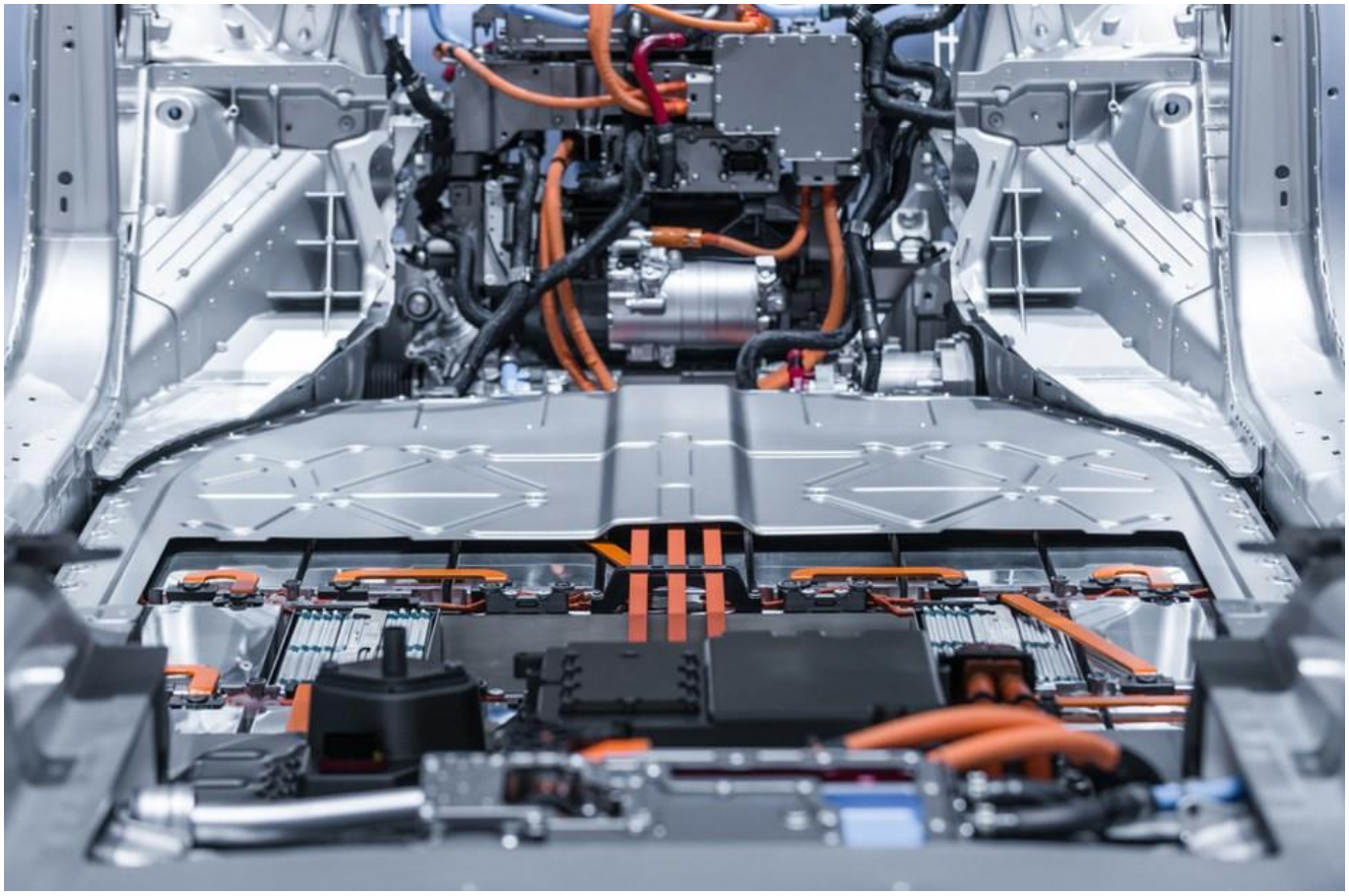

Automotive Assembly Master Technician

QP Code: ASC/Q3603

Version: 2.0

NSQF Level: 6

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

Contents

ASC/Q3603: Automotive Assembly Master Technician

Brief Job Description

The individual is primarily involved in assembly of critical components of vehicles and quality check operations performed in automotive manufacturing.

Personal Attributes

The individual must be patient, organized, team-oriented, be able to meet the deadlines for test results and having the ability to work for long hours in adverse conditions. The individual must also be able to communicate effectively.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N9810: Manage work and resources (Manufacturing)
2. ASC/N9812: Interact effectively with team, customers and others
3. ASC/N9805: Interpret engineering drawing
4. ASC/N3620: Manage shop floor Assembly operations and team
5. ASC/N3616: Plan and perform assembly of critical auto parts and aggregates

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Assembly Operation
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7223.0401

Minimum Educational Qualification & Experience	10th Class + I.T.I (Fitter) with 5 Years of experience OR Certificate-NSQF (Automotive Assembly Lead Technician Level 5) with 2 Years of Experience OR Diploma (Mechanical/Automobile) from a recognized body with relevant 3 Years of experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	29/07/2021
Next Review Date	29/07/2026
NSQC Approval Date	29/07/2021
Version	2.0

ASC/N9810: Manage work and resources (Manufacturing)

Description

This NOS unit is about implementing safety, planning work, adopting sustainable practices for optimising the use of resources.

Scope

The scope covers the following :

- Maintain safe and secure working environment
- Maintain Health and Hygiene
- Effective waste management practices
- Material/energy conservation practices

Elements and Performance Criteria

Maintain safe and secure working environment

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

PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace

PC2. implement safe working practices for dealing with hazards to ensure safety of self and others

PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards

PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions

PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices

PC6. fill daily check sheet to report improvements done and risks identified

PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others

PC8. report any identified breaches in health, safety and security policies and procedures to the designated person

Maintain Health and Hygiene

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

PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly

PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor

PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace

PC12. report advanced hygiene and sanitation issues to appropriate authority

PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc

PC14. wear and dispose PPEs regularly and appropriately

Effective waste management practices

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

PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP

PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste

Material/energy conservation practices

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

PC17. ensure malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively

PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water

PC19. identify possibilities of using renewable energy and environment friendly fuels

PC20. identify processes where material and energy/electricity utilization can be optimized

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation procedures for health, safety and security, individual role and responsibilities in this context

KU2. the organisation's emergency procedures for different emergency situations and the importance of following the same

KU3. evacuation procedures for workers and visitors

KU4. how and when to report hazards as well as the limits of responsibility for dealing with hazards

KU5. potential hazards, risks and threats based on the nature of work

KU6. various types of fire extinguisher

KU7. various types of safety signs and their meaning

KU8. appropriate first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.

KU9. relevant standards, procedures and policies related to 5S followed in the company

KU10. the various materials used and their storage norms

KU11. importance of efficient utilisation of material and water

KU12. basics of electricity and prevalent energy efficient devices

KU13. common practices of conserving electricity

KU14. common sources and ways to minimize pollution

KU15. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics

KU16. waste management techniques

KU17. significance of greening

Generic Skills (GS)

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

GS1. read safety instructions/guidelines
GS2. modify work practices to improve them
GS3. work with supervisors/team members to carry out work related tasks
GS4. complete tasks efficiently and accurately within stipulated time
GS5. inform/report to concerned person in case of any problem
GS6. make timely decisions for efficient utilization of resources
GS7. write reports such as accident report, in at least English/regional language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain safe and secure working environment	20	13	-	8
PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	4	2	-	2
PC2. implement safe working practices for dealing with hazards to ensure safety of self and others	3	1	-	2
PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards	2	2	-	1
PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions	3	2	-	1
PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices	2	-	-	-
PC6. fill daily check sheet to report improvements done and risks identified	2	2	-	-
PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others	2	2	-	1
PC8. report any identified breaches in health, safety and security policies and procedures to the designated person	2	2	-	1
Maintain Health and Hygiene	13	7	-	5
PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly	3	2	-	1
PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor	2	1	-	-
PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace	2	2	-	1
PC12. report advanced hygiene and sanitation issues to appropriate authority	1	1	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc	2	1	-	1
PC14. wear and dispose PPEs regularly and appropriately	3	-	-	1
Effective waste management practices	6	4	-	1
PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP	3	2	-	-
PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste	3	2	-	1
Material/energy conservation practices	11	6	-	6
PC17. ensure malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively	2	2	-	1
PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water	3	2	-	1
PC19. identify possibilities of using renewable energy and environment friendly fuels	3	1	-	2
PC20. identify processes where material and energy/electricity utilization can be optimized	3	1	-	2
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9810
NOS Name	Manage work and resources (Manufacturing)
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N9812: Interact effectively with team, customers and others

Description

This unit is about communicating with team members, superior and others.

Scope

The scope covers the following :

- Communicate effectively with team members
- Interact with superiors
- Respect gender and ability differences

Elements and Performance Criteria

Communicate effectively with team members

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

PC1. implement ways to share information with team members in line with organisational requirements

PC2. ensure that work requirements are clearly communicated to the team members through all means including face-to-face, telephonic and written

PC3. manage and co-ordinate with team members to integrate work as per requirements

PC4. work in a way that show respect for all team members and customers

PC5. carry out commitments made to team members and let them know in good time if there is any discrepancy with reasons

PC6. resolve conflicts within the team members at work to achieve smooth workflow

PC7. guide the team members to follow the organisation's policies and procedures

PC8. ensure team goals are given preference over individual goals

PC9. respect personal space of colleagues and customers

Interact with superiors

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

PC10. report progress on job allocated and team performance to the superiors

PC11. escalate problems to superiors that cannot be handled

PC12. train the team members to report completed work and receive feedback on work done

PC13. encourage team members to rectify errors as per feedback and minimize mistakes in future

Respect gender and ability differences

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

PC14. ensure team shows sensitivity towards all genders and PwD

PC15. adjust communication styles to reflect gender sensitivity and sensitivity towards person with disability

PC16. help PwD team members to overcome the challenges, if asked

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance of effective communication and establishing good working relationships with team members and superiors
KU2. different methods of communication as per the circumstances
KU3. gender based concepts, issues and legislation
KU4. organisation standards and guidelines to be followed for PwD
KU5. rights and duties at workplace with respect to PwD
KU6. organisation policies and procedures pertaining to written and verbal communication

Generic Skills (GS)

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

GS1. read safety instructions/guidelines
GS2. modify work practices to improve them
GS3. work with supervisors/team members to carry out work related tasks
GS4. complete tasks efficiently and accurately within stipulated time
GS5. make timely decisions for efficient utilization of resources
GS6. read instructions/guidelines/procedures
GS7. write in English/any one language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively with team members	20	14	-	8
PC1. implement ways to share information with team members in line with organisational requirements	2	2	-	-
PC2. ensure that work requirements are clearly communicated to the team members through all means including face-to-face, telephonic and written	2	2	-	2
PC3. manage and co-ordinate with team members to integrate work as per requirements	2	1	-	2
PC4. work in a way that show respect for all team members and customers	3	1	-	2
PC5. carry out commitments made to team members and let them know in good time if there is any discrepancy with reasons	2	2	-	-
PC6. resolve conflicts within the team members at work to achieve smooth workflow	3	2	-	-
PC7. guide the team members to follow the organisation's policies and procedures	2	1	-	-
PC8. ensure team goals are given preference over individual goals	2	1	-	-
PC9. respect personal space of colleagues and customers	2	2	-	2
Interact with superiors	18	10	-	7
PC10. report progress on job allocated and team performance to the superiors	4	3	-	2
PC11. escalate problems to superiors that cannot be handled	4	2	-	1
PC12. train the team members to report completed work and receive feedback on work done	5	2	-	2
PC13. encourage team members to rectify errors as per feedback and minimize mistakes in future	5	3	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Respect gender and ability differences	12	6	-	5
PC14. ensure team shows sensitivity towards all genders and PwD	4	2	-	2
PC15. adjust communication styles to reflect gender sensitivity and sensitivity towards person with disability	4	2	-	2
PC16. help PwD team members to overcome the challenges, if asked	4	2	-	1
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9812
NOS Name	Interact effectively with team, customers and others
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N9805: Interpret engineering drawing

Description

This NOS unit is about reading and interpreting all concepts, symbols, methods, views, etc. of engineering drawing.

Scope

The scope covers the following :

- Interpret information from various views, projection, 2D and 3D shapes
- Identify drawing standards and symbols
- Modification and storage of drawing

Elements and Performance Criteria

Interpret information from various views, projection, 2D and 3D shapes

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

PC1. interpret engineering drawing's uniqueness, dimensions and important features in 2D and 3D shapes

PC2. identify the difference between 2D and 3D shapes

PC3. explain difference between first angle projection and third angle projection in mechanical engineering drawing

PC4. interpret all the 3 axes (x, y and z axis) and geometrical shapes (cones, cylinder, sphere, cuboid, etc) on to a 2D and 3D projection

PC5. identify details of the machine component which are not clearly visible by interpreting section views

Identify drawing standards and symbols

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

PC6. interpret Geometric Dimensioning and Tolerencing (GD&T) symbols in the drawings

PC7. interpret symbols of Radius, controlled radius, spherical radius, diameter, spherical diameter, square, counterbore, spotface, depth, countersink, “by”, maximum dimension, minimum dimension, reference, dimension origin etc

PC8. identify the sequence of operations which enables the selection and prioritization of the datums

PC9. read and interpret information from Tolerance Zone boundaries for part features in terms of shape and size

Modification and storage of drawing

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

PC10. observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization

PC11. store the drawings in an easily accessible place, avoiding damage from moisture, chemicals and fire

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant organisational standards such as work standard, Standard Operating Procedure, quality process, maintenance standards etc. followed in the company
KU2. importance of cycle-time and required output as per work order and work instructions
KU3. drawing standards used by the company
KU4. use of drawing tools such as scales, compass, types of pencils, CAD and CAM software etc.
KU5. the basics of engineering drawing, orthographic projection, isometric projection, GD&T etc.
KU6. importance of various projections, views, symbols and dimensions of drawing
KU7. use of geometric shapes like lines, angles, circles, etc for interpreting the drawing

Generic Skills (GS)

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

GS1. read and interpret workplace related drawing
GS2. communicate the changes and requirements to supervisor by using relevant drawing terms and nomenclature
GS3. attentively listen and comprehend the information given by the supervisor/team members
GS4. write in English/regional language
GS5. recognise problem in drawing and take suitable action
GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Interpret information from various views, projection, 2D and 3D shapes	21	11	-	10
PC1. interpret engineering drawing's uniqueness, dimensions and important features in 2D and 3D shapes	5	3	-	2
PC2. identify the difference between 2D and 3D shapes	4	2	-	2
PC3. explain difference between first angle projection and third angle projection in mechanical engineering drawing	4	-	-	2
PC4. interpret all the 3 axes (x, y and z axis) and geometrical shapes (cones, cylinder, sphere, cuboid, etc) on to a 2D and 3D projection	5	3	-	2
PC5. identify details of the machine component which are not clearly visible by interpreting section views	3	3	-	2
Identify drawing standards and symbols	23	15	-	8
PC6. interpret Geometric Dimensioning and Tolerencing (GD&T) symbols in the drawings	6	4	-	2
PC7. interpret symbols of Radius, controlled radius, spherical radius, diameter, spherical diameter, square, counterbore, spotface, depth, countersink, “by”, maximum dimension, minimum dimension, reference, dimension origin etc	6	4	-	2
PC8. identify the sequence of operations which enables the selection and prioritization of the datums	5	3	-	2
PC9. read and interpret information from Tolerance Zone boundaries for part features in terms of shape and size	6	4	-	2
Modification and storage of drawing	6	4	-	2
PC10. observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization	3	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. store the drawings in an easily accessible place, avoiding damage from moisture, chemicals and fire	3	2	-	1
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9805
NOS Name	Interpret engineering drawing
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N3620: Manage shop floor Assembly operations and team

Description

This NOS is about managing manpower and availability of material on shop floor for a shift/line. It is also about supervising production operations and implementing process and team improvement practices for achieving the targets.

Scope

The scope covers the following :

- Manage manpower and material for the shift/line
- Supervise Production Operations
- Implement process improvement techniques
- Implement team improvement practices

Elements and Performance Criteria

Manage manpower and material for the shift/line

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

PC1. allocate requisite manpower based on skill matrix to achieve production targets

PC2. support Shift In Charge/Process head/Shop head in finalizing the shift rosters for the week and month based on the production plan

PC3. maintain the information on leaves/in-out time and shift/line overtime of the team and share the information with the concerned authorities as per the organisational procedures

PC4. send inventory requirements to stores and purchase department and follow up with them to ensure the timely receipt of materials (Spares, Consumables, etc.)

PC5. maintain the movement of material and work pieces on the shop floor according to the TAKT time prescribed in the SOP/Work Plans

PC6. ensure that the operators and helpers have the required tools and equipment at the start of production process

PC7. ensure optimal resource utilization (man, machine and material) and streamlining of activities within the shift

Supervise Production Operations

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

PC8. co-ordinate with other departments like stores, paint shop, assembly line, quality, safety, production planning etc. regarding resolution of inter-related problems and achieving required production target and quality standards

PC9. implement corrective actions to reduce losses and wastages during shift operation and minimum rejection of components

PC10. prepare daily and monthly production MIS reports to analyse the actual performance with the production target and report the same to production incharge

PC11. verify the production and material movement related data entries in the system (manual/ERP) for the line/shift and ensure correctness of the data

PC12. support the maintenance team in finalizing and executing the preventive maintenance schedule for the shop/line

PC13. support the incharge/Engineer/Shop Head in analysing the various data sheets and reports related to production, maintenance, manpower deployment etc.

Implement process improvement techniques

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

PC14. analyse possible areas of improvements in production line and identify corrective measures to address the gaps

PC15. carry out audit of production process for capability of each operation and prepare reports on the non-compliances for the regulatory authorities by following organizational procedures

PC16. implement various process improvement techniques like Kaizen, 5S, Poka Yoke, TQM etc. on the production line to rectify the failure and gaps in the production process

PC17. analyse machine breakdown trends and current maintenance process to identify areas of improvement and corrective actions for improving the same

PC18. monitor and review the effectiveness of process improvement techniques and corrective actions on production and prepare reports for the regulatory authorities on the same

Implement team improvement practices

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

PC19. encourage team members/operators to suggest quality improvement measures through suggestion schemes, evaluate feasibility of the ideas and discuss their implementation with seniors

PC20. conduct daily floor meeting/morning meetings/staff meetings to communicate the information such as production targets, new guidelines, new processes etc. to team

PC21. organise training sessions for the operators and technicians to improve their skills and knowledge on new techniques and methods

PC22. resolve grievances within the team or escalate them to the concerned authorities if they are beyond the scope

PC23. counsel employees for any work related issues or any personal problems highlighted by the employee

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant manufacturing, quality and maintenance standards and procedures followed in the organisation

KU2. functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution

KU3. requirement of raw materials, tools and equipment on the shift/line

KU4. how to prepare shift roster and maintain performance information of the team

KU5. use of ERP system for maintaining and updating production line data

KU6. documents and reports related to production process

KU7. various process improvement techniques like Kaizen, 5S, Poka Yoke, TQM etc

KU8. how to audit gaps and issues in production process and their analysis

KU9. various employee engagement and development practices

KU10. how to handle and solve employee grievances

Generic Skills (GS)

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

GS1. read and interpret work instructions, reports and process documents
GS2. communicate the production requirements and issues to the seniors and other departments
GS3. attentively listen and comprehend the information given by the master technician/team members
GS4. write reports related to production process in English/regional language
GS5. recognise a workplace problem and take suitable action
GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently
GS7. plan and organise work according to the work requirements
GS8. report to the supervisor or deal with a colleague individually, depending on the type of concern
GS9. complete the assigned tasks with minimum supervision
GS10. explore new approach of doing things to resolve issues
GS11. suggest improvements (if any) in current ways of working

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Manage manpower and material for the shift/line	9	17	-	6
PC1. allocate requisite manpower based on skill matrix to achieve production targets	2	3	-	1
PC2. support Shift In Charge/Process head/Shop head in finalizing the shift rosters for the week and month based on the production plan	1	3	-	1
PC3. maintain the information on leaves/in-out time and shift/line overtime of the team and share the information with the concerned authorities as per the organisational procedures	2	3	-	1
PC4. send inventory requirements to stores and purchase department and follow up with them to ensure the timely receipt of materials (Spares, Consumables, etc.)	1	2	-	1
PC5. maintain the movement of material and work pieces on the shop floor according to the TAKT time prescribed in the SOP/Work Plans	1	2	-	1
PC6. ensure that the operators and helpers have the required tools and equipment at the start of production process	1	2	-	-
PC7. ensure optimal resource utilization (man, machine and material) and streamlining of activities within the shift	1	2	-	1
Supervise Production Operations	8	11	-	5
PC8. co-ordinate with other departments like stores, paint shop, assembly line, quality, safety, production planning etc. regarding resolution of inter-related problems and achieving required production target and quality standards	1	1	-	1
PC9. implement corrective actions to reduce losses and wastages during shift operation and minimum rejection of components	2	3	-	1
PC10. prepare daily and monthly production MIS reports to analyse the actual performance with the production target and report the same to production incharge	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. verify the production and material movement related data entries in the system (manual/ERP) for the line/shift and ensure correctness of the data	1	2	-	1
PC12. support the maintenance team in finalizing and executing the preventive maintenance schedule for the shop/line	1	1	-	-
PC13. support the incharge/Engineer/Shop Head in analysing the various data sheets and reports related to production, maintenance, manpower deployment etc.	2	1	-	1
Implement process improvement techniques	**8**	**12**	**-**	**7**
PC14. analyse possible areas of improvements in production line and identify corrective measures to address the gaps	2	1	-	1
PC15. carry out audit of production process for capability of each operation and prepare reports on the non-compliances for the regulatory authorities by following organizational procedures	1	2	-	1
PC16. implement various process improvement techniques like Kaizen, 5S, Poka Yoke, TQM etc. on the production line to rectify the failure and gaps in the production process	2	5	-	2
PC17. analyse machine breakdown trends and current maintenance process to identify areas of improvement and corrective actions for improving the same	2	2	-	1
PC18. monitor and review the effectiveness of process improvement techniques and corrective actions on production and prepare reports for the regulatory authorities on the same	1	2	-	2
Implement team improvement practices	**5**	**10**	**-**	**2**
PC19. encourage team members/operators to suggest quality improvement measures through suggestion schemes, evaluate feasibility of the ideas and discuss their implementation with seniors	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC20. conduct daily floor meeting/morning meetings/staff meetings to communicate the information such as production targets, new guidelines, new processes etc. to team	1	2	-	1
PC21. organise training sessions for the operators and technicians to improve their skills and knowledge on new techniques and methods	1	2	-	-
PC22. resolve grievances within the team or escalate them to the concerned authorities if they are beyond the scope	1	2	-	1
PC23. counsel employees for any work related issues or any personal problems highlighted by the employee	1	2	-	-
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3620
NOS Name	Manage shop floor Assembly operations and team
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Assembly Operation
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N3616: Plan and perform assembly of critical auto parts and aggregates

Description

This NOS is about performing end to end assembling operations to ensure that the final products manufactured is as per the quality, cost and production norms set by the organization.

Scope

The scope covers the following :

- Plan for assembling activities
- Perform assembly activities
- Perform post-assembly activities

Elements and Performance Criteria

Plan for assembling activities

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

PC1. give instructions to the assembly lead technician about the production target and planning

PC2. support assembly lead technician in preparing the production plan and schedule to meet the production target

PC3. identify the work to be done by interpreting the assembly drawing/blue print, assembly Work Instructions/SOPs and job orders

PC4. select the correct assembly method for conducting the process

PC5. identify and select the tools, measuring instruments, equipment, auto components/parts and subassemblies required for the job

PC6. create CLRI (Clean, Lubricate, Retighten & Inspection) check sheet and ensure its implementation

PC7. check that assembly apparatus is set properly as per the selected assembly method

PC8. set the assembly parameters as per the job requirements and work instructions

Perform assembly activities

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

PC9. create the program for conducting the job in case of robotic assembly method

PC10. run the idle cycle of program to test and validate its effectiveness and accuracy and if necessary, modify it as per the requirements and SOPs/Work Instructions

PC11. perform assembly operation and assemble all the required parts using mechanical, pneumatic, hydraulic and electrical controlled assembly tools

PC12. use the specified types of screws, nuts, clamps, rivets for fitting the required components and also validate that the assembly of components is as per the process laid out in the process manual/ Work Instructions

PC13. perform settings and adjustments of all the safety and high precision items such as backlash adjustment, shaft run-out adjustment, brake and clutch assembly, bearing assembly, nozzles, valve and cappex adjustment, steering rod adjustment, piston assembly, crankshaft assembly, differential assembly, etc. as per SOP

PC14. maintain adherence to takt time for every assembly station and ensure no stoppage of assembly line

Perform post-assembly activities

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

PC15. check the assembled components for any defect and product quality

PC16. conduct all the tests mentioned for electrical and mechanical assembly as per the checklist and take corrective action to avoid the recurrence of defects

PC17. record test observations and errors in the log books as per the organisational guidelines

PC18. create SOP/WI for a new component which indicates the type, cycle time, sequencing, parameters, PPEs, inspection equipment and the fixture requirement

PC19. prepare and maintain records related to assembly processes conducted as per the organisational guidelines

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant manufacturing and quality standards and procedures followed in the company

KU2. functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution

KU3. various components and systems of a vehicle

KU4. various assembly operations and methods

KU5. the process flow of the assembly operations

KU6. SOP recommended by the manufacturer for using hand tools, measuring instruments and equipment required during the assembly process

KU7. impact of various assembly process like bolting, torquing, tightening, fitting, greasing, hammering, sealing, clamping on the final component/vehicle

KU8. how to write program for robotic assembly method

KU9. connection of all the electrical terminals as per wiring diagram

KU10. various types of defects and their effect on final assembly

KU11. the various inspection methods for inspecting the final assembly

KU12. safety requirements during the assembling work

Generic Skills (GS)

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

GS1. read and interpret work instructions, assembly drawings, reports and process documents

GS2. communicate the assembling requirements to the seniors and other departments

GS3. communicate issues to the production incharge that occur during assembling process

GS4. attentively listen and comprehend the information given by the production incharge/team members

GS5. write reports related to production process in English/regional language

GS6. recognise a workplace problem and take suitable action

GS7. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS8. plan and organise work according to the work requirements

GS9. complete the assigned tasks with in targeted time

GS10. suggest improvements (if any) in current ways of working

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan for assembling activities	18	10	-	7
PC1. give instructions to the assembly lead technician about the production target and planning	1	1	-	-
PC2. support assembly lead technician in preparing the production plan and schedule to meet the production target	1	1	-	1
PC3. identify the work to be done by interpreting the assembly drawing/blue print, assembly Work Instructions/SOPs and job orders	1	1	-	1
PC4. select the correct assembly method for conducting the process	5	2	-	1
PC5. identify and select the tools, measuring instruments, equipment, auto components/parts and subassemblies required for the job	5	2	-	2
PC6. create CLRI (Clean, Lubricate, Retighten & Inspection) check sheet and ensure its implementation	1	1	-	1
PC7. check that assembly apparatus is set properly as per the selected assembly method	2	1	-	-
PC8. set the assembly parameters as per the job requirements and work instructions	2	1	-	1
Perform assembly activities	14	17	-	9
PC9. create the program for conducting the job in case of robotic assembly method	2	3	-	1
PC10. run the idle cycle of program to test and validate its effectiveness and accuracy and if necessary, modify it as per the requirements and SOPs/Work Instructions	1	1	-	1
PC11. perform assembly operation and assemble all the required parts using mechanical, pneumatic, hydraulic and electrical controlled assembly tools	4	5	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. use the specified types of screws, nuts, clamps, rivets for fitting the required components and also validate that the assembly of components is as per the process laid out in the process manual/ Work Instructions	3	3	-	2
PC13. perform settings and adjustments of all the safety and high precision items such as backlash adjustment, shaft run-out adjustment, brake and clutch assembly, bearing assembly, nozzles, valve and cappex adjustment, steering rod adjustment, piston assembly, crankshaft assembly, differential assembly, etc. as per SOP	3	5	-	2
PC14. maintain adherence to takt time for every assembly station and ensure no stoppage of assembly line	1	-	-	1
Perform post-assembly activities	8	13	-	4
PC15. check the assembled components for any defect and product quality	2	3	-	1
PC16. conduct all the tests mentioned for electrical and mechanical assembly as per the checklist and take corrective action to avoid the recurrence of defects	3	4	-	1
PC17. record test observations and errors in the log books as per the organisational guidelines	1	2	-	-
PC18. create SOP/WI for a new component which indicates the type, cycle time, sequencing, parameters, PPEs, inspection equipment and the fixture requirement	1	2	-	1
PC19. prepare and maintain records related to assembly processes conducted as per the organisational guidelines	1	2	-	1
NOS Total	**40**	**40**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3616
NOS Name	Plan and perform assembly of critical auto parts and aggregates
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Assembly Operation
NSQF Level	6
Credits	TBD
Version	2.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

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.

Minimum Aggregate Passing % at QP Level : 75

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N9810.Manage work and resources (Manufacturing)	50	30	-	20	100	10
ASC/N9812.Interact effectively with team, customers and others	50	30	-	20	100	10
ASC/N9805.Interpret engineering drawing	50	30	-	20	100	5
ASC/N3620.Manage shop floor Assembly operations and team	30	50	-	20	100	30
ASC/N3616.Plan and perform assembly of critical auto parts and aggregates	40	40	-	20	100	45
Total	**220**	**180**	**-**	**100**	**500**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
ERP	Enterprise Resource Planning
TQM	Total Quality Management
SOP	Standard Operating Procedure
GD&T	Geometric Dimensioning & Tolerancing
CAD	Computer-Aided Drafting
CAM	Computer-Aided Manufacturing
ERP	Enterprise Resource Planning
TQM	Total Quality Management

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.
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.