Qualification Pack

Automotive Service Technician Level 4

QP Code: ASC/Q1402

Version: 1.0

NSQF Level: 4

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Contents

ASC/Q1402: Automotive Service Technician Level 4

Brief Job Description

An Auto Service Technician Level 4 is responsible for the repair and routine servicing& maintenance (including electrical and mechanical aggregates) of vehicles.

Personal Attributes

An individual on this job must have good communication and interpersonal skills in addition to being a team player, as the job requires coordination with other Technicians as well. The individual must have a technical bend of mind to understand the technical aspects related to various aggregates (including both mechanical & electrical) in a vehicle, which would also help in understanding the fault diagnosis in the vehicle. The individual must know how to drive a vehicle to practically test drive and identify any additional repair or service requirements in the vehicle or any of components or aggregates.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N0001: Plan and organise work to meet expected outcomes
2. ASC/N0002: Work effectively in a team
3. ASC/N0003: Maintain a healthy,safe and secure working environment
4. ASC/N1402: Assist in performing diagnosis of vehicle for repair requirements
5. ASC/N1403: Carry out routine service and minor repairs of mechanical and electrical aggregates

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service and Repair
Country	India
NSQF Level	4
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3115.0602

Minimum Educational Qualification & Experience	10th Class with 3-5 years of experience For other qualifications
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	On the job training: Desirable for ASDC Auto Service Technician Level 4 Certificate or Diploma in Automotive Repair Compulsory for all other qualifications
Minimum Job Entry Age	18 Years
Last Reviewed On	10/06/2013
Next Review Date	30/09/2021
Deactivation Date	30/09/2021
NSQC Approval Date	20/07/2015
Version	1.0
Reference code on NQR	2015/AUT/ASDC/00559
NQR Version	1.0

ASC/N0001: Plan and organise work to meet expected outcomes

Description

This NOS unit is about planning and organising an individuals work in order to complete it to the required standards on time.

Elements and Performance Criteria

Work requirements including various activities within the given time and set quality standards

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

PC1. keep immediate work area clean and tidy

PC2. treat confidential information as per the organisations guidelines

PC3. work in line with organisations policies and procedures

PC4. work within the limits of job role

PC5. obtain guidance from appropriate people, where necessary

PC6. ensure work meets the agreed requirements

Appropriate use of resources

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

PC7. establish and agree on work requirements with appropriate people

PC8. manage time, materials and cost effectively

PC9. use resources in a responsible manner

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organisations policies, procedures and priorities for area of work, role and responsibilities in carrying out that work

KU2. the limits of responsibilities and when to involve others

KU3. specific work requirements and who these must be agreed with

KU4. the importance of having a tidy work area and how to do this

KU5. how to prioritize workload according to urgency and importance and the benefits of this

KU6. the organisations policies and procedures for dealing with confidential information and the importance of complying with these

KU7. the purpose of keeping others updated with the progress of work

KU8. who to obtain guidance from and the typical circumstances when this may be required

KU9. the purpose and value of being flexible and adapting work plans

KU10. how to complete tasks accurately by following standard procedures

KU11. technical resources needed for work and how to obtain and use these

Generic Skills (GS)

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

GS1. write in at least one language
GS2. read instructions, guidelines/procedures
GS3. ask for clarification and advice from appropriate persons
GS4. communicate orally with colleagues
GS5. make a decision on a suitable course of action appropriate for accurately completing the task within resources
GS6. agree objectives and work requirements
GS7. plan and organise work to achieve targets and deadlines
GS8. deliver consistent and reliable service to customers
GS9. check own work and ensure it meets customer requirements
GS10. anomalies to the concerned persons
GS11. analyse problems and identify work-arounds taking help from
GS12. apply own judgement to identify solutions in different situations

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work requirements including various activities within the given time and set quality standards	**16**	**47**	**-**	**-**
PC1. keep immediate work area clean and tidy	2	9	-	-
PC2. treat confidential information as per the organisations guidelines	2	6	-	-
PC3. work in line with organisations policies and procedures	3	8	-	-
PC4. work within the limits of job role	3	6	-	-
PC5. obtain guidance from appropriate people, where necessary	3	7	-	-
PC6. ensure work meets the agreed requirements	3	11	-	-
Appropriate use of resources	**9**	**28**	**-**	**-**
PC7. establish and agree on work requirements with appropriate people	3	9	-	-
PC8. manage time, materials and cost effectively	3	11	-	-
PC9. use resources in a responsible manner	3	8	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0001
NOS Name	Plan and organise work to meet expected outcomes
Sector	Automotive
Sub-Sector	Manufacturing and R&D, Sales and Service, Road Transportation
Occupation	Auto Components /Aggregates Repair
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

ASC/N0002: Work effectively in a team

Description

This NOS unit is about working effectively with colleagues, either in individuals own work group or in other work groups within organisation

Scope

This unit/task covers the following: Colleagues:

- Superiors
- Members of own work group
- People in other work groups within or outside the organisation Communicate:
- Face-to-face
- By telephone
- In writing

Elements and Performance Criteria

Effective communication

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

PC1. maintain clear communication with colleagues

PC2. work with colleagues

PC3. pass on information to colleagues in line with organisational requirements

PC4.. work in ways that show respect for colleagues

PC5. carry out commitments made to colleagues

PC6. let colleagues know in good time if cannot carry out commitments, explaining the reasons

PC7. identify problems in working with colleagues and take the initiative to solve these problems

PC8. follow the organisations policies and procedures for working with colleagues

PC9. ability to share resources with other members as per priority of tasks

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organisations policies and procedures for working withcolleagues, role and responsibilities in relation to this

KU2. the importance of effective communication and establishing goodworking relationships with colleagues

KU3. different methods of communication and the circumstances inwhich it is appropriate to use these

KU4. benefits of developing productive working relationships withcolleagues

KU5. the importance of creating an environment of trust and mutualrespect

KU6. whether not meeting commitments, will have implications onindividuals and the organisation

KU7. different types of information that colleagues might need and theimportance of providing this information when it is required

KU8. the importance of problems, from colleagues perspective andhow to provide support, where necessary, to resolve these

Generic Skills (GS)

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

GS1. complete well written work with attention to detail

GS2. read instructions, guidelines/procedures

GS3. listen effectively and orally communicate information

GS4. make decisions on a suitable course of action or response

GS5. plan and organise work to achieve targets and deadlines

GS6. check that the work meets customer requirements

GS7. deliver consistent and reliable service to customers

GS8. apply problem solving approaches in different situations

GS9. apply balanced judgements to different situations

GS10. apply good attention to detail

GS11. check that the work is complete and free from errors

GS12. get work checked by peers

GS13. work effectively in a team environment

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Effective communication	**25**	**75**	**-**	**-**
PC1. maintain clear communication with colleagues	4	10	-	-
PC2. work with colleagues	2	7	-	-
PC3. pass on information to colleagues in line with organisational requirements	3	8	-	-
PC4.. work in ways that show respect for colleagues	3	8	-	-
PC5. carry out commitments made to colleagues	2	8	-	-
PC6. let colleagues know in good time if cannot carry out commitments, explaining the reasons	2	8	-	-
PC7. identify problems in working with colleagues and take the initiative to solve these problems	4	9	-	-
PC8. follow the organisations policies and procedures for working with colleagues	3	9	-	-
PC9. ability to share resources with other members as per priority of tasks	2	8	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0002
NOS Name	Work effectively in a team
Sector	Automotive
Sub-Sector	Manufacturing and R&D, Sales and Service, Road Transportation
Occupation	Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	23/09/2013
Next Review Date	31/03/2022
NSQC Clearance Date	28/09/2015

ASC/N0003: Maintain a healthy,safe and secure working environment

Description

This NOS unit is about monitoring the working environment and making sure it meets requirements for health, safety and security

Scope

This unit/task covers the following:

- Resources (both material & manpower) needed to maintain a safe working environment as per the prevalent norms & government policies including emergency procedures for Illness, accidents, fires or any other reason which may involve evacuation of the premises

Elements and Performance Criteria

Resources needed to maintain a safe, secure working environment

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

PC1. comply with organisations 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.. Coordinate with other resources at the workplace to achieve the healthy, safe and secure environment for all incorporating all government norms esp. for emergency situations like fires,earthquakes etc.

PC4. identify and correct any hazards like illness, accidents, fires or any other natural calamity safely and within the limits of individuals authority

PC5. report any hazards outside the individuals authority to the relevant person in line with organisational procedures and warn other people who may be affected

PC6. follow organisations emergency procedures for accidents, fires or any other natural calamity

PC7. identify and recommend opportunities for improving health,safety, and security to the designated person

PC8. complete all health and safety records are updates and procedures well defined

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. legislative requirements and organisations procedures for health, safety and security and individuals role and responsibilities in relation to this

KU2. what is meant by a hazard, including the different types of health and safety hazards that can be found in the workplace

KU3. how and when to report hazards

KU4. the limits of responsibility for dealing with hazards

KU5. the organisations emergency procedures for different emergency situations and the importance of following these

KU6. the importance of maintaining high standards of health, safety and security

KU7. implications that any non-compliance with health, safety and security may have on individuals and the organisation

KU8. different types of breaches in health, safety and security and how and when to report these

KU9. evacuation procedures for workers and visitors

KU10. how to summon medical assistance and the emergency services,where necessary

KU11. how to use the health, safety and accident reporting procedures and the importance of these

Generic Skills (GS)

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

GS1. complete accurate, well written work with attention to detail

GS2. read instructions, guidelines/procedures/rules

GS3. listen and orally communicate information

GS4. make decisions on a suitable course of action or response

GS5. plan and organise work to achieve targets and deadlines

GS6. build and maintain positive and effective relationships withcolleagues and customers

GS7. apply problem solving approaches in different situations

GS8. analyse data and activities

GS9. apply balanced judgements to different situations

GS10. apply good attention to detail

GS11. check that the work is complete and free from errors

GS12. get work checked by peers

GS13. work effectively in a team environment

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Resources needed to maintain a safe, secure working environment	**25**	**75**	**-**	**-**
PC1. comply with organisations current health,safety and security policies and procedures	3	9	-	-
PC2. report any identified breaches in health,safety, and security policies and procedures to the designated person	3	10	-	-
PC3.. Coordinate with other resources at the workplace to achieve the healthy, safe and secure environment for all incorporating all government norms esp. for emergency situations like fires,earthquakes etc.	3	10	-	-
PC4. identify and correct any hazards like illness, accidents, fires or any other natural calamity safely and within the limits of individuals authority	5	10	-	-
PC5. report any hazards outside the individuals authority to the relevant person in line with organisational procedures and warn other people who may be affected	3	9	-	-
PC6. follow organisations emergency procedures for accidents, fires or any other natural calamity	3	10	-	-
PC7. identify and recommend opportunities for improving health,safety, and security to the designated person	3	8	-	-
PC8. complete all health and safety records are updates and procedures well defined	2	9	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0003
NOS Name	Maintain a healthy,safe and secure working environment
Sector	Automotive
Sub-Sector	Manufacturing and R&D, Sales and Service, Road Transportation
Occupation	Auto Components/Aggregates Repair
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	10/06/2013
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

ASC/N1402: Assist in performing diagnosis of vehicle for repair requirements

Description

This NOS unit is about assisting in troubleshooting problems and fault diagnosis of the vehicle (including both mechanical and electrical aggregates)

Scope

This unit/task covers the following:

- assist the senior technician in identifying & diagnosis of the operational fault responsible for the root cause of the vehicle trouble
- assist in taking necessary action post the root cause analysis to repair the vehicle

Elements and Performance Criteria

Assist in the diagnosis of the root cause of the vehicle trouble

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

PC1. . understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle

PC2. . understand the functioning of each system, component and aggregate (including both mechanical and electrical aggregates) of a vehicle

PC3. . follow standard operating procedures for using workshop tools and equipment for fault diagnosis or troubleshoot problem in a vehicle

PC4.. conduct test drives to assist the Senior Technician in finding the fault basis the performance of the vehicle during the test drive

PC5. . review the job card and understand customer complaints

PC6. . follow standard operating procedure set out for diagnosing faults under the supervision of a Senior Technician

PC7.. follow instructions of seniors for specific tasks related to diagnosing faults in the various sub-assemblies and aggregates in a vehicle

PC8. . use checklists and standard OEM operating procedures to understand if the fault is because of improper servicing, or low levels of oils, coolants, grease etc. or poor quality oil/ air filters etc.

PC9.. dismantle and assemble aggregates

PC10. . ensure any malfunctions observed in tools and equipment are reported to the concerned persons

PC11.. ensure any malfunctions or repair requirements observed in vehicles (and beyond own scope of work) are reported to the concerned person

PC12.. understand the various precautions to be taken to avoid damage to the vehicle and its components while working on diagnosis or troubleshooting the vehicle for any faults

PC13. . ensure safe movement and parking of the vehicle in the workshop especially in case some aggregate to be diagnosed had been disassembled

PC14. . ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)

PC15.. drive a relevant 2/3/4 wheeler vehicle which is an important part of the diagnosis of the type of vehicle that is dealt by the relevant OEM

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard operating procedures of the Organisation/ Dealership for inspection and diagnosis of faults in a vehicle as prescribed by the OEM/ Components Manufacturer

KU2. standard operating procedures recommended by the Dealership/ Suppliers/OEM for using tools and equipment for diagnosis or troubleshooting of various aggregates

KU3. standard operating procedures for rectification of errors in information (e.g. rectification of job card, reissue of correct tools and equipment etc. during the diagnosis)

KU4. safety requirements for equipment and components during the diagnosis or troubleshooting the various aggregates for root cause analysis of the fault

KU5. documentation requirements for each procedure carried out as part of roles and responsibilities as specified by OEM/ auto component manufacturer for the diagnosis of troubleshooting the vehicle for faults

KU6. organisational and professional code of ethics and standards of practice

KU7. safety, health, environmental policies and regulations for the workplace as well as for Automotive trade in general (e.g. safe practices while working in pits/ under vehicles)

KU8. the basic technology used in and functioning of various components and aggregates of the vehicle including: engines and fuel system (diesel, petrol, electrical, gas, hybrid etc.) cooling system air supply systems emission and exhaust system ignition systems clutch assembly clutch operating system gearbox (manual and automatic) drivelines and hubs drive-train assembly and transmission systems (manual, automatic etc.) steering system suspension system brake system (including regenerative braking systems) tyres and wheels (including wheel alignment) radiator batteries and power storage system power-generating systems (including charging systems especially for electrical and hybrid vehicles) electrical wire harness, lighting, ignition, electronic and air-conditioningsystems etc. energy recuperation systems, if applicable (e.g. in electric, gas and hybridvehicles) electronic systems including active and passive safety, media and othersystems electronic control unit hydraulic and pneumatic system various lubrication systems

KU9. the tools used to assess and confirm technical faults that cannot be determined through a visual inspection, including use of: pressure indicators: fuel pressure testers, manifold gauge sets, oil pressure gauges, tire pressure gauges measuring equipment: vernier callipers, micrometer, feeler gauges, multimetre, flow metre, temp gauge, dial gauge etc. electrical and electronic testing equipment: volt meters, ammeters, ohmmeters, battery testing equipment, dedicated and computer based diagnostic equipment, oscilloscopes etc.

KU10. the 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 standard operating procedures for diagnosis

KU11. typical symptoms of common technical faults in a vehicle

KU12. the various values and tolerance limits of various components across the mechanical/ electrical aggregates (e.g. within the engine assembly the following sub-aggregates : bore diameter, Liner fitment, piston height and butt clearance of piston rings, permissible imbalance in crankshaft (main and BE journal), axial and radial play in the camshaft etc.)

Generic Skills (GS)

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

GS1. create documentation required on the job (including diagnosis cards, work sheets, etc.) regarding the basic diagnosis and of various fault identification tests performed using various equipment as per the OEM/ auto component and aggregate guidelines

GS2. complete and maintain workplace records on inspection, diagnosis and repair activities

GS3. write any additional work to be done (on the job card) basis the diagnosis of the vehicle (in major mechanical & electrical aggregates) and convey it to the superiors

GS4. write in at least one language

GS5. read and interpret workplace related documentation including job cards, safety instructions, OEM guidelines etc. from senior technicians, supervisors and service advisor

GS6. read various sources of information available for vehicle diagnosis including service manual and diagnostic and visual displays put up in the workshop

GS7. read policies and regulations pertinent to the job, including OEM guidelines, health and safety instructions etc

GS8. clearly communicate workplace information and ideas with colleagues (verbal and non-verbal)

GS9. use terms, names, grades, and other nomenclature pertaining to the Automotive trade, tools, specific workshop equipment etc.

GS10. communicate with colleagues and customers to handle verbal enquiries, such as clarifying indicated faults and problems indicated on a job card which would lead to the proper diagnosis of the issue to do an effective root cause analysis

GS11. communicate to the supervisor and service advisor, the results of the test performed and appropriate values to find the root case of the problem (e.g. in case of High Engine Oil Consumption (HEOC) issue, post the dismantled engine convey the appropriate condition of piston ring, crank shaft and cylinder block etc.)

GS12. analyse information and evaluate results to choose the best solution and solve problems

GS13. decide on the repair/ replacement of any aggregate (including those in the electrical and mechanical sub- assemblies) post the diagnosis (with help from a superior in case required)

GS14. judge when to ask for help from a superior

GS15. plan work according to the required schedule and location

GS16. organize schedule to complete diagnosis on the vehicle so that repair/ replacement of aggregates/ components post diagnosis can start and vehicle can be delivered in a timely and cost effective manner.

GS17. interpret the needs of customers by understanding the key issue plaguing the poor performance of the vehicle and doing a proper diagnosis consulting the Service Advisor, supervisor and senior technicians to minimise the repeat complains

GS18. ensure that the service provided is of the highest order to ensure higher levels of customer satisfaction

GS19. follow up with the Service Advisor on any unfavourable feedback received from customer on the complaints reported on the vehicle

GS20. recognise a workplace problem or a potential problem and take action prior to diagnosis (e.g. during diagnosis of the engine, ensure that engine aggregates are placed in proper place so that it doesnt cause any hindrance to other vehicles parked near the vehicle which is being diagnosed)

GS21. determine problems needing priority action while diagnosis of the vehicle

GS22. refer problems outside area of responsibility to appropriate person

GS23. analyse the complexity of work to determine if it can be successfully carried out (e.g. refer a vehicle to a Superior or specialist in case of diagnosis for any critical fault is required)

GS24. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

GS25. use the diagnosis results to take an appropriate decision on repair/ replacement of an aggregates (including mechanical and electrical sub-assemblies) in consultation with the supervisor/ aggregate specialist/ service advisor

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assist in the diagnosis of the root cause of the vehicle trouble	**30**	**70**	**-**	**-**
PC1. . understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle	3	4	-	-
PC2. . understand the functioning of each system, component and aggregate (including both mechanical and electrical aggregates) of a vehicle	3	4	-	-
PC3. . follow standard operating procedures for using workshop tools and equipment for fault diagnosis or troubleshoot problem in a vehicle	1	3	-	-
PC4.. conduct test drives to assist the Senior Technician in finding the fault basis the performance of the vehicle during the test drive	2	7	-	-
PC5. . review the job card and understand customer complaints	1	3	-	-
PC6. . follow standard operating procedure set out for diagnosing faults under the supervision of a Senior Technician	1	3	-	-
PC7.. follow instructions of seniors for specific tasks related to diagnosing faults in the various sub-assemblies and aggregates in a vehicle	2	7	-	-
PC8. . use checklists and standard OEM operating procedures to understand if the fault is because of improper servicing, or low levels of oils, coolants, grease etc. or poor quality oil/ air filters etc.	3	5	-	-
PC9.. dismantle and assemble aggregates	3	6	-	-
PC10. . ensure any malfunctions observed in tools and equipment are reported to the concerned persons	3	6	-	-
PC11.. ensure any malfunctions or repair requirements observed in vehicles (and beyond own scope of work) are reported to the concerned person	2	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12.. understand the various precautions to be taken to avoid damage to the vehicle and its components while working on diagnosis or troubleshooting the vehicle for any faults	3	4	-	-
PC13. . ensure safe movement and parking of the vehicle in the workshop especially in case some aggregate to be diagnosed had been disassembled	1	4	-	-
PC14. . ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)	1	4	-	-
PC15.. drive a relevant 2/3/4 wheeler vehicle which is an important part of the diagnosis of the type of vehicle that is dealt by the relevant OEM	1	4	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1402
NOS Name	Assist in performing diagnosis of vehicle for repair requirements
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	12/06/2013
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

ASC/N1403: Carry out routine service and minor repairs of mechanical and electrical aggregates

Description

This NOS unit is about an Automotive Service Technician carrying out service, repairs and maintenance activities of various aggregates (including electrical and mechanical aggregates).

Scope

This unit/task covers the following:

- carry out routine and schedule servicing of various aggregates in a vehicle (including free and paid service)
- carry out other maintenance activities in a vehicle which are not a part of schedule maintenance (e.g. oil, lubricant, coolant change and greasing)
- carry out minor service and repair in a vehicle (including mechanical and electrical aggregates)

Elements and Performance Criteria

Carry out routine service and minor repairs of mechanical & electrical aggregates

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

PC1. . understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle

PC2.. follow standard operating procedures for using workshop tools and equipment for service and minor aggregate repairs in the vehicle

PC3. . conduct test drives to assess need for repairs, calibration or any other adjustments in the electrical/ mechanical aggregates in the vehicle

PC4. . review the job card and understand work to be carried out

PC5. . ensure OEM recommended procedure and checklist is followed for routine servicing in case of non-routine service or repair, confirm tasks to be carried out with superior

PC6. . calibrate, align and adjust settings, alignment and other routine service and maintenance of various parts and aggregates including: engine and aggregates other engine sub-assemblies like turbocharger, radiator etc. gear box and it aggregates propeller shafts and other transmission systems clutch and brake systems and sub-assemblies chassis electrical and electronic components steering systems suspension system other components (including to valves, ignition, fuel and emissions, transmission, lights, tires, steering and body fittings)

PC7. . ensure that for routine maintenance and service, the correct spare parts and appropriate grade of lubricants, coolant, oils and grease required have been obtained

PC8. . ensure all dismantled components (including mechanical and electrical aggregates) are cleaned and conditioned prior to reassembly

PC9. . identify and change components requiring change due to continuous wear and tear including: oil and air filters belts wiper blades brake linings and pads drive

PC10.. ensure disposal of materials (including waste oil, scrap of failed parts/ aggregates) in accordance with the organisations policies

PC11. . understand the various precautions to be taken to avoid damage to the vehicle and its components while working on other aggregates

PC12. . record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure

PC13.. ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary

PC14. . ensure any malfunctions observed in tools and equipment are reported to the concerned persons

PC15. . ensure any other repair requirements observed in the other components/ aggregates systems (like engine, gear box etc.) while repairing/ overhauling of braking systems are reported to supervisor/ service advisor for further inspection by other specialists

PC16. . measure/ inspect the machining or any other repair done from an outside source/ local machining garages

PC17. . ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard operating procedures for servicing and repair of vehicles as prescribed by the OEM/ dealership

KU2. standard schedules and checklists recommended by the OEM/ auto components manufacturer for servicing of vehicles

KU3. identification codes, nomenclature and grades of lubricants, components and aggregates

KU4. standard operating procedures recommended by the Dealership/ auto component manufacturer/ OEM for using tools and equipment to be followed related to various aggregates and components in a vehicle (including electrical and mechanical aggregates) as per the tool manufacturer instructions

KU5. standard operating procedures for rectification of errors in information (e.g. rectification of job card, reissue of correct tools and equipment etc.)

KU6. safety requirements for equipment and components prescribed by the OEM (e.g. preventing/ dealing with oil spillage and inflammable materials)

KU7. documentation requirements for each procedure carried out as part of roles and responsibilities as specified by OEM/ auto component manufacturer

KU8. organisational and professional code of ethics and standards of practice

KU9. safety, health and environmental policies and regulations for the workplace as well as for automotive trade in general (e.g. safe working practices inside pits/ under vehicles)

KU10. the basic technology used in and functioning of various components and component systems of the vehicle including: engines and fuel system (diesel, petrol, electrical, gas etc.) other engine allied aggregates (e.g. radiator, turbocharger etc.) emission and exhaust system clutch assembly gear box assembly and aggregates (manual, automatic etc.) propeller shaft and other allied transmission systems hydraulic and pneumatic system brake system drive-train assembly steering system suspension system tyres and wheel alignment cooling system electrical, ignition, electronic and air-conditioning system etc

KU11. the tools used to assess deviations from specifications during routine servicing, including use of: Pressure indicators: fuel pressure testers, manifold gauge sets, oil pressure gauges, tire pressure gauges etc. Pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc. Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc. Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc. Measuring equipment: vernier caliper, micrometre, feeler gauges, multi- metre, flow metre, temp gauge, dial gauge etc. other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator etc. tools for other tasks such as cleaning of vehicles, tools, equipment and workshop

KU12. How to select the right materials for the job such as seals, sealants, fittings, gaskets, joints, fasteners etc

KU13. how to carry out routine maintenance including: checking vehicle condition against OEM specifications to identify damage, corrosion, wear and tear, fluid levels, leaks and other problems in serviceability make adjustments to settings, alignment, pressures, tension, speeds and levels relevant to: - engine and aggregates (including fuel injection pump, ignition, intake and exhaust systems) - steering system - clutch and brake assembly - transmission system (including gearbox, differential, propeller shaft and axles) - electrical and electronic components (including alternator, wiper motor, lights, wire harness etc.) - other components (including tyres and body fittings)

KU14. the 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 standard operating procedures

KU15. procedures recommended by the OEM and Dealership to be used during routine servicing

KU16. the type and quality of components specified by the OEM for use as replacement parts

KU17. the grade of lubricants, oils, coolants and grease as specified by the OEM for use

KU18. typical causes and symptoms of operational faults and failures of a vehicle

KU19. corrective action to be taken for common engine and aggregate system faults and failures

KU20. faults and failures that necessitate replacement of components/ aggregates (including mechanical & electrical assemblies) and other units

KU21. how to dispose -off replaced failed components and changed oil, lubricant, grease etc. in accordance with safety, health and environmental policies and regulations

KU22. precautions to be taken to ensure the following while working (including specific precautions to be taken when working with alternative fuel/ hybrid vehicles): no damage to the electrical / other advanced systems (in case of hybrid/ electrical vehicles) no damage to the vehicle on which work is being done along with other vehicles parked besides no damage to vehicle components sub-assemblies and other systems no contact with hazardous materials

KU23. when to ask for assistance from a superior

Generic Skills (GS)

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

GS1. create documentation required on the job (including job cards, work sheets, etc.) regarding the basic details of repair , maintenance and service performed

GS2. write any additional requirement of work on the vehicle reported for service, maintenance or repair found during the work done as specified in the job card (for e.g. while working on the engine and transmission system, if low level of engine oil/ greasing, then convey to the superiors)

GS3. write in at least one language

GS4. read job cards and instructions from supervisors and the service advisor

GS5. read various sources of information available for assessing service and repair requirements of the vehicle including service manual and diagnostic and visual displays put up in the workshop

GS6. read policies and regulations pertinent to the job, including OEM guidelines, health and safety instructions etc.

GS7. clearly communicate workplace information and ideas with colleagues (verbal & non-verbal)

GS8. use terms, names, grades and other nomenclature pertaining to the automotive trade, tools, specific workshop equipment etc.

GS9. communicate with colleagues to handle verbal enquiries, such as clarifying instructions and responding to requests for information

GS10. interact with the customer through Service Advisor/ Supervisor in case any additional work needs to be done on the vehicle which may not have been indicated in the job card and found during the work being carried out as per the job card

GS11. analyse information and evaluate results to choose the best solution and solve problems

GS12. create documentation required on the job (including job cards, work sheets, etc.) regarding the basic details of repair , maintenance and service performed

GS13. judge when to ask for help from a superior

GS14. plan work according to the required schedule and location

GS15. organise the schedule to complete work on the vehicle timely in case other aggregate repairs/ maintenance work is also required to be done

GS16. interpret the needs of customers by evaluating job cards and talking to Service Advisor and Superiors

GS17. ensure that the service provided is of the highest order to ensure higher levels of customer satisfaction

GS18. ensure timely communication of the additional requirements in a vehicle to the Service Advisor who in turn communicates it to the customer

GS19. follow up with the Service Advisor on any unfavourable feedback received from customer

GS20. recognise a workplace problem or a potential problem and take action (e.g. leaks or oil spills in the workshop)

GS21. determine problems needing priority action (e.g. while working on the engine, crank / pistons require machining as they have been worn out, inform the service advisor or supervisor for urgent action)

GS22. create documentation required on the job (including job cards, work sheets, etc.) regarding the basic details of repair , maintenance and service performed

GS23. gather information while working on an aggregate/ components and take appropriate action, by consulting superiors

GS24. assess repairs required based on technical faults identified as specified in the job card/ supervisor notes

GS25. refer complex problems (outside the current scope of work) to a superior in case any additional work requirement comes up

GS26. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

GS27. use the diagnosis results to take an appropriate decision on repair/ replacement of an aggregates (including mechanical and electrical subassemblies) in consultation with the Supervisor/ Aggregate Specialist/ Service Advisor

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Carry out routine service and minor repairs of mechanical & electrical aggregates	**25**	**75**	**-**	**-**
PC1. . understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle	2	4	-	-
PC2.. follow standard operating procedures for using workshop tools and equipment for service and minor aggregate repairs in the vehicle	1	3	-	-
PC3. . conduct test drives to assess need for repairs, calibration or any other adjustments in the electrical/ mechanical aggregates in the vehicle	2	6	-	-
PC4. . review the job card and understand work to be carried out	1	4	-	-
PC5. . ensure OEM recommended procedure and checklist is followed for routine servicing in case of non-routine service or repair, confirm tasks to be carried out with superior	1	4	-	-
PC6. . calibrate, align and adjust settings, alignment and other routine service and maintenance of various parts and aggregates including: engine and aggregates other engine sub-assemblies like turbocharger, radiator etc. gear box and it aggregates propeller shafts and other transmission systems clutch and brake systems and sub-assemblies chassis electrical and electronic components steering systems suspension system other components (including to valves, ignition, fuel and emissions, transmission, lights, tires, steering and body fittings)	2	7	-	-
PC7. . ensure that for routine maintenance and service, the correct spare parts and appropriate grade of lubricants, coolant, oils and grease required have been obtained	2	5	-	-
PC8. . ensure all dismantled components (including mechanical and electrical aggregates) are cleaned and conditioned prior to reassembly	1	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. . identify and change components requiring change due to continuous wear and tear including: oil and air filters belts wiper blades brake linings and pads drive	2	7	-	-
PC10.. ensure disposal of materials (including waste oil, scrap of failed parts/ aggregates) in accordance with the organisations policies	1	3	-	-
PC11. . understand the various precautions to be taken to avoid damage to the vehicle and its components while working on other aggregates	2	4	-	-
PC12. . record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure	1	3	-	-
PC13.. ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary	2	6	-	-
PC14. . ensure any malfunctions observed in tools and equipment are reported to the concerned persons	1	3	-	-
PC15. . ensure any other repair requirements observed in the other components/ aggregates systems (like engine, gear box etc.) while repairing/ overhauling of braking systems are reported to supervisor/ service advisor for further inspection by other specialists	1	3	-	-
PC16. . measure/ inspect the machining or any other repair done from an outside source/ local machining garages	2	5	-	-
PC17. . ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)	1	3	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1403
NOS Name	Carry out routine service and minor repairs of mechanical and electrical aggregates
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	10/06/2013
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 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/N0001.Plan and organise work to meet expected outcomes	25	75	-	-	100	10
ASC/N0002.Work effectively in a team	25	75	-	-	100	15
ASC/N0003.Maintain a healthy,safe and secure working environment	25	75	-	-	100	15
ASC/N1402.Assist in performing diagnosis of vehicle for repair requirements	30	70	-	-	100	20
ASC/N1403.Carry out routine service and minor repairs of mechanical and electrical aggregates	25	75	-	-	100	40
Total	**130**	**370**	**-**	**-**	**500**	**100**

Acronyms

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

Glossary

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

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