

# Vehicle test Driver

QP Code: ASC/Q8402

NSQF Level: 5

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## Qualification Pack

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## Qualification Pack

### ASC/Q8402: Vehicle test Driver

#### Brief Job Description

This role is responsible for conducting various types of outdoor tests on automobile prototype in a simulated on road test environment and actual conditions to ensure proper measurement of the performance of the running proto vehicle and documenting all observations during the tests.

#### Personal Attributes

The individual should have a passion for driving and be willing to work in a risky and physically enduring environment of long hours and doing repetitive work. The role holder should have good physique, sound physical & mental health and good eyesight w/o colour blindness. The role holder should have good hand to eye coordination. The individual should have good listening and observation skills & good communication .He/she should demonstrate analytical reasoning, technology savvy, customer orientation, ability to provide correct feedback, high level of alertness, quick decision making, dependability reliability and safety orientation.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [ASC/N0006: Maintain a safe and healthy working environment](#)
2. [ASC/N0021: Maintain 5S at the work premises](#)
3. [ASC/N8403: Understanding the testing requirements and preparing for On Road testing of prototype vehicles](#)
4. [ASC/N8404: Conduct vehicle performance evaluation through On Road tests](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Research & Development
<b>Occupation</b>	Testing
<b>Country</b>	India
<b>NSQF Level</b>	5
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/8331.0501

## Qualification Pack

<b>Minimum Educational Qualification &amp; Experience</b>	B.Sc with 3-5 years of experience In on road testing of vehicle/driving of vehicles OR B.Sc with 3-5 years of experience In on road testing of vehicle/driving of vehicles OR B.Sc
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	Valid driving license for commercial/light motor vehicle Driving techniques in various conditions Testing apparatus and automobile instrumentation Fundamentals of automobile working Driving rules under Motor Vehicle Act Stress management techniques 5S and Safety aspects
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	20/01/2014
<b>Next Review Date</b>	31/03/2020
<b>NSQC Approval Date</b>	05/08/2015
<b>Version</b>	1.0

## Qualification Pack

### ASC/N0006: Maintain a safe and healthy working environment

#### Description

This NOS is about creating a Safe and Healthy work place, adhering to the safety guidelines in the working area, following practices which are not impacting the environment in a negative manner and training team members on health and safety related issues

#### Scope

The role holder will be responsible for

- identifying and reporting of risks
- creating and sustaining a safe, clean and environment friendly work place This NOS will be applicable to all Automotive sector manufacturing job roles

#### Elements and Performance Criteria

##### *Identify and report the risks identified*

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

- PC1..** Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise
- PC2.** Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc
- PC3.** Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations
- PC4.** Create awareness amongst other by sharing information on the identified risks

##### *Create and sustain a Safe, clean and environment friendly work place*

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

- PC5..** Follow the instructions given on the equipment manual describing the operating process of the equipments
- PC6..** Follow the Safety, Health and Environment related practices developed by the organization
- PC7.** Operate the machine using the recommended Personal Protective Equipments (PPE)
- PC8. .** Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc
- PC9.** Maintain high standards of personal hygiene at the work place
- PC10.** Ensure that the waste disposal is done in the designated area and manner as per organization SOP.
- PC11.** Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** relevant standards, procedures and policies related to Health, Safety and Environment followed in the company
- KU2.** basic knowledge of Safety procedures( fire fighting, first aid) within the organization
- KU3.** knowledge of various types of PPEs and their usage
- KU4.** basic knowledge of risks/hazards associated with each occupation in the organization
- KU5.** how to safely operate various tools and machines and risks associated with the tools/ equipment
- KU6.** knowledge of personal hygiene and how an individual can contribute towards creating a highly safe and clean working environment

## Generic Skills (GS)

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

- GS1.** write basic level notes and observations
- GS2.** read safety instructions put up across the plant premises
- GS3.** read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated
- GS4.** effectively communicate information to team members
- GS5.** inform employees in the plant and concerned functions about events, incidents & potential risks observed related to Safety, Health and Environment.
- GS6.** question operator/ supervisor in order to understand the safety related issues
- GS7.** attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs
- GS8.** use common sense and make judgments during day to day basis
- GS9.** use reasoning skills to identify and resolve basic problems
- GS10.** use common sense and make judgments during day to day basis
- GS11.** use reasoning skills to identify and resolve basic problems

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify and report the risks identified</i>	<b>8</b>	<b>23</b>	-	-
<b>PC1..</b> Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise	3	6	-	-
<b>PC2.</b> Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc	2	6	-	-
<b>PC3.</b> Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations	2	6	-	-
<b>PC4.</b> Create awareness amongst other by sharing information on the identified risks	1	5	-	-
<i>Create and sustain a Safe, clean and environment friendly work place</i>	<b>17</b>	<b>52</b>	-	-
<b>PC5..</b> Follow the instructions given on the equipment manual describing the operating process of the equipments	3	7	-	-
<b>PC6..</b> Follow the Safety, Health and Environment related practices developed by the organization	3	8	-	-
<b>PC7.</b> Operate the machine using the recommended Personal Protective Equipments (PPE)	3	8	-	-
<b>PC8. .</b> Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc	2	8	-	-
<b>PC9.</b> Maintain high standards of personal hygiene at the work place	2	7	-	-
<b>PC10.</b> Ensure that the waste disposal is done in the designated area and manner as per organization SOP.	3	8	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others	1	6	-	-
<b>NOS Total</b>	<b>25</b>	<b>75</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N0006
<b>NOS Name</b>	Maintain a safe and healthy working environment
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Maintenance
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	15/09/2013
<b>Next Review Date</b>	15/09/2015
<b>NSQC Clearance Date</b>	20/07/2015

## Qualification Pack

### ASC/N0021: Maintain 5S at the work premises

#### Description

This NOS is about ensuring all 5 S activities both at the shop floor and the office area to facilitate increase in work productivity

#### Elements and Performance Criteria

##### *Ensure sorting*

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

- PC1..** follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.
- PC2..** ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions
- PC3..** follow the technique of waste disposal and waste storage in the proper bins as per sop
- PC4..** segregate the items which are labelled as red tag items for the process area and keep them in the correct places
- PC5.** sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions
- PC6. .** ensure that areas of material storage areas are not overflowing
- PC7.** properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required
- PC8.** return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area
- PC9.** follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards
- PC10.** follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists

##### *Ensure proper documentation and storage ( organizing , streamlining)*

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

- PC11.** check that the items in the respective areas have been identified as broken or damaged
- PC12.** follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc
- PC13.** make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions

##### *Ensure cleaning of self and the work place*

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

- PC14.** check whether safety glasses are clean and in good condition
- PC15.** keep all outside surfaces of recycling containers are clean
- PC16..** ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards

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- PC17..** check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up
- PC18..** ensure workbenches and work surfaces are clean and in good condition
- PC19.** follow the cleaning schedule for the lighting system to ensure proper illumination
- PC20.** store the cleaning material and equipment in the correct location and in good condition
- PC21.** ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene

### *Ensure sustenance*

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

- PC22.** follow the daily cleaning standards and schedules to create a clean working environment
- PC23.** attend all training programs for employees on 5 s
- PC24.** support the team during the audit of 5 s
- PC25.** participate actively in employee work groups on 5s and encourage team members for active participation
- PC26.** follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards, procedures and policies related to 5S followed in the company
- KU2.** have basic knowledge of 5S procedures
- KU3.** know various types 5s practices followed in various areas
- KU4.** understand the 5S checklists provided in the department/ team
- KU5.** have skills to identify useful & non useful items
- KU6.** have knowledge of labels , signs & colours used as indicators
- KU7.** knowledge on how to sort and store various types of tools, equipment, material etc.
- KU8.** know , how to identify various types of waste products
- KU9.** understand the impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body
- KU10.** have knowledge of best ways of cleaning & waste disposal
- KU11.** understand the importance of standardization in processes
- KU12.** understand the importance of sustainability in 5S
- KU13.** have knowledge of TQM process
- KU14.** have knowledge of various materials and storage norms
- KU15.** understand visual controls, symbols, graphs etc.

## Generic Skills (GS)

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

- GS1.** write basic level notes and observations

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- GS2.** note down observations (if any) related to the process
- GS3.** read 5S instructions put up across the plant premises
- GS4.** effectively communicate information to team members inform employees in the plant and concerned functions about 5S
- GS5.** question the process head in order to understand the 5S related issues
- GS6.** attentively listen with full attention and comprehend the information given by the speaker during 5S training programs
- GS7.** use common sense and make judgments during day to day basis
- GS8.** use reasoning skills to identify and resolve basic problems using 5S
- GS9.** persuade co team members to follow 5 S
- GS10.** ensure that the co team members understand the importance of using 5 S tool
- GS11.** use innovative skills to perform and manage 5 S activities at the work desk and the shop floor
- GS12.** exhibit inquisitive behaviour to seek feedback and question on the existing set patterns of work
- GS13.** do what is right, not what is a popular practices
- GS14.** follow shop floor rules& regulations and avoid deviations; make 5S an integral way of life
- GS15.** ensure self-cleanliness on a daily basis
- GS16.** demonstrate the will to keep the work area in a clean and orderly manner

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure sorting</i>	<b>10</b>	<b>30</b>	-	-
<b>PC1..</b> follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.	1	3	-	-
<b>PC2..</b> ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions	1	3	-	-
<b>PC3..</b> follow the technique of waste disposal and waste storage in the proper bins as per sop	1	3	-	-
<b>PC4..</b> segregate the items which are labelled as red tag items for the process area and keep them in the correct places	1	3	-	-
<b>PC5.</b> sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions	1	3	-	-
<b>PC6. .</b> ensure that areas of material storage areas are not overflowing	1	3	-	-
<b>PC7.</b> properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	1	3	-	-
<b>PC8.</b> return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area	1	3	-	-
<b>PC9.</b> follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	1	3	-	-
<b>PC10.</b> follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure proper documentation and storage (organizing , streamlining)</i>	<b>3</b>	<b>9</b>	-	-
<b>PC11.</b> check that the items in the respective areas have been identified as broken or damaged	1	3	-	-
<b>PC12.</b> follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc	1	3	-	-
<b>PC13.</b> make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions	1	3	-	-
<i>Ensure cleaning of self and the work place</i>	<b>8</b>	<b>24</b>	-	-
<b>PC14.</b> check whether safety glasses are clean and in good condition	1	3	-	-
<b>PC15.</b> keep all outside surfaces of recycling containers are clean	1	3	-	-
<b>PC16..</b> ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards	1	3	-	-
<b>PC17..</b> check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up	1	3	-	-
<b>PC18..</b> ensure workbenches and work surfaces are clean and in good condition	1	3	-	-
<b>PC19.</b> follow the cleaning schedule for the lighting system to ensure proper illumination	1	3	-	-
<b>PC20.</b> store the cleaning material and equipment in the correct location and in good condition	1	3	-	-
<b>PC21.</b> ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	1	3	-	-
<i>Ensure sustenance</i>	<b>4</b>	<b>12</b>	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> follow the daily cleaning standards and schedules to create a clean working environment	1	3	-	-
<b>PC23.</b> attend all training programs for employees on 5 s	0.5	2	-	-
<b>PC24.</b> support the team during the audit of 5 s	1	3	-	-
<b>PC25.</b> participate actively in employee work groups on 5s and encourage team members for active participation	0.5	2	-	-
<b>PC26.</b> follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions	1	2	-	-
<b>NOS Total</b>	<b>25</b>	<b>75</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N0021
<b>NOS Name</b>	Maintain 5S at the work premises
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	15/03/2014
<b>Next Review Date</b>	15/03/2016
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N8403: Understanding the testing requirements and preparing for On Road testing of prototype vehicles

## Description

This NOS is about understanding the various tests which need to be undertaken to complete the on road performance testing of the prototype vehicles and understanding the related information

## Scope

The role holder will be responsible for:

- understanding the testing requirement and the process
- understanding various procedures, types of driving tests, driving symbols and vehicle performance parameters

## Elements and Performance Criteria

### *Understanding the testing requirement and the process*

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

- PC1..** ensure that a complete information briefing on the types of tests and performance parameters to be observed is received from the testing engineer/ manager
- PC2..** clearly understanding the does and donts of the manufacturing process as defined in sops/ work instructions or defined by supervisors
- PC3..** understand the vehicle specifications of the test vehicle and the test specifications
- PC4..** confirm with the test engineer/ test manager, the test procedure to be applied for conducting the various types of outdoor testing of vehicles
- PC5..** understand the different types of roads, environment test conditions, track conditions, loading conditions, testing route etc. from the test engineer/ test manager before initiation of the test procedure
- PC6..** ensure that the checklist of complete testing of vehicle manoeuvrability, durability, vehicle performance, structural durability, ride comfort, nvh and vehicle safety is received before initiation of the testing process
- PC7..** confirm with the test engineer/ test manager, the various data points which need to be captured and analyzed during the running test of the vehicle
- PC8..** understand the instruments which will be used for recording the observations during the road tests
- PC9..** ensure that the technician has properly connected of the various data capturing meters and instruments such as load cells, pneumatic/ plc testing gauges, strain gauges, displacement transducers, accelerometers, gps data collection devices and data loggers to capture the data points during the vehicle running condition
- PC10..** confirm the test drive parameters like speed, acceleration, braking, oil & fuel level etc. before initiating the test so that the test results are not adversely impacted
- PC11..** understand the observation sheet formats and the data which needs to be captured while driving the vehicle

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- PC12..** understand the traffic rules, driving regulations and norms as per the tests which are to be undertaken
- PC13..** confirm that all the safety features required for the vehicle under running condition are working and are checked as per the vehicle safety check list provided
- PC14..** ensure that the fitter/ technician has checked of fuel level, oil/ lubricant level, cooling, water level, tyre pressure etc. are checked as per the checklist provided before starting the on road testing of the vehicle prototype
- PC15..** ensure that any type of system warning indicators showing system, failures, loose connections, malfunctioning etc. are addressed before starting the various types of road test

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** products manufactured by the company
- KU2.** internal product standards finalized within the organization
- KU3.** quality norms and standards prescribed in the Quality Manual by the organization
- KU4.** 5S and Safety norms practiced in the organization
- KU5.** the working of the internal combustion engine ( Petrol/ Diesel)/ CNG engines
- KU6.** different parts of the automobile and basic working principle of automobile aggregates
- KU7.** different parameters used to evaluate the performance of the automobile
- KU8.** various regulations and norms governing vehicle driving as mentioned in Motor Vehicle Act etc.
- KU9.** impact of various types of roads, different environmental conditions, loading conditions etc. on the overall vehicle performance
- KU10.** various defects related to running automobiles and potential impact on the working of the final vehicle
- KU11.** various sources of noise and vibrations in the vehicle and potential causes of the noise and vibrations
- KU12.** how to use jack for changing tires, troubleshooting during low battery charging etc.
- KU13.** various symbols used on the roads assisting/ alerting drivers during on road vehicle driving
- KU14.** good driving principles and good driving skills which impact performance of the vehicle e.g. usage of brakes, clutches, overloading of vehicles, stationary engine raise, over speeding
- KU15.** how to drive in a social environment speed limits, overtaking vehicles, using indicators, usage of proper headlights and horns etc.
- KU16.** mandatory checks which need to be conducted on the vehicle before trial run
- KU17.** potential health and safety hazards and related safety precautions
- KU18.** personal safety norms such as usage of seat belts, door locking mechanism, helmets, goggles, boots etc. while driving vehicles
- KU19.** emergency response measures while driving on the roads and contact details in case of emergency

## Generic Skills (GS)

## Qualification Pack

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

- GS1.** document information from the manuals, discussion notes, process charts etc.
- GS2.** create small notes/ work documents/ diagrams/ maps for selfhelp to understand the process
- GS3.** read equipment manuals and process documents to understand the equipment and processes better
- GS4.** read internal information memos send by internal customers ( other functions within the organization)
- GS5.** discuss task lists, schedules, and work-loads with the supervisor
- GS6.** answer the queries raised by the engineer and supervisor as well as intercompany departments
- GS7.** effectively communicate with others in making them aware of work expectations, targets, policies, processes etc.
- GS8.** attentively listen with full attention to the speaker and comprehend the information given by the speaker
- GS9.** break the problem into smaller issues and tasks to arrive at a solution
- GS10.** understand inter process relationship and establish relationship between various parts of the problem
- GS11.** leverage experience to find effective solutions to problems
- GS12.** use basic analytical tools to arrive at solutions
- GS13.** plan, organize and prioritize the work order and jobs received from the manager
- GS14.** validate all process/ equipment manuals so that the final process selected is correct
- GS15.** organize information, tools, manuals etc. so that sorting becomes easy
- GS16.** reorganize resources on the line/ shift in case of change of plans
- GS17.** use common sense and make judgments during day to day basis
- GS18.** use reasoning skills to identify and resolve problems
- GS19.** use intuition to detect any potential problems which could arise during operations
- GS20.** identify faulty/ flawed part and processes during the process and highlight the same to the concerned persons with the required time framework
- GS21.** link the fault observed with the overall impact on the performance of the component/ automobile
- GS22.** support and contribute in monitoring and delivering high quality output from self and others
- GS23.** gather information skilfully from multiple sources
- GS24.** analyse information in depth and identifies the problem in a timely manner
- GS25.** Work tireless in spite of repeat activities in a diligent manner to resolve problems on a day to day basis
- GS26.** use previous experience in resolving problems and taking decisions
- GS27.** make timely and independent decisions within the boundaries of the delegation matrix of the organization
- GS28.** identify the needs of the customer
- GS29.** ensure that the product designed meets the expectation of the customer
- GS30.** contribute to building a positive team spirit

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**GS31.** exhibit objectivity & openness to others views

**GS32.** collaborate with stakeholders to achieve the desired state of final result

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Understanding the testing requirement and the process</i>				
<b>PC1..</b> ensure that a complete information briefing on the types of tests and performance parameters to be observed is received from the testing engineer/ manager	2	4	-	-
<b>PC2..</b> clearly understanding the does and donts of the manufacturing process as defined in sops/ work instructions or defined by supervisors	2	5	-	-
<b>PC3..</b> understand the vehicle specifications of the test vehicle and the test specifications	2	5	-	-
<b>PC4..</b> confirm with the test engineer/ test manager, the test procedure to be applied for conducting the various types of outdoor testing of vehicles	2	5	-	-
<b>PC5..</b> understand the different types of roads, environment test conditions, track conditions, loading conditions, testing route etc. from the test engineer/ test manager before initiation of the test procedure	2	5	-	-
<b>PC6..</b> ensure that the checklist of complete testing of vehicle manoeuvrability, durability, vehicle performance, structural durability, ride comfort, nvh and vehicle safety is received before initiation of the testing process	2	5	-	-
<b>PC7..</b> confirm with the test engineer/ test manager, the various data points which need to be captured and analyzed during the running test of the vehicle	2	5	-	-
<b>PC8..</b> understand the instruments which will be used for recording the observations during the road tests	2	5	-	-
<b>PC9..</b> ensure that the technician has properly connected of the various data capturing meters and instruments such as load cells, pneumatic/ plc testing gauges, strain gauges, displacement transducers, accelerometers, gps data collection devices and data loggers to capture the data points during the vehicle running condition	2	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10..</b> confirm the test drive parameters like speed, acceleration, braking, oil & fuel level etc. before initiating the test so that the test results are not adversely impacted	2	5	-	-
<b>PC11..</b> understand the observation sheet formats and the data which needs to be captured while driving the vehicle	2	4	-	-
<b>PC12..</b> understand the traffic rules, driving regulations and norms as per the tests which are to be undertaken	2	4	-	-
<b>PC13..</b> confirm that all the safety features required for the vehicle under running condition are working and are checked as per the vehicle safety check list provided	2	5	-	-
<b>PC14..</b> ensure that the fitter/ technician has checked of fuel level, oil/ lubricant level, cooling, water level, tyre pressure etc. are checked as per the checklist provided before starting the on road testing of the vehicle prototype	2	4	-	-
<b>PC15..</b> ensure that any type of system warning indicators showing system, failures, loose connections, malfunctioning etc. are addressed before starting the various types of road test	2	4	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N8403
<b>NOS Name</b>	Understanding the testing requirements and preparing for On Road testing of prototype vehicles
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing and R&D
<b>Occupation</b>	testing
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/01/2014
<b>Next Review Date</b>	20/01/2016
<b>NSQC Clearance Date</b>	

## Qualification Pack

# ASC/N8404: Conduct vehicle performance evaluation through On Road tests

## Description

This NOS is about driving the vehicle as per the testing norms of the organization, observe defects during various driving scenarios and report the observations to the testing engineer and the testing manager to improve the overall performance of the proto vehicle.

## Scope

The role holder will be responsible for:

- conducting the mandatory vehicle checks before the tests
- drive the vehicle through various vehicle testing scenarios
- document observations and share feedback on vehicle performance , vehicle handling and vehicle reliability

## Elements and Performance Criteria

*Conduct all mandatory checks and drive the vehicle through different testing scenarios to measure vehicle performance*

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

- PC1..** conduct a thorough check up of vehicle system displays, gauges, lighting system, signals, levels for lube, water, fuel in the vehicle for correct operations
- PC2..** check the working of various navigation systems on board the vehicle before the test procedure
- PC3..** for all tests to be conducted outside the company premises/ general road, ensure that all relevant papers are available before initiating the test procedure
- PC4..** check operations of safety measures like brakes, seat belts, wipers, door locking/ opening mechanisms before carrying out detailed road tests
- PC5..** drive the vehicle of different types of roads like long distance endurance testing roads, paved roads, stone tracks, mud tracks, corrugated roads etc. as specified in the vehicle testing checklist
- PC6..** ensure that vehicle performance parameters like torque, braking, vibrations, pickup, overall vehicle handling, driver comfort etc. on various torture tracks like rough stone track, corrugated tracks, bumpy tracks, potholed tracks, sand & mud tracks etc. are observed and comments are entered manually by the driver
- PC7..** ensure that the vehicle performance parameters like torque, braking, vibration, acceleration/ deceleration, driver comfort, tyre grip etc. on paved road tracks with different loading conditions are captured and observations are noted in the data observation sheets provided by the testing engineer
- PC8..** ensure capturing of various vehicle performance parameters like torque, vibrations, pickup, water seepage, ease of tyre movement, engine stalling etc. during the water trough wading test and ensure that the various levels of water depth/ vehicle depth in water are recorded

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- PC9..** ensure that the vehicle performance is measured at various slope levels by performing the vehicle gradient test. observe for any engine stalling, power drop, braking problems observed during the slope gradient test
- PC10..** ensure that parameter like steering comfort, braking power, acceleration/ deceleration, vibrations, tyre grip, turning radius, durability, reliability and vehicle handling ability at different loading conditions are captured on steering pads, flat straight roads and serpentine tracks to collect data for analyzing manoeuvrability
- PC11..** conduct the 80 km/hour speed braking test, low speed braking test and short distance breaking test to validate the braking distance, vehicle performance, driver comfort, durability and vehicle stability during various braking conditions under various environment conditions like dry roads, wet roads, muddy tracks etc. as well as setting conditions
- PC12..** capture relevant data such as driving comfort, vehicle mileage, engine performance etc. during long distance endurance testing of vehicles on cross country drives. note any driving related stresses, loss of concentration, fatigue due to long distance travel
- PC13..** capture all types of noises like squeaks, rattles and all types of vibrations in the running vehicle especially the ones coming from engine, transmission, gear changing, suspension, exhaust system, air conditioning & internal cabin noise during different running on road tests
- PC14..** test the operations of the lighting systems such as lamps, head lights and fog lamps using the lamp focus test and lamp brightness test as per the safety norms prescribed by the organization
- PC15..** test the operations of the signalling systems like reflectors and indicators including brightness, visibility, blinking speeds etc. as per the checklist provided for signal testing
- PC16..** ensure completion of dust shower, mist chamber and water shower test and check for any leakages of dust, mist and water inside the vehicle to determine any structural flaws with the test vehicle
- PC17..** check the working of safety measures like windshield wiper movement, rear view and side view mirror visibility while performing the dust, mist and water shower test
- PC18..** check the durability of the wind shield and side view mirror glass to detect any flaws like cracks, dust/ water accumulation on the glass etc.
- PC19..** ensure that all safety norms are adhered to while driving. ensure that the vehicle is immediately stopped if any usual behaviour is observed during driving for self or the vehicle
- PC20..** while driving in traffic conditions, ensure that all traffic rules are adhered to and due care is taken of other vehicle and pedestrians on the road while driving
- PC21..** record all the observations during different types of test in the formats shared by the testing engineer
- PC22..** ensure that the correct and relevant feedback on overall vehicle driving experience and vehicle performance is shared with the testing engineer and testing manager. ensure that the smallest defect observed during driving is highlighted to the engineer

### *Adherence to safety requirements*

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

- PC23..** ensure that all safety guidelines related to vehicle testing are adhered to while driving
- PC24..** ensure that safety measures like seat belts, helmets, gloves, boots, knee guards, shoulder guards etc. are worn as per the relevance of the tests
- PC25..** ensure that safety measures on vehicles like fire extinguishers, emergency brakes, wipers, signals etc. are in the working condition and are tested before the test trial

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- PC26..** maintain safety parameters while driving and keep the vehicle within safe running parameters as specified in the testing manual
- PC27..** demonstrate the application of emergency safety procedures at the time of emergency observed by the driver during the vehicle running test
- PC28..** inform the testing engineer of any safety related issues observed during testing of the automobile on the road

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** new products manufactured by the company
- KU2.** internal product standards finalized within the organization
- KU3.** 5S and Safety norms practiced in the organization
- KU4.** the working of various automobile components and basic working principle of automobile aggregates
- KU5.** general working of automobiles and linkage & impact of one parameter to another
- KU6.** the working of the internal combustion engine ( Petrol/ Diesel)/ CNG engines
- KU7.** different parameters used to evaluate the performance of the automobile
- KU8.** various regulations and norms governing vehicle driving as mentioned in Motor Vehicle Act etc.
- KU9.** impact of various types of roads, different environmental conditions, loading conditions etc. on the overall vehicle performance
- KU10.** various defects related to running automobiles and potential impact on the working of the final vehicle
- KU11.** various sources of noise and vibrations in the vehicle and potential causes of the noise and vibrations
- KU12.** how to use jack for changing tires, troubleshooting during low battery charging etc
- KU13.** various symbols used on the roads assisting/ alerting driver during on road vehicle driving
- KU14.** good driving principles and good driving skills which impact performance of the vehicle e.g. usage of brakes, clutches, overloading of vehicles, stationary engine raise, over speeding etc.
- KU15.** how to drive in a social environment speed limits, overtaking vehicles, using indicators, usage of proper headlights and hornsetc.
- KU16.** mandatory checks which need to be conducted on the vehicle before trial run
- KU17.** potential health and safety hazards and related safety precautions
- KU18.** personal safety norms such as usage of seat belts, door locking mechanism, helmets, goggles, boots etc. while driving vehicles
- KU19.** emergency response measures while driving on the roads and contact details in case of emergency
- KU20.** impact of environmental parameters like rain, mist, dust, sunlight, snow on overall vehicle and aggregate performance
- KU21.** probable sources of vehicle noise and possible impacts
- KU22.** basic road driving skills and fundamentals of vehicle movement in various conditions

## Qualification Pack

- KU23.** impact of various types of roads, gradient, sand etc. on the performance of the vehicle
- KU24.** impact of wind, water flow, hot & cold conditions, pressure on the performance of the vehicle
- KU25.** potential health and safety hazards and related safety precautions during driving
- KU26.** emergency response methodology in case of accidents
- KU27.** first aid methods at the time of accidents during road testing

## Generic Skills (GS)

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

- GS1.** document information from the manuals, discussion notes, process charts etc
- GS2.** create small notes/ work documents/ diagrams/ maps for self-help to understand the process
- GS3.** read equipment manuals and process documents to understand the equipment and processes better
- GS4.** read internal information memos send by internal customers ( other functions within the organization)
- GS5.** discuss task lists, schedules, and work-loads with the supervisor
- GS6.** answer the queries raised by the engineer and supervisor as well as intercompany departments
- GS7.** effectively communicate with others in making them aware of work expectations, targets, policies, processes etc
- GS8.** attentively listen with full attention to the speaker and comprehend the information given by the speaker
- GS9.** break the problem into smaller issues and tasks to arrive at a solution
- GS10.** understand inter process relationship and establish relationship between various parts of the problem
- GS11.** leverage experience to find effective solutions to problems
- GS12.** use basic analytical tools to arrive at solutions
- GS13.** plan, organize and prioritize the work order and jobs received from the manager
- GS14.** validate all process/ equipment manuals so that the final process selected is correct
- GS15.** organize information, tools, manuals etc. so that sorting becomes easy
- GS16.** reorganize resources on the line/ shift in case of change of plans
- GS17.** use common sense and make judgments during day to day basis
- GS18.** use reasoning skills to identify and resolve problems
- GS19.** use intuition to detect any potential problems which could arise during operations
- GS20.** gather information skilfully from multiple sources
- GS21.** analyse information in depth and identifies the problem in a timely manner
- GS22.** develop alternate solutions and resolves problems in early stages
- GS23.** work tireless in spite of repeat activities in a diligent manner to resolve problems on a day to day basis
- GS24.** use previous experience in resolving problems and taking decisions
- GS25.** familiarise with leading practices available in the market

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- GS26.** represent any new ideas/ approaches on process improvement and productivity improvement to the seniors in the team
- GS27.** exhibit objectivity & openness to others views
- GS28.** collaborate with stakeholders to achieve the desired state of final result
- GS29.** identify the needs of the customer
- GS30.** ensure that the product designed meets the expectation of the customer

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Conduct all mandatory checks and drive the vehicle through different testing scenarios to measure vehicle performance</i>	<b>21.5</b>	<b>62</b>	-	-
<b>PC1..</b> conduct a thorough check up of vehicle system displays, gauges, lighting system, signals, levels for lube, water, fuel in the vehicle for correct operations	1	3	-	-
<b>PC2..</b> check the working of various navigation systems on board the vehicle before the test procedure	1	3	-	-
<b>PC3..</b> for all tests to be conducted outside the company premises/ general road, ensure that all relevant papers are available before initiating the test procedure	1	2	-	-
<b>PC4..</b> check operations of safety measures like brakes, seat belts, wipers, door locking/ opening mechanisms before carrying out detailed road tests	1	2	-	-
<b>PC5..</b> drive the vehicle of different types of roads like long distance endurance testing roads, paved roads, stone tracks, mud tracks, corrugated roads etc. as specified in the vehicle testing checklist	1	3	-	-
<b>PC6..</b> ensure that vehicle performance parameters like torque, braking, vibrations, pickup, overall vehicle handling, driver comfort etc. on various torture tracks like rough stone track, corrugated tracks, bumpy tracks, potholed tracks, sand & mud tracks etc. are observed and comments are entered manually by the driver	1	3	-	-
<b>PC7..</b> ensure that the vehicle performance parameters like torque, braking, vibration, acceleration/ deceleration, driver comfort, tyre grip etc. on paved road tracks with different loading conditions are captured and observations are noted in the data observation sheets provided by the testing engineer	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC8..</b> ensure capturing of various vehicle performance parameters like torque, vibrations, pickup, water seepage, ease of tyre movement, engine stalling etc. during the water trough wading test and ensure that the various levels of water depth/ vehicle depth in water are recorded	1	3	-	-
<b>PC9..</b> ensure that the vehicle performance is measured at various slope levels by performing the vehicle gradient test. observe for any engine stalling, power drop, braking problems observed during the slope gradient test	1	3	-	-
<b>PC10..</b> ensure that parameter like steering comfort, braking power, acceleration/ deceleration, vibrations, tyre grip, turning radius, durability, reliability and vehicle handling ability at different loading conditions are captured on steering pads, flat straight roads and serpentine tracks to collect data for analyzing manoeuvrability	1	3	-	-
<b>PC11..</b> conduct the 80 km/hour speed braking test, low speed braking test and short distance breaking test to validate the braking distance, vehicle performance, driver comfort, durability and vehicle stability during various braking conditions under various environment conditions like dry roads, wet roads, muddy tracks etc. as well as setting conditions	1	3	-	-
<b>PC12..</b> capture relevant data such as driving comfort, vehicle mileage, engine performance etc. during long distance endurance testing of vehicles on cross country drives. note any driving related stresses, loss of concentration, fatigue due to long distance travel	1	3	-	-
<b>PC13..</b> capture all types of noises like squeaks, rattles and all types of vibrations in the running vehicle especially the ones coming from engine, transmission, gear changing, suspension, exhaust system, air conditioning & internal cabin noise during different running on road tests	1	3	-	-
<b>PC14..</b> test the operations of the lighting systems such as lamps, head lights and fog lamps using the lamp focus test and lamp brightness test as per the safety norms prescribed by the organization	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15..</b> test the operations of the signalling systems like reflectors and indicators including brightness, visibility, blinking speeds etc. as per the checklist provided for signal testing	1	3	-	-
<b>PC16..</b> ensure completion of dust shower, mist chamber and water shower test and check for any leakages of dust, mist and water inside the vehicle to determine any structural flaws with the test vehicle	1	3	-	-
<b>PC17..</b> check the working of safety measures like windshield wiper movement, rear view and side view mirror visibility while performing the dust, mist and water shower test	1	3	-	-
<b>PC18..</b> check the durability of the wind shield and side view mirror glass to detect any flaws like cracks, dust/ water accumulation on the glass etc.	1	3	-	-
<b>PC19..</b> ensure that all safety norms are adhered to while driving. ensure that the vehicle is immediately stopped if any usual behaviour is observed during driving for self or the vehicle	1	3	-	-
<b>PC20..</b> while driving in traffic conditions, ensure that all traffic rules are adhered to and due care is taken of other vehicle and pedestrians on the road while driving	1	3	-	-
<b>PC21..</b> record all the observations during different types of test in the formats shared by the testing engineer	0.5	2	-	-
<b>PC22..</b> ensure that the correct and relevant feedback on overall vehicle driving experience and vehicle performance is shared with the testing engineer and testing manager. ensure that the smallest defect observed during driving is highlighted to the engineer	1	2	-	-
<i>Adherence to safety requirements</i>	<b>3.5</b>	<b>13</b>	-	-
<b>PC23..</b> ensure that all safety guidelines related to vehicle testing are adhered to while driving	1	3	-	-
<b>PC24..</b> ensure that safety measures like seat belts, helmets, gloves, boots, knee guards, shoulder guards etc. are worn as per the relevance of the tests	0.5	2	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC25..</b> ensure that safety measures on vehicles like fire extinguishers, emergency brakes, wipers, signals etc. are in the working condition and are tested before the test trial	0.5	2	-	-
<b>PC26..</b> maintain safety parameters while driving and keep the vehicle within safe running parameters as specified in the testing manual	0.5	2	-	-
<b>PC27..</b> demonstrate the application of emergency safety procedures at the time of emergency observed by the driver during the vehicle running test	0.5	2	-	-
<b>PC28..</b> inform the testing engineer of any safety related issues observed during testing of the automobile on the road	0.5	2	-	-
<b>NOS Total</b>	<b>25</b>	<b>75</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ASC/N8404
<b>NOS Name</b>	Conduct vehicle performance evaluation through On Road tests
<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing and R&D
<b>Occupation</b>	Testing
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	20/01/2014
<b>Next Review Date</b>	20/01/2016
<b>NSQC Clearance Date</b>	

## Qualification Pack

### 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.

**Recommended Pass % aggregate for QP : 75**

#### Assessment Weightage

##### Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N0006.Maintain a safe and healthy working environment	25	75	-	-	100	15
ASC/N0021.Maintain 5S at the work premises	25	75	-	-	100	15
ASC/N8403.Understanding the testing requirements and preparing for On Road testing of prototype vehicles	30	70	-	-	100	35

### Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N8404. Conduct vehicle performance evaluation through On Road tests	25	75	-	-	100	35
<b>Total</b>	<b>105</b>	<b>295</b>	<b>-</b>	<b>-</b>	<b>400</b>	<b>100</b>

## 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.