

## Qualification Pack



# Four Wheeler Service Master Technician

Automotive Diagnostics

QP Code: ASC/Q1404

Version: 4.0

NSQF Level: 5

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## Qualification Pack

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### ASC/Q1404: Four Wheeler Service Master Technician

#### Brief Job Description

A Four Wheeler Service Master Technician is responsible for managing advanced diagnosis and repairs, also maintains and manages tools and equipment used in the workshop. The individual carries out all types of diagnosis of faults and repairs and is responsible for assisting other technician and supervising their work .

#### Personal Attributes

The person should be patient, organised, team-oriented and have the ability to work for long hours in adverse conditions. They should be keen observers and have an eye for detail and quality.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [ASC/N9813: Manage work and resources](#)
2. [ASC/N1407: Perform advanced fault diagnosis on vehicle](#)
3. [ASC/N1409: Assist lead technician in mechanical/electrical/electronic repairs and overhauling](#)
4. [ASC/N1444: Maintain the tools and equipment](#)
5. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

##### Options(Not mandatory):

Option : Automotive Diagnostics

1. [ASC/N1322: Carry out diagnosis of vehicle mechanical, Electrical and Advanced systems by diagnostic tools](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair

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Country	India
NSQF Level	5
Credits	24
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3115.0602
Minimum Educational Qualification & Experience	<p>B.E./B.Tech (Mechanical, Automobile, Electrical, Electronics) with 1 Year of experience OR 2-year Diploma after 12th grade (in any field) (Mechanical, Automobile, Electrical, Electronics) with 1 Year of experience OR Completed 3 year diploma after 10th (Mechanical, Automobile, Electrical, Electronics) with 1.5 years of experience OR 10th grade pass plus 2-year NTC (NAC (Machinist/ Turner/ DMM/MMV)) with 3 Years of experience OR Certificate-NSQF (Level 4 (Four wheeler service lead Technician)) with 3 Years of experience</p>
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Permanent driving Licence
Minimum Job Entry Age	20 Years
Last Reviewed On	NA
Next Review Date	18/02/2028
NSQC Approval Date	18/02/2025
Version	4.0
Reference code on NQR	QG-05-AU-03597-2025-V2-ASDC
NQR Version	2.0

## Qualification Pack

### ASC/N9813: Manage work and resources

#### Description

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

#### Scope

The scope covers the following :

- Maintain safe and secure working environment
- Ensure work as per quality standards
- Material/energy/electricity conservation practices
- Effective waste management/recycling practices
- Ensure a healthy and hygienic workplace

#### Elements and Performance Criteria

##### *Maintain safe and secure working environment*

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

- PC1.** ensure that the team complies with organisation's health, safety, security policies and procedures
- PC2.** identify the risks and hazards associated with work activities, their causes and prevention as per organisation's policy
- PC3.** encourage team to report any identified breaches in health, safety, and security policies and procedures to the designated person

##### *Ensure work as per quality standards*

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

- PC4.** ensure work area is kept clean and tidy
- PC5.** identify individual work requirements and provide necessary instructions to the team
- PC6.** ensure the team works as per the assigned and agreed requirements
- PC7.** identify work which fails the requirements, specified quality standards and ensure timely corrective action is taken
- PC8.** implement ways and guide the team to manage time, resources and cost effectively
- PC9.** train the team on skill level advancement to develop expertise in their work
- PC10.** ensure that the team understands accountability for timely completion of tasks
- PC11.** analyse and validate the problem accurately and communicate different possible solutions to the problem

##### *Material/energy/electricity conservation practices*

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

- PC12.** identify ways to optimize usage of electricity/other source of energy and material including water in various tasks/activities/processes
- PC13.** ensure that the team uses resources in a responsible manner

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- PC14.** ensure that the team periodically checks for spills/leakages around the work area and take corrective actions or escalate to appropriate authority if unable to rectify
- PC15.** supervise team to carry out routine cleaning of tools, machine and equipment
- PC16.** ensure that the team periodically checks if the equipment/machines are maintained and functioning normally before commencing work and take corrective action wherever required

### *Effective waste management/recycling practices*

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

- PC17.** identify recyclable, non-recyclable and hazardous waste generated
- PC18.** ensure the team segregates waste into different categories
- PC19.** ensure proper disposal of non-recyclable waste
- PC20.** ensure recyclable and reusable material is deposited at identified location
- PC21.** ensure the team follows processes specified for disposal of hazardous waste

### *Ensure a healthy and hygienic workplace*

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

- PC22.** ensure workplace, equipment, restrooms etc. are sanitized regularly
- PC23.** promote awareness about hygiene and sanitation regulations
- PC24.** check availability of running water, hand wash and alcohol-based sanitizers at workplace
- PC25.** support employees to cope with stress, anxiety etc.
- PC26.** wear and dispose PPEs regularly and appropriately

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** different types of health and safety hazards that can be found in the workplace, risks and threats based on the nature of work
- KU2.** company defined workplace hazards and rules/regulation for maintaining health, safety and security at workplace
- KU3.** breaches in health, safety and security as well as procedures to report the same
- KU4.** workshop layout with electrical, hydraulic and thermal equipment used
- KU5.** the organisation's emergency procedures for different emergency situations and the importance of following the same
- KU6.** ways of time and cost management
- KU7.** ways to manage efficient utilisation of energy, material and water in the process
- KU8.** ways to recognize common electrical problems and common practices of conserving electricity
- KU9.** usage of different colours of dustbins and categorization of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics
- KU10.** organisations procedures for minimizing waste
- KU11.** waste management and methods of waste disposal
- KU12.** common sources of pollution and ways to minimize it
- KU13.** different ways for skill level advancement to develop expertise



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- KU14.** key performance indicators for the new tasks
- KU15.** timelines and goals set by the manager
- KU16.** importance of quality and timely delivery of the product/service
- KU17.** organisation's policies to maintain personal health and hygiene at workplace
- KU18.** significance of greening

## Generic Skills (GS)

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

- GS1.** read instructions/guidelines/procedures
- GS2.** listen effectively and orally communicate information
- GS3.** ask for clarification and advice from the concerned person
- GS4.** maintain positive and effective relationships with colleagues and customers
- GS5.** evaluate the possible solution(s) to the problem
- GS6.** complete written work with attention to detail
- GS7.** modify work practices to improve them
- GS8.** work with supervisors/team members to carry out work related tasks
- GS9.** complete tasks efficiently and accurately within stipulated time
- GS10.** make timely decisions for efficient utilization of resources
- GS11.** be punctual and utilize time
- GS12.** evaluate strategies to maintain, enhance or reduce the intensity of heightened emotional response

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain safe and secure working environment</i>	<b>7</b>	<b>5</b>	-	<b>4</b>
<b>PC1.</b> ensure that the team complies with organisation's health, safety, security policies and procedures	2	2	-	1
<b>PC2.</b> identify the risks and hazards associated with work activities, their causes and prevention as per organisation's policy	3	2	-	2
<b>PC3.</b> encourage team to report any identified breaches in health, safety, and security policies and procedures to the designated person	2	1	-	1
<i>Ensure work as per quality standards</i>	<b>15</b>	<b>8</b>	-	<b>5</b>
<b>PC4.</b> ensure work area is kept clean and tidy	2	1	-	-
<b>PC5.</b> identify individual work requirements and provide necessary instructions to the team	2	1	-	1
<b>PC6.</b> ensure the team works as per the assigned and agreed requirements	1	1	-	-
<b>PC7.</b> identify work which fails the requirements, specified quality standards and ensure timely corrective action is taken	3	2	-	2
<b>PC8.</b> implement ways and guide the team to manage time, resources and cost effectively	2	-	-	-
<b>PC9.</b> train the team on skill level advancement to develop expertise in their work	2	1	-	1
<b>PC10.</b> ensure that the team understands accountability for timely completion of tasks	2	-	-	-
<b>PC11.</b> analyse and validate the problem accurately and communicate different possible solutions to the problem	1	2	-	1
<i>Material/energy/electricity conservation practices</i>	<b>10</b>	<b>6</b>	-	<b>4</b>



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> identify ways to optimize usage of electricity/other source of energy and material including water in various tasks/activities/processes	2	2	-	2
<b>PC13.</b> ensure that the team uses resources in a responsible manner	2	1	-	-
<b>PC14.</b> ensure that the team periodically checks for spills/leakages around the work area and take corrective actions or escalate to appropriate authority if unable to rectify	2	1	-	1
<b>PC15.</b> supervise team to carry out routine cleaning of tools, machine and equipment	2	1	-	-
<b>PC16.</b> ensure that the team periodically checks if the equipment/machines are maintained and functioning normally before commencing work and take corrective action wherever required	2	1	-	1
<i>Effective waste management/recycling practices</i>	<b>10</b>	<b>6</b>	-	<b>4</b>
<b>PC17.</b> identify recyclable, non-recyclable and hazardous waste generated	2	2	-	1
<b>PC18.</b> ensure the team segregates waste into different categories	2	1	-	1
<b>PC19.</b> ensure proper disposal of non-recyclable waste	2	1	-	-
<b>PC20.</b> ensure recyclable and reusable material is deposited at identified location	2	1	-	1
<b>PC21.</b> ensure the team follows processes specified for disposal of hazardous waste	2	1	-	1
<i>Ensure a healthy and hygienic workplace</i>	<b>8</b>	<b>5</b>	-	<b>3</b>
<b>PC22.</b> ensure workplace, equipment, restrooms etc. are sanitized regularly	2	1	-	-
<b>PC23.</b> promote awareness about hygiene and sanitation regulations	2	1	-	1
<b>PC24.</b> check availability of running water, hand wash and alcohol-based sanitizers at workplace	1	1	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC25.</b> support employees to cope with stress, anxiety etc.	1	1	-	1
<b>PC26.</b> wear and dispose PPEs regularly and appropriately	2	1	-	1
<b>NOS Total</b>	<b>50</b>	<b>30</b>	<b>-</b>	<b>20</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N9813
<b>NOS Name</b>	Manage work and resources
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	18/02/2025
<b>Next Review Date</b>	18/02/2028
<b>NSQC Clearance Date</b>	18/02/2025

## Qualification Pack

### ASC/N1407: Perform advanced fault diagnosis on vehicle

#### Description

This NOS unit is about advanced fault diagnosis of the vehicle for both mechanical and electrical/electronic repair requirements

#### Scope

The scope covers the following :

- Inspect and validate faults
- identify the root cause of fault
- Conclude the repair solution for the fault

#### Elements and Performance Criteria

##### *Inspect and validate faults*

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

- PC1.** review the job card, vehicle service history, customer verbatim, probing sheet and obtain required information about the fault, note ambient condition of the vehicle during the fault, in case fault is not permanent
- PC2.** check the functioning of vehicle systems for abnormal behaviour or other malfunctioning due to reported fault
- PC3.** conduct vehicle inspection for visual defects such external impact/bend/rust/leak/incorrect fluid level/wear & tear etc. which can lead to reported fault
- PC4.** conduct vehicle inspection/test drive according to nature of fault or vehicle ambient condition to reproduce/simulate the fault and validate
- PC5.** determine symptoms and precise location of faults in vehicle systems and collect evidences such as photographs audio/video recording, environmental data of electronic control units (ECUs) etc.

##### *identify the root cause of fault*

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

- PC6.** record the observations and suggest diagnostic test/measurement require to evaluate suspected aggregate/component/vehicle system performance
- PC7.** ensure lead technician follows SOP set out for troubleshooting and perform tests using various mechanical, electrical/electronic measuring devices/testers/diagnostic tools/software to identify/isolate faulty component or the root cause of fault
- PC8.** use vehicle or component specification, checklists, service/repair/diagnostic manual, technical information, etc. and find the possible repair solution
- PC9.** report any new premature failure/malfunctions/repair where no known solution provided by respective OEM or component manufacturer

##### *Conclude the repair solution for the fault*

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

- PC10.** interpret inspection, measurement and test results as required

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- PC11.** compare results of diagnostic inspections/tests with vehicle specifications and regulatory requirements
- PC12.** ensure lead technician maintain the documentation related to inspections and troubleshooting performed on the vehicle
- PC13.** validate final proposal regarding repair/replacement, repairing process and time requirements with justification

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the automotive industry in India, workshop structure and role and responsibilities of different people in the workshop
- KU2.** SOP for receiving vehicles, opening job card, allocation of work, invoicing, vehicle delivery, handling complaints etc.
- KU3.** different components/aggregates as well as auto component manufacturer's specifications for the same
- KU4.** technology used in functioning of various electrical, mechanical systems of the vehicle and their integration such as engine management systems (petrol, diesel, gas and hybrid), engine mechanical systems, forced induction, emission and exhaust systems, body electrical and electronic system, transmission system, brake and stability control system, air-conditioning systems, active & passive safety system, media and other systems self-starter, alternator, charging systems etc.
- KU5.** interconnection of systems with each other and effect of one system on other systems
- KU6.** fundamental terms, laws and principles used in vehicles such as: voltage, current (AC/DC/HV), resistance, power, capacitance, inductance, discrete electronic components, radio frequency, torque, traction, OHM's law, pascal's law, law of levers etc., automotive communication protocols such as Controller Area Network (CAN), Local Interconnect Network(LIN), Media Oriented Systems Transport(MOST) etc.
- KU7.** use of relevant measuring device/equipment and interpretation of all relevant mathematical calculations
- KU8.** various electrical and electronic signals such as electrical inputs, outputs, voltage, pulse-width modulation, digital signal (including infrared and fiber optics) etc.
- KU9.** symbols, units and terms used in wiring diagrams associated with electrical/electric systems/components of the vehicle
- KU10.** how to use computer, on-line application and OEM technical information/assistance portals
- KU11.** various sources of information available for assessing service and repair requirements of the vehicle including diagnostic displays, visual inspections, test drives, vehicle/equipment manufacturer specifications, and tolerance limits of components
- KU12.** industry standards required for inspection and fault reporting in oral, written, and electronic formats
- KU13.** typical symptoms of common faults and failures in vehicle mechanical, electrical and electronic systems
- KU14.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.

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- KU15.** safety, health and environmental policies and regulations for the work place as well as for automotive trade in general
- KU16.** safety requirements recommended by the OEM for handling tool/equipment, hazardous substances and while working in hazardous environments
- KU17.** legal regulations that need to be considered for handling hybrid vehicles in the workshop
- KU18.** occupational Safety and Health (OSH) measures required for working on vehicles
- KU19.** various methods to dispose-off replaced failed components/parts, fluids and hazardous substances
- KU20.** Standard Operating Procedures (SOPs) of the organization/ dealership for inspection and diagnosis of faults in a vehicle as prescribed by the OEM/components manufacturer
- KU21.** SOP recommended by OEM for using tools/equipment for diagnosis or troubleshooting such as special service tools, measuring instrument, volt meters, ammeters, ohmmeters, battery tester, dedicated and computer based diagnostic equipment, oscilloscopes etc.
- KU22.** different types of errors or defects in the tools/equipment
- KU23.** documentation requirements for each procedure carried out as part of roles and responsibilities as specified by OEM/auto component manufacturer
- KU24.** organizational/professional code of ethics and standards of practice

## 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.** plan work according to the required schedule and location

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Inspect and validate faults</i>	15	15	-	7
<b>PC1.</b> review the job card, vehicle service history, customer verbatim, probing sheet and obtain required information about the fault, note ambient condition of the vehicle during the fault, in case fault is not permanent	-	2	-	2
<b>PC2.</b> check the functioning of vehicle systems for abnormal behaviour or other malfunctioning due to reported fault	3	3	-	1
<b>PC3.</b> conduct vehicle inspection for visual defects such external impact/bend/rust/leak/incorrect fluid level/wear & tear etc. which can lead to reported fault	3	3	-	1
<b>PC4.</b> conduct vehicle inspection/test drive according to nature of fault or vehicle ambient condition to reproduce/simulate the fault and validate	5	3	-	1
<b>PC5.</b> determine symptoms and precise location of faults in vehicle systems and collect evidences such as photographs audio/video recording, environmental data of electronic control units (ECUs) etc.	4	4	-	2
<i>Identify the root cause of fault</i>	15	15	-	7
<b>PC6.</b> record the observations and suggest diagnostic test/measurement require to evaluate suspected aggregate/component/vehicle system performance	3	3	-	2
<b>PC7.</b> ensure lead technician follows SOP set out for troubleshooting and perform tests using various mechanical, electrical/electronic measuring devices/testers/diagnostic tools/software to identify/isolate faulty component or the root cause of fault	4	4	-	2
<b>PC8.</b> use vehicle or component specification, checklists, service/repair/diagnostic manual, technical information, etc. and find the possible repair solution	4	4	-	2



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC9.</b> report any new premature failure/malfunctions/repair where no known solution provided by respective OEM or component manufacturer	4	4	-	1
<i>Conclude the repair solution for the fault</i>	<b>10</b>	<b>10</b>	-	<b>6</b>
<b>PC10.</b> interpret inspection, measurement and test results as required	3	3	-	2
<b>PC11.</b> compare results of diagnostic inspections/tests with vehicle specifications and regulatory requirements	3	3	-	2
<b>PC12.</b> ensure lead technician maintain the documentation related to inspections and troubleshooting performed on the vehicle	2	2	-	1
<b>PC13.</b> validate final proposal regarding repair/replacement, repairing process and time requirements with justification	2	2	-	1
<b>NOS Total</b>	<b>40</b>	<b>40</b>	-	<b>20</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1407
<b>NOS Name</b>	Perform advanced fault diagnosis on vehicle
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>NSQF Level</b>	6
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	18/02/2025
<b>Next Review Date</b>	18/02/2028
<b>NSQC Clearance Date</b>	18/02/2025

## Qualification Pack

### ASC/N1409: Assist lead technician in mechanical/electrical/electronic repairs and overhauling

#### Description

This NOS unit is about an individual carrying out repairs and overhauling of mechanical/electronic/electrical systems of a vehicle.

#### Scope

The scope covers the following :

- Prepare to assist for repair and overhauling in mechanical/electrical/electronic systems of the vehicle
- Assist for repair and overhauling in mechanical/electrical/electronic systems of the vehicle
- Perform post service/repair activities

#### Elements and Performance Criteria

##### *Prepare to assist for repair and overhauling in mechanical/electrical/electronic systems of the vehicle*

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

- PC1.** review the job card, vehicle service history, inspection report, etc. to verify repair requirement
- PC2.** conduct visual inspection to assess defects such as any external impact/bend/leak/incorrect level/wear & tear etc.
- PC3.** ensure correct service/repair manual is collected and lead technician has gone through the required SOP
- PC4.** ensure workshop tools/measuring devices/equipment/spare parts/consumable required for the job are collected and their condition/calibration is as specified by respective OEM
- PC5.** ensure tools/equipment are placed in an organised manner for maintaining safe and tidy workstation
- PC6.** wear PPE according to nature of job to be performed

##### *Assist for repair and overhauling in mechanical/electrical/electronic systems of the vehicle*

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

- PC7.** take precautions to avoid damage to the vehicle and its components while working on various aggregates
- PC8.** follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments
- PC9.** remove parts relevant to various aggregates and place them securely as specified by OEM
- PC10.** remove parts relevant to various aggregates and place them securely as specified by OEM
- PC11.** test mechanical/electrical/electronic components post removal wherever applicable as per OEM SOP
- PC12.** ensure cleanliness and condition dismantled components, including mechanical and electrical aggregates, prior to assembly

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- PC13.** assist lead technician to perform repair/replacement/calibration/overhauling of mechanical/electrical and electronic system/aggregate such as engine, transmission, running systems, etc. including power assisted braking & steering systems
- PC14.** repair indirect faults in mechanical aggregate due to other system/component
- PC15.** ensure the documentation related to repair/overhaul of the vehicle are maintained

### *Perform post service/repair activities*

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

- PC16.** check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection/repair required
- PC17.** ensure completeness of tasks assigned before releasing the vehicle for the next procedure
- PC18.** ensure dispose off materials such as waste oil, scrap of failed parts/aggregates, as per organisation's policies
- PC19.** ensure all tools, auxiliary material and other equipment is removed from the work site
- PC20.** ensure scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the automotive industry in India, workshop structure and role and responsibilities of different people in the workshop
- KU2.** Standard Operating Procedures (SOP) for receiving vehicles, opening job card, allocation of work, invoicing, vehicle delivery, handling complaints, etc.
- KU3.** different components/aggregates as well as auto component manufacturer's specifications for the same
- KU4.** technology used in functioning of various electrical, mechanical systems of the vehicle and their integration such as engine management systems (petrol, diesel, gas and hybrid), engine mechanical systems, forced induction, emission and exhaust systems, body electrical and electronic system, transmission system, brake and stability control system, air-conditioning systems, active & passive safety system, media and other systems self-starter, alternator, charging systems etc.
- KU5.** interconnection of vehicle's systems with each other and one system effect on other
- KU6.** fundamental terms, laws and principles used in vehicles such as: voltage, current (AC/DC/HV), resistance, power, capacitance, inductance, discrete electronic components, radio frequency, torque, traction, OHM's law, pascal's law, law of levers etc., automotive communication protocols such as Controller Area Network (CAN), Local Interconnect Network(LIN), Media Oriented Systems Transport(MOST) etc.
- KU7.** SOP recommended by OEM for using tools/equipment related to mechanical electrical/electronic systems such as special service tools, measuring instrument, pressure indicators/gauges, air bleeding equipment, volt meters, ammeters, ohmmeters, battery tester, dedicated and computer based diagnostic equipment, etc.
- KU8.** different types of errors or defects in the tools/equipment
- KU9.** various sources of information available for vehicle/equipment manufacturer specifications, tolerance limits of components and options for repair or replacement.

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- KU10.** OEM SOPs for service, repair and overhauling of mechanical, electrical/electronics aggregate of the vehicle
- KU11.** standard schedules and checklists recommended by the OEM/auto component manufacturer for servicing of mechanical, electrical/electronics component/aggregate in the vehicle
- KU12.** various methods for removal, dismantling, cleaning, adjusting, reassembling and testing of mechanical, electrical/electronics components for proper functioning
- KU13.** type and quality of consumables/materials used for the job such as seals, sealant, fasteners, lubricants etc.
- KU14.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU15.** safety, health and environmental policies and regulations for the work place as well as for automotive trade in general
- KU16.** safety requirements recommended by the OEM for handling tool/equipment, hazardous substances and while working in hazardous environments
- KU17.** legal regulations that need to be considered for handling hybrid vehicle in the workshop
- KU18.** Occupational Safety and Health (OSH) measures required for working on vehicles
- KU19.** various methods to dispose-off replaced failed components/parts, fluids and hazardous substances
- KU18.** organisational/professional code of ethics and standards of practice
- KU19.** documentation requirements for each procedure carried out as part of roles and responsibilities as specified by OEM/auto component manufacturer

## 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.** write in English/regional language
- GS6.** plan work according to the required schedule and location

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare to assist for repair and overhauling in mechanical/electrical/electronic systems of the vehicle</i>	<b>15</b>	<b>15</b>	-	<b>7</b>
<b>PC1.</b> review the job card, vehicle service history, inspection report, etc. to verify repair requirement	-	2	-	1
<b>PC2.</b> conduct visual inspection to assess defects such as any external impact/bend/leak/incorrect level/wear & tear etc.	5	4	-	2
<b>PC3.</b> ensure correct service/repair manual is collected and lead technician has gone through the required SOP	3	3	-	-
<b>PC4.</b> ensure workshop tools/measuring devices/equipment/spare parts/consumable required for the job are collected and their condition/calibration is as specified by respective OEM	3	2	-	2
<b>PC5.</b> ensure tools/equipment are placed in an organised manner for maintaining safe and tidy workstation	2	2	-	1
<b>PC6.</b> wear PPE according to nature of job to be performed	2	2	-	1
<i>Assist for repair and overhauling in mechanical/electrical/electronic systems of the vehicle</i>	<b>15</b>	<b>15</b>	-	<b>7</b>
<b>PC7.</b> take precautions to avoid damage to the vehicle and its components while working on various aggregates	1	1	-	-
<b>PC8.</b> follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments	2	2	-	1
<b>PC9.</b> remove parts relevant to various aggregates and place them securely as specified by OEM	1	1	-	-
<b>PC10.</b> remove parts relevant to various aggregates and place them securely as specified by OEM	1	1	-	1

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> test mechanical/electrical/electronic components post removal wherever applicable as per OEM SOP	3	3	-	2
<b>PC12.</b> ensure cleanliness and condition dismantled components, including mechanical and electrical aggregates, prior to assembly	1	1	-	-
<b>PC13.</b> assist lead technician to perform repair/replacement/calibration/overhauling of mechanical/electrical and electronic system/aggregate such as engine, transmission, running systems, etc. including power assisted braking & steering systems	3	3	-	2
<b>PC14.</b> repair indirect faults in mechanical aggregate due to other system/component	2	2	-	1
<b>PC15.</b> ensure the documentation related to repair/overhaul of the vehicle are maintained	1	1	-	-
<i>Perform post service/repair activities</i>	<b>10</b>	<b>10</b>	-	<b>6</b>
<b>PC16.</b> check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection/repair required	2	2	-	2
<b>PC17.</b> ensure completeness of tasks assigned before releasing the vehicle for the next procedure	2	2	-	-
<b>PC18.</b> ensure dispose off materials such as waste oil, scrap of failed parts/aggregates, as per organisation's policies	2	2	-	2
<b>PC19.</b> ensure all tools, auxiliary material and other equipment is removed from the work site	2	2	-	-
<b>PC20.</b> ensure scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations	2	2	-	2
<b>NOS Total</b>	<b>40</b>	<b>40</b>	-	<b>20</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1409
<b>NOS Name</b>	Assist lead technician in mechanical/electrical/electronic repairs and overhauling
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>NSQF Level</b>	6
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	18/02/2025
<b>Next Review Date</b>	18/02/2028
<b>NSQC Clearance Date</b>	18/02/2025

## Qualification Pack

### ASC/N1444: Maintain the tools and equipment

#### Description

This NOS unit is about maintaining tools and equipment as well as their records for efficient running of the workshop

#### Scope

The scope covers the following :

- Carry out tools and equipment maintenance activity
- Monitor special purpose tools/equipment usage

#### Elements and Performance Criteria

##### *Carry out tools and equipment maintenance activity*

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

- PC1.** prepare a list of tools and equipment available in the workshop as specified by respective OEM
- PC2.** inspect tools and equipment to detect losses, defects, wear or breakage
- PC3.** document the required timelines within which the tools/equipment need calibration
- PC4.** ensure re-calibration of the tools and equipment as per the requirement
- PC5.** maintain budget and expenditure records of tools and equipment, within the prescribed limit sanctioned for maintenance
- PC6.** report tools or equipment shortfall due to workload, new product launch, missing/damage tools/equipment and vehicular population in the workshop
- PC7.** label each special purpose tool/equipment location with details such as tool/equipment number, application and total items/child parts of the tools/equipment, etc.
- PC8.** ensure tools and equipment are kept clean and safe at specified location

##### *Monitor special purpose tools/equipment usage*

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

- PC9.** ensure out of order tools/equipment are marked/labeled and reported to the concern person
- PC10.** ensure correct special purpose tools/equipment issued w.r.t vehicle model/aggregate and nature of the job
- PC11.** ensure documentation of the special purpose tools/equipment usage is maintained on daily basic
- PC12.** report if noticed any discrepancy in tools usage or in and out record

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** documentation requirements for each procedure carried out as part of roles and responsibilities

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- KU2.** Standard Operating Procedures (SOPs) of the organisation/dealership to operate the various tools and equipment within the specified tolerance levels and inspection of tools and equipment
- KU3.** the maintenance of various tools and equipment such as hand and power tools, specialist tool for removal/adjustment, storage racks, protective covers, measuring devices, welding equipment, vehicle cleaning equipment, service workshop manuals, product manuals, line oilers, filters and gauges, multi-meters, load testers, fuel injector cleaners, etc.
- KU4.** SOPs of the tool or equipment manufacturer/dealership for maintenance of tools and equipment
- KU5.** the methods of gauging and assessing faults in tools and equipment
- KU6.** specific timelines for recalibration of various tools and service schedules of the various equipment
- KU7.** how to recalibrate various tools either in the workshop or from external vendors as per the manufacturer guidelines
- KU8.** the operating procedure and usage of equipment and tools at appropriate place
- KU9.** the type of personal protective equipment required to carry out the repair/maintenance safely
- KU10.** the procedure and workshop protocols to be followed to order any tools and equipment or to carry out schedule maintenance
- KU11.** how to store tools and equipment safely to avoid physical hazards
- KU12.** safety and health policies and regulations for the workplace as well as for automotive trade in general (e.g. safe practices while working in pits/under vehicles)
- KU13.** organisational and professional code of ethics and standards of practice

## Generic Skills (GS)

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

- GS1.** plan work according to the required schedule and location
- GS2.** write in English/regional language
- GS3.** identify potential workplace problem and take suitable action
- GS4.** analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently
- GS5.** read and interpret workplace related documentation
- GS6.** communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out tools and equipment maintenance activity</i>	<b>30</b>	<b>30</b>	-	<b>12</b>
<b>PC1.</b> prepare a list of tools and equipment available in the workshop as specified by respective OEM	2	2	-	2
<b>PC2.</b> inspect tools and equipment to detect losses, defects, wear or breakage	5	5	-	2
<b>PC3.</b> document the required timelines within which the tools/equipment need calibration	2	2	-	-
<b>PC4.</b> ensure re-calibration of the tools and equipment as per the requirement	3	3	-	2
<b>PC5.</b> maintain budget and expenditure records of tools and equipment, within the prescribed limit sanctioned for maintenance	5	5	-	2
<b>PC6.</b> report tools or equipment shortfall due to workload, new product launch, missing/damage tools/equipment and vehicular population in the workshop	5	5	-	2
<b>PC7.</b> label each special purpose tool/equipment location with details such as tool/equipment number, application and total items/child parts of the tools/equipment, etc.	5	5	-	-
<b>PC8.</b> ensure tools and equipment are kept clean and safe at specified location	3	3	-	2
<i>Monitor special purpose tools/equipment usage</i>	<b>10</b>	<b>10</b>	-	<b>8</b>
<b>PC9.</b> ensure out of order tools/equipment are marked/labeled and reported to the concern person	2	2	-	2
<b>PC10.</b> ensure correct special purpose tools/equipment issued w.r.t vehicle model/aggregate and nature of the job	3	3	-	2
<b>PC11.</b> ensure documentation of the special purpose tools/equipment usage is maintained on daily basic	2	2	-	2

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> report if noticed any discrepancy in tools usage or in and out record	3	3	-	2
<b>NOS Total</b>	<b>40</b>	<b>40</b>	<b>-</b>	<b>20</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1444
<b>NOS Name</b>	Maintain the tools and equipment
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>NSQF Level</b>	6
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	18/02/2025
<b>Next Review Date</b>	18/02/2028
<b>NSQC Clearance Date</b>	18/02/2025

## Qualification Pack

### DGT/VSQ/N0102: Employability Skills (60 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.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

##### *Constitutional values – Citizenship*

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

- PC3.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC4.** follow environmentally sustainable practices

##### *Becoming a Professional in the 21st Century*

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

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** 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

##### *Basic English Skills*

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



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- PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC8.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC9.** write short messages, notes, letters, e-mails etc. in English

### *Career Development & Goal Setting*

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

- PC10.** understand the difference between job and career
- PC11.** prepare a career development plan with short- and long-term goals, based on aptitude

### *Communication Skills*

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

- PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13.** work collaboratively with others in a team

### *Diversity & Inclusion*

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

- PC14.** communicate and behave appropriately with all genders and PwD
- PC15.** escalate any issues related to sexual harassment at workplace according to POSH Act

### *Financial and Legal Literacy*

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

- PC16.** select financial institutions, products and services as per requirement
- PC17.** carry out offline and online financial transactions, safely and securely
- PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC19.** 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:

- PC20.** operate digital devices and carry out basic internet operations securely and safely
- PC21.** use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC22.** use basic features of word processor, spreadsheets, and presentations

### *Entrepreneurship*

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

- PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC25.** 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:

- PC26.** identify different types of customers
- PC27.** identify and respond to customer requests and needs in a professional manner.

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**PC28.** follow appropriate hygiene and grooming standards

*Getting ready for apprenticeship & Jobs*

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

**PC29.** create a professional Curriculum vitae (Résumé)

**PC30.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

**PC31.** apply to identified job openings using offline /online methods as per requirement

**PC32.** answer questions politely, with clarity and confidence, during recruitment and selection

**PC33.** 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 and different learning and employability related portals

**KU2.** various constitutional and personal values

**KU3.** different environmentally sustainable practices and their importance

**KU4.** Twenty first (21st) century skills and their importance

**KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

**KU6.** importance of career development and setting long- and short-term goals

**KU7.** about effective communication

**KU8.** POSH Act

**KU9.** Gender sensitivity and inclusivity

**KU10.** different types of financial institutes, products, and services

**KU11.** how to compute income and expenditure

**KU12.** importance of maintaining safety and security in offline and online financial transactions

**KU13.** different legal rights and laws

**KU14.** different types of digital devices and the procedure to operate them safely and securely

**KU15.** how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

**KU16.** how to identify business opportunities

**KU17.** types and needs of customers

**KU18.** how to apply for a job and prepare for an interview

**KU19.** 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

**GS2.** communicate effectively using appropriate language in formal and informal settings

## Qualification Pack

- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- 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

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> identify employability skills required for jobs in various industries	-	-	-	-
<b>PC2.</b> identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values – Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC3.</b> recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
<b>PC4.</b> follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>2</b>	<b>4</b>	-	-
<b>PC5.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC6.</b> 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	-	-	-	-
<i>Basic English Skills</i>	<b>2</b>	<b>3</b>	-	-
<b>PC7.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
<b>PC8.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC9.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development &amp; Goal Setting</i>	<b>1</b>	<b>2</b>	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> understand the difference between job and career	-	-	-	-
<b>PC11.</b> prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	<b>2</b>	<b>2</b>	-	-
<b>PC12.</b> follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
<b>PC13.</b> work collaboratively with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>2</b>	-	-
<b>PC14.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC15.</b> escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	<b>2</b>	<b>3</b>	-	-
<b>PC16.</b> select financial institutions, products and services as per requirement	-	-	-	-
<b>PC17.</b> carry out offline and online financial transactions, safely and securely	-	-	-	-
<b>PC18.</b> identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
<b>PC19.</b> identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	<b>3</b>	<b>4</b>	-	-
<b>PC20.</b> operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
<b>PC21.</b> use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
<b>PC22.</b> use basic features of word processor, spreadsheets, and presentations	-	-	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	<b>2</b>	<b>3</b>	-	-
<b>PC23.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
<b>PC24.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
<b>PC25.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	<b>1</b>	<b>2</b>	-	-
<b>PC26.</b> identify different types of customers	-	-	-	-
<b>PC27.</b> identify and respond to customer requests and needs in a professional manner.	-	-	-	-
<b>PC28.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>2</b>	<b>3</b>	-	-
<b>PC29.</b> create a professional Curriculum vitae (Résumé)	-	-	-	-
<b>PC30.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
<b>PC31.</b> apply to identified job openings using offline /online methods as per requirement	-	-	-	-
<b>PC32.</b> answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
<b>PC33.</b> identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	DGT/VSQ/N0102
<b>NOS Name</b>	Employability Skills (60 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	4
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	18/02/2025
<b>Next Review Date</b>	18/02/2028
<b>NSQC Clearance Date</b>	18/02/2025



## Qualification Pack

### ASC/N1322: Carry out diagnosis of vehicle mechanical, Electrical and Advanced systems by diagnostic tools

#### Description

This NOS unit is about performing diagnosis of faults and failures in vehicle mechanical, electrical and advanced systems/aggregates to identify their causes and preventive measures.

#### Scope

The scope covers the following :

- Prepare for diagnosis process
- Perform diagnosis of vehicle mechanical, electrical and advanced systems system/aggregates
- Perform post-diagnosis activities

#### Elements and Performance Criteria

##### *Prepare for diagnosis process*

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

- PC1.** obtain the details of faults/failures in vehicle through field reports and DMS data received from dealership/OEM/Area office
- PC2.** interpret the vehicle drawings, work instruction's, fault reports etc. to plan the diagnosis tasks need to be conducted
- PC3.** identify and select the diagnostic tools, testing tools, simulation tools, software testing tools, hand tools, measuring tools, measuring instruments, gauges, etc. required during the diagnosis process
- PC4.** ensure that tools, gauges and diagnosis apparatus are cleaned properly and free from any dust and impurities
- PC5.** identify the testing parameters which need to be measured during the diagnosis procedure
- PC6.** set the diagnostic apparatus and connect the various data capturing meters and gauges, data collection systems and data loggers to capture the required failure data as per the diagnosis process and SOPs/WI
- PC7.** dismantle and reassemble aggregates of vehicle for fault diagnosis as per the Drawing/Standard Operating Procedure/Work Instruction

##### *Perform diagnosis of vehicle mechanical, electrical and advanced systems system/aggregates*

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

- PC8.** perform root cause analysis to identify the cause of faults in the vehicle
- PC9.** carry out diagnosis of noise in engine
- PC10.** use compression tester and cylinder leakage tester to detect any leakage in cylinder
- PC11.** use engine fault diagnosis tools to identify possible causes and remedies for the identified faults/failures in engine
- PC12.** conduct cooling system leakage test, antifreeze content test and operating temperature test by using cooling fault diagnosis tables

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- PC13.** conduct lubrication system diagnosis with oil pressure testing kit and by using lubrication fault diagnosis tables
- PC14.** conduct brake fluid diagnosis with brake fluid tester, brake roller test, disc runout test by using brake fluid diagnosis table
- PC15.** conduct steering and wheels diagnosis with tire pressure, tread depth, wheel balancer, four-wheel alignment machine by using steering fault diagnosis table and tire fault diagnostic table
- PC16.** conduct suspension diagnosis with damper operation test, trim height test by using suspension fault diagnosis table
- PC17.** conduct clutch diagnosis with clutch tests by using clutch fault diagnosis table
- PC18.** conduct automatic gearbox diagnosis with stall test and kickdown test using automatic gear box fault diagnosis table

### *Perform post-diagnosis activities*

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

- PC19.** record and collate all the results in the required formats
- PC20.** analyse and compare the results with the standard values, regulatory norms and benchmarked values to identify causes of faults and suggest remedies and preventing actions to repair or avoid them
- PC21.** submit the report to concerned department for rectification of faults in vehicle

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's diagnostic standards and processes
- KU2.** diagnostic terminology in automobile industry
- KU3.** how to write precise report
- KU4.** various repairing and diagnostic techniques for vehicle mechanical system
- KU5.** root cause analysis and Fishbone diagram
- KU6.** different types of noises and possible source of them
- KU7.** difference between noise vibration and harshness
- KU8.** use of different mechanical gauges, tools, and instruments
- KU9.** working of different mechanical, hydraulic and pneumatic system
- KU10.** working of mechanicals in engine and its subsystems, clutch, transmission, and final drive, brakes, steering, and suspension system
- KU11.** different steering and suspension geometry angles
- KU12.** different tread wear pattern and causes of it
- KU13.** various national and international regulations, norms and standards on vehicles
- KU14.** how to read and interpret sketches and engineering drawings
- KU15.** potential health and safety hazards and related safety precautions

## Generic Skills (GS)

## Qualification Pack

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

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

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for diagnosis process</i>	<b>7</b>	<b>19</b>	<b>6</b>	<b>4</b>
<b>PC1.</b> obtain the details of faults/failures in vehicle through field reports and DMS data received from dealership/OEM/Area office	1	3	-	1
<b>PC2.</b> interpret the vehicle drawings, work instruction's, fault reports etc. to plan the diagnosis tasks need to be conducted	1	3	1	1
<b>PC3.</b> identify and select the diagnostic tools, testing tools, simulation tools, software testing tools, hand tools, measuring tools, measuring instruments, gauges, etc. required during the diagnosis process	1	3	1	1
<b>PC4.</b> ensure that tools, gauges and diagnosis apparatus are cleaned properly and free from any dust and impurities	1	3	1	-
<b>PC5.</b> identify the testing parameters which need to be measured during the diagnosis procedure	1	3	1	-
<b>PC6.</b> set the diagnostic apparatus and connect the various data capturing meters and gauges, data collection systems and data loggers to capture the required failure data as per the diagnosis process and SOPs/WI	1	2	2	-
<b>PC7.</b> dismantle and reassemble aggregates of vehicle for fault diagnosis as per the Drawing/Standard Operating Procedure/Work Instruction	1	2	-	1
<i>Perform diagnosis of vehicle mechanical, electrical and advanced systems system/aggregates</i>	<b>11</b>	<b>25</b>	<b>11</b>	<b>6</b>
<b>PC8.</b> perform root cause analysis to identify the cause of faults in the vehicle	1	2	1	1
<b>PC9.</b> carry out diagnosis of noise in engine	1	3	1	1
<b>PC10.</b> use compression tester and cylinder leakage tester to detect any leakage in cylinder	1	2	1	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> use engine fault diagnosis tools to identify possible causes and remedies for the identified faults/failures in engine	1	2	1	-
<b>PC12.</b> conduct cooling system leakage test, antifreeze content test and operating temperature test by using cooling fault diagnosis tables	1	2	1	1
<b>PC13.</b> conduct lubrication system diagnosis with oil pressure testing kit and by using lubrication fault diagnosis tables	1	2	1	1
<b>PC14.</b> conduct brake fluid diagnosis with brake fluid tester, brake roller test, disc runout test by using brake fluid diagnosis table	1	3	1	-
<b>PC15.</b> conduct steering and wheels diagnosis with tire pressure, tread depth, wheel balancer, four-wheel alignment machine by using steering fault diagnosis table and tire fault diagnostic table	1	2	1	1
<b>PC16.</b> conduct suspension diagnosis with damper operation test, trim height test by using suspension fault diagnosis table	1	3	1	1
<b>PC17.</b> conduct clutch diagnosis with clutch tests by using clutch fault diagnosis table	1	2	1	-
<b>PC18.</b> conduct automatic gearbox diagnosis with stall test and kickdown test using automatic gear box fault diagnosis table	1	2	1	-
<i>Perform post-diagnosis activities</i>	<b>2</b>	<b>6</b>	<b>3</b>	-
<b>PC19.</b> record and collate all the results in the required formats	-	2	1	-
<b>PC20.</b> analyse and compare the results with the standard values, regulatory norms and benchmarked values to identify causes of faults and suggest remedies and preventing actions to repair or avoid them	1	2	1	-
<b>PC21.</b> submit the report to concerned department for rectification of faults in vehicle	1	2	1	-
<b>NOS Total</b>	<b>20</b>	<b>50</b>	<b>20</b>	<b>10</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1322
<b>NOS Name</b>	Carry out diagnosis of vehicle mechanical, Electrical and Advanced systems by diagnostic tools
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	
<b>Occupation</b>	Automotive Service & Repair
<b>NSQF Level</b>	5
<b>Credits</b>	5
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	18/02/2025
<b>Next Review Date</b>	18/02/2028
<b>NSQC Clearance Date</b>	18/02/2025

### Assessment Guidelines and Assessment Weightage

#### Assessment Guidelines

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

## Qualification Pack

### Minimum Aggregate Passing % at QP Level : 70

(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/N9813.Manage work and resources	50	30	-	20	100	15
ASC/N1407.Perform advanced fault diagnosis on vehicle	40	40	-	20	100	35
ASC/N1409.Assist lead technician in mechanical/electrical/electronic repairs and overhauling	40	40	-	20	100	20
ASC/N1444.Maintain the tools and equipment	40	40	-	20	100	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
<b>Total</b>	<b>190</b>	<b>180</b>	<b>-</b>	<b>80</b>	<b>450</b>	<b>100</b>

Optional: 1 Automotive Diagnostics

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N1322.Carry out diagnosis of vehicle mechanical, Electrical and Advanced systems by diagnostic tools	20	50	20	10	100	20
<b>Total</b>	<b>20</b>	<b>50</b>	<b>20</b>	<b>10</b>	<b>100</b>	<b>20</b>



## Qualification Pack



## Qualification Pack

### Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training
<b>ECU</b>	Electronic Control Units
<b>SOP</b>	Standard Operating Procedure
<b>OEM</b>	Original Equipment Manufacturer
<b>CAN</b>	Controller Area Network
<b>LIN</b>	Local Interconnect Network
<b>SOP</b>	Standard Operating Procedure
<b>ECU</b>	Electronic Control Units
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## Qualification Pack

### Glossary

<b>Sector</b>	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.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	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.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	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.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

## Qualification Pack

<b>Knowledge and Understanding (KU)</b>	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.
<b>Organisational Context</b>	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.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	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.
<b>Electives</b>	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.
<b>Options</b>	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.