

Assessment Evidence Guide

For

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Level-2

Module name
(Formative Assessment)

8th -12th March 2021



**National Vocational & Technical
Training Commission**

Title of Qualification: Caster-II	CS Code:	Level: 2	Version: 01
Competency Standard Title: Perform Centrifugal Casting Process	Assessment Date (DD/MM/YY): Assessment Time:		

Candidate Details	Name: Registration/Roll Number:.....
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment) as per the instructions given in Annexure A:</p> <p>Assessment Task 1: Candidate is required to: Prepare mold for casting</p> <p>Assessment Task 2: Candidate is required to: Cast the molten metal.</p> <p>Assessment Task 3: Candidate is required to: Carry out cooling process</p> <p>Assessment Task 4: Candidate is required to: Clean the cast metal</p> <p>Assessment Task 5: Candidate is required to: Undertake preventive maintenance</p> <p>And complete:</p> <ol style="list-style-type: none"> Knowledge assessment test (Written or Oral) Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <ul style="list-style-type: none"> Apply refractory ceramic coating to cylindrical mold walls Perform rotation of mold to spread coating properly Perform drying of ceramic coat as per standard operating procedures Rotate mold about its axis at high speeds typically at 1000 RPM on casting machine rollers

	Assessment Task 2 <ul style="list-style-type: none"> • Pour molten metal into the pouring tub with transfer ladle • Transfer molten metal into the rotating mold at required temperature • Avoid spillage of molten metal while pouring
	Assessment Task 3 <ul style="list-style-type: none"> • Perform continuous rotation of mold with the molten metal • Allow melt to spread inside mold walls to let it cool • Stop the mold rotation after the casting has cooled
	Assessment Task 4 <ul style="list-style-type: none"> • Perform solidification of melt to room temperature • Shake out the solidified casting from mold as per SOPs
	Assessment Task 5 <ul style="list-style-type: none"> • Remove less dense impurities at the inner surface of the casting as per SOP • Remove dross by machining/grinding operation • Perform shot blasting to smooth the inner diameter of the part
	Assessment Task 6 <ul style="list-style-type: none"> • Ensure general maintenance of the machine • Ensure no shut down of machines due to improper maintenance • Perform regular cleaning process as prescribed by manufacturer
	Portfolios required at the time of assessment (if any) for

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 <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> 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		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Apply refractory ceramic coating to cylindrical mold walls			
2.	Perform rotation of mold to spread coating properly			
3.	Perform drying of ceramic coat as per standard operating procedures			
4.	Rotate mold about its axis at high speeds typically at 1000 RPM on casting machine rollers			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 2		Description of assessment task 2		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Pour molten metal into the pouring tub with transfer ladle			
2.	Transfer molten metal into the rotating mold at required temperature			
3.	Avoid spillage of molten metal while pouring			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Perform continuous rotation of mold with the molten metal			
2.	Allow melt to spread inside mold walls to let it cool			
3.	Stop the mold rotation after the casting has cooled			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 4		Description of assessment task 4		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Perform solidification of melt to room temperature			
2.	Shake out the solidified casting from mold as per SOPs			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 5		Description of assessment task 5		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Remove less dense impurities at the inner surface of the casting as per SOP			
2.	Remove dross by machining/grinding operation			
3.	Perform shot blasting to smooth the inner diameter of the part.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 6		Description of assessment task 6		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Ensure general maintenance of the machine			
2.	Ensure no shut down of machines due to improper maintenance			
3.	Perform regular cleaning process as prescribed by manufacturer			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Title of Qualification: Caster-II	CS Code:	Level: 2	Version: 01
Competency Standard Title: Perform Centrifugal Casting Process	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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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 <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Title of Qualification: Caster-II	CS Code:	Level:2	Version: 01
Competency Standard Title: Perform Centrifugal Casting Process	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

WRITTEN ASSESSMENT

Question	Candidate's answer
1. What is centrifugal casting and when we use it?	<ul style="list-style-type: none"> Method to produce pipes by pouring molten metal into a rapidly spinning cylindrical mold in which centrifugal force from the rotation exerts pressure on the molten metal. Centrifugal casting is used where we require strength, reliability, and material soundness in the end product.
2. How centrifugal casting is performed?	<ul style="list-style-type: none"> Molten metal is introduced into the mold which is continuously rotated during the whole casting process. The mold can itself be rotated horizontally or vertically depending upon the design requirements.
3. Which 2 types of machines are used for centrifugal die casting?	<ul style="list-style-type: none"> Horizontal designed machine is used to produce a thin cylinder Vertically mounted machines for producing rings or similar products.
4. State the main advantage of centrifugal casting over gravity casting?	<ul style="list-style-type: none"> The molten metal is spread uniformly on to the walls of the die as centrifugal force 100 times greater than of gravity force.
5. Mention few types of centrifugal casting?	<ul style="list-style-type: none"> True centrifugal casting Semi-Centrifugal casting Centrifuging
6. Mention some advantages of centrifugal die casting?	<ul style="list-style-type: none"> No gates and risers are used No defects of blow holes, shrinkage cavity gas pockets Less initial cost for buying equipment Less manufacturing costs Superior quality products are produced
7. What are typical materials and metals used for centrifugal casting?	<p>TYPICAL MATERIALS</p> <ul style="list-style-type: none"> Metals, cements, concretes, glass, and pottery materials. <p>TYPICAL METALS</p> <ul style="list-style-type: none"> cast are iron, steel, stainless steels, and alloys of nickel, aluminum, and copper

Question	Candidate's answer
8. When to use low pressure die casting?	<ul style="list-style-type: none"> Commonly used for larger and non-critical parts

Annexure A: