

## Qualification Pack



# Four Wheeler Service Lead Technician

QP Code: ASC/Q1403

Version: 3.0

NSQF Level: 4

Automotive || 153, GF, Okhla Industrial Area, Phase 3  
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## Qualification Pack

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### ASC/Q1403: Four Wheeler Service Lead Technician

#### Brief Job Description

The individual in this job is responsible for service, repair, overhauling and diagnosis with a wide range of specialization for mechanical, electrical and electronic faults in four wheeler vehicles.

#### Personal Attributes

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

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [ASC/N9801: Organize work and resources \(Service\)](#)
2. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)
3. [ASC/N1404: Carry out diagnosis on four wheeler vehicle for repair requirements](#)
4. [ASC/N1405: Carry out service, repair and overhauling of mechanical systems in four wheeler vehicle](#)
5. [ASC/N1438: Carry out service, repair and overhauling of electrical and electronic systems in the four wheeler vehicle](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Credits</b>	18

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<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/3115.0602
<b>Minimum Educational Qualification &amp; Experience</b>	<p>10th Class (+ 2 years I.T.I Mechanic Auto Electrical and Electronics/Diesel Mechanic/ Mechanic Motor Vehicle (MMV) with 2 Years of experience of relevant experience</p> <p>OR</p> <p>12th Class with 4 Years of experience of relevant experience</p> <p>OR</p> <p>Diploma (3 years from recognised body (Mechanical/Electrical/Electronics/Automobile, after Class 12th )</p> <p>OR</p> <p>Certificate-NSQF (Four Wheeler Service Technician Level 3) with 2 Years of experience</p>
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	LMV Driving Licence
<b>Minimum Job Entry Age</b>	20 Years
<b>Last Reviewed On</b>	27/05/2021
<b>Next Review Date</b>	27/05/2026
<b>NSQC Approval Date</b>	27/05/2021
<b>Version</b>	3.0
<b>Reference code on NQR</b>	QG-04-AU-00705-2023-V1.1-ASDC
<b>NQR Version</b>	1.1

## Qualification Pack

### ASC/N9801: Organize work and resources (Service)

#### 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
- Perform work as per quality standards
- Health and hygiene
- Material/energy conservation practices
- Effective waste management practices

#### Elements and Performance Criteria

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

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

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

##### *Perform work as per quality standards*

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

- PC4.** ensure work area is clean and tidy
- PC5.** ensure that work is accomplished as per the requirements within the specified timeline
- PC6.** ensure team goals are given preference over individual goals

##### *Health and hygiene*

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

- PC7.** sanitize workstation and equipment regularly
- PC8.** clean hands with soap, alcohol-based sanitizer regularly
- PC9.** avoid contact with ill people and self-isolate in a similar situation
- PC10.** wear and dispose PPEs regularly and appropriately
- PC11.** report advanced hygiene and sanitation issues to appropriate authority
- PC12.** follow stress and anxiety management techniques

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

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

- PC13.** identify ways to optimise usage of material in various tasks/activities/processes
- PC14.** use resources, including water, in a responsible manner

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- PC15.** check for spills/leakages in various tasks/activities/processes
- PC16.** plug spills/leakages and escalate to appropriate authority if unable to rectify
- PC17.** carry out routine cleaning of tools, machines and equipment
- PC18.** check if the equipment/machine is functioning normally before commencing work and rectify wherever required
- PC19.** report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment
- PC20.** ensure electrical equipment and appliances are properly connected and turned off when not in use

### *Effective waste management practices*

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

- PC21.** identify recyclable and non-recyclable, and hazardous waste generated
- PC22.** segregate waste into different categories
- PC23.** dispose non-recyclable waste appropriately
- PC24.** deposit recyclable and reusable material at identified location
- PC25.** follow processes specified for disposal of hazardous waste

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organisation procedures for health, safety and security, and individual role and responsibilities in this context
- KU2.** the organisations emergency procedures for different emergency situations and the importance of following the same
- KU3.** evacuation procedures for workers and visitors
- KU4.** how and when to report hazards as well as the limits of responsibility for dealing with hazards
- KU5.** potential hazards, risks and threats based on the nature of work
- KU6.** the implications of own work on the schedule and work of others
- KU7.** efficient utilisation of material and water
- KU8.** basics of electricity and prevalent energy efficient devices
- KU9.** ways to recognise common electrical problems
- KU10.** common practices of conserving electricity
- KU11.** common sources of pollution and ways to minimize it
- KU12.** categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics
- KU13.** usage of different colours of dustbins
- KU14.** waste management and methods of waste disposal
- KU15.** significance of greening
- KU16.** organisation's policies to maintain personal health and hygiene at workplace

## Generic Skills (GS)

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

- GS1.** read instructions/guidelines/standard operating procedures
- GS2.** complete statutory documents relevant to safety and hygiene
- GS3.** modify work practices to improve them
- GS4.** ask for clarifications from superior about the job requirement
- GS5.** work with supervisors/team members to carry out work related tasks
- GS6.** complete tasks efficiently and accurately within stipulated time
- GS7.** inform/report to concerned person in case of any problem
- GS8.** make timely decisions for efficient utilization of resources
- GS9.** write in at least one language and complete written work with attention to detail
- GS10.** record data on waste disposal at workplace
- GS11.** be punctual, utilize time and manage workload efficiently
- 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>8</b>	<b>4</b>	-	<b>3</b>
<b>PC1.</b> organise work as per organisation's current health, safety and security policies and procedures	-	2	-	1
<b>PC2.</b> report any identified breaches in health, safety, and security policies and procedures to the designated person	3	1	-	-
<b>PC3.</b> identify the risks and hazards associated with work activities, their causes and prevention	5	1	-	2
<i>Perform work as per quality standards</i>	<b>12</b>	<b>8</b>	-	<b>6</b>
<b>PC4.</b> ensure work area is clean and tidy	4	2	-	-
<b>PC5.</b> ensure that work is accomplished as per the requirements within the specified timeline	6	4	-	2
<b>PC6.</b> ensure team goals are given preference over individual goals	2	2	-	4
<i>Health and hygiene</i>	<b>12</b>	<b>8</b>	-	<b>5</b>
<b>PC7.</b> sanitize workstation and equipment regularly	2	2	-	2
<b>PC8.</b> clean hands with soap, alcohol-based sanitizer regularly	2	1	-	-
<b>PC9.</b> avoid contact with ill people and self-isolate in a similar situation	2	1	-	-
<b>PC10.</b> wear and dispose PPEs regularly and appropriately	2	2	-	1
<b>PC11.</b> report advanced hygiene and sanitation issues to appropriate authority	2	2	-	2
<b>PC12.</b> follow stress and anxiety management techniques	2	-	-	-
<i>Material/energy conservation practices</i>	<b>10</b>	<b>4</b>	-	<b>3</b>
<b>PC13.</b> identify ways to optimise usage of material in various tasks/activities/processes	2	-	-	1



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> use resources, including water, in a responsible manner	2	-	-	-
<b>PC15.</b> check for spills/leakages in various tasks/activities/processes	-	1	-	-
<b>PC16.</b> plug spills/leakages and escalate to appropriate authority if unable to rectify	-	1	-	1
<b>PC17.</b> carry out routine cleaning of tools, machines and equipment	2	-	-	-
<b>PC18.</b> check if the equipment/machine is functioning normally before commencing work and rectify wherever required	-	1	-	1
<b>PC19.</b> report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment	2	1	-	-
<b>PC20.</b> ensure electrical equipment and appliances are properly connected and turned off when not in use	2	-	-	-
<i>Effective waste management practices</i>	<b>8</b>	<b>6</b>	-	<b>3</b>
<b>PC21.</b> identify recyclable and non-recyclable, and hazardous waste generated	2	-	-	1
<b>PC22.</b> segregate waste into different categories	-	2	-	-
<b>PC23.</b> dispose non-recyclable waste appropriately	2	2	-	1
<b>PC24.</b> deposit recyclable and reusable material at identified location	2	1	-	-
<b>PC25.</b> follow processes specified for disposal of hazardous waste	2	1	-	1
<b>NOS Total</b>	<b>50</b>	<b>30</b>	-	<b>20</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N9801
<b>NOS Name</b>	Organize work and resources (Service)
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/05/2021
<b>Next Review Date</b>	27/05/2026
<b>NSQC Clearance Date</b>	27/05/2021

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### 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

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- 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

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### 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>	-	-



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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	-	-	-	-

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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>	-	-

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### 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>	31/01/2024
<b>Next Review Date</b>	31/01/2027
<b>NSQC Clearance Date</b>	31/01/2024

## Qualification Pack

### ASC/N1404: Carry out diagnosis on four wheeler vehicle for repair requirements

#### Description

This NOS unit is about diagnosing the mechanical and electrical/electronic aggregates in a vehicle and proposing repair to be carried out.

#### Scope

The scope covers the following :

- Inspect and identify/validate faults
- Prepare to perform diagnostic tests
- Perform tests to identify the root cause of fault
- Conclude the repair solution for the fault

#### Elements and Performance Criteria

##### *Inspect and identify/validate faults*

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

- PC1.** review the job card, obtain required information from customer/service advisor to assess service and repair requirements
- PC2.** identify the auto components related to the various aggregates in the vehicle
- PC3.** check the functioning of vehicle systems such as mechanical and electrical systems, air conditioning system etc.
- PC4.** conduct test drive to check vehicle performance and identify/validate the faults
- PC5.** conduct visual inspection to assess defects such as external impact/bend/leak/incorrect fluid level/wear & tear etc.
- PC6.** determine the precise location of faults in vehicle systems
- PC7.** report the malfunctions/repairs in the vehicle beyond own scope to the concerned person

##### *Prepare to perform diagnostic tests*

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

- PC8.** place the vehicle on suitable platform according to nature of job to be performed
- PC9.** ensure workshop tools/measuring devices/equipment required for fault diagnosis in vehicle systems are collected and checked for their condition and calibration
- PC10.** report the malfunctions if any, in the tools/equipment to the person concerned for rectification
- PC11.** ensure tools/equipment are placed in an organised manner for maintaining a safe and tidy workstation
- PC12.** wear PPE according to nature of job to be performed

##### *Perform tests to identify the root cause of fault*

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

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- PC13.** take precautions to avoid damage to the vehicle and its components during diagnosis or troubleshooting the faults
- PC14.** follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments
- PC15.** use checklists and OEM Standard Operating Procedures (SOPs) to understand if the fault is because of improper servicing, poor lubrication, low level of fluids, premature component failure, loose/poor contacts of pins in wiring harness connectors and their connection, improper driving style etc.
- PC16.** apply the appropriate device/equipment to make inspection and diagnose deficiencies/faults in various systems such as engine management system, force induction, emission and exhaust system, vehicle body electrical/electronic systems, braking and stability control systems, steering, suspension and drive line systems, etc.
- PC17.** use manufacturer's and component supplier's specifications to identify duplicate or defective component/parts which cannot be detected during visual inspection
- PC18.** follow SOP set out for troubleshooting and perform tests using various mechanical, electrical/electronic measuring devices/testers/diagnostic tools/software to identify/isolate a fault
- PC19.** diagnose indirect faults if any, in vehicle's mechanical, electrical and electronic systems as per OEM SOP
- PC20.** report the malfunctions in the vehicle where solution is not available or in case of new premature failures, to the concerned person along with preliminary diagnostic details and respond to issues or questions arising
- PC21.** dismantle and reassemble aggregates of a vehicle for fault diagnosis

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

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

- PC22.** maintain the documentation related to inspections and troubleshooting performed on the vehicle
- PC23.** interpret inspection, measurement and test results as required
- PC24.** compare results of diagnostic inspections/tests with vehicle specifications and regulatory requirements
- PC25.** validate the options for repair or replacement
- PC26.** prepare 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

## Qualification Pack

- 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.
- 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

## Qualification Pack

**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.** communicate using terms, names, grades and other nomenclature pertaining to the automotive trade
- GS3.** analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiency
- GS4.** identify potential workplace problem and take suitable action
- GS5.** read various sources of information available for assessing service and repair requirements
- GS6.** write in English/regional language
- GS7.** plan work according to the required schedule and location



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Inspect and identify/validate faults</i>	5	10	-	5
<b>PC1.</b> review the job card, obtain required information from customer/service advisor to assess service and repair requirements	-	1	-	-
<b>PC2.</b> identify the auto components related to the various aggregates in the vehicle	1	1	-	1
<b>PC3.</b> check the functioning of vehicle systems such as mechanical and electrical systems, air conditioning system etc.	2	1	-	1
<b>PC4.</b> conduct test drive to check vehicle performance and identify/validate the faults	-	2	-	-
<b>PC5.</b> conduct visual inspection to assess defects such as external impact/bend/leak/incorrect fluid level/wear & tear etc.	2	2	-	1
<b>PC6.</b> determine the precise location of faults in vehicle systems	-	2	-	2
<b>PC7.</b> report the malfunctions/repairs in the vehicle beyond own scope to the concerned person	-	1	-	-
<i>Prepare to perform diagnostic tests</i>	5	10	-	4
<b>PC8.</b> place the vehicle on suitable platform according to nature of job to be performed	-	2	-	-
<b>PC9.</b> ensure workshop tools/measuring devices/equipment required for fault diagnosis in vehicle systems are collected and checked for their condition and calibration	2	2	-	2
<b>PC10.</b> report the malfunctions if any, in the tools/equipment to the person concerned for rectification	1	2	-	1
<b>PC11.</b> ensure tools/equipment are placed in an organised manner for maintaining a safe and tidy workstation	-	2	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> wear PPE according to nature of job to be performed	2	2	-	1
<i>Perform tests to identify the root cause of fault</i>	<b>15</b>	<b>20</b>	-	<b>7</b>
<b>PC13.</b> take precautions to avoid damage to the vehicle and its components during diagnosis or troubleshooting the faults	1	1	-	1
<b>PC14.</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	-	-
<b>PC15.</b> use checklists and OEM Standard Operating Procedures (SOPs) to understand if the fault is because of improper servicing, poor lubrication, low level of fluids, premature component failure, loose/poor contacts of pins in wiring harness connectors and their connection, improper driving style etc.	2	2	-	-
<b>PC16.</b> apply the appropriate device/equipment to make inspection and diagnose deficiencies/faults in various systems such as engine management system, force induction, emission and exhaust system, vehicle body electrical/electronic systems, braking and stability control systems, steering, suspension and drive line systems, etc.	2	3	-	2
<b>PC17.</b> use manufacturer's and component supplier's specifications to identify duplicate or defective component/parts which cannot be detected during visual inspection	2	2	-	-
<b>PC18.</b> follow SOP set out for troubleshooting and perform tests using various mechanical, electrical/electronic measuring devices/testers/diagnostic tools/software to identify/isolate a fault	2	2	-	1
<b>PC19.</b> diagnose indirect faults if any, in vehicle's mechanical, electrical and electronic systems as per OEM SOP	2	2	-	2

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC20.</b> report the malfunctions in the vehicle where solution is not available or in case of new premature failures, to the concerned person along with preliminary diagnostic details and respond to issues or questions arising	2	3	-	1
<b>PC21.</b> dismantle and reassemble aggregates of a vehicle for fault diagnosis	-	3	-	-
<i>Conclude the repair solution for the fault</i>	<b>5</b>	<b>10</b>	-	<b>4</b>
<b>PC22.</b> maintain the documentation related to inspections and troubleshooting performed on the vehicle	-	2	-	-
<b>PC23.</b> interpret inspection, measurement and test results as required	2	2	-	1
<b>PC24.</b> compare results of diagnostic inspections/tests with vehicle specifications and regulatory requirements	2	2	-	2
<b>PC25.</b> validate the options for repair or replacement	1	2	-	1
<b>PC26.</b> prepare final proposal regarding repair/replacement, repairing process and time requirements with justification	-	2	-	-
<b>NOS Total</b>	<b>30</b>	<b>50</b>	-	<b>20</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1404
<b>NOS Name</b>	Carry out diagnosis on four wheeler vehicle for repair requirements
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/05/2021
<b>Next Review Date</b>	27/05/2026
<b>NSQC Clearance Date</b>	27/05/2021

## Qualification Pack

### ASC/N1405: Carry out service, repair and overhauling of mechanical systems in four wheeler vehicle

#### Description

This unit describes the knowledge and skills required in an individual to carry out service, repair and overhauling of mechanical system of a four wheeler vehicle.

#### Scope

The scope covers the following :

- Prepare to carry out service, repair and overhauling
- Perform service, repairs and overhauling job
- Perform post service/repair routine

#### Elements and Performance Criteria

##### *Prepare to carry out service, repair and overhauling*

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

- PC1.** review the job card, obtain sufficient information from customer/service advisor to assess service and repair needs of the vehicle
- PC2.** identify the auto components related to the various aggregates in the vehicle
- PC3.** place the vehicle on suitable platform according to nature of job to be performed
- PC4.** conduct visual inspection to assess defects such as any external impact/bend/leak/incorrect level/wear & tear etc.
- PC5.** ensure workshop tools/measuring devices/equipment required for the job are collected and check their condition/calibration
- PC6.** report the malfunctions if any, in the tools/equipment to the person concerned for rectification
- PC7.** report the malfunctions/repairs in the vehicle beyond own scope to the concerned person
- PC8.** prepare final proposal regarding repair/replacement, repairing process and time requirements with justification
- PC9.** ensure tools/equipment are placed in an organised manner for maintaining safe and tidy workstation
- PC10.** wear PPE according to nature of job to be performed

##### *Perform service, repairs and overhauling job*

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

- PC11.** take precautions to avoid damage to the vehicle and its components while working on various aggregates
- PC12.** follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments
- PC13.** remove parts relevant to various mechanical aggregates and place them securely as specified by OEM

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- PC14.** dismantle mechanical aggregates, if required and report additional repair requirement
- PC15.** test mechanical components post removal wherever applicable as per OEM SOP
- PC16.** clean and condition dismantled components, including mechanical and electrical aggregates, prior to assembly
- PC17.** perform service/repair/replacement/calibration/overhauling of mechanical system/aggregate such as engine, transmission, running systems, etc. including power assisted braking & steering systems
- PC18.** repair indirect faults in mechanical aggregate due to other system/component
- PC19.** maintain the documentation related to inspection, servicing and repair of the vehicle

### *Perform post service/repair routine*

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

- PC20.** check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist
- PC21.** ensure completeness of tasks assigned before releasing the vehicle for the next procedure
- PC22.** dispose off materials such as waste oil, scrap of failed parts/aggregates, as per organisation's policies
- PC23.** ensure all tools, auxiliary material and other equipment is removed from the work site
- PC24.** perform 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.** basic technology used in and functioning of various mechanical systems and components of the vehicle such as engine, drive train, running system, various lubrication system, hydraulic/pneumatic systems, cooling system, etc.
- KU5.** interconnection of systems with each other and one system's effect on other
- KU6.** fundamental terms, laws and principles such as Pascal law, law of inertia, Archimedes law of lever, gravitation, friction, thermal conduction, etc.
- KU7.** SOP recommended by OEM for using diagnostic and troubleshooting tools/equipment related to mechanical component/aggregate such as special service tools, measuring instrument, pressure indicators/gauges, air bleeding 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.
- KU10.** OEM's SOPs for service, repair and overhauling of mechanical aggregate of the vehicle

## Qualification Pack

- KU11.** standard schedules and checklists recommended by the OEM/auto component manufacturer for servicing of mechanical component/aggregate in the vehicle
- KU12.** various methods for removal, dismantling, cleaning, adjusting, reassembling and testing of mechanical 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
- KU20.** organisational/professional code of ethics and standards of practice
- KU21.** 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.** identify potential workplace problem and take suitable action
- GS6.** read various sources of information available for servicing, repairs and overhauling procedures.
- GS7.** read policies and regulations pertinent to the job, including OEM guidelines, Health and Safety instructions etc. while working on the 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



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare to carry out service, repair and overhauling</i>	<b>10</b>	<b>20</b>	-	<b>8</b>
<b>PC1.</b> review the job card, obtain sufficient information from customer/service advisor to assess service and repair needs of the vehicle	1	2	-	-
<b>PC2.</b> identify the auto components related to the various aggregates in the vehicle	1	2	-	2
<b>PC3.</b> place the vehicle on suitable platform according to nature of job to be performed	1	3	-	-
<b>PC4.</b> conduct visual inspection to assess defects such as any external impact/bend/leak/incorrect level/wear & tear etc.	1	3	-	2
<b>PC5.</b> ensure workshop tools/measuring devices/equipment required for the job are collected and check their condition/calibration	1	1	-	-
<b>PC6.</b> report the malfunctions if any, in the tools/equipment to the person concerned for rectification	1	2	-	2
<b>PC7.</b> report the malfunctions/repairs in the vehicle beyond own scope to the concerned person	1	1	-	-
<b>PC8.</b> prepare final proposal regarding repair/replacement, repairing process and time requirements with justification	1	2	-	-
<b>PC9.</b> ensure tools/equipment are placed in an organised manner for maintaining safe and tidy workstation	1	2	-	-
<b>PC10.</b> wear PPE according to nature of job to be performed	1	2	-	2
<i>Perform service, repairs and overhauling job</i>	<b>15</b>	<b>20</b>	-	<b>7</b>
<b>PC11.</b> take precautions to avoid damage to the vehicle and its components while working on various aggregates	1	2	-	1

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments	2	3	-	2
<b>PC13.</b> remove parts relevant to various mechanical aggregates and place them securely as specified by OEM	1	2	-	-
<b>PC14.</b> dismantle mechanical aggregates, if required and report additional repair requirement	-	2	-	-
<b>PC15.</b> test mechanical components post removal wherever applicable as per OEM SOP	2	3	-	1
<b>PC16.</b> clean and condition dismantled components, including mechanical and electrical aggregates, prior to assembly	2	2	-	-
<b>PC17.</b> perform service/repair/replacement/calibration/overhauling of mechanical system/aggregate such as engine, transmission, running systems, etc. including power assisted braking & steering systems	3	2	-	2
<b>PC18.</b> repair indirect faults in mechanical aggregate due to other system/component	2	2	-	1
<b>PC19.</b> maintain the documentation related to inspection, servicing and repair of the vehicle	2	2	-	-
<i>Perform post service/repair routine</i>	<b>5</b>	<b>10</b>	-	<b>5</b>
<b>PC20.</b> check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist	-	3	-	2
<b>PC21.</b> ensure completeness of tasks assigned before releasing the vehicle for the next procedure	-	1	-	-
<b>PC22.</b> dispose off materials such as waste oil, scrap of failed parts/aggregates, as per organisation's policies	2	3	-	2
<b>PC23.</b> ensure all tools, auxiliary material and other equipment is removed from the work site	1	3	-	-
<b>PC24.</b> perform scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations	2	-	-	1

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>NOS Total</b>	<b>30</b>	<b>50</b>	<b>-</b>	<b>20</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1405
<b>NOS Name</b>	Carry out service, repair and overhauling of mechanical systems in four wheeler vehicle
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/05/2021
<b>Next Review Date</b>	27/05/2026
<b>NSQC Clearance Date</b>	27/05/2021

## Qualification Pack

# ASC/N1438: Carry out service, repair and overhauling of electrical and electronic systems in the four wheeler vehicle

## Description

This unit describes the knowledge and skills required in an individual to carry out service, repair and overhauling of electrical and electronic system of a vehicle.

## Scope

The scope covers the following :

- Prepare to carry out service, repair and overhauling
- Perform service, repairs and overhauling
- Perform post service/repair routine

## Elements and Performance Criteria

### *Prepare to carry out service, repair and overhauling*

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

- PC1.** review the job card, obtain sufficient information from customer/service advisor to assess service and repair needs of the vehicle
- PC2.** identify the auto components related to the various aggregates in the vehicle
- PC3.** place the vehicle on suitable platform according to nature of job to be performed
- PC4.** conduct visual inspection to assess defects such as any external impact/bend/leak/incorrect level/wear & tear etc.
- PC5.** ensure workshop tools/measuring devices/equipment required for the job are collected and check their condition/calibration
- PC6.** report the malfunctions if any, in the tools/equipment to the person concerned for rectification
- PC7.** prepare final proposal regarding repair/replacement, repairing process and time requirements with justification
- PC8.** ensure tools/equipment are placed in an organised manner for safe and tidy workstation
- PC9.** wear PPE according to nature of job to be performed

### *Perform service, repairs and overhauling*

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

- PC10.** report the malfunctions/repairs in the vehicle beyond own scope to the concerned person
- PC11.** take precautions to avoid damage to the vehicle and its components while working on various aggregates
- PC12.** follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments
- PC13.** remove parts relevant to various electrical/electronics systems and place them securely as specified by OEM
- PC14.** dismantle electrical aggregate, if required and report additional repair requirement

## Qualification Pack

- PC15.** test electrical/electronic components post removal wherever applicable as per OEM SOP
- PC16.** clean and condition dismantled components, including mechanical and electrical aggregates, prior to assembly
- PC17.** perform repair of all electrical and electronic faults including direct faults in input sensors, output actuators, wiring harnesses, computer systems, calibration/adjustment specifications, component specifications, component assembly, system modifications
- PC18.** repair indirect faults in electrical/electronic aggregate due to other system/component
- PC19.** maintain the documentation related to inspection, servicing and repair of the vehicle

### *Perform post service/repair routine*

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

- PC20.** check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist
- PC21.** ensure completeness of tasks assigned before releasing the vehicle for the next procedure
- PC22.** dispose off materials such as old batteries, scrap of failed parts/aggregates as per organization's policies
- PC23.** ensure all tools, auxiliary material and other equipment are removed from the work site
- PC24.** perform 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.** fundamental terms, laws and principles of electricity used in electrical & electronic systems such as: principles of storing electrical voltage, ohms law, voltage, current (AC/DC/HV), resistance, power, capacitance, electrostatics, magnetic, inductance, discrete electronic components, and radio frequency (automotive digital computers, automotive communication protocols such as CAN, LIN, etc.)
- KU5.** basic technology used in and functioning of engine management system, body management system, transmission system, telematics, brake system, air-conditioning systems, active & passive safety system, media and other systems, self-starter, alternator, charging systems etc.
- KU6.** interconnection of systems with each other and effect of one system on another
- KU7.** SOP recommended by OEM for using tools and equipment for diagnosis or troubleshooting related to electrical/electronic systems such as special service tools, measuring instrument, volt meters, ammeters, ohmmeters, battery tester, dedicated and computer based diagnostic equipment, etc.

## Qualification Pack

- KU8.** various sources of information available for assessing service and repair of the vehicle such as diagnostic displays, visual inspections, test drives, vehicle/equipment manufacturer specifications, tolerance limits of components and options for repair or replacement
- KU9.** SOP for service, repair and overhauling of electrical/electronics aggregate of the vehicle as prescribed by the OEM
- KU10.** various methods to remove, dismantle, cleaning, adjusting, reassemble and test electrical/electronic components
- KU11.** type and quality of consumables/materials used for the job such as seals, sealant, fasteners, lubricants etc.
- KU12.** 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.
- KU13.** safety, health and environmental policies and regulations for the work place as well as for automotive trade in general
- KU14.** safety requirements recommended by the OEM for handling tool/equipment, hazardous substances and while working in hazardous environments
- KU15.** legal regulations that need to be considered for handling hybrid vehicles in the workshop
- KU16.** Occupational Safety and Health (OSH) measures required for working on vehicles
- KU17.** 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.** identify potential workplace problem and take suitable action
- GS6.** write in English/regional language
- GS7.** communicate effectively at the workplace
- GS8.** plan work according to the required schedule and location



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare to carry out service, repair and overhauling</i>	<b>10</b>	<b>20</b>	-	<b>8</b>
<b>PC1.</b> review the job card, obtain sufficient information from customer/service advisor to assess service and repair needs of the vehicle	-	2	-	-
<b>PC2.</b> identify the auto components related to the various aggregates in the vehicle	1	2	-	2
<b>PC3.</b> place the vehicle on suitable platform according to nature of job to be performed	1	3	-	-
<b>PC4.</b> conduct visual inspection to assess defects such as any external impact/bend/leak/incorrect level/wear & tear etc.	2	3	-	2
<b>PC5.</b> ensure workshop tools/measuring devices/equipment required for the job are collected and check their condition/calibration	1	1	-	-
<b>PC6.</b> report the malfunctions if any, in the tools/equipment to the person concerned for rectification	2	2	-	2
<b>PC7.</b> prepare final proposal regarding repair/replacement, repairing process and time requirements with justification	1	3	-	1
<b>PC8.</b> ensure tools/equipment are placed in an organised manner for safe and tidy workstation	1	2	-	-
<b>PC9.</b> wear PPE according to nature of job to be performed	1	2	-	1
<i>Perform service, repairs and overhauling</i>	<b>15</b>	<b>20</b>	-	<b>7</b>
<b>PC10.</b> report the malfunctions/repairs in the vehicle beyond own scope to the concerned person	-	2	-	-
<b>PC11.</b> take precautions to avoid damage to the vehicle and its components while working on various aggregates	1	1	-	1

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> follow OEM SOP and standard safety procedures while handling tool/equipment, vehicle component, fluids, hazardous substances and while working in hazardous environments	2	3	-	2
<b>PC13.</b> remove parts relevant to various electrical/electronics systems and place them securely as specified by OEM	1	2	-	-
<b>PC14.</b> dismantle electrical aggregate, if required and report additional repair requirement	-	2	-	-
<b>PC15.</b> test electrical/electronic components post removal wherever applicable as per OEM SOP	2	3	-	1
<b>PC16.</b> clean and condition dismantled components, including mechanical and electrical aggregates, prior to assembly	2	1	-	-
<b>PC17.</b> perform repair of all electrical and electronic faults including direct faults in input sensors, output actuators, wiring harnesses, computer systems, calibration/adjustment specifications, component specifications, component assembly, system modifications	3	2	-	2
<b>PC18.</b> repair indirect faults in electrical/electronic aggregate due to other system/component	2	2	-	1
<b>PC19.</b> maintain the documentation related to inspection, servicing and repair of the vehicle	2	2	-	-
<i>Perform post service/repair routine</i>	<b>5</b>	<b>10</b>	-	<b>5</b>
<b>PC20.</b> check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist	-	3	-	2
<b>PC21.</b> ensure completeness of tasks assigned before releasing the vehicle for the next procedure	-	1	-	-
<b>PC22.</b> dispose off materials such as old batteries, scrap of failed parts/aggregates as per organization's policies	2	3	-	2
<b>PC23.</b> ensure all tools, auxiliary material and other equipment are removed from the work site	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC24.</b> perform scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations	2	-	-	1
<b>NOS Total</b>	<b>30</b>	<b>50</b>	<b>-</b>	<b>20</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N1438
<b>NOS Name</b>	Carry out service, repair and overhauling of electrical and electronic systems in the four wheeler vehicle
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/05/2021
<b>Next Review Date</b>	27/05/2026
<b>NSQC Clearance Date</b>	27/05/2021

### Assessment Guidelines and Assessment Weightage

#### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.
5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
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/N9801.Organize work and resources (Service)	50	30	-	20	100	15
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	10
ASC/N1404.Carry out diagnosis on four wheeler vehicle for repair requirements	30	50	-	20	100	25
ASC/N1405.Carry out service, repair and overhauling of mechanical systems in four wheeler vehicle	30	50	-	20	100	25
ASC/N1438.Carry out service, repair and overhauling of electrical and electronic systems in the four wheeler vehicle	30	50	-	20	100	25
<b>Total</b>	<b>160</b>	<b>210</b>	<b>-</b>	<b>80</b>	<b>450</b>	<b>100</b>

## 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

## 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.