Automobile Technician (Diagnostics)

Semester 3: Automobile Body Repair/ Semester 3: Automobile Paint Refinish/ Semester 4: Spare Parts Inventory Management/ Semester 4: Warranty Management

QP Code: ASC/Q1444

Version: 1.0

NSQF Level: 4

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Contents

ASC/Q1444: Automobile Technician (Diagnostics)

Brief Job Description

The individual is responsible for Perform comprehensive diagnostic evaluations of vehicles to identify mechanical, electrical, and electronic issues using diagnostic tools and equipment.

Personal Attributes

An individual in this job should be a keen observer and have an eye for detail and quality. They should be organised, team-oriented, customer centric, able to multi-task and have the ability to work for long hours in adverse conditions. The person must have good communication and interpersonal skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N1493: Automobile Safety System
2. ASC/N1494: Automobile Service and Repair (Mechanical)
3. ASC/N1495: Automobile Air Conditioning
4. ASC/N9837: Applied Physics
5. ASC/N1496: Automobile System wise Performance Testing (Mechanical)
6. ASC/N6315: Quality Management
7. ASC/N1497: Automobile System wise Performance Testing (Electrical & Electronics)
8. ASC/N9839: English Language Skills
9. DGT/VSQ/N0104: Employability Skills (120 Hours)
10. ASC/N1498: Workshop Technology Four-Wheeler (OJT)

Options*(Not mandatory):*

Option 1: Semester 3: Automobile Body Repair

1. ASC/N1499: Automobile Body Repair

Option 2: Semester 3: Automobile Paint Refinish

1. ASC/N1301: Automobile Paint Refinish

Option 3: Semester 4: Spare Parts Inventory Management

1. ASC/N1302: Spare Parts Inventory Management

Option 4: Semester 4: Warranty Management

1. ASC/N1303: Warranty Management

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
Country	India
NSQF Level	4
Credits	40
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7213.0201
Minimum Educational Qualification & Experience	Certificate-NSQF (Automobile Jr. Technician (Service and Maintenance) level 3.5) OR 12th Class OR 10th Class with 3 Years of experience OR 10th grade pass plus 2-year NTC (or NAC)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	16 Years
Last Reviewed On	NA
Next Review Date	NA

NSQC Approval Date	
Version	1.0

Remarks:

Mandatory: It is Mandatory to select at least one optional NOS in every semester to meet the 40 credits requirement in a year for diploma progression (As per NCVET Diploma guidelines)

ASC/N1493: Automobile Safety System

Description

This unit describes steps which can be taken to ensure proper functioning of automobile safety systems.

Scope

The scope covers the following :

- Conduct routine inspections of safety systems.
- Implementing advanced diagnostic tools to diagnose issues.
- Staying updated through continuous training.

Elements and Performance Criteria

Conduct routine inspections of safety systems.

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

PC1. Inspect brake pads and rotors for wear and tear, replacing any components that show signs of damage or excessive usage.

PC2. Test functionality of airbag systems by triggering diagnostic scans and analyzing sensor readings for any anomalies.

PC3. Verify proper operation of seatbelt mechanisms, ensuring they latch securely and release smoothly in case of emergency.

Implementing advanced diagnostic tools to diagnose issues.

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

PC4. Conduct a comprehensive vehicle scan to identify any stored trouble codes and potential malfunctions

PC5. Analyze live data streams to pinpoint irregularities in engine performance or sensor readings.

PC6. Utilize oscilloscope to examine waveform patterns for accurate diagnosis of electrical system faults.

Staying updated through continuous training.

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

PC7. Attend regular workshops and seminars to learn about the latest advancements in automotive technology.

PC8. A Participate in online training modules to enhance diagnostic skills and stay abreast of industry trends.

PC9. Engage in hands-on practice sessions with new diagnostic equipment to ensure proficiency and readiness for emerging challenges.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Familiarize yourself with the various safety systems installed in modern automobiles, including airbag systems, anti-lock braking systems (ABS), traction control systems, and electronic stability control (ESC).

KU2. Understand the principles of operation for each safety system, including sensors, actuators, control modules, and communication protocols.

KU3. Stay updated on the latest advancements in automotive safety technology to effectively diagnose and address issues with newer systems.

KU4. Recognize common symptoms of malfunctioning safety systems, such as warning lights on the dashboard, unusual noises, or abnormal vehicle behavior.

KU5. Perform regular diagnostic scans using specialized tools and software to identify faults or errors within safety systems.

KU6. Interpret diagnostic trouble codes (DTCs) related to safety systems to pinpoint the root cause of malfunctions accurately.

KU7. Conduct thorough visual inspections of safety system components, including wiring harnesses, connectors, sensors, and control modules, to detect physical damage or corrosion.

KU8. Test individual safety system components and circuits using appropriate testing procedures and equipment to verify functionality.

KU9. Verify proper installation and alignment of safety system components, such as airbag modules and sensors, following repair or replacement.

KU10. Provide clear and detailed explanations to vehicle owners regarding the importance of maintaining properly functioning safety systems and address any concerns or questions they may have.

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements.

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates.

GS9. Communicate effectively at the workplace.

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Conduct routine inspections of safety systems.	**10**	**10**	**10**	**-**
PC1. Inspect brake pads and rotors for wear and tear, replacing any components that show signs of damage or excessive usage.	-	-	-	-
PC2. Test functionality of airbag systems by triggering diagnostic scans and analyzing sensor readings for any anomalies.	-	-	-	-
PC3. Verify proper operation of seatbelt mechanisms, ensuring they latch securely and release smoothly in case of emergency.	-	-	-	-
Implementing advanced diagnostic tools to diagnose issues.	**5**	**20**	**20**	**-**
PC4. Conduct a comprehensive vehicle scan to identify any stored trouble codes and potential malfunctions	-	-	-	-
PC5. Analyze live data streams to pinpoint irregularities in engine performance or sensor readings.	-	-	-	-
PC6. Utilize oscilloscope to examine waveform patterns for accurate diagnosis of electrical system faults.	-	-	-	-
Staying updated through continuous training.	**5**	**10**	**10**	**-**
PC7. Attend regular workshops and seminars to learn about the latest advancements in automotive technology.	-	-	-	-
PC8. A Participate in online training modules to enhance diagnostic skills and stay abreast of industry trends.	-	-	-	-
PC9. Engage in hands-on practice sessions with new diagnostic equipment to ensure proficiency and readiness for emerging challenges.	-	-	-	-
NOS Total	**20**	**40**	**40**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1493
NOS Name	Automobile Safety System
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	1.5
Version	1.0
Next Review Date	NA

ASC/N1494: Automobile Service and Repair (Mechanical)

Description

This unit describes steps which can help in arrying out a comprehensive service and repair an automobile.

Scope

The scope covers the following :

- Maintain attention to Detail and a Methodical Approach.
- Access to diagnostic equipment like OBD-II scanners, multimeters and oscilloscopes.
- Performing mechanical repairs and maintenance tasks.

Elements and Performance Criteria

Maintain attention to Detail and a Methodical Approach

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

PC1. Conduct thorough visual inspections of vehicle components to identify any signs of wear, damage, or irregularities.

PC2. Utilize diagnostic equipment to systematically scan and analyze electronic systems for fault codes or anomalies, ensuring comprehensive troubleshooting.

PC3. Follow manufacturer's guidelines meticulously to execute routine maintenance procedures, such as fluid checks and filter replacements, with precision and accuracy.

Access to diagnostic equipment like OBD-II scanners, multimeters and oscilloscopes

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

PC4. Connect the OBD-II scanner to the vehicle's diagnostic port and retrieve fault codes stored in the ECM.

PC5. Make use of a multimeter to measure voltage and resistance across various electrical components for circuit analysis.

PC6. Employ an oscilloscope to observe waveform patterns in sensor signals, aiding in pinpointing intermittent electrical issues.

Performing mechanical repairs and maintenance tasks.

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

PC7. Conduct regular engine diagnostics to identify potential issues and ensure optimal performance.

PC8. Utilize diagnostic equipment to pinpoint electrical system malfunctions and troubleshoot accordingly.

PC9. Stay updated on latest automotive technologies through ongoing training and research to enhance repair skills and efficiency.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Familiarity with various automobile systems, including engine, transmission, brakes, suspension, and electrical systems, to diagnose and repair issues comprehensively.

KU2. Understanding of vehicle manufacturer specifications, service manuals, and technical bulletins to ensure adherence to recommended repair procedures.

KU3. Proficiency in using diagnostic tools and equipment, such as OBD-II scanners, oscilloscopes, and multimeters, to identify and troubleshoot problems accurately.

KU4. Knowledge of diagnostic trouble codes (DTCs) and their interpretation to pinpoint specific faults within vehicle systems.

KU5. Competence in performing routine maintenance tasks, such as oil changes, tire rotations, and fluid inspections, to maintain vehicle performance and longevity.

KU6. Ability to diagnose complex mechanical and electrical issues through systematic troubleshooting methods, including visual inspection, component testing, and data analysis.

KU7. Awareness of safety protocols and regulations when working with hazardous materials, high-voltage systems, and heavy machinery to ensure a secure working environment.

KU8. Understanding of modern automotive technologies, including hybrid and electric vehicle systems, to adapt to evolving industry trends and repair requirements.

KU9. Skill in performing advanced repair procedures, such as engine overhauls, transmission rebuilds, and electrical system repairs, to address major vehicle malfunctions effectively.

KU10. Commitment to ongoing learning and professional development through training programs, workshops, and industry certifications to stay updated with the latest automotive repair techniques and technologies

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements.

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates.

GS9. Communicate effectively at the workplace.

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain attention to Detail and a Methodical Approach	**10**	**20**	**20**	**-**
PC1. Conduct thorough visual inspections of vehicle components to identify any signs of wear, damage, or irregularities.	-	-	-	-
PC2. Utilize diagnostic equipment to systematically scan and analyze electronic systems for fault codes or anomalies, ensuring comprehensive troubleshooting.	-	-	-	-
PC3. Follow manufacturer's guidelines meticulously to execute routine maintenance procedures, such as fluid checks and filter replacements, with precision and accuracy.	-	-	-	-
Access to diagnostic equipment like OBD-II scanners, multimeters and oscilloscopes	**5**	**10**	**10**	**-**
PC4. Connect the OBD-II scanner to the vehicle's diagnostic port and retrieve fault codes stored in the ECM.	-	-	-	-
PC5. Make use of a multimeter to measure voltage and resistance across various electrical components for circuit analysis.	-	-	-	-
PC6. Employ an oscilloscope to observe waveform patterns in sensor signals, aiding in pinpointing intermittent electrical issues.	-	-	-	-
Performing mechanical repairs and maintenance tasks.	**5**	**10**	**10**	**-**
PC7. Conduct regular engine diagnostics to identify potential issues and ensure optimal performance.	-	-	-	-
PC8. Utilize diagnostic equipment to pinpoint electrical system malfunctions and troubleshoot accordingly.	-	-	-	-
PC9. Stay updated on latest automotive technologies through ongoing training and research to enhance repair skills and efficiency.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	20	40	40	-

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1494
NOS Name	Automobile Service and Repair (Mechanical)
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	1.5
Version	1.0
Next Review Date	NA

ASC/N1495: Automobile Air Conditioning

Description

This unit describes innovative approaches to Inspect and Maintain of an Automobile Air Conditioning System

Scope

The scope covers the following :

- Examine by visual inspection.
- Check refrigerant pressure.
- Assess the overall performance of AC system.

Elements and Performance Criteria

Examine by visual inspection.

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

PC1. Inspect compressor for signs of damage or leakage, focusing on seals and connections.

PC2. Evaluate condenser for debris buildup or obstruction, ensuring proper airflow.

PC3. Check evaporator for frost buildup or leaks, confirming efficient cooling operation.

Check refrigerant pressure

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

PC4. E Assess refrigerant pressure using a manifold gauge set to ensure optimal AC performance.

PC5. Analyze pressure readings across the AC system to pinpoint potential leaks or blockages

PC6. Adjust refrigerant levels as needed based on pressure measurements for efficient cooling.

Assess the overall performance of AC system

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

PC7. Check for leaks in the AC system using UV dye and a UV light

PC8. Evaluate the functionality of the AC condenser by inspecting for debris or blockages.

PC9. Measure the temperature difference between the air entering and exiting the evaporator.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand the components of an automobile air conditioning (A/C) system, including the compressor, condenser, evaporator, expansion valve, and refrigerant lines.

KU2. Know the operating principles of the A/C system, such as refrigerant cycle, pressure-temperature relationships, and heat transfer mechanisms.

KU3. Recognize common A/C system problems and symptoms, such as reduced cooling capacity, unusual noises, and leaks.

KU4. Familiarize oneself with A/C system diagnostic tools and equipment, such as pressure gauges, leak detectors, and refrigerant identifiers.

KU5. Learn proper safety procedures for working with A/C refrigerants, including handling, storage, and disposal practices.

KU6. Understand the importance of system evacuation and recharging procedures to ensure proper refrigerant levels and system performance.

KU7. Know how to perform visual inspections of A/C system components for signs of damage, wear, or corrosion.

KU8. Learn how to test A/C system electrical components, such as relays, switches, and wiring harnesses, for proper function.

KU9. Understand the significance of regular maintenance tasks, such as cleaning or replacing air filters, inspecting belts and hoses, and lubricating moving parts

KU10. Familiarize oneself with manufacturer specifications and service procedures for specific A/C system models and vehicle makes to ensure compliance and accuracy in maintenance tasks

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements.

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates.

GS9. Communicate effectively at the workplace.

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Examine by visual inspection.	**10**	**10**	**10**	**-**
PC1. Inspect compressor for signs of damage or leakage, focusing on seals and connections.	-	-	-	-
PC2. Evaluate condenser for debris buildup or obstruction, ensuring proper airflow.	-	-	-	-
PC3. Check evaporator for frost buildup or leaks, confirming efficient cooling operation.	-	-	-	-
Check refrigerant pressure	**5**	**20**	**20**	**-**
PC4. E Assess refrigerant pressure using a manifold gauge set to ensure optimal AC performance.	-	-	-	-
PC5. Analyze pressure readings across the AC system to pinpoint potential leaks or blockages	-	-	-	-
PC6. Adjust refrigerant levels as needed based on pressure measurements for efficient cooling.	-	-	-	-
Assess the overall performance of AC system	**5**	**10**	**10**	**-**
PC7. Check for leaks in the AC system using UV dye and a UV light	-	-	-	-
PC8. Evaluate the functionality of the AC condenser by inspecting for debris or blockages.	-	-	-	-
PC9. Measure the temperature difference between the air entering and exiting the evaporator.	-	-	-	-
NOS Total	**20**	**40**	**40**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1495
NOS Name	Automobile Air Conditioning
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	1.5
Version	1.0
Next Review Date	NA

ASC/N9837: Applied Physics

Description

This NOS is about to Maintain a healthy and productive work environment by adhering Industrial Safety.

Scope

The scope covers the following :

- Create mathematical models and simulations to represent the fabrication process.
- Develop and test fabrication technology prototypes based on the optimized process parameters.
- Explore new and innovative fabrication techniques, incorporating emerging physics principles and technologies.

Elements and Performance Criteria

Create mathematical models and simulations to represent the fabrication process

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

PC1. Collect relevant data on the fabrication process, including material properties, process parameters, and any other factors that may influence the outcome

PC2. Create a preliminary representation of the fabrication process, outlining the key components, interactions, and relationships between various factors.

PC3. Translate the conceptual model into a set of mathematical equations that describe the behavior of the fabrication process, incorporating relevant physics principles and material properties.

PC4. Implement the numerical models to generate simulations of the fabrication process, visualizing the behavior of the system over time and under varying conditions.

Develop and test fabrication technology prototypes based on the optimized process parameters

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

PC5. Create a detailed design of the fabrication technology prototype, incorporating the optimized process parameters and considering factors such as material selection, geometry, and manufacturing constraints.

PC6. Obtain the required materials and components for the prototype, ensuring they meet the necessary specifications and quality standards.

PC7. Set up the fabrication equipment and tools according to the optimized process parameters, ensuring proper calibration and safety measures are in place.

PC8. Carry out the fabrication process using the optimized parameters, adhering to the designed prototype specifications and maintaining accurate records of the process.

Explore new and innovative fabrication techniques, incorporating emerging physics principles and technologies.

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

PC9. Perform thorough literature reviews to gather information on existing fabrication techniques, their limitations, and potential areas for improvement.

PC10. Create conceptual models and simulations to visualize and evaluate the proposed innovative fabrication techniques, incorporating relevant physics principles and material properties.

PC11. Develop and test prototypes of the innovative fabrication techniques, refining the design and process parameters based on experimental results and feedback.

PC12. Perform experiments to validate the innovative fabrication techniques, ensuring their effectiveness and reliability in real-world applications.

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.

KU4. requirement of raw materials, tools and equipment on the shift/line

KU5. Strong foundation in physics: A deep understanding of fundamental physics principles, such as mechanics, electromagnetism, thermodynamics, and quantum mechanics, is crucial for applying these concepts to fabrication technologies.

KU6. Material science knowledge: Familiarity with the properties, behaviors, and characteristics of different materials, as well as their response to various fabrication processes, is vital for designing efficient technologies.

KU7. Mathematical proficiency: Proficiency in mathematical concepts, such as calculus, linear algebra, and differential equations, is necessary for developing accurate models and simulations of fabrication processes.

KU8. Process engineering understanding: Knowledge of process engineering principles, including heat transfer, mass transfer, and reaction kinetics, helps in optimizing fabrication process parameters and identifying potential issues.

KU9. Fabrication techniques awareness: Familiarity with various fabrication techniques, such as casting, forging, welding, and additive manufacturing, allows for the selection and improvement of suitable methods for specific applications.

KU10. Computational modeling expertise: Skills in using computational tools, such as finite element analysis (FEA) and computational fluid dynamics (CFD), to model and simulate fabrication processes are essential for optimization and innovation

Generic Skills (GS)

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

GS1. Read and interpret workplace related documentation.

GS2. Communicate using terms, names, grades and other nomenclature pertaining to the automotive trade.

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
Create mathematical models and simulations to represent the fabrication process	**5**	**10**	**10**	**-**
PC1. Collect relevant data on the fabrication process, including material properties, process parameters, and any other factors that may influence the outcome	2	3	3	-
PC2. Create a preliminary representation of the fabrication process, outlining the key components, interactions, and relationships between various factors.	1	3	3	-
PC3. Translate the conceptual model into a set of mathematical equations that describe the behavior of the fabrication process, incorporating relevant physics principles and material properties.	1	2	2	-
PC4. Implement the numerical models to generate simulations of the fabrication process, visualizing the behavior of the system over time and under varying conditions.	1	2	2	-
Develop and test fabrication technology prototypes based on the optimized process parameters	**5**	**10**	**10**	**-**
PC5. Create a detailed design of the fabrication technology prototype, incorporating the optimized process parameters and considering factors such as material selection, geometry, and manufacturing constraints.	1	3	3	-
PC6. Obtain the required materials and components for the prototype, ensuring they meet the necessary specifications and quality standards.	2	3	3	-
PC7. Set up the fabrication equipment and tools according to the optimized process parameters, ensuring proper calibration and safety measures are in place.	1	2	2	-
PC8. Carry out the fabrication process using the optimized parameters, adhering to the designed prototype specifications and maintaining accurate records of the process.	1	2	2	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Explore new and innovative fabrication techniques, incorporating emerging physics principles and technologies.	**5**	**10**	**10**	**-**
PC9. Perform thorough literature reviews to gather information on existing fabrication techniques, their limitations, and potential areas for improvement.	2	3	3	-
PC10. Create conceptual models and simulations to visualize and evaluate the proposed innovative fabrication techniques, incorporating relevant physics principles and material properties.	1	2	2	-
PC11. Develop and test prototypes of the innovative fabrication techniques, refining the design and process parameters based on experimental results and feedback.	1	3	3	-
PC12. Perform experiments to validate the innovative fabrication techniques, ensuring their effectiveness and reliability in real-world applications.	1	2	2	-
NOS Total	**15**	**30**	**30**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9837
NOS Name	Applied Physics
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Generic
NSQF Level	4
Credits	3
Version	1.0
Last Reviewed Date	30/11/2023
Next Review Date	30/11/2026
NSQC Clearance Date	30/11/2023

ASC/N1496: Automobile System wise Performance Testing (Mechanical)

Description

This unit describes innovative approaches to automobile symptom-based diagnosis before carrying out service and repair an automobile.

Scope

The scope covers the following :

- Testing engine performance.
- Inspecting Transmission and Drivetrain.
- Assessing the suspension and steering performance.

Elements and Performance Criteria

Testing engine performance.

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

PC1. Analyze engine diagnostics to identify irregularities in performance.

PC2. Conduct comprehensive inspections of fuel systems for potential issues.

PC3. Test ignition timing to ensure optimal engine efficiency.

Inspecting Transmission and Drivetrain

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

PC4. Assess transmission fluid level and condition for signs of degradation or contamination

PC5. Conduct a visual inspection of drivetrain components for signs of wear, such as leaking seals or damaged shafts.

PC6. Perform a road test to evaluate transmission shifting patterns and drivetrain performance under varying conditions

Assessing the suspension and steering performance.

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

PC7. Inspect the shock absorbers for signs of leakage or damage.

PC8. Conduct a visual examination of the tie rod ends and ball joints for excessive wear.

PC9. Test the wheel alignment using precision instruments for accuracy.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand the purpose of system-wise performance testing in automobiles, which is to evaluate the functionality and efficiency of individual mechanical parts within different systems

KU2. Gain knowledge of the specific mechanical parts constituting each system in the automobile, such as the engine, transmission, suspension, braking, and steering systems.

KU3. Familiarize oneself with the diagnostic tools and equipment required for conducting system-wise performance testing, including sensors, scanners, pressure gauges, and oscilloscopes.

KU4. Recognize the importance of establishing baseline performance metrics for comparison during testing, aiding in the identification of deviations or abnormalities.

KU5. Understand the significance of real-world driving conditions in system-wise performance testing, as certain issues may only manifest during specific operational scenarios.

KU6. Acquire knowledge of common performance indicators and parameters for assessing the health and functionality of mechanical parts, such as temperature, pressure, fluid levels, and vibration levels

KU7. Learn to interpret test results accurately, distinguishing between normal variations and indications of potential mechanical failures or inefficiencies.

KU8. Understand the implications of system-wise performance testing results on vehicle safety, reliability, and overall performance, guiding subsequent repair or maintenance actions.

KU9. Recognize the iterative nature of system-wise performance testing, acknowledging the need for continuous monitoring and adjustment to ensure ongoing optimization

KU10. Learn the appropriate testing procedures for each mechanical part within a system, ensuring comprehensive coverage and accurate assessment.

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements.

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates

GS9. Communicate effectively at the workplace

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Testing engine performance.	**10**	**10**	**10**	**-**
PC1. Analyze engine diagnostics to identify irregularities in performance.	-	-	-	-
PC2. Conduct comprehensive inspections of fuel systems for potential issues.	-	-	-	-
PC3. Test ignition timing to ensure optimal engine efficiency.	-	-	-	-
Inspecting Transmission and Drivetrain	**5**	**20**	**20**	**-**
PC4. Assess transmission fluid level and condition for signs of degradation or contamination	-	-	-	-
PC5. Conduct a visual inspection of drivetrain components for signs of wear, such as leaking seals or damaged shafts.	-	-	-	-
PC6. Perform a road test to evaluate transmission shifting patterns and drivetrain performance under varying conditions	-	-	-	-
Assessing the suspension and steering performance.	**5**	**10**	**10**	**-**
PC7. Inspect the shock absorbers for signs of leakage or damage.	-	-	-	-
PC8. Conduct a visual examination of the tie rod ends and ball joints for excessive wear.	-	-	-	-
PC9. Test the wheel alignment using precision instruments for accuracy.	-	-	-	-
NOS Total	**20**	**40**	**40**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1496
NOS Name	Automobile System wise Performance Testing (Mechanical)
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	1.5
Version	1.0
Next Review Date	NA

ASC/N6315: Quality Management

Description

This NOS is about to Implementing effective quality control and assurance practices in a Manufacturing Process.

Scope

The scope covers the following :

- Develop and implement quality standards and guidelines based on industry best practices.
- Establish quality control checkpoints at various stages of the manufacturing process.
- Perform regular quality audits and inspections to assess the effectiveness of quality control.

Elements and Performance Criteria

Develop and implement quality standards and guidelines based on industry best practices.

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

PC1. Identify the existing quality gaps in the manufacturing process by comparing the current practices with industry best practices, regulatory requirements, and customer specifications.

PC2. Establish clear quality objectives and goals that align with the organization's vision, mission, and strategic priorities.

PC3. Create comprehensive quality policies and procedures that outline the processes, responsibilities, and expectations for maintaining product quality throughout the manufacturing process.

PC4. Define quality metrics and key performance indicators (KPIs) to measure the effectiveness of quality control and assurance practices and track progress towards quality objectives.

PC5. Develop quality manuals and other relevant documentation that clearly communicate quality policies, procedures, and guidelines to all stakeholders, including employees, suppliers, and customers

Establish quality control checkpoints at various stages of the manufacturing process

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

PC6. Establish quality control checkpoints at various stages of the manufacturing process.

PC7. Determine the critical process parameters that, if not controlled, could lead to defects or deviations in the final product.

PC8. Select appropriate inspection methods and tools, such as visual inspection, measurement devices, or testing equipment, to assess the quality of the product at each checkpoint

PC9. Develop sampling plans that define the number of units to be inspected, the acceptance or rejection criteria, and the sampling techniques to be used at each checkpoint.

PC10. Design inspection forms and checklists that outline the specific criteria, measurements, or tests to be performed at each checkpoint, ensuring consistency and clarity in the inspection process.

PC11. Identify and mark the locations where quality control checkpoints will be implemented within the manufacturing process, ensuring they are accessible, visible, and appropriately timed.

PC12. Analyze the inspection results and take appropriate corrective actions to address identified issues, minimize the impact of defects, and prevent their recurrence in the future.

Perform regular quality audits and inspections to assess the effectiveness of quality control

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

PC13. Develop a schedule for quality audits and inspections, considering factors such as production cycles, product types, and regulatory requirements.

PC14. Create detailed checklists that cover all essential aspects of the manufacturing process, including raw materials, equipment, processes, documentation, and finished products.

PC15. Monitor the implementation of identified corrective and preventive actions, ensuring that the necessary improvements are made and maintaining a continuous cycle of quality improvement.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. fundamentals of the CNC/conventional machine

KU2. various types of machining processes such as drilling, boring, turning etc.

KU3. SOP recommended by the manufacturer for using tools, jigs, fixtures, measuring instruments etc., during the machining processes.

KU4. how to select and modify the CNC machining program

KU5. SOP recommended by the organisation for operating CNC and conventional machine

KU6. Technical Knowledge: A strong understanding of the manufacturing process, raw materials, and production equipment is essential to identify potential quality issues and develop appropriate solutions.

KU7. Quality Management Principles: Familiarity with quality management concepts, such as the PDCA (Plan-Do-Check-Act) cycle, ISO 9000 standards, and Six Sigma methodologies, will help in designing and implementing effective quality control systems.

KU8. Statistical Process Control (SPC): Understanding SPC techniques, such as control charts, capability analysis, and process capability studies, will enable you to monitor and improve the manufacturing process continuously.

KU9. Sampling Techniques: Knowledge of various sampling techniques, like random sampling, stratified sampling, and attribute sampling, is vital for selecting representative samples for quality inspection and analysis.

KU10. Measurement and Testing Methods: Familiarity with different measuring instruments, testing methods, and calibration procedures is necessary to ensure accurate and reliable quality assessments.

Generic Skills (GS)

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

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

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

GS3. communicate issues to the supervisor that occur during machining process

GS4. attentively listen and comprehend the information given by the master technician/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. report to the supervisor or deal with a colleague individually, depending on the type of concern

GS10. complete the assigned tasks with minimum supervision

GS11. suggest improvements (if any) in current ways of working

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Develop and implement quality standards and guidelines based on industry best practices.	**10**	**20**	**20**	**-**
PC1. Identify the existing quality gaps in the manufacturing process by comparing the current practices with industry best practices, regulatory requirements, and customer specifications.	2	4	4	-
PC2. Establish clear quality objectives and goals that align with the organization's vision, mission, and strategic priorities.	2	4	4	-
PC3. Create comprehensive quality policies and procedures that outline the processes, responsibilities, and expectations for maintaining product quality throughout the manufacturing process.	2	4	4	-
PC4. Define quality metrics and key performance indicators (KPIs) to measure the effectiveness of quality control and assurance practices and track progress towards quality objectives.	2	4	4	-
PC5. Develop quality manuals and other relevant documentation that clearly communicate quality policies, procedures, and guidelines to all stakeholders, including employees, suppliers, and customers	2	4	4	-
Establish quality control checkpoints at various stages of the manufacturing process	**5**	**10**	**10**	**-**
PC6. Establish quality control checkpoints at various stages of the manufacturing process.	1	1	1	-
PC7. Determine the critical process parameters that, if not controlled, could lead to defects or deviations in the final product.	1	2	2	-
PC8. Select appropriate inspection methods and tools, such as visual inspection, measurement devices, or testing equipment, to assess the quality of the product at each checkpoint	1	1	1	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. Develop sampling plans that define the number of units to be inspected, the acceptance or rejection criteria, and the sampling techniques to be used at each checkpoint.	-	2	2	-
PC10. Design inspection forms and checklists that outline the specific criteria, measurements, or tests to be performed at each checkpoint, ensuring consistency and clarity in the inspection process.	1	2	2	-
PC11. Identify and mark the locations where quality control checkpoints will be implemented within the manufacturing process, ensuring they are accessible, visible, and appropriately timed.	-	1	1	-
PC12. Analyze the inspection results and take appropriate corrective actions to address identified issues, minimize the impact of defects, and prevent their recurrence in the future.	1	1	1	-
Perform regular quality audits and inspections to assess the effectiveness of quality control	**5**	**10**	**10**	**-**
PC13. Develop a schedule for quality audits and inspections, considering factors such as production cycles, product types, and regulatory requirements.	2	3	3	-
PC14. Create detailed checklists that cover all essential aspects of the manufacturing process, including raw materials, equipment, processes, documentation, and finished products.	2	3	3	-
PC15. Monitor the implementation of identified corrective and preventive actions, ensuring that the necessary improvements are made and maintaining a continuous cycle of quality improvement.	1	4	4	-
NOS Total	**20**	**40**	**40**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N6315
NOS Name	Quality Management
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Automotive Quality Assurance
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	30/11/2023
Next Review Date	30/11/2026
NSQC Clearance Date	30/11/2023

ASC/N1497: Automobile System wise Performance Testing (Electrical & Electronics)

Description

This unit describes steps on how to implement system wise performance testing of Electrical and Electronic parts in an Automobile.

Scope

The scope covers the following :

- Performing voltage and Current Measurements.
- Testing Signal Integrity.
- Investigating Component Functionality.

Elements and Performance Criteria

Performing voltage and Current Measurements.

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

PC1. Connect the multimeter's positive lead to the battery's positive terminal.

PC2. Attach the multimeter's negative lead to the battery's negative terminal.

PC3. Set the multimeter to the voltage measurement mode.

Testing Signal Integrity

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

PC4. Inspect wiring harnesses for signs of wear or damage.

PC5. Verify continuity of electrical circuits using a multimeter.

PC6. Test voltage output from sensors to ensure they meet specifications.

Investigating Component Functionality.

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

PC7. Check functionality of sensors by performing live data analysis

PC8. Conduct resistance tests on ignition coils for proper functioning.

PC9. Inspect and clean electrical connectors to ensure secure connections.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand the electrical architecture of the vehicle, including power distribution, control modules, sensors, actuators, and communication networks

KU2. Familiarize yourself with the specific diagnostic procedures outlined in the manufacturer's technical documentation for each electrical or electronic component

KU3. Master the use of diagnostic tools such as multimeters, oscilloscopes, scan tools, and specialized software for system-wide performance testing

KU4. Recognize normal operating parameters for electrical and electronic systems, including voltage, current, resistance, frequency, and signal waveforms

KU5. Interpret diagnostic trouble codes (DTCs) retrieved from onboard diagnostic systems to pinpoint potential faults in electrical or electronic components.

KU6. Perform systematic component testing to identify faulty parts, including continuity checks, voltage drop tests, resistance measurements, and output signal verifications

KU7. Perform systematic component testing to identify faulty parts, including continuity checks, voltage drop tests, resistance measurements, and output signal verifications

KU8. Evaluate the integrity of electrical connectors, wiring harnesses, and grounds to ensure proper electrical continuity and signal transmission.

KU9. Consider environmental factors such as temperature, humidity, and vibration that may affect the performance of electrical and electronic components.

KU10. Stay updated on emerging technologies and diagnostic techniques through training, professional development, and industry publications to enhance diagnostic accuracy and efficiency.

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates.

GS9. Communicate effectively at the workplace

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Performing voltage and Current Measurements.	**10**	**20**	**20**	**-**
PC1. Connect the multimeter's positive lead to the battery's positive terminal.	-	-	-	-
PC2. Attach the multimeter's negative lead to the battery's negative terminal.	-	-	-	-
PC3. Set the multimeter to the voltage measurement mode.	-	-	-	-
Testing Signal Integrity	**5**	**10**	**10**	**-**
PC4. Inspect wiring harnesses for signs of wear or damage.	-	-	-	-
PC5. Verify continuity of electrical circuits using a multimeter.	-	-	-	-
PC6. Test voltage output from sensors to ensure they meet specifications.	-	-	-	-
Investigating Component Functionality.	**5**	**10**	**10**	**-**
PC7. Check functionality of sensors by performing live data analysis	-	-	-	-
PC8. Conduct resistance tests on ignition coils for proper functioning.	-	-	-	-
PC9. Inspect and clean electrical connectors to ensure secure connections.	-	-	-	-
NOS Total	**20**	**40**	**40**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1497
NOS Name	Automobile System wise Performance Testing (Electrical & Electronics)
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	1.5
Version	1.0
Next Review Date	NA

ASC/N9839: English Language Skills

Description

This NOS is about to Comprehend and analyze a wide range of texts, Literature using English Language Skills in Fabrication Process.

Scope

The scope covers the following :

- Develop and practice reading comprehension skills.
- Develop analytical skills to break down complex texts into their core components,
- Enhance your written and verbal communication skills to clearly convey ideas, instructions.

Elements and Performance Criteria

Develop and practice reading comprehension skills

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

PC1. Establish a clear reading goal, such as improving overall comprehension or focusing on a specific area, like understanding complex texts or enhancing speed reading.

PC2. Select reading materials that cater to your reading goals and interests, ensuring a balance between challenging and enjoyable texts.

PC3. Expand your vocabulary by learning new words and phrases from the texts you read.

PC4. Regularly assess your reading comprehension skills by taking quizzes, writing summaries, or discussing texts with others.

Develop analytical skills to break down complex texts into their core components

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

PC5. Analyze individual paragraphs within a text, identifying their main ideas and supporting details, as well as the relationships between them.

PC6. Create visual representations of the text's structure and key ideas using mind-mapping tools, which can help you identify relationships between different components and organize your thoughts.

PC7. Engage in critical thinking to challenge assumptions, evaluate evidence, and question the author's arguments or perspectives.

PC8. Analyze the results obtained from the Assessment

Enhance your written and verbal communication skills to clearly convey ideas, instructions

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

PC9. Develop active listening skills to understand others better and respond appropriately

PC10. Engage in reading various materials, such as books, articles, and reports, to improve your comprehension and writing skills.

PC11. Record your conversations or presentations and review them later to identify areas for improvement in your tone, clarity, or delivery

PC12. Maintain a growth mindset and be open to learning from your experiences, feedback, and mistakes.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. fundamentals of the Fabrication Process
KU2. various types of machining processes such as drilling, boring, turning etc
KU3. SOP recommended by the manufacturer for using tools, jigs, fixtures, measuring instruments etc., during the machining processes
KU4. how to select and modify the CNC machining program
KU5. Vocabulary: A strong command of the English language is essential to understand the meaning of complex words and phrases used in various texts
KU6. Grammar and Syntax: Understanding grammar rules and sentence structure is crucial for accurately interpreting the meaning of a text and identifying its underlying structure.
KU7. Reading Comprehension: The ability to read and understand the main ideas, supporting details, and relationships between different parts of a text is vital for effective analysis.
KU8. Critical Thinking: Analyzing and evaluating the information presented in a text requires the ability to think critically, identify patterns, and make connections between different pieces of information
KU9. Contextual Understanding: Knowing the historical, cultural, and social context in which a text was written can greatly enhance one's ability to comprehend its meaning and significance
KU10. Literary Devices: Familiarity with various literary devices such as metaphors, similes, symbolism, and imagery can help in understanding the nuances and deeper meanings of a text.

Generic Skills (GS)

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

GS1. read and interpret work instructions, machine drawings, reports and process documents
GS2. communicate the machining requirements to the seniors and other departments
GS3. communicate issues to the supervisor that occur during machining process
GS4. attentively listen and comprehend the information given by the master technician/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. report to the supervisor or deal with a colleague individually, depending on the type of concern
GS10. complete the assigned tasks with minimum supervision
GS11. suggest improvements (if any) in current ways of working

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Develop and practice reading comprehension skills	**5**	**10**	**10**	**-**
PC1. Establish a clear reading goal, such as improving overall comprehension or focusing on a specific area, like understanding complex texts or enhancing speed reading.	1	2	2	-
PC2. Select reading materials that cater to your reading goals and interests, ensuring a balance between challenging and enjoyable texts.	2	3	3	-
PC3. Expand your vocabulary by learning new words and phrases from the texts you read.	1	3	3	-
PC4. Regularly assess your reading comprehension skills by taking quizzes, writing summaries, or discussing texts with others.	1	2	2	-
Develop analytical skills to break down complex texts into their core components	**5**	**10**	**10**	**-**
PC5. Analyze individual paragraphs within a text, identifying their main ideas and supporting details, as well as the relationships between them.	1	3	3	-
PC6. Create visual representations of the text's structure and key ideas using mind-mapping tools, which can help you identify relationships between different components and organize your thoughts.	1	2	2	-
PC7. Engage in critical thinking to challenge assumptions, evaluate evidence, and question the author's arguments or perspectives.	1	3	3	-
PC8. Analyze the results obtained from the Assessment	2	2	2	-
Enhance your written and verbal communication skills to clearly convey ideas, instructions	**5**	**10**	**10**	**-**
PC9. Develop active listening skills to understand others better and respond appropriately	1	2	2	-
PC10. Engage in reading various materials, such as books, articles, and reports, to improve your comprehension and writing skills.	1	3	3	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. Record your conversations or presentations and review them later to identify areas for improvement in your tone, clarity, or delivery	1	3	3	-
PC12. Maintain a growth mindset and be open to learning from your experiences, feedback, and mistakes.	2	2	2	-
NOS Total	**15**	**30**	**30**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9839
NOS Name	English Language Skills
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Generic
NSQF Level	4
Credits	3
Version	1.0
Last Reviewed Date	30/11/2023
Next Review Date	30/11/2026
NSQC Clearance Date	30/11/2023

DGT/VSQ/N0104: Employability Skills (120 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

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

PC1. understand the significance of employability skills in meeting the current job market requirement and future of work

PC2. identify and explore learning and employability relevant portals

PC3. research about the different industries, job market trends, latest skills required and the available opportunities

Constitutional values – Citizenship

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

PC4. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. for personal growth and the nation's progress

PC5. follow personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC6. follow and promote environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC7. recognize the significance of 21st Century Skills for employment

PC8. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

PC9. adopt a continuous learning mindset for personal and professional development

Basic English Skills

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

PC10. use English as a medium of formal and informal communication while dealing with topics of everyday conversation in different contexts

PC11. speak over the phone in English, in an audible manner, using appropriate greetings, opening, and closing statements both on personal and work front

PC12. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC13. write short messages, notes, letters, e-mails etc., using accurate English

Career Development & Goal Setting

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

PC14. identify career goals based on the skills, interests, knowledge, and personal attributes

PC15. prepare a career development plan with short- and long-term goals

Communication Skills

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

PC16. follow verbal and non-verbal communication etiquette while communicating in professional and public settings

PC17. use active listening techniques for effective communication

PC18. communicate in writing using appropriate style and format based on formal or informal requirements

PC19. work collaboratively with others in a team

Diversity & Inclusion

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

PC20. • ensure personal behaviour, conduct, and use appropriate communication by taking gender into • consideration

PC21. empathize with a PwD and aid a PwD, if asked

PC22. escalate any issues related to sexual harassment at the workplace in accordance with the POSH Act

Financial and Legal Literacy

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

PC23. identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.

PC24. carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook

PC25. identify common components of salary and compute income, expenses, taxes, investments etc

PC26. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

PC27. operate digital devices and use their features and applications securely and safely

PC28. carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.

PC29. display responsible online behaviour while using various social media platforms

PC30. create a personal email account, send and process received messages as per requirement

PC31. carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications

PC32. utilize virtual collaboration tools to work effectively

Entrepreneurship

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

PC33. identify different types of Entrepreneurship and Enterprises

PC34. use research and networking skills to identify and assess opportunities for potential business

PC35. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC36. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

PC37. identify different types of customers

PC38. identify and respond to customer requests and needs in a professional manner

PC39. use appropriate tools to collect customer feedback

PC40. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC41. create a professional Curriculum vitae (Résumé)

PC42. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC43. apply to identified job openings using offline /online methods as per requirement

PC44. answer questions politely, with clarity and confidence, during recruitment and selection

PC45. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. different learning and employability related portals

KU3. various constitutional and personal values

KU4. different environmentally sustainable practices and their importance

KU5. Twenty first (21st) century skills and their importance

KU6. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU7. importance of career development and setting long- and short-term goals

KU8. Do's and don'ts of effective communication
KU9. POSH Act
KU10. inclusivity and its importance
KU11. different types of disabilities and appropriate verbal and non-verbal communication and behaviour towards PwD
KU12. different types of financial institutes, products, and services
KU13. components of salary and how to compute income and expenditure
KU14. importance of maintaining safety and security in offline and online financial transactions
KU15. different legal rights and laws
KU16. different types of digital devices and the procedure to operate them safely and securely
KU17. how to create and operate an e- mail account
KU18. use applications such as word processors, spreadsheets etc.
KU19. different types of Enterprises and ways to identify business opportunities
KU20. types and needs of customers
KU21. how to apply for a job and prepare for an interview
KU22. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence in English and other languages
GS2. communicate effectively using appropriate language in formal and informal settings
GS3. behave politely and appropriately with all to maintain effective work relationship
GS4. how to work in a virtual mode, using various technological platforms
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
PC2. identify and explore learning and employability relevant portals	-	-	-	-
PC3. research about the different industries, job market trends, latest skills required and the available opportunities	-	-	-	-
Constitutional values – Citizenship	**2**	**1**	**-**	**-**
PC4. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. for personal growth and the nation's progress	-	-	-	-
PC5. follow personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC6. follow and promote environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**3**	**-**	**-**
PC7. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC8. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
PC9. adopt a continuous learning mindset for personal and professional development	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. use English as a medium of formal and informal communication while dealing with topics of everyday conversation in different contexts	-	-	-	-
PC11. speak over the phone in English, in an audible manner, using appropriate greetings, opening, and closing statements both on personal and work front	-	-	-	-
PC12. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC13. write short messages, notes, letters, e-mails etc., using accurate English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**
PC14. identify career goals based on the skills, interests, knowledge, and personal attributes	-	-	-	-
PC15. prepare a career development plan with short- and long-term goals	-	-	-	-
Communication Skills	**2**	**3**	**-**	**-**
PC16. follow verbal and non-verbal communication etiquette while communicating in professional and public settings	-	-	-	-
PC17. use active listening techniques for effective communication	-	-	-	-
PC18. communicate in writing using appropriate style and format based on formal or informal requirements	-	-	-	-
PC19. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC20. • ensure personal behaviour, conduct, and use appropriate communication by taking gender into • consideration	-	-	-	-
PC21. empathize with a PwD and aid a PwD, if asked	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. escalate any issues related to sexual harassment at the workplace in accordance with the POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC23. identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.	-	-	-	-
PC24. carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook	-	-	-	-
PC25. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC26. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**2**	**3**	**-**	**-**
PC27. operate digital devices and use their features and applications securely and safely	-	-	-	-
PC28. carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.	-	-	-	-
PC29. display responsible online behaviour while using various social media platforms	-	-	-	-
PC30. create a personal email account, send and process received messages as per requirement	-	-	-	-
PC31. carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications	-	-	-	-
PC32. utilize virtual collaboration tools to work effectively	-	-	-	-
Entrepreneurship	**2**	**3**	**-**	**-**
PC33. identify different types of Entrepreneurship and Enterprises	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. use research and networking skills to identify and assess opportunities for potential business	-	-	-	-
PC35. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC36. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC37. identify different types of customers	-	-	-	-
PC38. identify and respond to customer requests and needs in a professional manner	-	-	-	-
PC39. use appropriate tools to collect customer feedback	-	-	-	-
PC40. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**4**	**-**	**-**
PC41. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC42. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC43. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC44. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC45. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0104
NOS Name	Employability Skills (120 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	6
Credits	4
Version	1.0
Last Reviewed Date	30/11/2023
Next Review Date	30/11/2026
NSQC Clearance Date	30/11/2023

ASC/N1498: Workshop Technology Four-Wheeler (OJT)

Description

On the Job Training - OJT

Scope

The scope covers the following :

- On the Job Training - OJT

Elements and Performance Criteria

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

PC1. On the Job Training - OJT

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. On the Job Training - OJT

Generic Skills (GS)

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

GS1. On the Job Training - OJT

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	-	**-**	**50**	**50**
PC1. On the Job Training - OJT	-	-	50	50
NOS Total	**-**	**-**	**50**	**50**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1498
NOS Name	Workshop Technology Four-Wheeler (OJT)
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	11
Version	1.0
Next Review Date	NA

ASC/N1499: Automobile Body Repair

Description

This unit describes how we can perform Damage Assessment and Structural Analysis while performing Automobile Body Repair

Scope

The scope covers the following :

- Perform Visual Inspection.
- Conduct Diagnostic Scans.
- A Carry out Measurement and Testing

Elements and Performance Criteria

Perform Visual Inspection

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

PC1. Inspect vehicle exterior for visible damage, noting dents, scratches, and misalignments.

PC2. Identify areas requiring repair or replacement to restore structural strength and safety.

PC3. Remove damaged components, such as bumpers or panels, to access underlying structural elements.

Conduct Diagnostic Scans

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

PC4. Connect diagnostic scanner to vehicle's OBD-II port to retrieve fault codes.

PC5. Initiate full-system scan to identify potential issues across all vehicle modules

PC6. Analyze live data streams to pinpoint abnormalities in engine performance.

Carry out Measurement and Testing

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

PC7. Inspecting wiring harnesses for continuity and proper connections.

PC8. Conducting compression tests on engine cylinders to assess internal integrity.

PC9. Testing sensors for responsiveness and accuracy in transmitting data.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Identify and document all visible damage to the vehicle's body, including dents, scratches, cracks, and deformations

KU2. Assess the extent of structural damage by examining key components such as frame rails, suspension mounting points, and pillars.

KU3. Utilize specialized tools such as measuring systems and alignment gauges to accurately measure and analyze the degree of structural misalignment.

KU4. Understand the structural design and construction of different vehicle models to anticipate potential areas of weakness or vulnerability

KU5. Evaluate the integrity of welded joints and seams to determine if any structural reinforcement or repair is necessary

KU6. Consider environmental factors such as corrosion or rust that may compromise the structural integrity of the vehicle

KU7. Interpret manufacturer specifications and repair guidelines to ensure compliance with safety and performance standards.

KU8. Consult repair manuals and technical resources to identify recommended repair procedures for specific types of damage

KU9. Collaborate with other technicians or specialists, such as welders or engineers, to develop comprehensive repair strategies for complex structural damage.

KU10. Document all findings and assessments in written reports or digital records to communicate the extent of damage and recommended repair actions effectively.

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates.

GS9. Communicate effectively at the workplace.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform Visual Inspection	**5**	**10**	**10**	**-**
PC1. Inspect vehicle exterior for visible damage, noting dents, scratches, and misalignments.	-	-	-	-
PC2. Identify areas requiring repair or replacement to restore structural strength and safety.	-	-	-	-
PC3. Remove damaged components, such as bumpers or panels, to access underlying structural elements.	-	-	-	-
Conduct Diagnostic Scans	**5**	**10**	**10**	**-**
PC4. Connect diagnostic scanner to vehicle's OBD-II port to retrieve fault codes.	-	-	-	-
PC5. Initiate full-system scan to identify potential issues across all vehicle modules	-	-	-	-
PC6. Analyze live data streams to pinpoint abnormalities in engine performance.	-	-	-	-
Carry out Measurement and Testing	**5**	**10**	**10**	**-**
PC7. Inspecting wiring harnesses for continuity and proper connections.	-	-	-	-
PC8. Conducting compression tests on engine cylinders to assess internal integrity.	-	-	-	-
PC9. Testing sensors for responsiveness and accuracy in transmitting data.	-	-	-	-
NOS Total	**15**	**30**	**30**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1499
NOS Name	Automobile Body Repair
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	3
Version	1.0
Next Review Date	NA

ASC/N1301: Automobile Paint Refinish

Description

This unit describes about steps to Conduct diagnostic scans during Automobile Paint Refinishing.

Scope

The scope covers the following :

- Conducting in Surface Inspection
- Perform Color Matching.
- Verifying the correct application technique.

Elements and Performance Criteria

Conducting in Surface Inspection.

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

PC1. Assess surface smoothness for imperfections

PC2. Identify paint bubbles or blisters on the automobile's exterior

PC3. Examine for any paint runs or drips along the bodywork

Perform Color Matching

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

PC4. Analyze the vehicle's paint hue against standardized color charts.

PC5. Compare the paint sample with the vehicle's original color to identify discrepancies.

PC6. Adjust color formulas using computer software to match the vehicle's paint accurately.

Verifying the correct application technique

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

PC7. Inspect the vehicle surface for any imperfections before applying paint.

PC8. Clean the surface thoroughly to ensure proper adhesion of the new paint

PC9. Mask off areas not intended for paint application to prevent overspray

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Familiarize yourself with different types of scanning tools and their capabilities for automobile paint refinishing.

KU2. Understand the importance of conducting scans before and after the refinishing process to assess the condition and quality of the paint job.

KU3. Recognize the significance of scanning for identifying imperfections such as scratches, dents, or irregularities in the painted surface

KU4. Learn how to interpret scan results accurately, distinguishing between acceptable variations and critical defects

KU5. Gain knowledge of scanning techniques to ensure comprehensive coverage of the painted area, including scanning angles and distances

KU6. Understand the relationship between scanning data and paint application methods to troubleshoot potential issues effectively

KU7. Acquire proficiency in using scanning software to analyze and visualize scan data, aiding in decision-making for refinishing strategies

KU8. Be aware of industry standards and best practices for conducting scans during automobile paint refinishing to meet quality and safety requirements.

KU9. Stay updated on advancements in scanning technology and methodologies to enhance efficiency and accuracy in the refinishing process.

KU10. Emphasize the importance of documentation, including scan reports and images, to track refinishing progress and ensure compliance with customer expectations and regulatory standards

Generic Skills (GS)

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

GS1. Read and interpret workplace related documentation

GS2. Interpret the needs of customers by understanding the key issues

GS3. Communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. Analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. Identify potential workplace problems and take suitable action

GS6. read various sources of information available for assessing service and repair requirements

GS7. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates

GS8. Write in English/regional language

GS9. Communicate effectively at the workplace

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Conducting in Surface Inspection.	**5**	**10**	**10**	**-**
PC1. Assess surface smoothness for imperfections	-	-	-	-
PC2. Identify paint bubbles or blisters on the automobile's exterior	-	-	-	-
PC3. Examine for any paint runs or drips along the bodywork	-	-	-	-
Perform Color Matching	**5**	**10**	**10**	**-**
PC4. Analyze the vehicle's paint hue against standardized color charts.	-	-	-	-
PC5. Compare the paint sample with the vehicle's original color to identify discrepancies.	-	-	-	-
PC6. Adjust color formulas using computer software to match the vehicle's paint accurately.	-	-	-	-
Verifying the correct application technique	**5**	**10**	**10**	**-**
PC7. Inspect the vehicle surface for any imperfections before applying paint.	-	-	-	-
PC8. Clean the surface thoroughly to ensure proper adhesion of the new paint	-	-	-	-
PC9. Mask off areas not intended for paint application to prevent overspray	-	-	-	-
NOS Total	**15**	**30**	**30**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1301
NOS Name	Automobile Paint Refinish
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Automotive Service & Repair
NSQF Level	4
Credits	3
Version	1.0
Next Review Date	NA

ASC/N1302: Spare Parts Inventory Management

Description

This unit describes innovative approaches to automobile symptom-based diagnosis before carrying out service and repair an automobile.

Scope

The scope covers the following :

- Indulging in Forecasting and Demand Planning.
- Maintaining inventory control.
- Building strong relationships with Suppliers

Elements and Performance Criteria

Indulging in Forecasting and Demand Planning.

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

PC1. Analyze historical repair data to identify trends and patterns in spare part usage.

PC2. Collaborate with procurement team to forecast demand based on upcoming vzhicle models and market trends.

PC3. Adjust inventory levels based on seasonal fluctuations and anticipated changes in demand.

Maintaining inventory control.

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

PC4. Update inventory database with latest stock arrivals and adjustments

PC5. Conduct routine stock checks to ensure accuracy and identify discrepancies

PC6. Reorder parts based on inventory levels and demand forecasts

Building strong relationships with Suppliers

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

PC7. Establish regular communication channels with suppliers to streamline the procurement process for spare parts.

PC8. Negotiate pricing agreements with suppliers to ensure cost-effectiveness in spare parts procurement

PC9. Collaborate with suppliers to develop efficient inventory replenishment strategies for spare parts

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand the criticality of spare parts inventory in minimizing vehicle downtime and maximizing repair efficiency.

KU2. Identify common failure points and components prone to wear and tear in various vehicle models to prioritize stocking.

KU3. Utilize historical data and trend analysis to forecast demand for spare parts, reducing the risk of stockouts or overstocking.

KU4. Implement a systematic inventory tracking system to monitor stock levels, replenishment needs, and usage patterns accurately.

KU5. Establish minimum and maximum stock levels for each spare part based on usage frequency and lead times to maintain optimal inventory levels.

KU6. Collaborate with suppliers to negotiate favorable pricing, bulk discounts, and timely deliveries to optimize inventory costs.

KU7. Categorize spare parts based on criticality, frequency of use, and shelf life to streamline inventory management processes

KU8. Implement a first-in-first-out (FIFO) inventory rotation policy to ensure the use of older stock before newer acquisitions.

KU9. Conduct regular audits and inventory checks to identify obsolete or slow-moving spare parts for disposal or discounting.

KU10. Continuously evaluate and adjust inventory management strategies based on changing repair demands, technological advancements, and market trends to maintain competitiveness and efficiency.

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates

GS9. Communicate effectively at the workplace

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Indulging in Forecasting and Demand Planning.	**5**	**10**	**10**	**-**
PC1. Analyze historical repair data to identify trends and patterns in spare part usage.	-	-	-	-
PC2. Collaborate with procurement team to forecast demand based on upcoming vzhicle models and market trends.	-	-	-	-
PC3. Adjust inventory levels based on seasonal fluctuations and anticipated changes in demand.	-	-	-	-
Maintaining inventory control.	**5**	**10**	**10**	**-**
PC4. Update inventory database with latest stock arrivals and adjustments	-	-	-	-
PC5. Conduct routine stock checks to ensure accuracy and identify discrepancies	-	-	-	-
PC6. Reorder parts based on inventory levels and demand forecasts	-	-	-	-
Building strong relationships with Suppliers	**5**	**10**	**10**	**-**
PC7. Establish regular communication channels with suppliers to streamline the procurement process for spare parts.	-	-	-	-
PC8. Negotiate pricing agreements with suppliers to ensure cost-effectiveness in spare parts procurement	-	-	-	-
PC9. Collaborate with suppliers to develop efficient inventory replenishment strategies for spare parts	-	-	-	-
NOS Total	**15**	**30**	**30**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1302
NOS Name	Spare Parts Inventory Management
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Automotive Service & Repair
NSQF Level	4
Credits	3
Version	1.0
Next Review Date	NA

ASC/N1303: Warranty Management

Description

This unit describes innovative approaches to automobile symptom-based diagnosis before carrying out service and repair an automobile.

Scope

The scope covers the following :

- Recording detailed diagnostic findings and repair actions.
- Maintaining comprehensive documentation of warranty claims submitted.
- Tracking timelines for warranty approval and processing.

Elements and Performance Criteria

Recording detailed diagnostic findings and repair actions.

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

PC1. Conduct thorough vehicle inspections to identify potential warranty issues

PC2. Document diagnostic findings and repair actions in the warranty management system

PC3. Update warranty databases with accurate information on parts and labor used for repairs.

Maintaining comprehensive documentation of warranty claims submitted.

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

PC4. Conduct thorough diagnostic tests on vehicle systems to identify potential issues

PC5. Analyze electronic control modules for fault codes and irregularities

PC6. Interpret diagnostic results to determine necessary repairs or replacements

Tracking timelines for warranty approval and processing

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

PC7. Review customer vehicle history for warranty eligibility

PC8. Document diagnostic findings and repair recommendations

PC9. Coordinate with warranty administrator for pre-approval

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Familiarize yourself with the warranty policies and procedures of the automotive manufacturer or dealership to understand coverage terms and conditions.

KU2. Maintain detailed records of warranty information for each vehicle serviced, including warranty start and end dates, coverage types, and limitations

KU3. Document all warranty-related repairs performed, including parts replaced, labor hours, and associated costs, for accurate tracking and reporting

KU4. Ensure adherence to warranty guidelines and specifications during diagnostic testing and repair processes to avoid voiding warranty coverage

KU5. Verify warranty eligibility before initiating any repairs to prevent unauthorized expenses and minimize customer disputes

KU6. Communicate effectively with customers regarding warranty coverage, explaining any potential out-of-pocket costs or limitations upfront

KU7. Utilize digital tools or software systems for efficient tracking and management of warranty claims, streamlining administrative tasks

KU8. Stay updated on changes or updates to warranty policies and procedures to ensure compliance and accuracy in documentation

KU9. Collaborate with warranty administrators or representatives as needed to resolve complex warranty issues or disputes

KU10. Conduct regular audits of warranty documentation and tracking processes to identify areas for improvement and ensure accuracy and completeness

Generic Skills (GS)

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

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. write in English/regional language

GS7. read various sources of information available for assessing service and repair requirements.

GS8. Read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the Electric Vehicle and its aggregates

GS9. Communicate effectively at the workplace

GS10. Plan work according to the required schedule and location

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Recording detailed diagnostic findings and repair actions.	**5**	**10**	**10**	**-**
PC1. Conduct thorough vehicle inspections to identify potential warranty issues	-	-	-	-
PC2. Document diagnostic findings and repair actions in the warranty management system	-	-	-	-
PC3. Update warranty databases with accurate information on parts and labor used for repairs.	-	-	-	-
Maintaining comprehensive documentation of warranty claims submitted.	**5**	**10**	**10**	**-**
PC4. Conduct thorough diagnostic tests on vehicle systems to identify potential issues	-	-	-	-
PC5. Analyze electronic control modules for fault codes and irregularities	-	-	-	-
PC6. Interpret diagnostic results to determine necessary repairs or replacements	-	-	-	-
Tracking timelines for warranty approval and processing	**5**	**10**	**10**	**-**
PC7. Review customer vehicle history for warranty eligibility	-	-	-	-
PC8. Document diagnostic findings and repair recommendations	-	-	-	-
PC9. Coordinate with warranty administrator for pre-approval	-	-	-	-
NOS Total	**15**	**30**	**30**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1303
NOS Name	Warranty Management
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Automotive Service & Repair
NSQF Level	4
Credits	3
Version	1.0
Next Review Date	NA

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Components of Assessment: - Each subject will be assessed in three components: Theory (20% weightage), Practical (40% weightage), and On-job Training (OJT, 40% weightage).

2. Passing Parameters: - To pass the semester, students must meet both the assessment parameters given below.

Parameter 1 - Weighted Semester Score: - Students must achieve a minimum of 60% in the weighted average score across all three components (Theory, Practical, and OJT) for each subject.

Parameter 2 - Individual Component Score: - Students need to score at least 40% in each individual component (Theory, Practical, and OJT) of every subject.

Mandatory Note: This qualification can be offered as part of a Diploma program, in line with the 39th NSQC, ASDC Diploma (Diploma in Manufacturing Technology) approval. However, achieving 40 credits in a year is mandatory for progression within the Diploma course. Therefore, it is required to select at least one optional NOS in every semester to meet this requirement.

Minimum Aggregate Passing % at QP Level : 40

(**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/N1493.Automobile Safety System	20	40	40	0	100	10
ASC/N1494.Automobile Service and Repair (Mechanical)	20	40	40	0	100	10
ASC/N1495.Automobile Air Conditioning	20	40	40	0	100	10
ASC/N9837.Applied Physics	15	30	30	-	75	10
ASC/N1496.Automobile System wise Performance Testing (Mechanical)	20	40	40	0	100	10
ASC/N6315.Quality Management	20	40	40	-	100	10
ASC/N1497.Automobile System wise Performance Testing (Electrical & Electronics)	20	40	40	0	100	10
ASC/N9839.English Language Skills	15	30	30	-	75	10
DGT/VSQ/N0104.Employability Skills (120 Hours)	20	30	-	-	50	10
ASC/N1498.Workshop Technology Four-Wheeler (OJT)	0	0	50	50	100	10
Total	**170**	**330**	**350**	**50**	**900**	**100**

Optional: 1 Semester 3: Automobile Body Repair

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N1499.Automobile Body Repair	15	30	30	0	75	50
Total	**15**	**30**	**30**	**-**	**75**	**50**

Optional: 2 Semester 3: Automobile Paint Refinish

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N1301.Automobile Paint Refinish	15	30	30	0	75	50
Total	**15**	**30**	**30**	**-**	**75**	**50**

Optional: 3 Semester 4: Spare Parts Inventory Management

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N1302.Spare Parts Inventory Management	15	30	30	0	75	50
Total	**15**	**30**	**30**	**-**	**75**	**50**

Optional: 4 Semester 4: Warranty Management

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N1303.Warranty Management	15	30	30	0	75	50
Total	**15**	**30**	**30**	**-**	**75**	**50**

Acronyms

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

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.