

Qualification Pack



Draughtsman

QP Code: ASC/Q8201

Version: 1.0

NSQF Level: 4

Automotive Skills Development Council || 153, Gr Floor, Okhla Industrial Area, Phase - III, Leela Building
New Delhi - 110020

Qualification Pack

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ASC/Q8201: Draughtsman

Brief Job Description

The Draughtsman has to interpret the customer /design team requirement of the product and translate the same into 3D and 2D drawings through various computer aided design techniques to create a graphical model on exact specifications for the product under design.

Personal Attributes

The individual should be detail oriented, observant; should be good in computing skills and analysis. The individual should be able to visualize the final output, should be creative in designing components and parts and be able to communicate well with the customers (internal and external). The role holder should have a good vision and should not be colour blind.

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/N8201: Understanding process and product requirement to complete the task](#)
4. [ASC/N8202: Performing the component/aggregate designing operation](#)

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Research & Development
Occupation	Product Design
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3118.0301
Minimum Educational Qualification & Experience	I.T.I (Mechanical) with 2-3 Years of experience Design of components and fixtures
Minimum Level of Education for Training in School	

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Pre-Requisite License or Training	CAD/CAM Software modules Measurement systems Problem solving skills Quality Management 5S and Safety
Minimum Job Entry Age	18 Years
Last Reviewed On	20/01/2014
Next Review Date	30/06/2020
Deactivation Date	30/06/2020
NSQC Approval Date	05/08/2015
Version	1.0

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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:

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

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify and report the risks identified</i>	8	23	-	-
PC1.. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise	3	6	-	-
PC2. Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc	2	6	-	-
PC3. Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations	2	6	-	-
PC4. 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>	17	52	-	-
PC5.. Follow the instructions given on the equipment manual describing the operating process of the equipments	3	7	-	-
PC6.. Follow the Safety, Health and Environment related practices developed by the organization	3	8	-	-
PC7. Operate the machine using the recommended Personal Protective Equipments (PPE)	3	8	-	-
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	2	8	-	-
PC9. Maintain high standards of personal hygiene at the work place	2	7	-	-
PC10. 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
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	1	6	-	-
NOS Total	25	75	-	-

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National Occupational Standards (NOS) Parameters

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

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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.

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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>	10	30	-	-
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.	1	3	-	-
PC2.. ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions	1	3	-	-
PC3.. follow the technique of waste disposal and waste storage in the proper bins as per sop	1	3	-	-
PC4.. segregate the items which are labelled as red tag items for the process area and keep them in the correct places	1	3	-	-
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	1	3	-	-
PC6. . ensure that areas of material storage areas are not overflowing	1	3	-	-
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	1	3	-	-
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	1	3	-	-
PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	1	3	-	-
PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure proper documentation and storage (organizing , streamlining)</i>	3	9	-	-
PC11. check that the items in the respective areas have been identified as broken or damaged	1	3	-	-
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	1	3	-	-
PC13. 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>	8	24	-	-
PC14. check whether safety glasses are clean and in good condition	1	3	-	-
PC15. keep all outside surfaces of recycling containers are clean	1	3	-	-
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	1	3	-	-
PC17.. check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up	1	3	-	-
PC18.. ensure workbenches and work surfaces are clean and in good condition	1	3	-	-
PC19. follow the cleaning schedule for the lighting system to ensure proper illumination	1	3	-	-
PC20. store the cleaning material and equipment in the correct location and in good condition	1	3	-	-
PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	1	3	-	-
<i>Ensure sustenance</i>	4	12	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. follow the daily cleaning standards and schedules to create a clean working environment	1	3	-	-
PC23. attend all training programs for employees on 5 s	0.5	2	-	-
PC24. support the team during the audit of 5 s	1	3	-	-
PC25. participate actively in employee work groups on 5s and encourage team members for active participation	0.5	2	-	-
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	1	2	-	-
NOS Total	25	75	-	-

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National Occupational Standards (NOS) Parameters

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

Qualification Pack

ASC/N8201: Understanding process and product requirement to complete the task

Description

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

Scope

The draughtsman will be responsible for

- understanding the process, process parameters and equipment requirements
- escalations of any queries regarding the job The job holder will various designing methods using CAD/ CAM and other software for designing the components. The role holder will interact with the product design team

Elements and Performance Criteria

Understand the designing requirements, designing equipment and parameters to be set for the process

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

- PC1..** ensure correct understanding of the requirements in terms of design and utility of the component
- PC2..** understand the methodology and process to be adopted for completing the work order through discussions with the supervisor and reading the process manuals/ work instructions/standard operating procedures
- PC3..** visualize the end product required by the customer and prepare a rough sketch of the end product
- PC4..** correctly understand the use of various software used like CATIA, Auto CAD, unigraphics etc. for creating the designs and models as specified in the work order/ customer
- PC5..** understand 5 s related to the work station/ filing of the drawings and implement 5s for workstation upkeep and upkeep of records pertaining to drawings and sketches.
- PC6..** understand internal systems of design records (Manual /PLM), change notes (ECN)

Escalations of queries on the given job

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

- PC7..** refer the queries to a competent internal specialist if they cannot be resolved by the designer on own
- PC8..** obtain help or advice from specialist if the problem is outside his/her area of competence or experience
- PC9..** confirm self-understanding with the specialist holding discussions 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:

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- KU1.** relevant standards and procedures followed in the company
- KU2.** different types of products manufactured by the company
- KU3.** policies around Quality, Safety and 5 S
- KU4.** Draughting Standards & Techniques e.g. ANSI series IS/ ISO
- KU5.** design review process for suitability for assembly / manufacturing
- KU6.** change management procedures related to drawing changes and review
- KU7.** the method of reading and interpreting drawings and sketches
- KU8.** how to visualize the final product output and conduct quality verification tests
- KU9.** different types of designing processes and associated software like CATIA, Unigraphics
- KU10.** 3D and 2D drawings and modelling techniques
- KU11.** different type of views generated in engineering drawings
- KU12.** different production and manufacturing related processes and equipment

Generic Skills (GS)

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

- GS1.** document information
- GS2.** note down observations (if any) related to the design aspect
- GS3.** read and interpret technical customer drawings
- GS4.** read software manuals and process documents to understand the software and processes better
- GS5.** read internal information documents sent by internal teams
- GS6.** discuss task lists, schedules and activities with the supervisor
- GS7.** effectively communicate with the team members
- GS8.** question the customer in order to understand the nature of the problem and to clarify queries
- GS9.** attentively listen with full attention and comprehend the information given by the speaker
- GS10.** plan and organize the work order and jobs received from the customer
- GS11.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS12.** use common sense and make judgments during day to day basis
- GS13.** use reasoning skills to identify and resolve basic problems
- GS14.** use intuition and keen observation skills to detect any potential problems which could arise during operations
- GS15.** follow instructions and work on areas of improvement identified
- GS16.** complete the assigned tasks with minimum supervision
- GS17.** complete the job defined by the supervisor within timelines and quality norms
- GS18.** detect problems in day to day tasks
- GS19.** support supervisor in using specific problem solving techniques and detailing out the problems
- GS20.** discuss possible solution with the supervisor for problem solving

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Understand the designing requirements, designing equipment and parameters to be set for the process</i>	21	49	-	-
PC1.. ensure correct understanding of the requirements in terms of design and utility of the component	4	8	-	-
PC2.. understand the methodology and process to be adopted for completing the work order through discussions with the supervisor and reading the process manuals/ work instructions/standard operating procedures	4	9	-	-
PC3.. visualize the end product required by the customer and prepare a rough sketch of the end product	3	8	-	-
PC4.. correctly understand the use of various software used like CATIA, Auto CAD, unigraphics etc. for creating the designs and models as specified in the work order/ customer	4	8	-	-
PC5.. understand 5 s related to the work station/ filing of the drawings and implement 5s for workstation upkeep and upkeep of records pertaining to drawings and sketches.	3	8	-	-
PC6.. understand internal systems of design records (Manual /PLM), change notes (ECN)	3	8	-	-
<i>Escalations of queries on the given job</i>	9	21	-	-
PC7.. refer the queries to a competent internal specialist if they cannot be resolved by the designer on own	3	7	-	-
PC8.. obtain help or advice from specialist if the problem is outside his/her area of competence or experience	3	7	-	-
PC9.. confirm self-understanding with the specialist holding discussions so that all doubts & queries can be resolved before the actual process execution	3	7	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	ASC/N8201
NOS Name	Understanding process and product requirement to complete the task
Sector	Automotive
Sub-Sector	Manufacturing and R&D
Occupation	Product Design
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	20/01/2014
Next Review Date	20/01/2016
NSQC Clearance Date	

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ASC/N8202: Performing the component/aggregate designing operation

Description

This NOS is about understanding the internal product design requirements and designing components using the right kinds of computer graphic techniques

Scope

The draughtsman will be responsible for

- understanding the design team requirements
- designing components using various software based techniques
- inspect and store graphs, charts and drawing files The job holder will various designing methods using CAD/ CAM and other soft wares for designing components. The role holder will interact with the product design team within R&D

Elements and Performance Criteria

Understanding the customer requirement

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

- PC1..** coordinate with the internal design team for understanding the component requirements including need and utility of the component
- PC2..** ensure that the information received from the internal customer is correct and complete
- PC3..** ensure that the understanding of the requirement is correct

Design the component as per customer/ National /International/Organizational specifications

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

- PC4..** understand packaging & other requirements to decide on dimensions, measurements and tolerances of the aggregate/component from system down to child component level .
- PC5..** create a physical drawing of the product visualizing the final product and then creating a design/ drawing
- PC6..** understand the type of material which will be used for making the component
- PC7..** use the geometric and trigonometric rules/ formula provided by the supervisor to develop & design specifications for the component
- PC8..** work on CAD techniques to generate 3D product model from the incoming drawing or associated information of the customer
- PC9..** create layouts and drawing with various views to generate relationship between components and assemblies
- PC10..** ensure that the layout and the view created areas per requirement to create a first level of visual representation of the component
- PC11..** use various drawing/ drafting aids like colours, symbols etc. to highlight areas in the drawings
- PC12..** test the 3d model through simulation/ packaging study on feasibility of actual product as per the customer requirement

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- PC13..** generate the 2D drawing for the actual manufacturing of the component and share the same with the product design team for their comments
- PC14..** ensure necessary instructions and comments are added in the drawing sheets as well as 2D/ 3D models to easy the understanding of the drawing
- PC15..** ensure that the drawings are completed as per the scale required for the design process, verification through chain of dimensions/ tolerance stack up
- PC16..** co- ordinate with other departments related to the component design work stream for design review and check the correctness and validity of the drawing for productionizing.

Inspection and storage

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

- PC17..** conduct quality inspection of the drawings and sketches for various tolerances levels
- PC18..** ensure that the feedback shared by the product design team on the 2D drawings is incorporated in the final drawing/ design and the drawings are modified
- PC19..** ensure that the drawings are tagged with the right numbers & codes as per the internal SOPs
- PC20..** ensure that the drawings (hard copies & soft copies) are stored in the right places which can be easily accessed by the team. follow manual /PLM systems .

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.** Quality and Safety policy of the organization
- KU4.** different types of designing processes and associated software for component design CATIA, IDEAS, Unigraphics etc.
- KU5.** computer programming and drafting skills
- KU6.** the method of reading and interpreting the various drawings
- KU7.** 3D modelling, simulation, 2D drawings , Limits & Fits ,GD & T etc.
- KU8.** algebra and trigonometric rules and applications
- KU9.** how to visualize the final product output and conduct quality verification tests
- KU10.** the raw material to be used for the component designing process raw material quantity, quality and basic raw material properties
- KU11.** Internal customer interaction and internal customer need analysis/ customer requirement analysis
- KU12.** how to interpret Tolerance Analysis sheet supplied by the design team
- KU13.** understand various dimensional mismatches which may happen on the actual product assembly

Generic Skills (GS)

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

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- GS1.** document information required for creating the designs
- GS2.** create drawings in 2D and 3D framework as per the Tolerance Analysis Sheet and the Customer Need Analysis
- GS3.** create drawing records for storage as defined in the SOPs
- GS4.** read and interpret technical customer drawings
- GS5.** read symbols and dimensions used in the drawings
- GS6.** read software manuals and process documents to understand the software and processes
- GS7.** read internal information documents sent by internal teams
- GS8.** discuss task lists, schedules and activities with the supervisor
- GS9.** effectively communicate with the team members
- GS10.** question the customer in order to understand the product requirement, nature of the problem and to clarify queries
- GS11.** attentively listen with full attention and comprehend the information given by the speaker
- GS12.** plan and organize the work order received from the internal customers
- GS13.** plan and organize the design/ process/quality documents received from internal customers
- GS14.** organize all drawings and manuals so that sorting out information is fast
- GS15.** carefully analyse the 3d simulation and 2D drawing for various customer specifications
- GS16.** carefully do the design analysis with relevant actions as listed in SOP/WI
- GS17.** visualize the final customer requirement including type of product, dimensions, shape, product usage, type of material to be used
- GS18.** offer different design solutions to the customer in order to arrive at the final product design
- GS19.** follow instructions and work on areas of improvement identified
- GS20.** complete the assigned tasks with minimum supervision
- GS21.** complete the job defined by the supervisor within timelines and quality norms
- GS22.** detect problems in day to day tasks
- GS23.** support supervisor in using specific problem solving techniques and detailing out the problems
- GS24.** discuss possible solution with the supervisor for problem solving
- GS25.** 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>Understanding the customer requirement</i>	4	7	-	-
PC1.. coordinate with the internal design team for understanding the component requirements including need and utility of the component	2	3	-	-
PC2.. ensure that the information received from the internal customer is correct and complete	1	2	-	-
PC3.. ensure that the understanding of the requirement is correct	1	2	-	-
<i>Design the component as per customer/ National /International/Organizational specifications</i>	22	52	-	-
PC4.. understand packaging & other requirements to decide on dimensions, measurements and tolerances of the aggregate/component from system down to child component level .	2	3	-	-
PC5.. create a physical drawing of the product visualizing the final product and then creating a design/ drawing	2	5	-	-
PC6.. understand the type of material which will be used for making the component	2	3	-	-
PC7.. use the geometric and trigonometric rules/ formula provided by the supervisor to develop & design specifications for the component	2	6	-	-
PC8.. work on CAD techniques to generate 3D product model from the incoming drawing or associated information of the customer	2	6	-	-
PC9.. create layouts and drawing with various views to generate relationship between components and assemblies	2	6	-	-
PC10.. ensure that the layout and the view created areas per requirement to create a first level of visual representation of the component	1	4	-	-
PC11.. use various drawing/ drafting aids like colours, symbols etc. to highlight areas in the drawings	2	4	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12.. test the 3d model through simulation/ packaging study on feasibility of actual product as per the customer requirement	2	4	-	-
PC13.. generate the 2D drawing for the actual manufacturing of the component and share the same with the product design team for their comments	2	3	-	-
PC14.. ensure necessary instructions and comments are added in the drawing sheets as well as 2D/ 3D models to easy the understanding of the drawing	1	3	-	-
PC15.. ensure that the drawings are completed as per the scale required for the design process, verification through chain of dimensions/ tolerance stack up	1	3	-	-
PC16.. co- ordinate with other departments related to the component design work stream for design review and check the correctness and validity of the drawing for productionizing.	1	2	-	-
<i>Inspection and storage</i>	4	11	-	-
PC17.. conduct quality inspection of the drawings and sketches for various tolerances levels	1	4	-	-
PC18.. ensure that the feedback shared by the product design team on the 2D drawings is incorporated in the final drawing/ design and the drawings are modified	1	3	-	-
PC19.. ensure that the drawings are tagged with the right numbers & codes as per the internal SOPs	1	2	-	-
PC20.. ensure that the drawings (hard copies & soft copies) are stored in the right places which can be easily accessed by the team. follow manual /PLM systems .	1	2	-	-
NOS Total	30	70	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N8202
NOS Name	Performing the component/aggregate designing operation
Sector	Automotive
Sub-Sector	Manufacturing and R&D
Occupation	Product Design
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	20/01/2014
Next Review Date	20/01/2016
NSQC Clearance Date	

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 % : 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	15
ASC/N8201.Understanding process and product requirement to complete the task	30	70	-	-	100	30

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N8202.Performing the component/aggregate designing operation	30	70	-	-	100	40
Total	110	290	-	-	400	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Qualification Pack

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.