Qualification Pack

Advance Concepts of Commercial Vehicle service and Repair

QP Code: ASC/N1318

Version: 1.0

NSQF Level: 4.5

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Qualification Pack

ASC/N1318: Advance Concepts of Commercial Vehicle service and Repair

Brief Job Description

This NOS unit is about performing all tasks related to service, diagnosis and repair of faults and issues in light, medium and heavy-duty vehicles.

Personal Attributes

undefined

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N1318: Advance Concepts of Commercial Vehicle service and Repair

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	
Occupation	Automotive Service & Repair
Country	
NSQF Level	4.5
Credits	2
Aligned to NCO/ISCO/ISIC Code	
Minimum Educational Qualification & Experience	Completed 1st year of UG (UG Certificate) (3 years/ 4 years of UG) OR Completed 3 year diploma after 10th OR Previous relevant Qualification of NSQF Level (4 - Intermediate Course in vehicle service and repair) with 1.5 years of experience
Minimum Level of Education for Training in School	

Qualification Pack

Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	18/02/2028
NSQC Approval Date	18/02/2025
Version	1.0
Reference code on NQR	NG-4.5-AU-03743-2025-V1-ASDC
NQR Version	1.0

ASC/N1318: Advance Concepts of Commercial Vehicle service and Repair

Description

This NOS unit is about performing all tasks related to service, diagnosis and repair of faults and issues in light, medium and heavy-duty vehicles.

Scope

The scope covers the following :

- Prepare for servicing and repairing of vehicles.
- Assist and perform servicing and repairing of various components and systems of vehicle
- Perform post-servicing and repairing activities

Elements and Performance Criteria

Prepare for servicing and repairing of heavy vehicle

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

PC1. Review the job card and understand work to be carried out

PC2. Identify the auto components related to the various aggregates in the vehicle

PC3. Collect workshop tools/measuring devices/equipment required for the job and check their condition/calibration

PC4. Prepare the vehicle according to nature of job to be performed: general and mechanical job on the vehicle

PC5. Diagnose the faults in the various sub-assemblies of the vehicle, using workshop tools, equipment, checklists and standard OEM operating procedures

PC6. Wear PPE according to nature of job to be performed

Perform servicing and repairing of various components and systems of vehicle

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

PC7. Use appropriate tools, equipment, and consumables as per nature of job and Standard Operating Procedure (SOP) recommended by the organization

PC8. Ensure that correct spare parts and appropriate grade of lubricants, coolant, oils and grease for service and repair work

PC9. Inspect and diagnose the engine for mechanical complaint diagnosis i.e. Abnormal noise from engine, Engine overrunning and Engine not starting - Engine Timing setting, Injector complaint diagnosis, Injector checking using test bench, Fuel system dry run complaint (Air bleeding process), Engine overheating & Inter Cooler leakage, Engine not starting & poor pickup issue, Chain timing adjustment, UPCR pump fitment, turbo failure, Feed Pump relay circuit checking / Poor pick complaint fuel stra

PC10. Inspect and diagnose the engine (in case of CNG engine i5 / i6) for faults and issues i.e. CNG vehicle not starting, CNG vehicle misfiring, CNG ETB calibration, Accelerator pedal verification, CNG rail pressure monitoring, Injector Shut off test, HPRV solenoid test etc.

PC11. Inspect and diagnose Ignition coil and spark plug for the faults and issues

PC12. Use appropriate Engine Overhauling Kit according to type of engine for diagnosing the issues in the engine

PC13. Remove parts relevant to various mechanical aggregates and place them securely as specified by OEM

PC14. Perform repair/replacement/calibration/ of mechanical system/aggregate of heavy vehicle engine as per the faults and issues diagnosed

PC15. Inspect and diagnose transmission system of the vehicle for issues and faults and repair/replace the faulty system/aggregate as per the requirement

PC16. Inspect and diagnose brake system of the vehicle for issues and faults i.e. Brakes Jam, grabbing and brake overheating, brake drum run out checking, Air ABS fault, Hydraulic Disk brake - Brake booster complaint etc. and repair/replace the faulty system/aggregate as per the requirement

PC17. Perform troubleshooting and repairing of faults in the Electromagnetic retarder of the vehicle

PC18. Inspect and diagnose suspension system of the vehicle for issues and faults and repair/replace the faulty system/aggregate as per the requirement

PC19. Test electrical/electronic components performance wherever applicable as per OEM SOP

PC20. Inspect and diagnose Vehicle Electrical and Electronics system for issues and faults i.e. CAN EMS Power & Cranking circuit faults, Dosing injector & dosing Pump faults, Viscotronic fan short circuit, ECU issues, accelerator pedal pin back out and injector short circuit, loss of power and idling RPM fluctuating issue / rail pressure and metering unit problem / Poor pickup issue due to AVU not functioning etc. and repair/replace the faulty system/aggregate as per the requirement

PC21. Inspect and diagnose faults and issues in other systems/aggregates such as tyres, drive line, Lift axle, HVAC systems - electrical and mechanical, steering systems, RPAS - Reverse parking assist system & FDSS - Fire detection and suppression system etc. and repair/replace the faulty system/aggregate as per the requirement

PC22. Choose and use the appropriate device/equipment to inspect/test vehicle/system/component performance to diagnose defect or faults in the vehicle

PC23. Use diagnostic tools like OBDII, DA Lite tool etc. to conduct DTC diagnosis, Parameters monitoring (Boost Pressure, Rail Pressure, Accelerator pedal position and DP sensor), Injector shut off test, Compression test, SCR system test, DPF value reset, DPF regeneration test, PRV counter reset, Electric EGR valve test, Nox Conversion test, Engine protection data test, Switch test, ECU calibration & Reprogramming, Guided Diagnostic process - Vehicle health status checking, Dosing pump diagnosis ETC.

PC24. Interpret and compare results of diagnostic inspections/tests with vehicle specifications and regulatory requirements

PC25. Clean and condition dismantled mechanical and electrical components prior to assembly

Perform post-servicing and repairing activities

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

PC26. Check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist

PC27. Ensure completeness of tasks assigned before releasing the vehicle for the next procedure

PC28. Maintain the documentation related to inspections and troubleshooting performed on the vehicle

PC29. Dispose of materials such as old batteries, scrap of failed parts/aggregates as per organization's policies

PC30. Return leftover consumable/parts, tools/equipment, and report if any malfunctions are observed to the person concerned

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Different components/aggregates as well as auto component manufacturer's specifications of the light, medium and heavy duty vehicle

KU2. The various sources of information available for assessing service and repair requirements of the vehicle including repair, diagnostic, and wiring manuals etc.

KU3. Standard schedules and checklists recommended by the OEM/auto component manufacturer for servicing of vehicles

KU4. Standard Operating Procedures for servicing and minor repair of vehicles as prescribed by the OEM

KU5. Standard Operating Procedures recommended by OEM for using tools and equipment related to aggregates/components (including electrical and mechanical aggregates)

KU6. The tools used to assess deviations from specifications during routine servicing, maintenance and repair including use of pressure indicators: oil pressure gauges, tire pressure gauges etc., pullers: ball joint separators, bearing pullers, etc., gasket scrapers, etc., measuring equipment: Vernier callipers, micrometre, multi-metre, dial gauge etc., hand tools, power tools, lifting/jacking equipment, tools for other tasks such as wheel alignment, AC gas charging etc.

KU7. Use of special diagnostic tools i.e. OBDII, DA Lite etc, for diagnosing the faults

KU8. Basic technology used in and functioning of various systems and components of the heavy vehicle such as engine, transmission, batteries, body management system, telematics, brake system, air-conditioning systems, active & passive safety system, media and other systems

KU9. Interconnection of systems with each other and effect of one system on other system

KU10. Impact of Fuel efficiency Factors affecting Vehicle FE

KU11. BSIV & BSVI engine complaints

KU12. Major factors influencing Tyre Life

KU13. How to use computer, on-line application and OEM technical information/assistance portals

KU14. Various types of engines i.e. petrol, diesel, CNG etc. in heavy vehicles

KU15. Vehicle electronic architecture

KU16. Probable reasons for Low FE & Rectification process

KU17. Procedure of SAP setting, Tandem axle thrust adjustment and Wheel Alignment

KU18. Typical symptoms of common faults and failures in vehicle mechanical, electrical and electronic systems

KU19. Standard Operating Procedures (SOPs) for inspection and diagnosis of faults in a vehicle as prescribed by the OEM/components manufacturer

KU20. Different types of errors or defects in the vehicle

KU21. Corrective actions for common faults and failures in engine, components/aggregates (including electrical and mechanical aggregates) and other units

KU22. Documentation requirements for each procedure carried out as part of roles and responsibilities as specified by OEM/ auto component manufacturer

KU23. Safety requirements recommended by the OEM for equipment /vehicle components during diagnosis, troubleshooting and root cause analysis on various aggregates

KU24. Documentation required on the job (including job cards, work sheets, etc.) regarding the basic details of repair, maintenance and service performed

KU25. Emergency wiring harness connection method and usage

KU26. Strategy based diagnosis & Root cause analysis of faults and issues

KU27. Various tests need to perform on the vehicle

KU28. Occupational Safety and Health (OSH) measures required for working on electric vehicle

Generic Skills (GS)

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

GS1. Read and interpret workplace related documentation

GS2. Analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS3. Identify potential workplace problem and take suitable action

GS4. Read various sources of information available for assessing service and repair requirements

GS5. Write any work-related information

GS6. Write in English/regional language

GS7. Interpret the needs of customers by understanding the key issues

GS8. Communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for servicing and repairing of heavy vehicle	**8**	**5**	**-**	**3**
PC1. Review the job card and understand work to be carried out	1	1	-	-
PC2. Identify the auto components related to the various aggregates in the vehicle	2	1	-	1
PC3. Collect workshop tools/measuring devices/equipment required for the job and check their condition/calibration	2	1	-	1
PC4. Prepare the vehicle according to nature of job to be performed: general and mechanical job on the vehicle	1	1	-	-
PC5. Diagnose the faults in the various sub-assemblies of the vehicle, using workshop tools, equipment, checklists and standard OEM operating procedures	1	1	-	1
PC6. Wear PPE according to nature of job to be performed	1	-	-	-
Perform servicing and repairing of various components and systems of vehicle	**26**	**30**	**-**	**15**
PC7. Use appropriate tools, equipment, and consumables as per nature of job and Standard Operating Procedure (SOP) recommended by the organization	1	1	-	-
PC8. Ensure that correct spare parts and appropriate grade of lubricants, coolant, oils and grease for service and repair work	1	-	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. Inspect and diagnose the engine for mechanical complaint diagnosis i.e. Abnormal noise from engine, Engine overrunning and Engine not starting - Engine Timing setting, Injector complaint diagnosis, Injector checking using test bench, Fuel system dry run complaint (Air bleeding process), Engine overheating & Inter Cooler leakage, Engine not starting & poor pickup issue, Chain timing adjustment, UPCR pump fitment, turbo failure, Feed Pump relay circuit checking / Poor pick complaint fuel stra	2	2	-	1
PC10. Inspect and diagnose the engine (in case of CNG engine i5 / i6) for faults and issues i.e. CNG vehicle not starting, CNG vehicle misfiring, CNG ETB calibration, Accelerator pedal verification, CNG rail pressure monitoring, Injector Shut off test, HPRV solenoid test etc.	2	2	-	1
PC11. Inspect and diagnose Ignition coil and spark plug for the faults and issues	1	2	-	1
PC12. Use appropriate Engine Overhauling Kit according to type of engine for diagnosing the issues in the engine	1	1	-	-
PC13. Remove parts relevant to various mechanical aggregates and place them securely as specified by OEM	1	1	-	1
PC14. Perform repair/replacement/calibration/ of mechanical system/aggregate of heavy vehicle engine as per the faults and issues diagnosed	2	2	-	1
PC15. Inspect and diagnose transmission system of the vehicle for issues and faults and repair/replace the faulty system/aggregate as per the requirement	1	2	-	1
PC16. Inspect and diagnose brake system of the vehicle for issues and faults i.e. Brakes Jam, grabbing and brake overheating, brake drum run out checking, Air ABS fault, Hydraulic Disk brake - Brake booster complaint etc. and repair/replace the faulty system/aggregate as per the requirement	1	2	-	1
PC17. Perform troubleshooting and repairing of faults in the Electromagnetic retarder of the vehicle	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC18. Inspect and diagnose suspension system of the vehicle for issues and faults and repair/replace the faulty system/aggregate as per the requirement	1	2	-	1
PC19. Test electrical/electronic components performance wherever applicable as per OEM SOP	1	2	-	1
PC20. Inspect and diagnose Vehicle Electrical and Electronics system for issues and faults i.e. CAN EMS Power & Cranking circuit faults, Dosing injector & dosing Pump faults, Viscotronic fan short circuit, ECU issues, accelerator pedal pin back out and injector short circuit, loss of power and idling RPM fluctuating issue / rail pressure and metering unit problem / Poor pickup issue due to AVU not functioning etc. and repair/replace the faulty system/aggregate as per the requirement	2	2	-	1
PC21. Inspect and diagnose faults and issues in other systems/aggregates such as tyres, drive line, Lift axle, HVAC systems - electrical and mechanical, steering systems, RPAS - Reverse parking assist system & FDSS - Fire detection and suppression system etc. and repair/replace the faulty system/aggregate as per the requirement	2	2	-	1
PC22. Choose and use the appropriate device/equipment to inspect/test vehicle/system/component performance to diagnose defect or faults in the vehicle	1	1	-	-
PC23. Use diagnostic tools like OBDII, DA Lite tool etc. to conduct DTC diagnosis, Parameters monitoring (Boost Pressure, Rail Pressure, Accelerator pedal position and DP sensor), Injector shut off test, Compression test, SCR system test, DPF value reset, DPF regeneration test, PRV counter reset, Electric EGR valve test, Nox Conversion test, Engine protection data test, Switch test, ECU calibration & Reprogramming, Guided Diagnostic process - Vehicle health status checking, Dosing pump diagnosis ETC.	2	2	-	1
PC24. Interpret and compare results of diagnostic inspections/tests with vehicle specifications and regulatory requirements	1	1	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. Clean and condition dismantled mechanical and electrical components prior to assembly	1	1	-	-
Perform post-servicing and repairing activities	**6**	**5**	**-**	**2**
PC26. Check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist	2	2	-	1
PC27. Ensure completeness of tasks assigned before releasing the vehicle for the next procedure	1	-	-	-
PC28. Maintain the documentation related to inspections and troubleshooting performed on the vehicle	1	1	-	-
PC29. Dispose of materials such as old batteries, scrap of failed parts/aggregates as per organization's policies	1	1	-	1
PC30. Return leftover consumable/parts, tools/equipment, and report if any malfunctions are observed to the person concerned	1	1	-	-
NOS Total	**40**	**40**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1318
NOS Name	Advance Concepts of Commercial Vehicle service and Repair
Sector	Automotive
Sub-Sector	
Occupation	Automotive Service & Repair
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	18/02/2025
Next Review Date	18/02/2028
NSQC Clearance Date	18/02/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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

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

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

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

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

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

7. Assessment conducted only after permanent driving license.

Minimum Aggregate Passing % at QP Level : 50

(**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/N1318.Advance Concepts of Commercial Vehicle service and Repair	40	40	-	20	100	100
Total	**40**	**40**	**-**	**20**	**100**	**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.