

# PDC Casting Operator - Level 4

QP Code: ASC/Q3204

NSQF Level: 4

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## Qualification Pack

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## Qualification Pack

### ASC/Q3204: PDC Casting Operator - Level 4

#### Brief Job Description

This role primarily involves managing the specifications of the molten metal, setting up and operating the casting machinery and forming & finishing the metal cast

#### Personal Attributes

Reading, writing and communication skills, ability to plan and prioritize, quality consciousness, safety orientation, Physique to sustain strenuous conditions, Dexterity, Ability to use fingers, hands and feet with ease to complete the assigned task (Dexterity), high precision and sensitivity to problem solving and sensitivity towards safety for self and equipment.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [ASC/N0006: Maintain a safe and healthy working environment](#)
2. [ASC/N0021: Maintain 5S at the work premises](#)
3. [ASC/N3209: Understanding and interpreting engineering drawings and sketches](#)
4. [ASC/N3210: Understand Casting processes and equipment requirement to complete the task](#)
5. [ASC/N3211: Prepare the machine \(apparatus\) and auxiliaries for casting the metal](#)
6. [ASC/N3212: Perform the casting related operations and monitor process parameters](#)
7. [ASC/N3213: Conduct quality checks and inspection of the finished die cast products](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Casting
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/8121.4201

### Qualification Pack

<b>Minimum Educational Qualification &amp; Experience</b>	I.T.I with 2-3 years of experience Casting OR 12th Class with 2-3 years of experience Casting
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	Latest Casting techniques and methodologies Reading and writing skills Safety and 5S
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	14/04/2014
<b>Next Review Date</b>	31/03/2020
<b>NSQC Approval Date</b>	05/08/2015
<b>Version</b>	1.0

## Qualification Pack

### ASC/N0006: Maintain a safe and healthy working environment

#### Description

This NOS is about creating a Safe and Healthy work place, adhering to the safety guidelines in the working area, following practices which are not impacting the environment in a negative manner and training team members on health and safety related issues

#### Scope

The role holder will be responsible for identifying and reporting of risks creating and sustaining a safe, clean and environment friendly work place This NOS will be applicable to all Automotive sector manufacturing job roles

#### Elements and Performance Criteria

##### *Identify and report the risks identified*

To be competent, the user/individual on the job must be able to:

- PC1..** Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise
- PC2.** Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc
- PC3.** Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations
- PC4.** Create awareness amongst other by sharing information on the identified risks

##### *Create and sustain a Safe, clean and environment friendly work place*

To be competent, the user/individual on the job must be able to:

- PC5..** Follow the instructions given on the equipment manual describing the operating process of the equipments
- PC6..** Follow the Safety, Health and Environment related practices developed by the organization
- PC7.** Operate the machine using the recommended Personal Protective Equipments (PPE)
- PC8. .** Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc
- PC9.** Maintain high standards of personal hygiene at the work place
- PC10.** Ensure that the waste disposal is done in the designated area and manner as per organization SOP.
- PC11.** Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards, procedures and policies related to Health, Safety and Environment followed in the company

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- KU2.** basic knowledge of Safety procedures( fire fighting, first aid) within the organization
- KU3.** knowledge of various types of PPEs and their usage
- KU4.** basic knowledge of risks/hazards associated with each occupation in the organization
- KU5.** how to safely operate various tools and machines and risks associated with the tools/ equipment
- KU6.** knowledge of personal hygiene and how an individual can contribute towards creating a highly safe and clean working environment

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write basic level notes and observations
- GS2.** read safety instructions put up across the plant premises
- GS3.** read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated
- GS4.** effectively communicate information to team members
- GS5.** inform employees in the plant and concerned functions about events, incidents & potential risks observed related to Safety, Health and Environment.
- GS6.** question operator/ supervisor in order to understand the safety related issues
- GS7.** attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs
- GS8.** use common sense and make judgments during day to day basis
- GS9.** use reasoning skills to identify and resolve basic problems
- GS10.** use common sense and make judgments during day to day basis
- GS11.** use reasoning skills to identify and resolve basic problems

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify and report the risks identified</i>	<b>8</b>	<b>23</b>	-	-
<b>PC1..</b> Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise	3	6	-	-
<b>PC2.</b> Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc	2	6	-	-
<b>PC3.</b> Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations	2	6	-	-
<b>PC4.</b> Create awareness amongst other by sharing information on the identified risks	1	5	-	-
<i>Create and sustain a Safe, clean and environment friendly work place</i>	<b>17</b>	<b>52</b>	-	-
<b>PC5..</b> Follow the instructions given on the equipment manual describing the operating process of the equipments	3	7	-	-
<b>PC6..</b> Follow the Safety, Health and Environment related practices developed by the organization	3	8	-	-
<b>PC7.</b> Operate the machine using the recommended Personal Protective Equipments (PPE)	3	8	-	-
<b>PC8. .</b> Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc	2	8	-	-
<b>PC9.</b> Maintain high standards of personal hygiene at the work place	2	7	-	-
<b>PC10.</b> Ensure that the waste disposal is done in the designated area and manner as per organization SOP.	3	8	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others	1	6	-	-
<b>NOS Total</b>	<b>25</b>	<b>75</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N0006
<b>NOS Name</b>	Maintain a safe and healthy working environment
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Maintenance
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	15/09/2013
<b>Next Review Date</b>	15/09/2015
<b>NSQC Clearance Date</b>	20/07/2015

## Qualification Pack

### ASC/N0021: Maintain 5S at the work premises

#### Description

This NOS is about ensuring all 5 S activities both at the shop floor and the office area to facilitate increase in work productivity

#### Scope

The individual needs to. Ensure sorting, streamlining & organizing, storage and documentation, cleaning, standardization and sustenance across the plant and office premises of the organization

#### Elements and Performance Criteria

##### *Ensure sorting*

To be competent, the user/individual on the job must be able to:

- PC1..** follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.
- PC2..** ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions
- PC3..** follow the technique of waste disposal and waste storage in the proper bins as per sop
- PC4..** segregate the items which are labelled as red tag items for the process area and keep them in the correct places
- PC5.** sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions
- PC6. .** ensure that areas of material storage areas are not overflowing
- PC7.** properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required
- PC8.** return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area
- PC9.** follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards
- PC10.** follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists

##### *Ensure proper documentation and storage ( organizing , streamlining)*

To be competent, the user/individual on the job must be able to:

- PC11.** check that the items in the respective areas have been identified as broken or damaged
- PC12.** follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc
- PC13.** make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions

##### *Ensure cleaning of self and the work place*

To be competent, the user/individual on the job must be able to:

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- PC14.** check whether safety glasses are clean and in good condition
- PC15.** keep all outside surfaces of recycling containers are clean
- PC16..** ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards
- PC17..** check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up
- PC18..** ensure workbenches and work surfaces are clean and in good condition
- PC19.** follow the cleaning schedule for the lighting system to ensure proper illumination
- PC20.** store the cleaning material and equipment in the correct location and in good condition
- PC21.** ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene

### *Ensure sustenance*

To be competent, the user/individual on the job must be able to:

- PC22.** follow the daily cleaning standards and schedules to create a clean working environment
- PC23.** attend all training programs for employees on 5 s
- PC24.** support the team during the audit of 5 s
- PC25.** participate actively in employee work groups on 5s and encourage team members for active participation
- PC26.** follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards, procedures and policies related to 5S followed in the company
- KU2.** have basic knowledge of 5S procedures
- KU3.** know various types 5s practices followed in various areas
- KU4.** understand the 5S checklists provided in the department/ team
- KU5.** have skills to identify useful & non useful items
- KU6.** have knowledge of labels , signs & colours used as indicators
- KU7.** knowledge on how to sort and store various types of tools, equipment, material etc.
- KU8.** know , how to identify various types of waste products
- KU9.** understand the impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body
- KU10.** have knowledge of best ways of cleaning & waste disposal
- KU11.** understand the importance of standardization in processes
- KU12.** understand the importance of sustainability in 5S
- KU13.** have knowledge of TQM process
- KU14.** have knowledge of various materials and storage norms
- KU15.** understand visual controls, symbols, graphs etc.

## Qualification Pack

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write basic level notes and observations
- GS2.** note down observations (if any) related to the process
- GS3.** read 5S instructions put up across the plant premises
- GS4.** effectively communicate information to team members inform employees in the plant and concerned functions about 5S
- GS5.** question the process head in order to understand the 5S related issues
- GS6.** attentively listen with full attention and comprehend the information given by the speaker during 5S training programs
- GS7.** use common sense and make judgments during day to day basis
- GS8.** use reasoning skills to identify and resolve basic problems using 5S
- GS9.** persuade co team members to follow 5 S
- GS10.** ensure that the co team members understand the importance of using 5 S tool
- GS11.** use innovative skills to perform and manage 5 S activities at the work desk and the shop floor
- GS12.** exhibit inquisitive behaviour to seek feedback and question on the existing set patterns of work
- GS13.** do what is right, not what is a popular practices
- GS14.** follow shop floor rules& regulations and avoid deviations; make 5S an integral way of life
- GS15.** ensure self-cleanliness on a daily basis
- GS16.** demonstrate the will to keep the work area in a clean and orderly manner

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure sorting</i>	<b>10</b>	<b>30</b>	-	-
<b>PC1..</b> follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.	1	3	-	-
<b>PC2..</b> ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions	1	3	-	-
<b>PC3..</b> follow the technique of waste disposal and waste storage in the proper bins as per sop	1	3	-	-
<b>PC4..</b> segregate the items which are labelled as red tag items for the process area and keep them in the correct places	1	3	-	-
<b>PC5.</b> sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions	1	3	-	-
<b>PC6. .</b> ensure that areas of material storage areas are not overflowing	1	3	-	-
<b>PC7.</b> properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	1	3	-	-
<b>PC8.</b> return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area	1	3	-	-
<b>PC9.</b> follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	1	3	-	-
<b>PC10.</b> follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure proper documentation and storage (organizing , streamlining)</i>	<b>3</b>	<b>9</b>	-	-
<b>PC11.</b> check that the items in the respective areas have been identified as broken or damaged	1	3	-	-
<b>PC12.</b> follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc	1	3	-	-
<b>PC13.</b> make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions	1	3	-	-
<i>Ensure cleaning of self and the work place</i>	<b>8</b>	<b>24</b>	-	-
<b>PC14.</b> check whether safety glasses are clean and in good condition	1	3	-	-
<b>PC15.</b> keep all outside surfaces of recycling containers are clean	1	3	-	-
<b>PC16..</b> ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards	1	3	-	-
<b>PC17..</b> check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up	1	3	-	-
<b>PC18..</b> ensure workbenches and work surfaces are clean and in good condition	1	3	-	-
<b>PC19.</b> follow the cleaning schedule for the lighting system to ensure proper illumination	1	3	-	-
<b>PC20.</b> store the cleaning material and equipment in the correct location and in good condition	1	3	-	-
<b>PC21.</b> ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	1	3	-	-
<i>Ensure sustenance</i>	<b>4</b>	<b>12</b>	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> follow the daily cleaning standards and schedules to create a clean working environment	1	3	-	-
<b>PC23.</b> attend all training programs for employees on 5 s	0.5	2	-	-
<b>PC24.</b> support the team during the audit of 5 s	1	3	-	-
<b>PC25.</b> participate actively in employee work groups on 5s and encourage team members for active participation	0.5	2	-	-
<b>PC26.</b> follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions	1	2	-	-
<b>NOS Total</b>	<b>25</b>	<b>75</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N0021
<b>NOS Name</b>	Maintain 5S at the work premises
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	15/03/2014
<b>Next Review Date</b>	15/03/2016
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N3209: Understanding and interpreting engineering drawings and sketches

## Description

This NOS is about analysing the work/ job requirements by interpreting the drawings and sketches provided by the supervisor, understanding measurement dimensions and applying the knowledge to determine the process which needs to be followed to create the casting as per the specifications mentioned in the work order

## Scope

The PDC Operator will be responsible for Understanding the process and equipment requirements Understanding various engineering drawings and sketches Escalations of any queries regarding the job

## Elements and Performance Criteria

### *Identify the right drawing to be used for the process*

To be competent, the user/individual on the job must be able to:

- PC1.** . check the version of the engineering drawing provided.
- PC2.** . select the latest version of the available engineering drawing so that the final measurements and design is available with the team
- PC3.** . clearly understanding the does and donts of the manufacturing process as defined in SOPs/ work instructions or defined by supervisors

### *Understand the engineering drawings, sketches and work order and identify required work steps*

To be competent, the user/individual on the job must be able to:

- PC4.**.. thoroughly understand the work order ( work output) required from the process
- PC5.** . refer all engineering drawings and sketches related to the work output to understand the measurement dimensions and shape of the required work output
- PC6.** . identify the required activities which need to be executed in order achieve the final output as per the work order
- PC7.** . ensure that the process adopted is according to the work instructions/ standard operating procedures adopted

### *Documentation and storage of the drawings/ sketches*

To be competent, the user/individual on the job must be able to:

- PC8.** . store the drawings in a proper place where they cannot be damaged by moisture, chemicals, fire and can be easily accessed by the user
- PC9.** . observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company

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- KU2.** different types of products manufactured by the company
- KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU4.** sketches and engineering drawings and how to interpret meaningful information from the drawings
- KU5.** dimensions and characteristics of the final product output
- KU6.** different types of casting and trimming processes and associated equipment
- KU7.** different types of tools and machinery to cast the metal and trim the output
- KU8.** sketches and engineering drawings
- KU9.** basic principles of geometric and drawing
- KU10.** impact of various physical parameters like temperature, etc .on the properties of final output product like strength, shape etc.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document information from the sketches and engineering drawings
- GS2.** prepare draft drawings for the final output product
- GS3.** write drawings to internal customers on the requirement of casting apparatus, hand tools etc.
- GS4.** read and interpret engineering drawing and sketches
- GS5.** read equipment manuals and process documents to understand the equipment and processes better
- GS6.** read internal information drawings send by internal customers ( other functions within the organization)
- GS7.** discuss task lists, schedules, and work-loads with co-workers
- GS8.** question internal customers/ Casting shop supervisor appropriately in order to understand the nature of the problem and make a diagnosis
- GS9.** avoid using jargon, slang or acronyms when communicating with a customer, unless it is required
- GS10.** plan and organize the work order and jobs received from the internal customers
- GS11.** plan and organize the design documents received from internal customers
- GS12.** organize all process/ equipment manuals so that sorting out information is fast
- GS13.** use common sense and make judgments during day to day basis
- GS14.** use reasoning skills to identify and resolve basic problems
- GS15.** use intuition to detect any potential problems which could arise during operations
- GS16.** follow instructions and work on areas of improvement identified
- GS17.** complete the assigned tasks with minimum supervision
- GS18.** complete the job defined by the supervisor within the timelines and quality norms
- GS19.** detect problems in day to day tasks
- GS20.** support supervisor in using specific problem solving techniques and detailing out the problems

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- GS21.** discuss possible solution with the supervisor for problem solving
- GS22.** make decisions in emergency conditions in case the supervisor is not available( as per the authority matrix defined by the organization)

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify the right drawing to be used for the process</i>	<b>10</b>	<b>23</b>	-	-
<b>PC1.</b> . check the version of the engineering drawing provided.	3	7	-	-
<b>PC2.</b> . select the latest version of the available engineering drawing so that the final measurements and design is available with the team	3	7	-	-
<b>PC3.</b> . clearly understanding the does and donts of the manufacturing process as defined in SOPs/ work instructions or defined by supervisors	4	9	-	-
<i>Understand the engineering drawings, sketches and work order and identify required work steps</i>	<b>15</b>	<b>34</b>	-	-
<b>PC4..</b> thoroughly understand the work order ( work output) required from the process	4	9	-	-
<b>PC5.</b> . refer all engineering drawings and sketches related to the work output to understand the measurement dimensions and shape of the required work output	4	9	-	-
<b>PC6.</b> . identify the required activities which need to be executed in order achieve the final output as per the work order	4	8	-	-
<b>PC7.</b> . ensure that the process adopted is according to the work instructions/ standard operating procedures adopted	3	8	-	-
<i>Documentation and storage of the drawings/ sketches</i>	<b>5</b>	<b>13</b>	-	-
<b>PC8.</b> . store the drawings in a proper place where they cannot be damaged by moisture, chemicals, fire and can be easily accessed by the user	2	6	-	-
<b>PC9.</b> . observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization	3	7	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N3209
<b>NOS Name</b>	Understanding and interpreting engineering drawings and sketches
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Casting
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/08/2013
<b>Next Review Date</b>	20/08/2015
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N3210: Understand Casting processes and equipment requirement to complete the task

## Description

This NOS is about understanding the job requirement, what processes need to be executed, what equipment will be used for the project and what is the required output considering the standards specified

## Scope

The PDC Operator will be responsible for Determining the casting requirements and equipment Escalations of any queries regarding the job

## Elements and Performance Criteria

### *Determine the casting requirements, casting equipment and parameters*

To be competent, the user/individual on the job must be able to:

- PC1.** . determine the casting and trimming methodology and process to be adopted for completing the work order
- PC2.** . determine the various casting parameters like temperature, pressure, etc. before starting the process
- PC3..** determine the equipment availability for executing the activity

### *Escalations of queries on the given job*

To be competent, the user/individual on the job must be able to:

- PC4.** . refer the queries to a competent internal specialist if they cannot be resolved by the operator on own
- PC5..** obtain help or advice from specialist if the problem is outside his/her area of competence or experience
- PC6..** confirm self -understanding to the specialist once the query is resolved so that all doubts & queries can be resolved before the actual process execution

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company
- KU2.** different types of products manufactured by the company
- KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU4.** different types of casting and trimming processes and associated equipment
- KU5.** different types of tools and machinery to cast the metal and trim the output
- KU6.** sketches and engineering drawings
- KU7.** different types of automated processes pertinent to casting
- KU8.** different types of metallurgical processes

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- KU9.** final product output and hence decide on the key steps to be followed for casting and trimming
- KU10.** impact of various physical parameters like temperature, etc. on the properties of final output product like strength, shape etc.
- KU11.** basic principles of geometric and drawing
- KU12.** hazards and safety aspects involved in welding activities and usage of relevant PPEs

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document information from the sketches and engineering drawings
- GS2.** prepare draft drawings for the final output product
- GS3.** write information documents to internal departments/ internal teams or enter the information in online ERP systems under guidance of the supervisor
- GS4.** read and interpret engineering drawing and sketches
- GS5.** read equipment manuals and process documents to understand the equipment and processes better
- GS6.** read internal information drawings send by internal customers ( other functions within the organization)
- GS7.** discuss task lists, schedules, and work-loads with co-workers
- GS8.** effectively communicate with the team members
- GS9.** question internal customers/ Casting shop supervisor appropriately in order to understand the nature of the problem and make a diagnosis
- GS10.** avoid using jargon, slang or acronyms when communicating with a customer, unless it is required
- GS11.** plan and organize the work order and jobs received from the Operator
- GS12.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS13.** support the supervisor in scheduling tasks for helper and assistant supervisor
- GS14.** use common sense and make judgments during day to day basis
- GS15.** use reasoning skills to identify and resolve basic problems
- GS16.** use intuition to detect any potential problems which could arise during operations
- GS17.** follow instructions and work on areas of improvement identified
- GS18.** complete the assigned tasks with minimum supervision
- GS19.** complete the job defined by the supervisor within timelines and quality norms
- GS20.** detect problems in day to day tasks
- GS21.** support supervisor in using specific problem solving techniques and detailing out the problems
- GS22.** discuss possible solution with the supervisor for problem solving
- GS23.** make decisions in emergency conditions in case the supervisor is not available( as per the authority matrix defined by the organization)

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Determine the casting requirements, casting equipment and parameters</i>	<b>21</b>	<b>48</b>	-	-
<b>PC1.</b> . determine the casting and trimming methodology and process to be adopted for completing the work order	7	16	-	-
<b>PC2.</b> . determine the various casting parameters like temperature, pressure, etc. before starting the process	7	16	-	-
<b>PC3..</b> determine the equipment availability for executing the activity	7	16	-	-
<i>Escalations of queries on the given job</i>	<b>9</b>	<b>22</b>	-	-
<b>PC4.</b> . refer the queries to a competent internal specialist if they cannot be resolved by the operator on own	3	7	-	-
<b>PC5..</b> obtain help or advice from specialist if the problem is outside his/her area of competence or experience	3	7	-	-
<b>PC6..</b> confirm self -understanding to the specialist once the query is resolved so that all doubts & queries can be resolved before the actual process execution	3	8	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N3210
<b>NOS Name</b>	Understand Casting processes and equipment requirement to complete the task
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Casting
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/08/2013
<b>Next Review Date</b>	20/08/2015
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N3211: Prepare the machine (apparatus) and auxiliaries for casting the metal

## Description

This NOS is about selecting the tools and apparatus for casting the metal basis the work order received, preparing the dies through cleaning, finishing, and lubricating them

## Scope

The PDC Operator will be responsible for Determining the casting and trimming process requirements Cleaning the die and the casting machine before operations Conduct the actual Casting operations as per the WI/ SOP

## Elements and Performance Criteria

### *Determine the casting and trimming process requirements, tools, equipment and parameters*

To be competent, the user/individual on the job must be able to:

- PC1.** . determine the right casting and trimming methodology and process to be adopted for completing the work order
- PC2.** . correctly determine the various casting and trimming parameters like temperature, geometric dimensions etc. before starting the casting and trimming process
- PC3.** . determine the material required and the equipment availability for executing the activity

### *Clean the dies and casting equipment & tools before executing the casting process and setup the equipment*

To be competent, the user/individual on the job must be able to:

- PC4.** . ensure cleaning of dies by spraying or brushing surfaces with parting agents to ensure smoothness and prevent sticking or seepage
- PC5.** . ensure cleaning of the other casting machine and tools, auxiliaries (spatulas, chippers etc.) before the initiation of the casting and trimming process
- PC6.** . setup the casting apparatus as per the selected casting process and the casting standards used in the automobile industry

### *Cast the molten metal as per the product specification*

To be competent, the user/individual on the job must be able to:

- PC7.** . correctly analyze the geometric specifications for the output and ensure the casting of molten metal in line with the product drawing/ sketches available
- PC8.** . in case the output is not as per the given measurements, remove extra material by using chippers, grinders etc

### *Escalations of queries for the given job*

To be competent, the user/individual on the job must be able to:

- PC9.** . immediately refer the queries to a competent internal specialist if they cannot be resolved by the operator on own
- PC10.** . obtain help or advice from specialist if the problem is outside his/her area of competence or experience

## Qualification Pack

**PC11..** confirm self- understanding to the specialist once the query is resolved so that all doubts & queries can be resolved before the actual process execution

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company
- KU2.** different types of products manufactured by the company
- KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU4.** different types of cleaning techniques, casting processes and associated equipment
- KU5.** different tools and equipment being used for trimming and casting
- KU6.** different types of cleaning agents being commonly used
- KU7.** measuring instruments like Vernier caliper, micrometer and acceptance gauges
- KU8.** sketches and engineering drawings
- KU9.** final product output and hence decide on the key steps to be followed for casting and trimming
- KU10.** basic principles of geometric dimensioning & tolerances
- KU11.** key safety aspects related to casting and foundry industry

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document information from the sketches and engineering drawings
- GS2.** prepare draft drawings for the final output product
- GS3.** write information documents to internal departments/ internal teams or enter the information in online ERP systems under guidance of the supervisor
- GS4.** read and interpret engineering drawing and sketches
- GS5.** read equipment manuals and process documents to understand the equipment and processes better
- GS6.** read internal information drawings sent by internal customers ( other functions within the organization)
- GS7.** discuss task lists, schedules, and work-loads with co-workers
- GS8.** effectively communicate with the team members
- GS9.** question internal customers/ Casting shop supervisor appropriately in order to understand the nature of the problem and make a diagnosis
- GS10.** attentively listen with full attention and comprehend the information given by the speaker
- GS11.** plan and organize the work order and jobs received from the Operator
- GS12.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS13.** visualize the final job product after understanding the given drawing/ sketches
- GS14.** analyze the final output and its alignment with the given drawing

## Qualification Pack

- GS15.** finalize the optimum levels of physical parameters so that the job output meets the prescribed job standards
- GS16.** use common sense and make judgments during day to day basis
- GS17.** use reasoning skills to identify and resolve basic problems
- GS18.** follow instructions and work on areas of improvement identified complete the assigned tasks with minimum supervision
- GS19.** complete the job defined by the supervisor within the timelines and quality norms
- GS20.** take self initiatives in driving small projects with the supervisor like operation improvement, training of helpers and assistant operators, 5S, Kaizen etc

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Determine the casting and trimming process requirements, tools, equipment and parameters</i>	<b>7</b>	<b>18</b>	-	-
<b>PC1.</b> . determine the right casting and trimming methodology and process to be adopted for completing the work order	3	6	-	-
<b>PC2.</b> . correctly determine the various casting and trimming parameters like temperature, geometric dimensions etc. before starting the casting and trimming process	2	6	-	-
<b>PC3.</b> . determine the material required and the equipment availability for executing the activity	2	6	-	-
<i>Clean the dies and casting equipment &amp; tools before executing the casting process and setup the equipment</i>	<b>6</b>	<b>25</b>	-	-
<b>PC4.</b> . ensure cleaning of dies by spraying or brushing surfaces with parting agents to ensure smoothness and prevent sticking or seepage	2	7	-	-
<b>PC5.</b> . ensure cleaning of the other casting machine and tools, auxiliaries (spatulas, chippers etc.) before the initiation of the casting and trimming process	2	7	-	-
<b>PC6.</b> . setup the casting apparatus as per the selected casting process and the casting standards used in the automobile industry	2	11	-	-
<i>Cast the molten metal as per the product specification</i>	<b>4</b>	<b>17</b>	-	-
<b>PC7.</b> . correctly analyze the geometric specifications for the output and ensure the casting of molten metal in line with the product drawing/ sketches available	2	10	-	-
<b>PC8.</b> . in case the output is not as per the given measurements, remove extra material by using chippers, grinders etc	2	7	-	-
<i>Escalations of queries for the given job</i>	<b>3</b>	<b>20</b>	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC9.</b> . immediately refer the queries to a competent internal specialist if they cannot be resolved by the operator on own	1	6	-	-
<b>PC10.</b> . obtain help or advice from specialist if the problem is outside his/her area of competence or experience	1	7	-	-
<b>PC11.</b> .. confirm self- understanding to the specialist once the query is resolved so that all doubts & queries can be resolved before the actual process execution	1	7	-	-
<b>NOS Total</b>	<b>20</b>	<b>80</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N3211
<b>NOS Name</b>	Prepare the machine (apparatus) and auxiliaries for casting the metal
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Casting
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/08/2013
<b>Next Review Date</b>	20/08/2015
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N3212: Perform the casting related operations and monitor process parameters

## Description

This NOS is about casting the molten metal into the desired shape and ensure finishing of the output in line with the required specifications and industry standards

## Scope

The PDC Operator will be responsible for Ensuring that the right quantity of metal is poured in the casting machine Checking the measuring and measurement instruments Conducting visual inspection of the final output

## Elements and Performance Criteria

### *Check the operations of the equipment used in the casting process and conduct a test proces*

To be competent, the user/individual on the job must be able to:

- PC1.** . check for operation of casting apparatus like grinding wheels, pouring nozzles, casting machines, ladles etc.
- PC2.** . make modifications in the casting parameters ( by selecting the right program from the machine control system) if required and ensure alignment with the prescribed standards

### *Pour the metal into cast*

To be competent, the user/individual on the job must be able to:

- PC3.** . deploy means for slag/ impurities removal from molten metal like skimming the top layer/ filtration for sound castings etc.
- PC4.** . ensure refractory ladles are preheated and in red hot condition, its pouring spout or lip is repaired and free from slag
- PC5.** . ensure required alloy or inoculants are added during tapping or transfer
- PC6.** . instruct assistant operator to turn valves of machines to regulate speed of the metal
- PC7.** . ensure maintenance of the temperature of molten metal in case pouring is manual
- PC8.** . ensure that the down sprue is always full during pouring
- PC9.** . ensure pouring in line with the defined standards and specifications
- PC10.** . record the pouring observations like parting leak, interrupted pouring or any abnormality
- PC11.** . allow the poured to cool as per given instructions before knock out

### *Conduct the actual casting process*

To be competent, the user/individual on the job must be able to:

- PC12.** . adjust the temperature and other parameters as per the casting requirement
- PC13.** . feed the required operation code in the casting machine for it to cast the metal into desired shape
- PC14.** . provide instructions to assistant operator to turn valves to circulate water through cores, or spray water on filled molds to cool and solidify metal (in case of manual solidification)
- PC15.** . clean and lubricate metal casts and machinery

## Qualification Pack

**PC16.** . stamp the cast with the identifying information (wherever required) and send the same for further processing

*Check measurement instruments for monitoring casting process parameter*

To be competent, the user/individual on the job must be able to:

**PC17..** monitor the casting process (parameters like temperature etc.) by observing and analyzing the readings on various panels/ meters to prevent machine breakdown and deviations of the cast from desired specifications

**PC18.** . observe and analyze any irregularity in the process and take preventive steps

**PC19.** . check the in line composition/ soundness of the casting

*Perform the visual inspection of the output to further finish the casting*

To be competent, the user/individual on the job must be able to:

**PC20.** . measure the final metal casting and compare the dimensions as prescribed in the work order engineering drawing

**PC21.** . in case the parts are not as per the given measurements, send the same for further processing in terms of chipping, fettling etc.

*Remove surface imperfections using Shot Blasting technique*

To be competent, the user/individual on the job must be able to:

**PC22..** clean the shot blasting machine using air pressure blast to remove any dust particles and any unwanted material

**PC23.** . load the components and the shots in the chamber of the shot blasting machine

**PC24.** . ensure that the door of the shot blasting machine is tightly closed

**PC25.** . switch on the shot blasting machine and ensure that all auxiliary motors are in the on position

**PC26.** . keep the machine in the moving position till the cycle time prescribed in the work instructions/ SOP manual

**PC27.** . switch off the machine and inspect the parts. turn the parts into the opposite side. ensure that all the parts in the current position are completely turned in the opposite direction

**PC28.** . keep the machine moving till the prescribed cycle time is achieved. ensure that the cycle time get completed for both the cycles.

**PC29.** . open the shot blasting machine and carefully remove the components from the machine and load them into the designated trolley

**PC30.** . ensure that the machine is again cleaned using an Air blasting machine

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** relevant standards and procedures followed in the company

**KU2.** different types of products manufactured by the company

**KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution

**KU4.** quality norms prescribed by the organization for casting jobs

**KU5.** different types of casting processes and associated equipment

## Qualification Pack

- KU6.** different parameters pertinent to casting process like casting hardness, tensile strength, elongation and microstructure requirement etc.
- KU7.** casting defects and how they are generated, how they can be prevented, knowledge of different raw materials, metals & alloys and consumables used in the melt shop
- KU8.** furnace operation, melting process, charging method and safety process of handling hot liquid iron, furnace lining process and control
- KU9.** measuring instruments like vernier callipers, micrometer and other
- KU10.** effect of operators work on casting quality at in house and at customers, how to improve customers satisfaction
- KU11.** geometry and dimensions
- KU12.** sketches and engineering drawings
- KU13.** final product output and hence decide on the key steps to be followed
- KU14.** safety precautions to be taken for all types of casting activities
- KU15.** mechanical laws and working of casting machines etc.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document information from the sketches and engineering drawings
- GS2.** write log book in terms of output quantity, set up parameters, machine setting parameters and loss details etc
- GS3.** prepare draft drawings for the final output product
- GS4.** write drawings to internal customers on the requirement of casting metal, casting apparatus etc
- GS5.** note measurements, equipment panel readings for various process parameters in the required reporting formats
- GS6.** read and interpret engineering drawing and sketches
- GS7.** read equipment manuals and process documents to understand the equipments and processes better
- GS8.** read instructions especially safety instructions especially symbols while using the equipments in the plant area
- GS9.** read internal drawings send by internal customers ( other functions within the organization)
- GS10.** discuss task lists, schedules, and work-loads with co-workers
- GS11.** question internal customers/ Casting shop supervisor appropriately in order to understand the nature of the problem and make a diagnosis
- GS12.** plan and organize the work order and jobs received from the internal customers
- GS13.** plan and organize the design documents received from internal customers
- GS14.** organize all process/ equipment manuals so that sorting out information is fast
- GS15.** organize apparatus etc in an orderly manner at proper designated areas
- GS16.** visualize the final job product after understanding the given drawing/ sketches
- GS17.** carefully measure the casting so in terms of the geometrical dimensions so that the final output is as pre the given drawing

## Qualification Pack

- GS18.** finalize the optimum levels of physical parameters so that the job output meets the prescribed job standards
- GS19.** think through the problem, evaluate the possible solution and suggest the best possible solution to the problem
- GS20.** identify immediate or temporary solutions to resolve delays

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Check the operations of the equipment used in the casting process and conduct a test process</i>	<b>2</b>	<b>4</b>	-	-
<b>PC1.</b> . check for operation of casting apparatus like grinding wheels, pouring nozzles, casting machines, ladles etc.	1	2	-	-
<b>PC2.</b> . make modifications in the casting parameters ( by selecting the right program from the machine control system) if required and ensure alignment with the prescribed standards	1	2	-	-
<i>Pour the metal into cast</i>	<b>9</b>	<b>18</b>	-	-
<b>PC3.</b> . deploy means for slag/ impurities removal from molten metal like skimming the top layer/ filtration for sound castings etc.	1	2	-	-
<b>PC4.</b> . ensure refractory ladles are preheated and in red hot condition, its pouring spout or lip is repaired and free from slag	1	2	-	-
<b>PC5.</b> .. ensure required alloy or inoculants are added during tapping or transfer	1	2	-	-
<b>PC6.</b> . instruct assistant operator to turn valves of machines to regulate speed of the metal	1	2	-	-
<b>PC7.</b> . ensure maintenance of the temperature of molten metal in case pouring is manual	1	2	-	-
<b>PC8.</b> . ensure that the down sprue is always full during pouring	1	2	-	-
<b>PC9.</b> . ensure pouring in line with the defined standards and specifications	1	2	-	-
<b>PC10.</b> . record the pouring observations like parting leak, interrupted pouring or any abnormality	1	2	-	-
<b>PC11.</b> . allow the poured to cool as per given instructions before knock out	1	2	-	-
<i>Conduct the actual casting process</i>	<b>5</b>	<b>10</b>	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> . adjust the temperature and other parameters as per the casting requirement	1	2	-	-
<b>PC13..</b> feed the required operation code in the casting machine for it to cast the metal into desired shape	1	2	-	-
<b>PC14..</b> provide instructions to assistant operator to turn valves to circulate water through cores, or spray water on filled molds to cool and solidify metal (in case of manual solidification)	1	2	-	-
<b>PC15..</b> clean and lubricate metal casts and machinery	1	2	-	-
<b>PC16.</b> . stamp the cast with the identifying information (wherever required) and send the same for further processing	1	2	-	-
<i>Check measurement instruments for monitoring casting process parameter</i>	<b>3</b>	<b>7</b>	-	-
<b>PC17..</b> monitor the casting process (parameters like temperature etc.) by observing and analyzing the readings on various panels/ meters to prevent machine breakdown and deviations of the cast from desired specifications	1	2	-	-
<b>PC18.</b> . observe and analyze any irregularity in the process and take preventive steps	1	2	-	-
<b>PC19.</b> . check the in line composition/ soundness of the casting	1	3	-	-
<i>Perform the visual inspection of the output to further finish the casting</i>	<b>2</b>	<b>6</b>	-	-
<b>PC20.</b> . measure the final metal casting and compare the dimensions as prescribed in the work order engineering drawing	1	3	-	-
<b>PC21.</b> . in case the parts are not as per the given measurements, send the same for further processing in terms of chipping, fettling etc.	1	3	-	-
<i>Remove surface imperfections using Shot Blasting technique</i>	<b>9</b>	<b>25</b>	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> . clean the shot blasting machine using air pressure blast to remove any dust particles and any unwanted material	1	3	-	-
<b>PC23.</b> . load the components and the shots in the chamber of the shot blasting machine	1	3	-	-
<b>PC24.</b> . ensure that the door of the shot blasting machine is tightly closed	1	3	-	-
<b>PC25.</b> . switch on the shot blasting machine and ensure that all auxiliary motors are in the on position	1	3	-	-
<b>PC26.</b> . keep the machine in the moving position till the cycle time prescribed in the work instructions/ SOP manual	1	3	-	-
<b>PC27.</b> . switch off the machine and inspect the parts. turn the parts into the opposite side. ensure that all the parts in the current position are completely turned in the opposite direction	1	3	-	-
<b>PC28.</b> . keep the machine moving till the prescribed cycle time is achieved. ensure that the cycle time get completed for both the cycles.	1	3	-	-
<b>PC29.</b> . open the shot blasting machine and carefully remove the components from the machine and load them into the designated trolley	1	2	-	-
<b>PC30.</b> . ensure that the machine is again cleaned using an Air blasting machine	1	2	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N3212
<b>NOS Name</b>	Perform the casting related operations and monitor process parameters
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Casting
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/08/2013
<b>Next Review Date</b>	20/08/2015
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N3213: Conduct quality checks and inspection of the finished die cast products

## Description

This NOS is about inspecting the finished goods produced for any damages, deformities and further repairing the parts produced so that the damaged/ defective pieces can be corrected and right quality components are supplied to 1. The customer/ end user 2. Internal manufacturing team

## Scope

The PDC Operator will be responsible for inspection of final products to detect quality related deviations recording the logs of defective and discarded products

## Elements and Performance Criteria

### *Inspection of finished goods to detect any deviations from the product design*

To be competent, the user/individual on the job must be able to:

- PC1.** . measure the specifications of the finished product using devices like micrometers, vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order
- PC2.** . compare texture, color, surface properties, hardness and strength with the given product specifications

### *Record log of defective products and discard defective pieces*

To be competent, the user/individual on the job must be able to:

- PC3.** . note down the observations of the basic inspection process and identify pieces which are ok and also not meeting the specified standards
- PC4.** . separate the defective pieces into two categories pieces which can be repaired/ modified and pieces which are beyond repair
- PC5.** . discard the pieces which are beyond repair and repair the ones which need minor modifications/ rework
- PC6.** . maintain records of each category of work outputs
- PC7.** . establish linkage between rejection of output and the pertinent causes for the same (process/ material etc.); recommend the means for rejection control

### *Repair the pieces with minor defects*

To be competent, the user/individual on the job must be able to:

- PC8.** . rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by fettling, chipping, cutting, sawing, filling, shearing, hammering etc.
- PC9.** . escalate all issues related to change in colour, surface properties, hardness etc. so that the manufacturing equipment can be reset to achieve the specified output

### *Perform Batch Quality Procedure*

To be competent, the user/individual on the job must be able to:

- PC10.** . provide first and last casting from each batch to the lab for quality check on its composition, soundness, hardness etc.

## Qualification Pack

**PC11..** obtain batch clearance from the lab

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards specified for the manufacturing process
- KU2.** basic process followed for inspection of the pieces
- KU3.** quality Management policy of the organization
- KU4.** processes and procedures followed for manufacturing the components/ prices/ products
- KU5.** techniques of using measurement instruments like rulers, Vernier calipers, micrometers, weighing scales etc.
- KU6.** methods to identify quality defects in work pieces
- KU7.** methods used for cutting, shearing, hammering, drilling which can repair pieces with minor defects
- KU8.** various casting standards in India (ISO)

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** note the number of pieces with defects which can be repaired to number of pieces which will be discarded
- GS2.** read process and equipment manuals to understand the working of the equipment
- GS3.** read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing
- GS4.** inform supervisor of any quality related defects arising out of the manufacturing process
- GS5.** question internal customers/ Shop supervisor appropriately in order to understand the nature of the problem and make a diagnosis
- GS6.** plan and organize the work order and jobs received from the operator
- GS7.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS8.** visualize the final job product after understanding the given drawing/ sketches
- GS9.** co relate the type of job output required with the casting methodology to be used
- GS10.** use common sense and make judgments during day to day basis
- GS11.** use reasoning skills to identify and resolve basic problems

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Inspection of finished goods to detect any deviations from the product design</i>	<b>6</b>	<b>16</b>	-	-
<b>PC1.</b> . measure the specifications of the finished product using devices like micrometers, vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order	3	8	-	-
<b>PC2.</b> . compare texture, color, surface properties, hardness and strength with the given product specifications	3	8	-	-
<i>Record log of defective products and discard defective pieces</i>	<b>10</b>	<b>32</b>	-	-
<b>PC3.</b> . note down the observations of the basic inspection process and identify pieces which are ok and also not meeting the specified standards	2	6	-	-
<b>PC4.</b> . separate the defective pieces into two categories pieces which can be repaired/ modified and pieces which are beyond repair	2	6	-	-
<b>PC5.</b> . discard the pieces which are beyond repair and repair the ones which need minor modifications/ rework	2	6	-	-
<b>PC6..</b> maintain records of each category of work outputs	2	6	-	-
<b>PC7.</b> . establish linkage between rejection of output and the pertinent causes for the same (process/ material etc.); recommend the means for rejection control	2	8	-	-
<i>Repair the pieces with minor defects</i>	<b>5</b>	<b>14</b>	-	-
<b>PC8.</b> . rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by fettling, chipping, cutting, sawing, filling, shearing, hammering etc.	3	8	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC9..</b> escalate all issues related to change in colour, surface properties, hardness etc. so that the manufacturing equipment can be reset to achieve the specified output	2	6	-	-
<i>Perform Batch Quality Procedure</i>	<b>4</b>	<b>13</b>	-	-
<b>PC10.</b> . provide first and last casting from each batch to the lab for quality check on its composition, soundness , hardness etc.	2	7	-	-
<b>PC11..</b> obtain batch clearance from the lab	2	6	-	-
<b>NOS Total</b>	<b>25</b>	<b>75</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N3213
<b>NOS Name</b>	Conduct quality checks and inspection of the finished die cast products
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Casting
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/08/2013
<b>Next Review Date</b>	20/08/2015
<b>NSQC Clearance Date</b>	

## Qualification Pack

### Assessment Guidelines and Assessment Weightage

#### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

**Recommended Pass % aggregate for QP : 70**

#### Assessment Weightage

##### Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N0006.Maintain a safe and healthy working environment	25	75	-	-	100	15
ASC/N0021.Maintain 5S at the work premises	25	75	-	-	100	10
ASC/N3209.Understanding and interpreting engineering drawings and sketches	30	70	-	-	100	15

### Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N3210.Understand Casting processes and equipment requirement to complete the task	30	70	-	-	100	15
ASC/N3211.Prepare the machine (apparatus) and auxiliaries for casting the metal	20	80	-	-	100	15
ASC/N3212.Perform the casting related operations and monitor process parameters	30	70	-	-	100	15
ASC/N3213.Conduct quality checks and inspection of the finished die cast products	25	75	-	-	100	15
<b>Total</b>	<b>185</b>	<b>515</b>	<b>-</b>	<b>-</b>	<b>700</b>	<b>100</b>