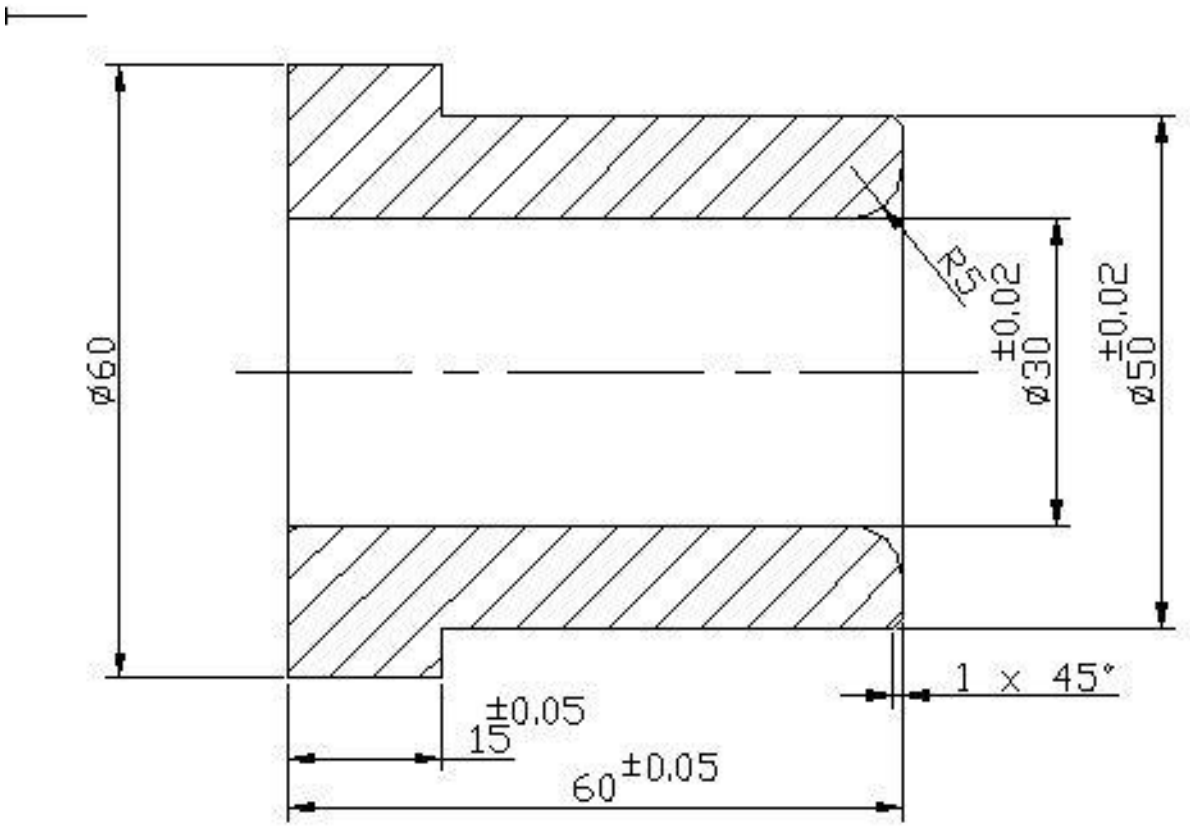
Assessment Task 2	Description of assessment task 2 Execute the CNC program on CNC Lathe Machine

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Followed Health & Safety rules.			
2	Performance criteria 2: Set work piece accordingly.			
3	Performance criteria 3: Set of cutting tools accordingly.			
4	Performance criteria 4: Set machine parameters & execute the program			
5	Performance criteria 5: Maintained housekeeping after completion of task			
Competent ☐		Not Yet Competent ☐		

Portfolio (if any)	Description of portfolio
Current ☐ Sufficient ☐ Authentic ☐ Valid ☐ Reliable ☐	

Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1: Submitted logbook or activity record (practical evidence, project, pictures etc.) completed during the training.			
Competent ☐		Not Yet Competent ☐		

Annex - A



Sample Drawing

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500972	Level: 3	Version:
Competency Standard Title: Perform CNC lathe machine operation	**Assessment Date (DD/MM/YY):**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature:..... .....
Written Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor: ..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Perform CNC lathe machine operation	**Assessment Date (DD/MM/YY):**		

WRITTEN ASSESSMENT

Question	Candidate's answer
13. Why we use G71, G72 & G73?	G71 for roughing G72 for finishing and G73 for patterning
14. Difference between feed per minute (G94) and feed per revolution (G95)?	G94 Feed Per Minute and G95 Feed Per Revolution
15. What are M08 & M09 used for?	M08 coolant ON and M09 for coolant OFF

16. Why we use coolant during machining ?	To cool work piece and wipeout of chips
17. How do we clamp & unclamp the work piece on a CNC lathe Machine?	With Hydraulic pressure used for clamping and unclamping of work piece in chuck
18. Enlist three different types of PPE's used on CNC lathe machine.	Goggle, Gloves and safety shoes
19. What is the minimum pneumatic pressure (PSI) required to operate the CNC lathe machine?	6 - 7.5 PSI required for machines
20. Which axis represent the diameter of the workpiece in turning centre?	X-Axis used for diameter

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500973	Level: 3	Version:
Competency Standard Title: Perform CNC milling machine operations	**Assessment Date (DD/MM/YY):**		

Candidate Details	Name: ..... Registration/Roll Number: .....

Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (03 hours) (for practical demonstration & assessment):** **4. Assessment Task 1:** Make a CNC program according to given drawing in Annex A **5. Assessment Task 2:** Execute the CNC program on CNC Milling Machine **And complete:** **6. Knowledge assessment test (written or oral)** **7. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **1. Assessment Task 1:** Make a CNC program according to given drawing in Annex A Performance Criteria 1: Generate program as per given specification Performance Criteria 2: Perform post processing of program
	Assessment Task 2: Execute the CNC program on CNC Milling Machine Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Set work piece as per requirement Performance Criteria 3: Set cutting tools as per requirement Performance Criteria 4: Set machine parameters & execute the program Performance Criteria 5: Maintain housekeeping after completion of task
	Portfolios required at the time of assessment (if any) for Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity evidence, completed during this specific module, for relevant activity with drawing/illustration

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor:..... Assessor's code: ..... Signature of the Assessor:..... .....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Each Assessment Task (with performance criteria)	
Assessment Task 1	Description of assessment task 1 Make a CNC program according to given drawing in Annex A

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Generated program as per given specification			
2	Performance criteria 2: Performed post processing of program			
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	Description of assessment task 2 Execute the CNC program on CNC Milling Machine

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Set work piece as per requirement			
3	Performance Criteria 3: Set cutting tools as per requirement			
4	Performance Criteria 4: Set machine parameters & execute the program			
5	Performance Criteria 5: Maintained housekeeping after completion of task			

Competent ☐	Not Yet Competent ☐

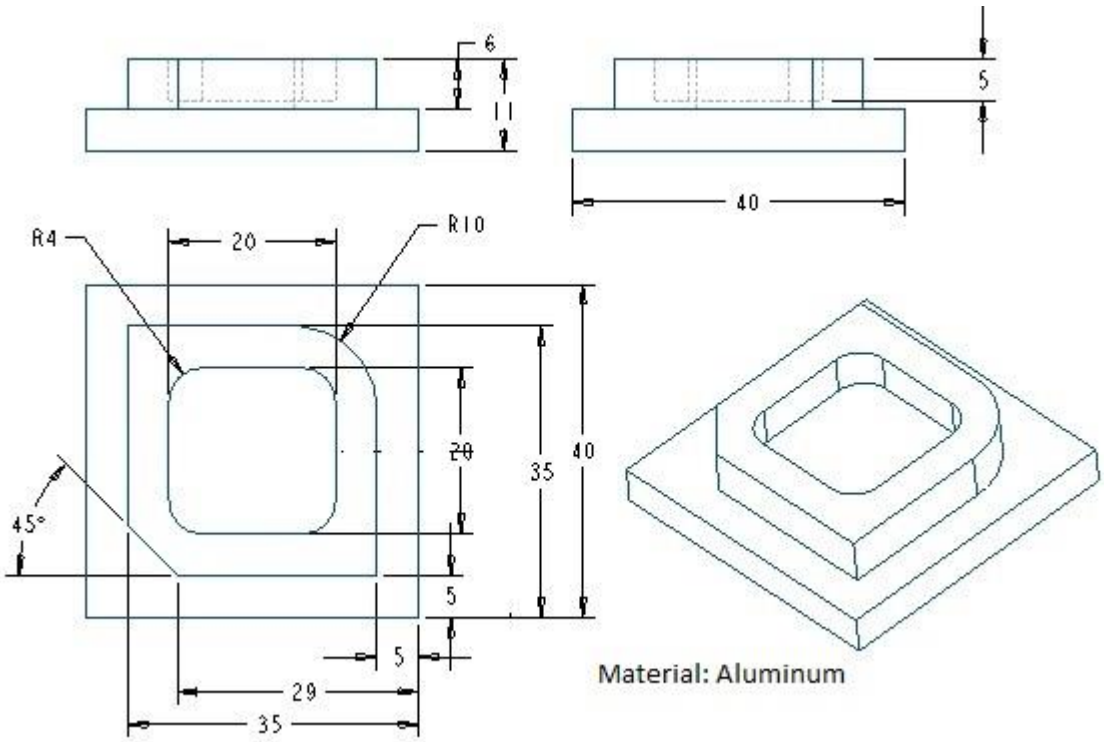
Portfolio (if any)	Description of portfolio

Current ☐ Sufficient ☐ Authentic ☐ Valid ☐ Reliable ☐

Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1: Submitted log book or activity record (practical evidence, project, pictures etc.) completed during the training			

Competent ☐	Not Yet Competent ☐

Annex - A



**Sample drawing*

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500973	Level: 3	Version:
Competency Standard Title: Perform CNC milling machine operations	**Assessment Date (DD/MM/YY):**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature:..... .....
Written Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor: ..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Perform CNC milling machine operations	**Assessment Date (DD/MM/YY):**		

WRITTEN ASSESSMENT

Question	Candidate's answer
21. What is the difference between G & M codes?	G codes are preparatory and M codes are miscellaneous
22. Enlist G codes for three different types of drilling operations.	G81, G73 and G83
23. For what action the command M06 used in CNC milling?	Tool Changer
24. Write difference between absolute & relative (incremental) coordinate system.	An **ABSOLUTE** movement based on your ZERO POINT. An **INCREMENTAL** movement based on your CURRENT POSITION.
25. Enlist at least four types of cutting tools use on CNC machines.	END Mill, Ball Nose, Face Mill and Insert with holder , Drills
26. What does the abbreviation ATC?	Automatic Tool Changer
27. Enlist three PPE's used on a CNC machine.	Goggle, Gloves and safety shoes
28. Enlist the name of 5 mode keys used in CNC machines	Edit, Auto, MDI, Jog and handle

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500974	Level: 3	Version:
Competency Standard Title: Perform Heat treatment	**Assessment Date (DD/MM/YY):**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** 1. **Assessment Task 1:** Perform annealing for high carbon steel. 2. **Assessment Task 2:** Perform tempering for medium carbon steel to the required hardening. **And complete:** 3. **Knowledge assessment test (written or oral)** 4. **Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** Performance Criteria 1: Apply health and safety during performance of task. Performance Criteria 2: Prepare material for the annealing Performance Criteria 3: Perform annealing as per standard procedure Performance Criteria 4: Maintain housekeeping at work place
	Assessment Task 2 Performance Criteria 1: Apply health and safety during the performance of task Performance Criteria 2: Prepare material for heat treatment process. Performance Criteria 3: Perform hardening for medium carbon steel Performance Criteria 4: Perform tempering as per standard Performance Criteria 5: Verify the hardness as per required grade. Performance Criteria 6: Maintain housekeeping at work place ……..
	Portfolios required at the time of assessment (if any) for Submit evidence for annealing which trainee has performed during his training

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor:..... Assessor's code: ..... Signature of the Assessor:..... .....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement				✓			

Each Assessment Task (with performance criteria)				
Assessment Task 1	Description of assessment task 1 Perform annealing for high carbon steel			
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Applied health and safety during performance of task			
2	Performance criteria 2: Prepared material for the annealing			
3	Performance criteria 3: Performed annealing as per standard procedure			
4	Performance Criteria 4: Maintained housekeeping at work place			
Competent ☐	Not Yet Competent ☐			

Assessment Task 2	Description of assessment task 2 Perform tempering for medium carbon steel to the required hardening

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance criteria 1: Applied health and safety during the performance of task			
2	Performance criteria 2: Prepared material for heat treatment process			
3	Performance criteria 3: : Performed hardening for medium carbon steel			
4	Performance Criteria 4: Performed tempering as per standard			
5	Performance Criteria 5: Verified the hardness as per required grade			
6	Performance Criteria 6: Maintained housekeeping at work place			
Competent ☐		Not Yet Competent ☐		

Portfolio (if any)	Description of portfolio
Current ☐ Sufficient ☐ Authentic ☐ Valid ☐ Reliable ☐	

Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1: Submitted evidence for annealing which trainee has performed during his training			
Competent ☐		Not Yet Competent ☐		

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code: 071500974	Level: 3	Version:
Competency Standard Title: Perform heat treatment	**Assessment Date (DD/MM/YY):**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature:..... .....
Written Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor: ..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Perform heat treatment	**Assessment Date (DD/MM/YY):**		

WRITTEN ASSESSMENT

Question	Candidate's answer
29. Define the purpose of annealing	To improve machine ability
30. Write down the five major steps to perform hardening.	1. Prepare work piece 2. Set the temperature of furnace according to the material specifications 3. Set the required soaking time 4. Quench the work piece in required medium as per material specifications. 5. Check the hardness
31. Describe why the tempering is done followed by hardening.	To improve the toughness of the hardened material.
32. Describe any two types of heat treatment furnace.	Muffle furnace Vacuumed furnace Inert gas furnace Nitriding furnace
33. What is minimum carbon percentage required to harden the material	Minimum 0.4 % carbon

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Integrated Assessment Lev-3	**Assessment Date (DD/MM/YY):**		

Candidate Details	Name: ..... Registration/Roll Number: .....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (04 hours) (for practical and assessment):** **1. Assessment Task 1:** Operate CNC milling machine to manufacture s part as specified in Annexure1. **OR** **Assessment Task 2:** Operate CNC Lathe machine to manufacture a part as per specification provided in Annexure - 2. **2. Assessment Task 3:** Operate wire cut machine to cut specified profile in Annexure3. **OR** **Assessment Task 4:** Operate EDM Machine (Electric Discharge Machine to make cavity as specified in Annexure - 4. **And complete:** **3. Knowledge assessment test (Written or Oral)** **4. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** Performance Criteria 1: Ensure health and safety. Performance Criteria 2: Generate Cam (Program) of work piece as per specification provided in Annex1 and transmit to machine. Performance Criteria 3: Select and clamp the tool as per job requirement. Performance Criteria 4: Run machine to complete job according to provided specification in annexure1. Performance Criteria 5: Maintain housekeeping after completion of task **Assessment Task 2** Performance Criteria 1: Ensure health and safety Performance Criteria 2: Generate manual part program of specified work piece in Annex2. Performance Criteria 3: Select & clamp the tool as per job requirement. Performance Criteria 4: Perform work piece setting (dialing, clamping and coordinate setting) as per requirement Performance Criteria 5: Run machine to complete job according to provided specification Annex2. Performance Criteria 6: Maintain housekeeping after completion of task **Assessment Task 3** Performance Criteria 1: Ensure health and safety.

	Performance Criteria 2: Check and set wire tension and its alignment. Performance Criteria 3: Check required surface finish as per specification and set machine parameters accordingly. Performance Criteria 4: Perform work piece setting (dialing and clamping). Performance Criteria 5: Run machine to complete job according to provided specification. Performance Criteria 6: Maintain housekeeping after completion of task **Assessment Task 4** Performance Criteria 1: Ensure health and safety. Performance Criteria 2: Check electrode profile, material and spark gap as per job requirement provided in Annexure4. Performance Criteria 3: Mount the electrode and perform dialing Performance Criteria 4: Check required surface finish as per specification and set machine parameters accordingly. Performance Criteria 5: Perform work piece setting (dialing and clamping). Performance Criteria 6: Start of machining to complete job according to provided specification. Performance Criteria 7: Maintain housekeeping after completion of task.
	Portfolios required at the time of assessment (if any) for Performance criteria 1 for the evaluation of portfolio: Submit record of all completed formative assessments. S/he must be competent in all formative assessments

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: ..... Signature of the Assessor:..... .....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement				✓			

Each Assessment Task (with performance criteria)	
Assessment Task 1	Operate CNC Milling machine to manufacture part as specified in Annexure 1.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Ensured health and safety.			
2	Performance Criteria 2: Generated Cam (Program) of work piece as per specification provided in Annex1 and transmit to machine.			
3	Performance Criteria 3: Selected and Clamped the tool as per job requirement.			
5	Performance Criteria 4: Completed job according to provided specification in annexure1.			
6	Performance Criteria 5: Maintained housekeeping after completion of task			

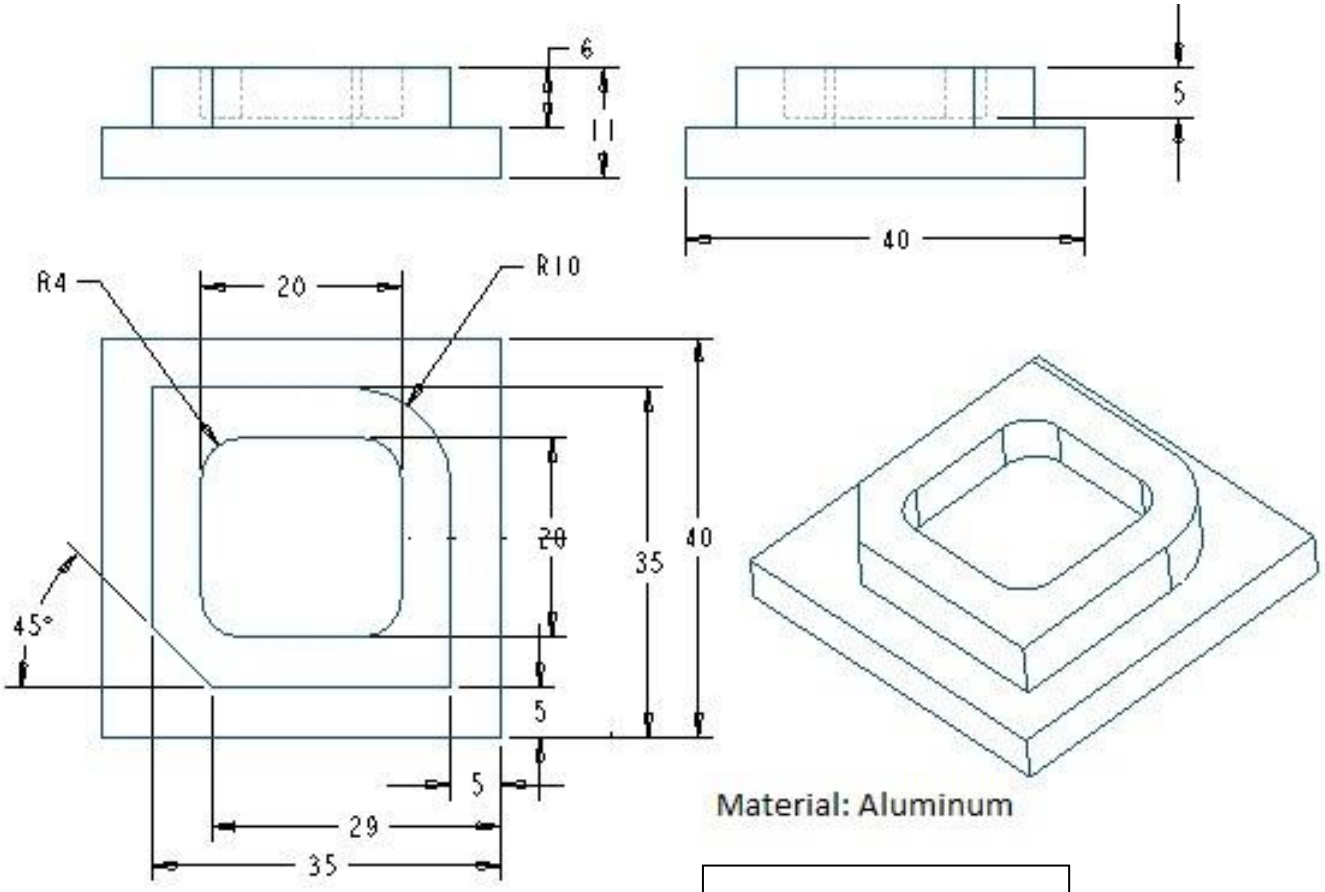
Each Assessment Task (with performance criteria)				
Assessment Task 2		Operate CNC Lathe machine to manufacture part as per specification provided in Annexure 2.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Ensured health and safety			
2	Performance Criteria 2: Generated manual part program of specified work piece in Annex2.			
3	Performance Criteria 3: Selected & clamped the tool as per job requirement.			
4	Performance Criteria 4: Performed work piece setting (Dialing, Clamping and coordinate setting) as per requirement			
5	Performance Criteria 5: Completed the job according to provided specification Annex2.			
6	Performance Criteria 6: Maintained housekeeping after completion of task			

Each Assessment Task (with performance criteria)	
Assessment Task 3	Operate Wire Cut machine to cut specified profile in Annexure 3.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Ensured health and safety.			
2	Performance Criteria 2: Checked and set wire tension and its alignment.			
3	Performance Criteria 3: Checked required surface finish as per specification and set machine parameters accordingly.			
4	Performance Criteria 4: Performed work piece setting (dialing and clamping).			
5	Performance Criteria 5: Completed the job according to provided specification.			
6	Performance Criteria 6: Maintained housekeeping after completion of task			

Each Assessment Task (with performance criteria)				
Assessment Task 4	Operate EDM Machine (Electric Discharge Machine) to make cavity as specified in Annexure 4.			
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Ensured health and safety.			
2	Performance Criteria 2: Checked electrode profile, material and spark gap as per job requirement provided in Annexure4.			
3	Performance Criteria 3: Mounted the electrode and perform dialing			
4	Performance Criteria 4: Checked required surface finish as per specification and set machine parameters accordingly.			
5	Performance Criteria 5: Performed work piece setting (dialing and clamping).			
6	Performance Criteria 6: Completed the job according to provided specification.			
7	Performance Criteria 7: Maintain housekeeping after completion of task.			
Competent ☐		Not Yet Competent ☐		
Portfolio(if any)		Description of portfolio		
Current☐ Sufficient☐ Authentic☐ Valid☐ Reliable ☐				
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1 for the evaluation of portfolio: Submitted record of all completed formative assessments. S/he must be competent in all formative assessments.			
Competent ☐		Not Yet Competent ☐		

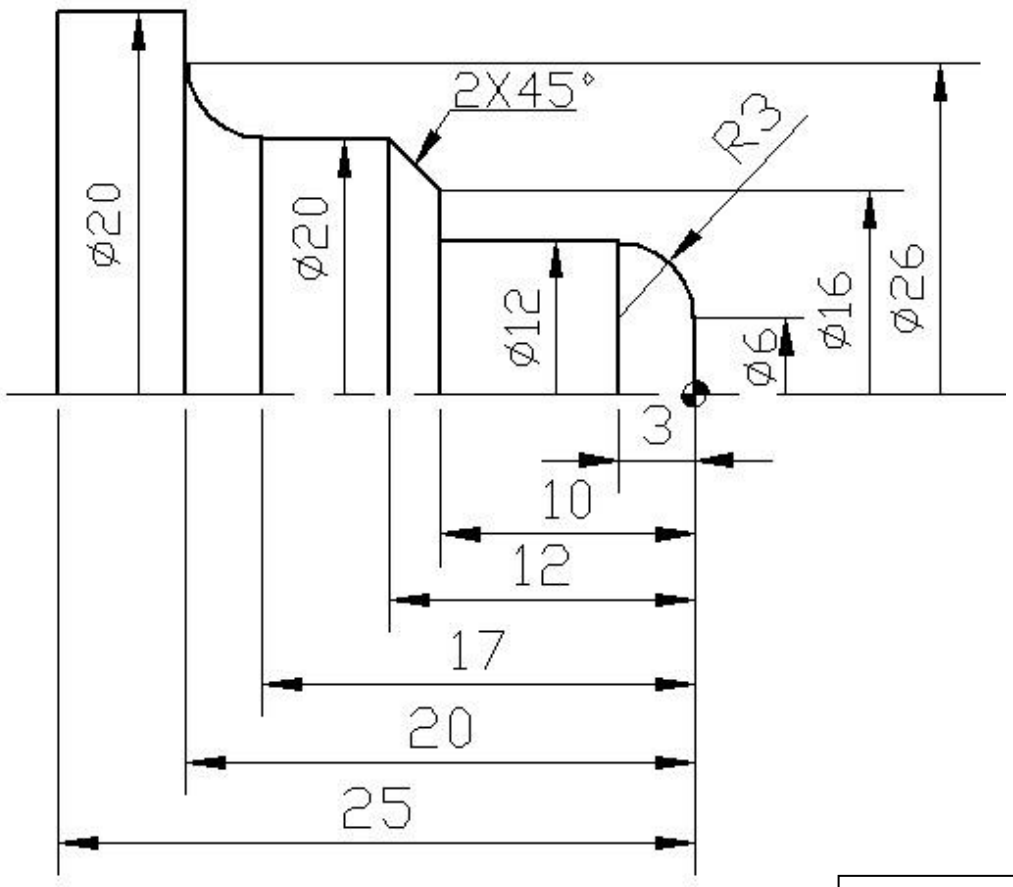
Annexure 1:



Sample Drawing

ok

Annexure 2:

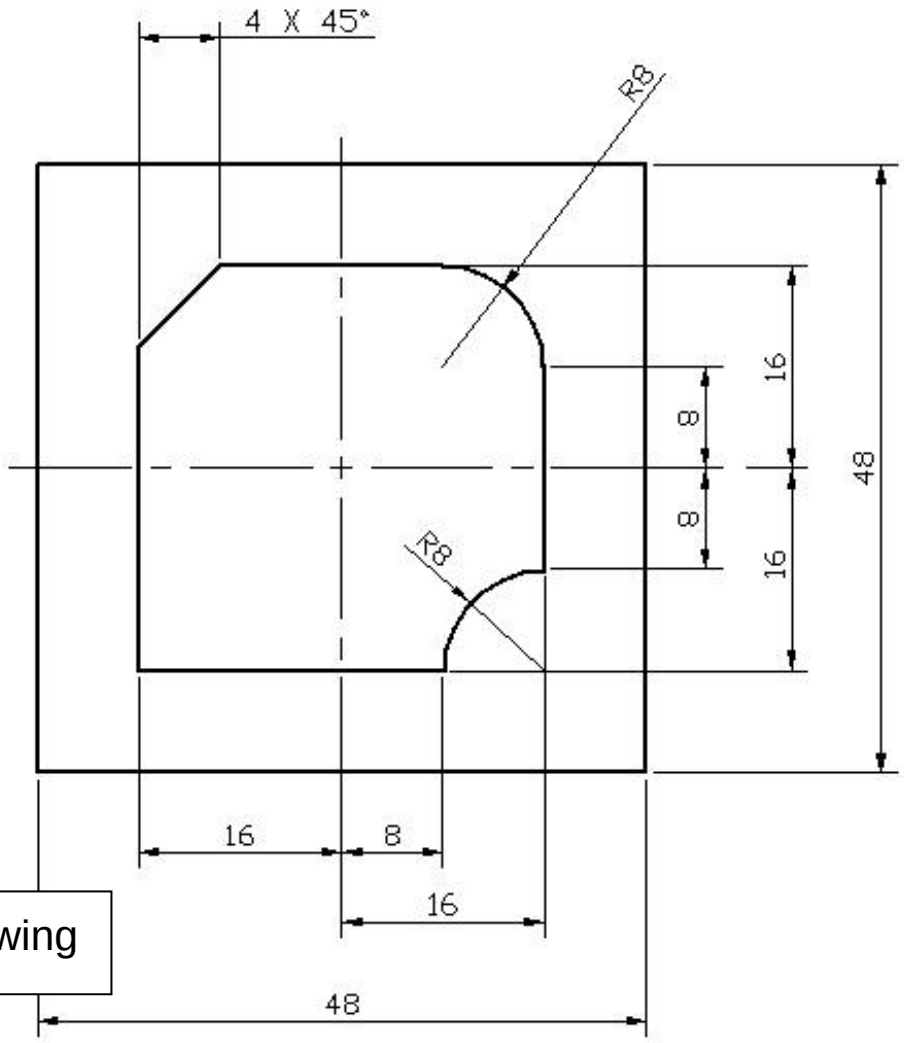


Sample Drawing

Sampl

ok

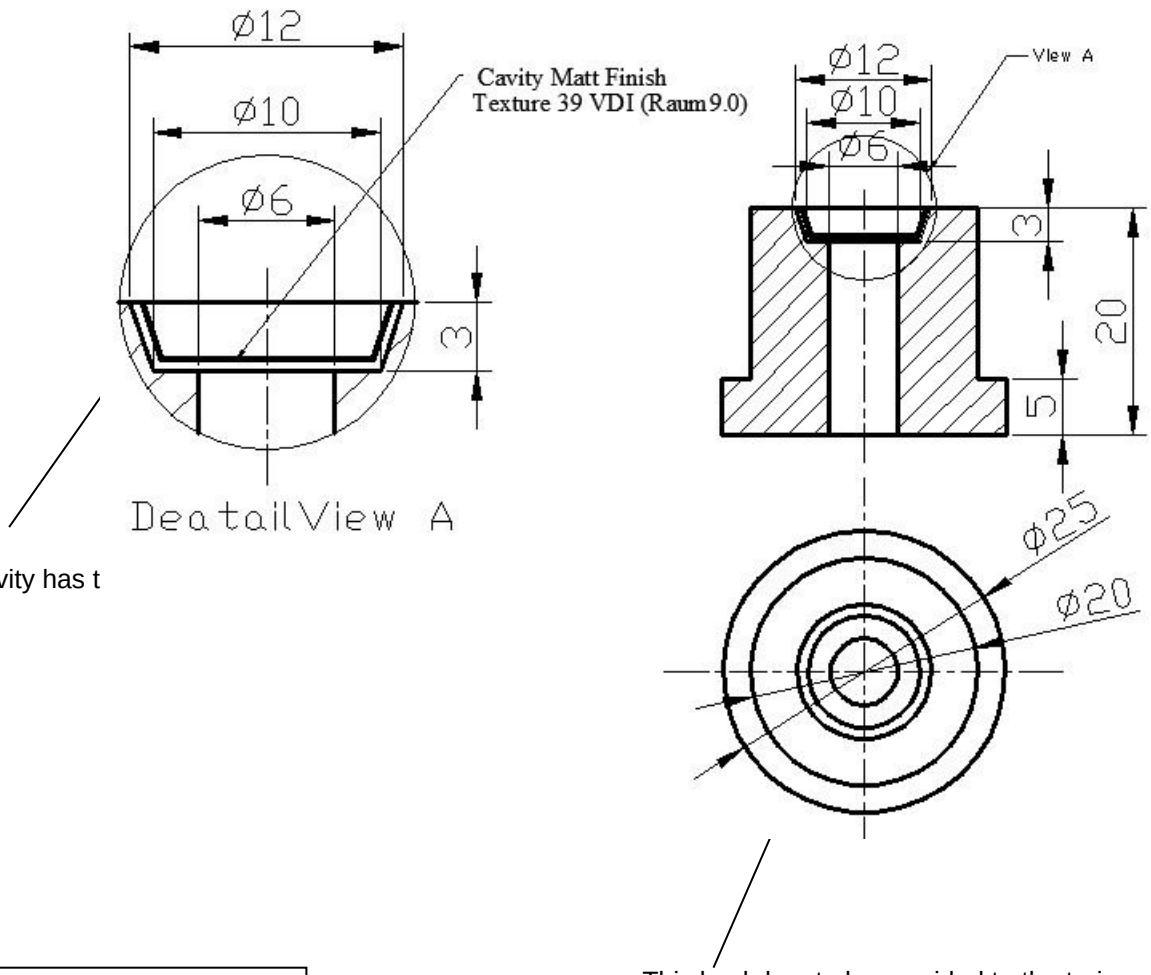
Annexure 3:



Sample Drawing

Note: Sheet Thickens is 3.0mm

Annexure 4:



This cavity has t

Sample Drawing

This bush has to be provided to the trainee, If not available the cavity can be produced on a sinple rectangular plate also.

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Integrated assessment level 3	**Assessment Date (DD/MM/YY):**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature:..... .....
Written Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor: ..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: National Vocational Certificate In Dies and Molds Maker	CS Code:	Level: 3	Version:
Competency Standard Title: Integrated assessment level 3	**Assessment Date (DD/MM/YY):**		

WRITTEN ASSESSMENT

Question	Candidate's answer
1. What are the differences between G & M codes?	G stand for preparatory and M stand for Miscellaneous
2. Enlist 3 G codes for different types of drilling operations.	G81, G73 and G83
3. What is M06 used for?	Tool changing
4. Write difference between absolute & relative (incremental) coordinate system.	An **ABSOLUTE** movement is based on your ZERO POINT. An **INCREMENTAL** movement is based on your CURRENT POSITION.
5. Write the names of wire material used as tool in wire cutting operation?	Molybdenum and brass
6. Define the impact of tension of wire in the wire cutting operation?	Surface finish will be effected due to tension of wire
7. Why are magnetic blocks used on a wire cut machine?	To hold work piece during cutting process

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