

Qualification Pack



Tractor Service Mechanic

Options: Repair and maintenance of farm implements

QP Code: AGR/Q1108

Version: 4.0

NSQF Level: 4

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AGR/Q1108: Tractor Service Mechanic

Brief Job Description

A Tractor Service Mechanic performs routine checks, carries out maintenance and repair of tractor engine and other parts. S/he also assembles repaired and serviced parts, checks the performance of the transmission, hydraulic and auto-electrical systems, etc.

Personal Attributes

The individual in this job role must have mechanical aptitude and analytical ability. The person must also possess problem-solving and good communication skills. An eye for detail with good hand-eye co-ordination are other important and desirable attributes for this job role.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [AGR/N1126: Ensure Preparedness for Repair and maintenance of tractor](#)
2. [AGR/N1127: Perform routine checks on the tractor](#)
3. [AGR/N1128: Carry out maintenance and repair of engine parts](#)
4. [AGR/N1129: Carry out maintenance and repair of transmission, hydraulic and electrical systems](#)
5. [AGR/N1130: Assemble the repaired and serviced parts](#)
6. [AGR/N9903: Maintain health and safety at the workplace](#)
7. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Options(Not mandatory):

Option : Repair and maintenance of farm implements

This OS unit is about carrying out repair and maintenance of farm implements

1. [AGR/N1119: Carry out repair and maintenance of tillage and soil farming equipment](#)

Qualification Pack (QP) Parameters

Sector	Agriculture
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Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
Country	India
NSQF Level	4
Credits	15
Aligned to NCO/ISCO/ISIC Code	NC0-2015/7231.0300
Minimum Educational Qualification & Experience	12th Class (or equivalent) OR 10th grade pass with 3 Years of experience relevant experience in Agriculture and allied sectors OR Previous relevant Qualification of NSQF Level (3.5) with 1.5 years of experience relevant experience in Agriculture and allied sectors OR Previous relevant Qualification of NSQF Level (3) with 3 Years of experience relevant experience in Agriculture and allied sectors
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	26/11/2027
NSQC Approval Date	26/11/2024
Version	4.0
Reference code on NQR	QG-04-AG-03416-2024-V2-ASCI
NQR Version	2.0

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AGR/N1126: Ensure Preparedness for Repair and maintenance of tractor

Description

This OS unit is about preparing to carry out repair and maintenance of a tractor

Scope

The scope covers the following :

- Prepare for the tractor's repair and maintenance

Elements and Performance Criteria

Prepare for the tractor's repair and maintenance

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

- PC1.** identify the tractor's manufacturer, model and any special requirements along with the maintenance schedule
- PC2.** determine any existing issues with the tractor through discussion with the client and studying the previous repair and maintenance record
- PC3.** arrange manufacturer-approved tools, equipment, spare parts and PPE for the repair and maintenance activities
- PC4.** prepare the repair and maintenance tools and equipment for use
- PC5.** select a well-ventilated and hazard-free area to carry out tractor repair and maintenance
- PC6.** prepare the worksheet and obtain the client's approval to initiate the repair and maintenance activities
- PC7.** Familiarize different tools used for repair and maintenance and different make & models of tractors

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** own job responsibilities and limits of authority
- KU2.** different models, design and functions of a tractor
- KU3.** basic terminology used for various tractor components and systems
- KU4.** the importance of checking the tractor's previous repair and maintenance record
- KU5.** the importance of using manufacturer-approved tools, equipment and spare parts
- KU6.** relevant hand/ power tools and equipment and their preparation for use
- KU7.** appropriate environment for the repair and maintenance of a tractor
- KU8.** documentation requirement to initiate repair and maintenance of a tractor
- KU9.** PPE required for the repair and maintenance of a tractor

Generic Skills (GS)

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

- GS1.** make work-related short notes
- GS2.** read and interpret the relevant guides and manuals
- GS3.** communicate politely and clearly with clients and co-workers
- GS4.** listen attentively to the speaker and comprehend the information given
- GS5.** take quick action to resolve work-related issues to minimise impact on productivity
- GS6.** prioritise tasks to ensure timely completion
- GS7.** plan to utilise time, equipment and resources effectively

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for the tractor's repair and maintenance</i>	30	40	-	30
PC1. identify the tractor's manufacturer, model and any special requirements along with the maintenance schedule	-	-	-	-
PC2. determine any existing issues with the tractor through discussion with the client and studying the previous repair and maintenance record	-	-	-	-
PC3. arrange manufacturer-approved tools, equipment, spare parts and PPE for the repair and maintenance activities	-	-	-	-
PC4. prepare the repair and maintenance tools and equipment for use	-	-	-	-
PC5. select a well-ventilated and hazard-free area to carry out tractor repair and maintenance	-	-	-	-
PC6. prepare the worksheet and obtain the client's approval to initiate the repair and maintenance activities	-	-	-	-
PC7. Familiarize different tools used for repair and maintenance and different make & models of tractors	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N1126
NOS Name	Ensure Preparedness for Repair and maintenance of tractor
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	26/11/2024
Next Review Date	26/11/2027
NSQC Clearance Date	26/11/2024

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AGR/N1127: Perform routine checks on the tractor

Description

This OS unit is about performing necessary and important routine checks of the tractor.

Scope

The scope covers the following :

- Perform routine checks
- Check the gauges for correct functioning
- Optimise resource utilisation

Elements and Performance Criteria

Perform routine checks

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

- PC1.** inspect the tractor visually to identify any cracks or damages
- PC2.** check clutch, gears, brakes and steering for correct functioning
- PC3.** test the working of implements such as harrow, rotavator, seed drills, etc.
- PC4.** examine the fan belt for any damage and recommended level of tension
- PC5.** check the engine oil, hydraulic oil, transmission oil, steering box oil, coolant and fuel for the prescribed levels
- PC6.** examine for any leakage in the engine, transmission, hydraulic and steering
- PC7.** check for any bleeding or air locks in the fuel system

Check the gauges for correct functioning

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

- PC8.** check the temperature gauge for correct functioning
- PC9.** check the low oil pressure warning lamp
- PC10.** inspect the hour meter for correct functioning

Optimise resource utilisation

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

- PC11.** optimise usage of various material in different tasks/ activities/ processes
- PC12.** optimise usage of electricity/energy in various tasks/ activities/ processes
- PC13.** connect electrical tools and equipment safely and turn off when not in use
- PC14.** segregate waste into different categories
- PC15.** dispose non-recyclable waste appropriately
- PC16.** deposit recyclable and reusable material at the identified location

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** procedure for performing routine checks on a tractor
- KU2.** various components of a tractor that require regular checks
- KU3.** different systems of a tractor and common faults found with them
- KU4.** how to identify faults with clutch, gears, brakes and steering
- KU5.** different tractor implements such as harrow, rotavator, seed drills and common faults with them
- KU6.** necessary checks before, during and after starting a tractor
- KU7.** recommended level of engine oil, hydraulic oil, transmission oil, steering box oil, coolant and fuel in a tractor
- KU8.** working of different systems of a tractor engine
- KU9.** types of brakes, electrical system, clutches and steering systems and their use in a tractor
- KU10.** how to check for bleeding or air locks in the fuel system
- KU11.** functioning of the temperature gauge, low oil pressure warning lamp, hour meter
- KU12.** importance of following environmental and ecological best practice to minimise the impact on the environment
- KU13.** benefits of resource optimisation
- KU14.** ways of efficiently managing various materials in repair and maintenance activities
- KU15.** common practices of conserving electricity
- KU16.** waste management and methods of waste disposal
- KU17.** common sources of pollution and ways to minimise it

Generic Skills (GS)

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

- GS1.** Make work-related notes
- GS2.** read and interpret the relevant guides and manuals
- GS3.** communicate professionally with clients and co-workers
- GS4.** listen attentively to comprehend the information given by the speaker
- GS5.** plan and prioritise tasks to ensure timely completion
- GS6.** plan to use resources efficiently
- GS7.** evaluate all possible solutions to a problem to select the best one
- GS8.** co-ordinate with clients and co-workers to achieve organisational goals

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform routine checks</i>	15	20	-	15
PC1. inspect the tractor visually to identify any cracks or damages	-	-	-	-
PC2. check clutch, gears, brakes and steering for correct functioning	-	-	-	-
PC3. test the working of implements such as harrow, rotavator, seed drills, etc.	-	-	-	-
PC4. examine the fan belt for any damage and recommended level of tension	-	-	-	-
PC5. check the engine oil, hydraulic oil, transmission oil, steering box oil, coolant and fuel for the prescribed levels	-	-	-	-
PC6. examine for any leakage in the engine, transmission, hydraulic and steering	-	-	-	-
PC7. check for any bleeding or air locks in the fuel system	-	-	-	-
<i>Check the gauges for correct functioning</i>	8	12	-	10
PC8. check the temperature gauge for correct functioning	-	-	-	-
PC9. check the low oil pressure warning lamp	-	-	-	-
PC10. inspect the hour meter for correct functioning	-	-	-	-
<i>Optimise resource utilisation</i>	7	8	-	5
PC11. optimise usage of various material in different tasks/ activities/ processes	-	-	-	-
PC12. optimise usage of electricity/energy in various tasks/ activities/ processes	-	-	-	-
PC13. connect electrical tools and equipment safely and turn off when not in use	-	-	-	-
PC14. segregate waste into different categories	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. dispose non-recyclable waste appropriately	-	-	-	-
PC16. deposit recyclable and reusable material at the identified location	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N1127
NOS Name	Perform routine checks on the tractor
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	26/11/2024
Next Review Date	26/11/2027
NSQC Clearance Date	26/11/2024

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AGR/N1128: Carry out maintenance and repair of engine parts

Description

This OS unit is about dismantling various tractor engine parts and carrying out their maintenance and repair.

Scope

The scope covers the following :

- Dismantle the engine parts
- Inspect the engine parts
- Carry out maintenance and repair
- Carry out repair and maintenance of a diesel engine with Common Rail Fuel System

Elements and Performance Criteria

Dismantle the engine parts

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

- PC1.** identify the type of engine, its components and working mechanism
- PC2.** arrange the necessary tools and protective gear for dismantling
- PC3.** dismantle the engine parts as per the instructions in the service manual

Inspect the engine parts

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

- PC4.** clean the dismantled parts and accessories as per the Standard Operating Procedure (SOP)
- PC5.** examine the dismantled parts for any damage
- PC6.** check engine idle Revolutions Per Minute (RPM) and maximum idle RPM
- PC7.** check the fuel system, lubrication system, cooling system, air intake and exhaust system for correct functioning
- PC8.** inspect cylinder head to identify the need to replace it
- PC9.** check the water temperature gauge, sensors, and thermostat for correct functioning
- PC10.** inspect the engine front cover, front oil seal and rear oil seal to identify any replacement needs
- PC11.** assess the taperness and ovality of cylinder bore
- PC12.** examine engine compression pressure, turbo charger, and exhaust gas recirculation systems
- PC13.** check the ovality of crank shaft/bearings for the prescribed measurement
- PC14.** measure the piston rings' side clearance and butt clearance for the prescribed measurement
- PC15.** examine valves for spring stiffness and clearance adjustment
- PC16.** check for clearance between the gear and oil pump body

Carry out maintenance and repair

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

- PC17.** refill distilled water in the battery to maintain the electrolyte level

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- PC18.** replace the oil filter, air filter, fuel filter, transmission filter, hydraulic filter and steering filter as per the Standard Operating Procedure (SOP)
- PC19.** flush the radiator after opening it as per the service manual
- PC20.** use the appropriate tools and equipment as per the service manual to carry out maintenance and repair activities
- PC21.** replace any worn out or damaged engine parts with authentic new parts
- PC22.** maintain the record of maintenance and repair activities

Carry out repair and maintenance of a diesel engine with Common Rail Fuel System

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

- PC23.** arrange the relevant tools required for the removal of injectors
- PC24.** remove the engine head and check the intake valve and exhaust valve condition to ensure there is no leakage
- PC25.** conduct compression test as per the SOP
- PC26.** check the piston ring and oil rings for any wear and tear or damage
- PC27.** check the oil rings wear and tear or damage
- PC28.** match crank shaft and balance shaft as per the design
- PC29.** fit the rocker arm as per the service manual
- PC30.** repair/ replace the piston ring as per the requirement
- PC31.** assemble the engine after repair and maintenance

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** safety precautions to be undertaken during tractor repair and maintenance activities
- KU2.** design and functioning of different types of tractor engine
- KU3.** different engine components, their design and materials used, assembling and disassembling of parts, their cleaning, repair and adjustment
- KU4.** sequence of dismantling, re-assembling and all critical settings such as valve clearance, timing gears, Fuel Injection Pump (FIP) timing for inline and distributor (rotary) pump
- KU5.** use of measuring tools such as feeler gauge, fillet radius gauge, vernier, micrometre, dial gauge, dial bore gauge
- KU6.** torque, back-up torque, power and its units and working of a four-stroke diesel engine
- KU7.** working of fuel supply system including inline fuel injection pump and rotary pump system
- KU8.** removal, flushing and assembly of engine radiator
- KU9.** engine valves operating mechanism
- KU10.** different systems of engines such as air intake and exhaust system, fuel supply system, cooling system, lubrication system, governing system, etc.
- KU11.** repair and maintenance procedure for different components of a tractor engine
- KU12.** components and operations of an engine with the Common Rail Fuel System
- KU13.** components and operations of a Turbocharged Direct Injection (TDI) engine
- KU14.** repair and maintenance of a diesel engine with the Common Rail Fuel System

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Generic Skills (GS)

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

- GS1.** make short and precise notes
- GS2.** read and understand the relevant guides
- GS3.** communicate politely and clearly with clients and co-workers
- GS4.** listen attentively for clear instructions
- GS5.** communicate with co-workers and farmers to understand their concerns
- GS6.** take quick decisions to resolve work-related problems in a timely manner
- GS7.** plan and prioritise tasks to ensure timely completion
- GS8.** plan to utilise time and resources efficiently

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Dismantle the engine parts</i>	5	8	-	5
PC1. identify the type of engine, its components and working mechanism	-	-	-	-
PC2. arrange the necessary tools and protective gear for dismantling	-	-	-	-
PC3. dismantle the engine parts as per the instructions in the service manual	-	-	-	-
<i>Inspect the engine parts</i>	12	15	-	10
PC4. clean the dismantled parts and accessories as per the Standard Operating Procedure (SOP)	-	-	-	-
PC5. examine the dismantled parts for any damage	-	-	-	-
PC6. check engine idle Revolutions Per Minute (RPM) and maximum idle RPM	-	-	-	-
PC7. check the fuel system, lubrication system, cooling system, air intake and exhaust system for correct functioning	-	-	-	-
PC8. inspect cylinder head to identify the need to replace it	-	-	-	-
PC9. check the water temperature gauge, sensors, and thermostat for correct functioning	-	-	-	-
PC10. inspect the engine front cover, front oil seal and rear oil seal to identify any replacement needs	-	-	-	-
PC11. assess the taperness and ovality of cylinder bore	-	-	-	-
PC12. examine engine compression pressure, turbo charger, and exhaust gas recirculation systems	-	-	-	-
PC13. check the ovality of crank shaft/bearings for the prescribed measurement	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. measure the piston rings' side clearance and butt clearance for the prescribed measurement	-	-	-	-
PC15. examine valves for spring stiffness and clearance adjustment	-	-	-	-
PC16. check for clearance between the gear and oil pump body	-	-	-	-
<i>Carry out maintenance and repair</i>	5	8	-	5
PC17. refill distilled water in the battery to maintain the electrolyte level	-	-	-	-
PC18. replace the oil filter, air filter, fuel filter, transmission filter, hydraulic filter and steering filter as per the Standard Operating Procedure (SOP)	-	-	-	-
PC19. flush the radiator after opening it as per the service manual	-	-	-	-
PC20. use the appropriate tools and equipment as per the service manual to carry out maintenance and repair activities	-	-	-	-
PC21. replace any worn out or damaged engine parts with authentic new parts	-	-	-	-
PC22. maintain the record of maintenance and repair activities	-	-	-	-
<i>Carry out repair and maintenance of a diesel engine with Common Rail Fuel System</i>	8	9	-	10
PC23. arrange the relevant tools required for the removal of injectors	-	-	-	-
PC24. remove the engine head and check the intake valve and exhaust valve condition to ensure there is no leakage	-	-	-	-
PC25. conduct compression test as per the SOP	-	-	-	-
PC26. check the piston ring and oil rings for any wear and tear or damage	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. check the oil rings wear and tear or damage	-	-	-	-
PC28. match crank shaft and balance shaft as per the design	-	-	-	-
PC29. fit the rocker arm as per the service manual	-	-	-	-
PC30. repair/ replace the piston ring as per the requirement	-	-	-	-
PC31. assemble the engine after repair and maintenance	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N1128
NOS Name	Carry out maintenance and repair of engine parts
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
NSQF Level	4
Credits	2
Version	3.0
Last Reviewed Date	26/11/2024
Next Review Date	26/11/2027
NSQF Clearance Date	26/11/2024

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AGR/N1129: Carry out maintenance and repair of transmission, hydraulic and electrical systems

Description

This OS unit is about carrying out maintenance and repair of a tractor's transmission, hydraulic and electrical systems.

Scope

The scope covers the following :

- Perform maintenance and repair of the transmission system
- Perform maintenance and repair of the hydraulic system
- Perform maintenance and repair of the electrical system

Elements and Performance Criteria

Perform maintenance and repair of the transmission system

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

- PC1.** dismantle the transmission system using the appropriate tools and equipment
- PC2.** check gearbox, rear axle, Power Take-Off (PTO) for the correct settings and performance
- PC3.** check for the recommended free play setting of the clutch and brakes
- PC4.** examine the wheel hub bearing play to identify the need to replace the bearings
- PC5.** examine all nuts and bolts for the recommended torque and locking
- PC6.** inspect dry disc brake and Oil Immersed Brake (OIB) for correct functioning
- PC7.** check the bull and pinion gear, epicyclic gear train and wheel assembly for correct performance
- PC8.** check linkages in power-steering, steering pump, steering cylinders and the steering system
- PC9.** examine the 2-wheel-drive front axle centre pin, stub axle and wheel assembly
- PC10.** examine the 4-wheel-drive front axle drop box, propeller shaft, differential, axle shaft and wheel assembly
- PC11.** align the clutch using the appropriate tool
- PC12.** adjust wheel tracking as per the requirement
- PC13.** adjust the steering geometry as per the requirement
- PC14.** carry out maintenance and repair of gear and gearbox to resolve the issue of gearbox noise, oil leakage and slipping of gear
- PC15.** replace the worn-out brake discs
- PC16.** replace oil seals on axle shaft and bearings as per the requirement

Perform maintenance and repair of the hydraulics system

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

- PC17.** dismantle the hydraulic system as per the service manual using the appropriate tools and equipment

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- PC18.** examine the hydraulic pump for correct functioning
- PC19.** inspect the hydraulic distributor/ control valve, hydraulic pipes and hydraulic cylinder components for any faults
- PC20.** examine the quality of hydraulic oil and linkages
- PC21.** check hydraulic system pressure and external hydraulics auxiliary valve for correct functioning
- PC22.** check the tractor's 3-point linkage for any wear and tear or damage
- PC23.** adjust draft control and position control levers as per the requirement

Perform maintenance and repair of the electrical system

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

- PC24.** check the cables for any wear and tear or damage
- PC25.** check Revolutions Per Minute (RPM) gauge, hour meter, fuel gauge, battery charging indicator for any faults
- PC26.** test the performance of alternator, self-starter, starting system, relays, fuses, headlights, plough lamp, brake lights, indicator lights and horns

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** design and functioning of a tractor's hydraulic, transmission and electrical systems
- KU2.** different types of hydraulic, transmission and electrical systems
- KU3.** types of gear and power flow systems
- KU4.** working principle of differential and final drive
- KU5.** the sequence of checking a tractors' transmission, hydraulic and electrical systems
- KU6.** maintenance and troubleshooting of different types of clutches such as single clutch and dual clutch
- KU7.** types and functioning of the differential and steering system
- KU8.** types and functioning of power take off systems
- KU9.** components and working of four-wheel drive of front axle
- KU10.** steering geometry, sequential dismantling of steering linkages, steering gear box, front axle hubs, pivot pins, re-assembling and critical settings
- KU11.** wheel toe-in setting
- KU12.** functioning and types of brakes such as dry disc brake and Oil Immersed Brake (OIB)
- KU13.** circuit reading in neutral, lift and lower conditions
- KU14.** different types of hydraulic pump, valves and cylinders
- KU15.** functioning of the battery, alternator and self-starter
- KU16.** handling of various repair tools and equipment such as multi-meter and hydrometer
- KU17.** working of regulatory system, starting system and fuses/relays
- KU18.** lift mechanism or 3-point linkage system in a tractor
- KU19.** principle of pascal law of hydraulics
- KU20.** basic principles of electricity

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Generic Skills (GS)

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

- GS1.** write work-related notes
- GS2.** read the relevant guides and manuals
- GS3.** communicate politely and clearly with all
- GS4.** listen attentively and comprehend the information shared by the speaker
- GS5.** analyse work processes critically to identify improvements
- GS6.** plan tasks for effective time and resource management
- GS7.** prioritise tasks to improve work-efficiency
- GS8.** take quick action to resolve any disruptions in work
- GS9.** co-ordinate with co-workers to achieve the organisational goals

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform maintenance and repair of the transmission system</i>	20	25	-	15
PC1. dismantle the transmission system using the appropriate tools and equipment	-	-	-	-
PC2. check gearbox, rear axle, Power Take-Off (PTO) for the correct settings and performance	-	-	-	-
PC3. check for the recommended free play setting of the clutch and brakes	-	-	-	-
PC4. examine the wheel hub bearing play to identify the need to replace the bearings	-	-	-	-
PC5. examine all nuts and bolts for the recommended torque and locking	-	-	-	-
PC6. inspect dry disc brake and Oil Immersed Brake (OIB) for correct functioning	-	-	-	-
PC7. check the bull and pinion gear, epicyclic gear train and wheel assembly for correct performance	-	-	-	-
PC8. check linkages in power-steering, steering pump, steering cylinders and the steering system	-	-	-	-
PC9. examine the 2-wheel-drive front axle centre pin, stub axle and wheel assembly	-	-	-	-
PC10. examine the 4-wheel-drive front axle drop box, propeller shaft, differential, axle shaft and wheel assembly	-	-	-	-
PC11. align the clutch using the appropriate tool	-	-	-	-
PC12. adjust wheel tracking as per the requirement	-	-	-	-
PC13. adjust the steering geometry as per the requirement	-	-	-	-
PC14. carry out maintenance and repair of gear and gearbox to resolve the issue of gearbox noise, oil leakage and slipping of gear	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. replace the worn-out brake discs	-	-	-	-
PC16. replace oil seals on axle shaft and bearings as per the requirement	-	-	-	-
<i>Perform maintenance and repair of the hydraulics system</i>	10	10	-	5
PC17. dismantle the hydraulic system as per the service manual using the appropriate tools and equipment	-	-	-	-
PC18. examine the hydraulic pump for correct functioning	-	-	-	-
PC19. inspect the hydraulic distributor/ control valve, hydraulic pipes and hydraulic cylinder components for any faults	-	-	-	-
PC20. examine the quality of hydraulic oil and linkages	-	-	-	-
PC21. check hydraulic system pressure and external hydraulics auxiliary valve for correct functioning	-	-	-	-
PC22. check the tractor's 3-point linkage for any wear and tear or damage	-	-	-	-
PC23. adjust draft control and position control levers as per the requirement	-	-	-	-
<i>Perform maintenance and repair of the electrical system</i>	5	5	-	5
PC24. check the cables for any wear and tear or damage	-	-	-	-
PC25. check Revolutions Per Minute (RPM) gauge, hour meter, fuel gauge, battery charging indicator for any faults	-	-	-	-
PC26. test the performance of alternator, self-starter, starting system, relays, fuses, headlights, plough lamp, brake lights, indicator lights and horns	-	-	-	-
NOS Total	35	40	-	25

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N1129
NOS Name	Carry out maintenance and repair of transmission, hydraulic and electrical systems
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
NSQF Level	4
Credits	3
Version	3.0
Last Reviewed Date	26/11/2024
Next Review Date	26/11/2027
NSQC Clearance Date	26/11/2024

Qualification Pack

AGR/N1130: Assemble the repaired and serviced parts

Description

This OS unit is about assembling the repaired and serviced parts of a tractor.

Scope

The scope covers the following :

- Clean and assemble the parts
- Perform pre-start checks

Elements and Performance Criteria

Clean and assemble the parts

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

- PC1.** clean the moving parts/shafts and bearings
- PC2.** apply lubricant on the parts/shafts and bearings
- PC3.** set draft control levers in the correct position
- PC4.** adjust the gearbox bearings
- PC5.** fit the cage wheel and adjust track
- PC6.** apply sealant on any leakages
- PC7.** tighten any loose parts
- PC8.** assemble the parts as per the service manual

Perform pre-start checks

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

- PC9.** check the tyre pressure for suitability for various operations
- PC10.** check for fuel bleeding before starting the tractor
- PC11.** monitor the tractor for correct functioning after starting the engine
- PC12.** carry out troubleshooting for any issues identified

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** correct procedure of assembling various tractor parts after service and repair
- KU2.** the procedure of performing pre-start checks on a tractor
- KU3.** the importance of cleaning various parts and components of a tractor
- KU4.** types of lubricant and the correct way of applying it on tractor parts/ shafts and bearings
- KU5.** use of the appropriate PPE
- KU6.** recommended level of tractor tyre pressure for various operations
- KU7.** the correct position of draft control levers

Qualification Pack

KU8. how to adjust gearbox bearings

KU9. the process of fitting the cage wheel and adjusting the track

Generic Skills (GS)

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

GS1. make work-related notes

GS2. read the relevant repair and maintenance guide

GS3. communicate politely and clearly with all

GS4. listen attentively and comprehend the information shared by the speaker

GS5. analyse work processes critically to identify improvements

GS6. plan tasks for effective time and resource management

GS7. prioritise tasks to ensure timely completion

GS8. take quick decisions to resolve any disruptions in work

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Clean and assemble the parts</i>	15	20	-	15
PC1. clean the moving parts/shafts and bearings	-	-	-	-
PC2. apply lubricant on the parts/shafts and bearings	-	-	-	-
PC3. set draft control levers in the correct position	-	-	-	-
PC4. adjust the gearbox bearings	-	-	-	-
PC5. fit the cage wheel and adjust track	-	-	-	-
PC6. apply sealant on any leakages	-	-	-	-
PC7. tighten any loose parts	-	-	-	-
PC8. assemble the parts as per the service manual	-	-	-	-
<i>Perform pre-start checks</i>	15	20	-	15
PC9. check the tyre pressure for suitability for various operations	-	-	-	-
PC10. check for fuel bleeding before starting the tractor	-	-	-	-
PC11. monitor the tractor for correct functioning after starting the engine	-	-	-	-
PC12. carry out troubleshooting for any issues identified	-	-	-	-
NOS Total	30	40	-	30

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N1130
NOS Name	Assemble the repaired and serviced parts
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	26/11/2024
Next Review Date	26/11/2027
NSQC Clearance Date	26/11/2024

Qualification Pack

AGR/N9903: Maintain health and safety at the workplace

Description

This OS is about maintaining health and safety of self and other co-workers at the workplace

Scope

The scope covers the following :

- Maintain personal hygiene
- Maintain clean and safe workplace
- Administer appropriate emergency procedures

Elements and Performance Criteria

Maintain personal hygiene

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

- PC1.** wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals
- PC2.** wash the worn clothes with soap and sun dry before use next time
- PC3.** ensure the face is covered with mask or three layers of cloth-piece
- PC4.** follow the workplace sanitization norms including distancing from sick people

Maintain clean and safe workplace

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

- PC5.** carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor
- PC6.** wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy
- PC7.** follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc to avoid hazards
- PC8.** assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices
- PC9.** sanitize equipment, tools and machinery before and after use
- PC10.** use equipment and materials safely and correctly and return the same to designated storage after use
- PC11.** dispose waste safely and correctly in the designated area
- PC12.** recognize risks to bystanders and take required action to reduce the risks
- PC13.** work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed
- PC14.** report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger
- PC15.** follow government / workplace advisories incase of outbreak of any disease/disaster

Administer appropriate emergency procedures

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

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- PC16.** follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements
- PC17.** use emergency equipment in accordance with manufacturer's specifications and workplace requirements
- PC18.** provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques
- PC19.** recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate
- PC20.** report details of first aid administered in accordance with workplace procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures at work
- KU2.** relevant health and safety requirements applicable to the work environment
- KU3.** own job role and responsibilities and sources of information pertaining to work
- KU4.** who to approach for support in order to obtain work related information, clarifications and support
- KU5.** importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business
- KU6.** personal hygiene and fitness requirement
- KU7.** importance of sanitization of the workplace
- KU8.** types of Personal Protective Equipment (PPE) required at the workplace and their importance
- KU9.** the correct and safe way to use materials and equipment required for the work
- KU10.** the importance of good housekeeping at the workplace
- KU11.** safe waste disposal methods
- KU12.** methods for minimizing environmental damage during work
- KU13.** the risks to health and safety including contagious diseases and the measures to be taken to control those risks in the area of work
- KU14.** workplace procedures and requirements for the prevention and treatment of workplace injuries/illnesses.
- KU15.** basic emergency first aid procedure
- KU16.** local emergency services
- KU17.** why accidents, incidents and problems should be reported and the appropriate actions to be taken

Generic Skills (GS)

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

- GS1.** record the data as per the requirement
- GS2.** report problems to the appropriate personnel in a timely manner

Qualification Pack

- GS3.** read instruction manual for hand tool and equipments
- GS4.** communicate clearly and effectively with co-workers, and other stakeholders
- GS5.** comprehend information shared by senior people and experts
- GS6.** make decisions pertaining to personal hygiene and safety
- GS7.** schedule daily activities and draw up priorities
- GS8.** manage relationships with co-workers, manager and other stakeholders
- GS9.** assess situation and identify appropriate control measures

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain personal hygiene</i>	10	5	-	10
PC1. wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals	-	-	-	-
PC2. wash the worn clothes with soap and sun dry before use next time	-	-	-	-
PC3. ensure the face is covered with mask or three layers of cloth-piece	-	-	-	-
PC4. follow the workplace sanitization norms including distancing from sick people	-	-	-	-
<i>Maintain clean and safe workplace</i>	15	15	-	15
PC5. carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor	-	-	-	-
PC6. wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy	-	-	-	-
PC7. follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc to avoid hazards	-	-	-	-
PC8. assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices	-	-	-	-
PC9. sanitize equipment, tools and machinery before and after use	-	-	-	-
PC10. use equipment and materials safely and correctly and return the same to designated storage after use	-	-	-	-
PC11. dispose waste safely and correctly in the designated area	-	-	-	-
PC12. recognize risks to bystanders and take required action to reduce the risks	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed	-	-	-	-
PC14. report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger	-	-	-	-
PC15. follow government / workplace advisories incase of outbreak of any disease/disaster	-	-	-	-
<i>Administer appropriate emergency procedures</i>	15	5	-	10
PC16. follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements	-	-	-	-
PC17. use emergency equipment in accordance with manufacturer's specifications and workplace requirements	-	-	-	-
PC18. provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques	-	-	-	-
PC19. recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate	-	-	-	-
PC20. report details of first aid administered in accordance with workplace procedures	-	-	-	-
NOS Total	40	25	-	35

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N9903
NOS Name	Maintain health and safety at the workplace
Sector	Agriculture
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	1
Version	4.0
Last Reviewed Date	22/10/2024
Next Review Date	22/10/2027
NSQC Clearance Date	22/10/2024

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

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

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

Constitutional values – Citizenship

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

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

Becoming a Professional in the 21st Century

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

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

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

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

Career Development & Goal Setting

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

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

Communication Skills

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

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

Diversity & Inclusion

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

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

Financial and Legal Literacy

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

- PC16.** select financial institutions, products and services as per requirement
- PC17.** carry out offline and online financial transactions, safely and securely
- PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC19.** identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

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

Entrepreneurship

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

- PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC25.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

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

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PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)

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

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

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

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

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

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

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

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

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

KU11. how to compute income and expenditure

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

KU13. different legal rights and laws

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

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

KU16. how to identify business opportunities

KU17. types and needs of customers

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

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence

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

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- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

Qualification Pack

Assessment Criteria

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

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

Qualification Pack

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

Qualification Pack

National Occupational Standards (NOS) Parameters

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

Qualification Pack

AGR/N1119: Carry out repair and maintenance of tillage and soil farming equipment

Description

This OS unit is about carrying out repair and maintenance of tillage and soil farming equipment.

Scope

The scope covers the following :

- Carry out repair and maintenance of mouldboard plough
- Carry out repair and maintenance of disc plough
- Carry out repair and maintenance of disc harrow
- Carry out repair and maintenance of cultivator

Elements and Performance Criteria

Carry out repair and maintenance of mouldboard plough

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

- PC1.** check the mouldboard plough for smooth movement
- PC2.** inspect that the nuts and bolts are secured tightly
- PC3.** remove soil and any other waste from the mouldboard plough
- PC4.** apply grease/ lubricant on mouldboard plough to prevent rusting
- PC5.** sharpen the bar point and shares
- PC6.** adjust the level of the plough, horizontal suction, vertical suction and draft of the plough
- PC7.** replace any worn-out or damaged parts as per the Standard Operating Procedure (SOP)

Carry out repair and maintenance of disc plough

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

- PC8.** inspect all nuts and bolts for locking and the recommended torque
- PC9.** check the bearings and castle nuts are secured tightly
- PC10.** clean the hub of disc plough using diesel oil
- PC11.** adjust the horizontal disc angle, vertical tilt angle, width of cut, level of plough and scrapper position as per the service manual
- PC12.** change the degree of hub by loosening the mounting bolts when the diameter of disc reduces below the prescribed level
- PC13.** apply the recommended grade of lubricant on bearings, bearing housing, coulter hub and all greasing points
- PC14.** replace the grease nipple if contaminated with soil
- PC15.** replace the worn-out disc plough hub seal with a new one

Carry out repair and maintenance of disc harrow

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

- PC16.** inspect the disc gang angle and gang assembly for wear and tear or damage

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- PC17.** check the scrapper for correct assembly
- PC18.** inspect the depth control system for correct functioning
- PC19.** check the angle of hitch and hitch parts
- PC20.** examine all joints, bolts, nuts and pins for the prescribed torque and locking
- PC21.** measure the disc spacing and diameter for the prescribed dimensions
- PC22.** sharpen the harrow discs
- PC23.** apply the recommended grade of grease/ lubricant on bearing assembly, mating parts and greasing points
- PC24.** replace any damaged discs, spool flanges, gang-bolts and gang bearings as per the SOP
- PC25.** replace the worn out or damaged pins, nuts and bolts with the new ones

Carry out repair and maintenance of cultivator

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

- PC26.** examine the level of the cultivator to ensure all the shovels touch the ground
- PC27.** check the shovel for the correct angle
- PC28.** inspect the tyres for uniform spacing
- PC29.** check the nuts and bolts for the prescribed torque and locking
- PC30.** remove accumulated soil, trash or grease on the cultivator by washing it
- PC31.** apply grease/ lubricant on all nuts and bolts
- PC32.** replace the worn out or damaged shovel points

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** applicable health and safety standards and requirements
- KU2.** design and function of commonly used primary and secondary tillage machinery
- KU3.** various components of a mouldboard plough, disc plough, disc harrow and cultivator
- KU4.** common repair and maintenance needs of a mouldboard plough, disc plough, disc harrow and cultivator
- KU5.** relevant environmental and occupational hazards and the ways to deal with them
- KU6.** importance and use of relevant Personal Protective Equipment (PPE)
- KU7.** importance of service and maintenance of tillage machinery
- KU8.** correct handling of various service and maintenance tools and equipment
- KU9.** adjustments of gauge and wheels disc, tilt angle, working depth of tillage machinery
- KU10.** safety measures, possible problems and their remedies for various tillage equipment
- KU11.** correct process to hitch and unhitch implements

Generic Skills (GS)

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

- GS1.** write work-related notes

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- GS2.** read the relevant guides, manuals literature to get latest information about the field of work
- GS3.** communicate clearly and politely
- GS4.** listen attentively to understand the instructions being given
- GS5.** identify solutions to work-related issues
- GS6.** plan and prioritise tasks to ensure timely completion
- GS7.** take quick decision in case of an emergency/ accident
- GS8.** plan effective use of time and resources

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out repair and maintenance of mouldboard plough</i>	8	12	-	8
PC1. check the mouldboard plough for smooth movement	-	-	-	-
PC2. inspect that the nuts and bolts are secured tightly	-	-	-	-
PC3. remove soil and any other waste from the mouldboard plough	-	-	-	-
PC4. apply grease/ lubricant on mouldboard plough to prevent rusting	-	-	-	-
PC5. sharpen the bar point and shares	-	-	-	-
PC6. adjust the level of the plough, horizontal suction, vertical suction and draft of the plough	-	-	-	-
PC7. replace any worn-out or damaged parts as per the Standard Operating Procedure (SOP)	-	-	-	-
<i>Carry out repair and maintenance of disc plough</i>	8	12	-	8
PC8. inspect all nuts and bolts for locking and the recommended torque	-	-	-	-
PC9. check the bearings and castle nuts are secured tightly	-	-	-	-
PC10. clean the hub of disc plough using diesel oil	-	-	-	-
PC11. adjust the horizontal disc angle, vertical tilt angle, width of cut, level of plough and scrapper position as per the service manual	-	-	-	-
PC12. change the degree of hub by loosening the mounting bolts when the diameter of disc reduces below the prescribed level	-	-	-	-
PC13. apply the recommended grade of lubricant on bearings, bearing housing, coulter hub and all greasing points	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. replace the grease nipple if contaminated with soil	-	-	-	-
PC15. replace the worn-out disc plough hub seal with a new one	-	-	-	-
<i>Carry out repair and maintenance of disc harrow</i>	10	10	-	10
PC16. inspect the disc gang angle and gang assembly for wear and tear or damage	-	-	-	-
PC17. check the scrapper for correct assembly	-	-	-	-
PC18. inspect the depth control system for correct functioning	-	-	-	-
PC19. check the angle of hitch and hitch parts	-	-	-	-
PC20. examine all joints, bolts, nuts and pins for the prescribed torque and locking	-	-	-	-
PC21. measure the disc spacing and diameter for the prescribed dimensions	-	-	-	-
PC22. sharpen the harrow discs	-	-	-	-
PC23. apply the recommended grade of grease/lubricant on bearing assembly, mating parts and greasing points	-	-	-	-
PC24. replace any damaged discs, spool flanges, gang-bolts and gang bearings as per the SOP	-	-	-	-
PC25. replace the worn out or damaged pins, nuts and bolts with the new ones	-	-	-	-
<i>Carry out repair and maintenance of cultivator</i>	4	6	-	4
PC26. examine the level of the cultivator to ensure all the shovels touch the ground	-	-	-	-
PC27. check the shovel for the correct angle	-	-	-	-
PC28. inspect the tyres for uniform spacing	-	-	-	-
PC29. check the nuts and bolts for the prescribed torque and locking	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC30. remove accumulated soil, trash or grease on the cultivator by washing it	-	-	-	-
PC31. apply grease/ lubricant on all nuts and bolts	-	-	-	-
PC32. replace the worn out or damaged shovel points	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N1119
NOS Name	Carry out repair and maintenance of tillage and soil farming equipment
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Farm Machinery, Equipment Operation and Maintenance
NSQF Level	4
Credits	2
Version	8.0
Last Reviewed Date	26/11/2024
Next Review Date	26/11/2027
NSQC Clearance Date	26/11/2024

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

- 1.Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
- 2.The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
- 3.Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
- 4.Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
- 5.In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
- 6.In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

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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
AGR/N1126.Ensure Preparedness for Repair and maintenance of tractor	30	40	-	30	100	15
AGR/N1127.Perform routine checks on the tractor	30	40	-	30	100	15
AGR/N1128.Carry out maintenance and repair of engine parts	30	40	-	30	100	20
AGR/N1129.Carry out maintenance and repair of transmission, hydraulic and electrical systems	35	40	-	25	100	20
AGR/N1130.Assemble the repaired and serviced parts	30	40	-	30	100	15
AGR/N9903.Maintain health and safety at the workplace	40	25	-	35	100	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	5
Total	215	255	-	180	650	100

Optional: 1 Repair and maintenance of farm implements

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National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N1119.Carry out repair and maintenance of tillage and soil farming equipment	30	40	-	30	100	15
Total	30	40	-	30	100	15

Qualification Pack

Acronyms

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

Qualification Pack

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.

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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.