

## Qualification Pack



# Kisan Drone Operator

QP Code: AGR/Q1006

Version: 3.0

NSQF Level: 3

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## Qualification Pack

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### AGR/Q1006: Kisan Drone Operator

#### Brief Job Description

A Kisan Drone Operator/pilot is responsible for operating the drone for spraying pesticides/fertilizers. The individual is also responsible for carrying out regular maintenance of drone and relevant equipment associated with it.

#### Personal Attributes

The individual must be physically fit to work for extended durations with the ability to make appropriate decisions independently. The person must have strong verbal and written communication skills to interact with various stakeholders. Analytical and problem-solving skills are the other important requirements in this job role.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [AGR/N1039: Undertake drone flying ensuring adherence to laws/procedures](#)
2. [AGR/N1030: Carry out drone based pesticide and crop nutrient application](#)
3. [AGR/N1020: Ensure adherence of precautionary measures before, during and post-operation for drone based pesticide application](#)
4. [DGT/VSQ/N0101: Employability Skills \(30 Hours\)](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>Country</b>	India
<b>NSQF Level</b>	3
<b>Credits</b>	9
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/7233.2800, 7233.9900

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<b>Minimum Educational Qualification &amp; Experience</b>	10th grade pass
<b>Minimum Level of Education for Training in School</b>	Not Applicable
<b>Pre-Requisite License or Training</b>	No License required, DGCA approved RPTO provides Remote Pilot Certificate (RPC) to candidates who clear the flying examination taken by DGCA certified instructor, Candidate to be trained and assessed on AGR/N1039 at RPTO as per DGCA guidelines
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	01/03/2027
<b>NSQC Approval Date</b>	29/02/2024
<b>Version</b>	3.0
<b>Reference code on NQR</b>	QG-03-AG-00515-2024-V2-ASCI
<b>NQR Version</b>	2.0

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### AGR/N1039: Undertake drone flying ensuring adherence to laws/procedures

#### Description

The unit is about understanding the Stakeholders & their Laws (Basic), Drone Rules 2021 and Drone (Amendment) Rules, 2022 notified by the Ministry of Civil Aviation, pertaining to drone (Rotorcraft) operation of Category-1 (VLOS less than 400 feet). It also helps understand the basic flight principles, ATC procedures & Radiotelephony (non-FRTOL), Fixed-Wing, Rotorcraft & Hybrid Operations, Aerodynamics, effects of weather & meteorology in drone operations.

#### Scope

The scope covers the following :

- Comprehend the dynamics and principles of drone operation
- Prepare for drone operation and carry out drone flying as per the requirement

#### Elements and Performance Criteria

##### *Comprehend the dynamics and principles of drone operation*

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

- PC1.** comprehend various stakeholders & their laws (Basic) as per drone Rules 2021 and drone (Amendment) Rules, 2022 notified by Ministry of Civil Aviation
- PC2.** follow the basic principles of flight while operating a drone
- PC3.** follow the ATC procedures & Radiotelephony (non FRTOL) techniques
- PC4.** comprehend the Fixed-wing, Rotorcraft & Hybrid operations and Aerodynamics

##### *Prepare for drone operation and carry out drone flying as per the requirement*

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

- PC5.** assess the effects of weather and meteorology in drone operations
- PC6.** undertake necessary measures for hazardous weather avoidance
- PC7.** carry out drone equipment maintenance and basic assembly
- PC8.** carry out risk assessment & analysis - Safety Management / TEM
- PC9.** carry out installation & utilization of payload and analysis of data
- PC10.** perform pre-start checks
- PC11.** carry out drone flying as per the requirement

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various international rules, regulations, standards & practices
- KU2.** civil aviation requirements, AIPS, NOTAM
- KU3.** classification & categorization, various type of certifications of drones

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- KU4.** registration, sale & de-registration and insurance, unique Identification Number (UIN) of drones
- KU5.** operations of various types of drones, dos and don'ts while carrying out drone operation
- KU6.** introduction to digital sky platform, remote pilot certificate
- KU7.** drone (Amendment) Rules, 2022 notified by Ministry of Civil Aviation
- KU8.** fundamentals of flight, introduction and principles of aerodynamics of flight
- KU9.** how to Take-off, flight, landing, maneuvers, turns and circuit pattern
- KU10.** longitude/ Latitude
- KU11.** drone forbidden areas, Rules, regulations and restrictions for no drone zones
- KU12.** different types of Drones, uses and their Nomenclatures
- KU13.** newton's Laws of Motion, Bernoulli's Principle, four forces of Flight, three axes of Flight
- KU14.** how various laws, principles and forces applies to drone Flight
- KU15.** ATC operations, Airspace structure and Airspace
- KU16.** Various zones for drone flight
- KU17.** Flight regulations and procedures in Yellow Zone
- KU18.** How to communicate with ATC & RT Phraseology including Position and Altitude Reporting
- KU19.** Procedures for flight planning including Altimeter setting
- KU20.** Techniques/ measures for collision avoidance
- KU21.** Techniques for Radio Telephony (RT)
- KU22.** Importance of adopting a safety attitude when flying a drone
- KU23.** Issues aircraft pilots encounter including airspace, traffic patterns, and safe attitudes
- KU24.** Types of fixed wing drones, Rotorcraft drones, make, parts, terminology and size of drones
- KU25.** How to Operation and maneuver fixed wing drones, Flight Performance
- KU26.** Applications of fixed-wing, Rotorcraft drones, hybrid UAVs
- KU27.** Pros and Cons of Fixed Wing Drones, Rotorcraft drones, hybrid UAVs
- KU28.** Basic drone terminology & parts of Rotorcraft
- KU29.** Rotorcraft drone Anatomy: Different parts of drones
- KU30.** Avionics & C2 Link
- KU31.** Introduction to Mission Planning, Instrument Flying & Navigation (GCS) of Fixed wing, Rotorcraft & Hybrid
- KU32.** Comparison with Rotorcraft & Aeroplane
- KU33.** Weather and meteorology: The standard atmosphere, measuring air pressure, heat and temperature wind Moisture, cloud formation etc.
- KU34.** Met Terminal Aviation Routine Weather Report (METAR)
- KU35.** effects of atmospheric components such as air pressure, heat, wind, moisture, cloud formation, icing etc.
- KU36.** Favorable conditions for drone operation
- KU37.** Emergency procedures during sudden shift in weather conditions
- KU38.** effect of atmosphere on RPAS operation & hazardous weather avoidance
- KU39.** How to measure air pressure, heat, temperature and wind speed
- KU40.** Tools and equipment required to measure components of atmosphere

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- KU41.** pre-flight checks, take off, cruise, flying techniques such as approach, go-around & landing, post-flight checks
- KU42.** terminology such as cruise and turns, climbing and climbing turns, descend & descending turns
- KU43.** consequences of disorientation and measures to recover the path
- KU44.** various flying techniques such as circuit flying - rectangle/ square/ circle / orbit
- KU45.** gimbal controls (pan, tilt & zoom)
- KU46.** how to fly at night
- KU47.** safety measures and RPAS familiarization
- KU48.** sensitivity of controls, the orientation of the RPA
- KU49.** take-off, climbing, descending and maintaining height and basic controls: pitch, roll and yaw
- KU50.** mission planning & instrument flying, auto mission & flight
- KU51.** how to fly left and right square circuits patterns, level turns in both directions
- KU52.** progress check - multirotor
- KU53.** drone emergency and handling and fail safe features of drone
- KU54.** emergency procedures during loss of C2-link
- KU55.** consequences of loss of power and control surface failures
- KU56.** human performance & pilot incapacitation
- KU57.** DGCA safety regulations & safety guidelines
- KU58.**
  - various types of payloads - what to carry, what not to carry and parts of payloads, mounting/installation of payloads and features of payloads
  - on the drone
- KU59.** basic principles of photogrammetry

## Generic Skills (GS)

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

- GS1.** maintain work-related notes and records
- GS2.** communicate clearly and effectively with co-workers and clients
- GS3.** read the relevant literature to get information about the latest developments in the field of work
- GS4.** plan and prioritise tasks to ensure timely completion
- GS5.** take quick decisions to deal with workplace emergencies/ accidents
- GS6.** listen attentively to understand the information/ instructions being shared by the speaker
- GS7.** identify possible disruptions to work and take appropriate preventive measures
- GS8.** co-ordinate with co-workers to achieve work objectives
- GS9.** evaluate all possible solutions to a problem to select the best one



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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Comprehend the dynamics and principles of drone operation</i>	<b>2</b>	-	-	<b>2</b>
<b>PC1.</b> comprehend various stakeholders & their laws (Basic) as per drone Rules 2021 and drone (Amendment) Rules, 2022 notified by Ministry of Civil Aviation	-	-	-	-
<b>PC2.</b> follow the basic principles of flight while operating a drone	-	-	-	-
<b>PC3.</b> follow the ATC procedures & Radiotelephony (non FRTOL) techniques	-	-	-	-
<b>PC4.</b> comprehend the Fixed-wing, Rotorcraft & Hybrid operations and Aerodynamics	-	-	-	-
<i>Prepare for drone operation and carry out drone flying as per the requirement</i>	<b>3</b>	-	-	<b>3</b>
<b>PC5.</b> assess the effects of weather and meteorology in drone operations	-	-	-	-
<b>PC6.</b> undertake necessary measures for hazardous weather avoidance	-	-	-	-
<b>PC7.</b> carry out drone equipment maintenance and basic assembly	-	-	-	-
<b>PC8.</b> carry out risk assessment & analysis - Safety Management / TEM	-	-	-	-
<b>PC9.</b> carry out installation & utilization of payload and analysis of data	-	-	-	-
<b>PC10.</b> perform pre-start checks	-	-	-	-
<b>PC11.</b> carry out drone flying as per the requirement	-	-	-	-
<b>NOS Total</b>	<b>5</b>	-	-	<b>5</b>



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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1039
<b>NOS Name</b>	Undertake drone flying ensuring adherence to laws/procedures
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	3
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	29/02/2024
<b>Next Review Date</b>	01/03/2027
<b>NSQC Clearance Date</b>	29/02/2024

## Qualification Pack

# AGR/N1030: Carry out drone based pesticide and crop nutrient application

## Description

This OS unit is about use of a drone to apply pesticides and nutrients in the field

## Scope

The scope covers the following :

- Prepare the drone for application of pesticides and fertilizers
- Apply pesticides and fertilizers using the drone
- Safeguard the non-target while pesticide application
- Drone, sensors data processing software and soil nutrient spraying system
- Precautions for storage of crop nutrients/ pesticides
- Undertake post operation drone maintenance

## Elements and Performance Criteria

### *Prepare the drone for application of pesticides and fertilizers*

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

- PC1.** select appropriate drones which can carry suitably sized reservoirs, which can be filled with fertilizers, herbicides, or pesticides for crop spraying
- PC2.** identify appropriate software and technology with reference to different farming practices for drone utilization in various agriculture activities
- PC3.** attach the nozzle system in an efficient manner for continuity in spray swath during spray from minimum permitted height above the uniformly distributed crop
- PC4.** make appropriate setting in drone software to self-adjust its altitude and speed for spraying on desired height above the crop.
- PC5.** Track the fields and fix the coordinates appropriately
- PC6.** ensure GPS and map accuracy of the drone to demarcate the target area boundary and safety/buffer margins
- PC7.** plan the appropriate route for the drone operation
- PC8.** check obstacle presence in the area of operation and make necessary mapping and adjustments in software or peripherals
- PC9.** make appropriate route adjustment as per applicable and available options in the software like row spacing, row number, borders indentation, obstacle boundary distance, route type and setting etc.
- PC10.** ensure for leak proof drone spray system to avoid any dripping of pesticides/ agrochemicals
- PC11.** calibrate the drone spray system to ensure recommended accuracy on amount of input to be sprayed
- PC12.** Inspect the field to know the extent of pest/disease/weeds infestation

### *Apply pesticides and fertilizers using the drone*

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

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- PC13.** select /use the agrochemicals duly included in SOP prepared by MoA
- PC14.** Follow critical parameters while applying in field by manual spraying or auto pilotining
- PC15.** ensure compatibility of selected agrochemicals with drone spray system and nozzles for the desired dilution to ensure stability of agrochemical solubility formulation
- PC16.** Ensure proper formulation and their management
- PC17.** Adhere to agrochemical safety guidelines prescribed by the manufacturer for their safe handling
- PC18.** Follow recommended spray schedule at various/ critical crop growth and infestation stages as per crop protection guidelines
- PC19.** dilute the agrochemical in clean water as per recommendations by the manufacturing company using appropriate PPE
- PC20.** perform crop spraying in safer and cost-effective way by its autonomous and pre-programmed run on specific schedules and routes.
- PC21.** Operate drone to apply soil/crop nutrients in the form/concentration of the nutrients being sprayed/ broadcasted using sensors/ spraying systems installed
- PC22.** Ensure efficient fertigation use of water using drone (depending on the sprayer system of the drone)
- PC23.** Use different kinds of sprayer nozzles depending on the form and concentration of the nutrients to be applied
- PC24.** Evaluate residue and bio efficacy effects
- PC25.** Follow safe application standard
- PC26.** use the available advance feature of the software for accurate movement of drone and its control as per manifested various parameters like battery discharge or low voltage in the area operation
- PC27.** identify and resolve common error messages and corrections by debugging of Software appropriately
- PC28.** ensure the drone is at home position after task completion

### *Safeguard the non-target while pesticide application*

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

- PC29.** Maintain sufficient buffer zone to counter agrichemical drift between the adjacent farm or different crops to avoid spray on non-target considering the severity of the agrochemical on the non-targets
- PC30.** maintain suitable distance from the drone and avoid windward direction as much as possible during the spray operation
- PC31.** Conduct Drone based spray operations at an appropriate distance from water bodies, residential areas, fodder crops, public utilities, dairy, poultry etc.as per DGCA or other concerned authority guidelines and ensure no human or animal movement within or in the close proximity of the farm during and immediately after the spray operations.

### *Drone, sensors data processing software and soil nutrient spraying system*

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

- PC32.** Use Recommended Dose of Fertilizer (RDF) Protocol to assess the soil nutrient status and post-process the data to generate the GPS tagged precision nutrient requirements map of the field as an input logic to the nutrient spraying drone with the help of soil indices

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- PC33.** Use real-time operation protocol to live process the data from multispectral camera for spraying the nutrients simultaneously
- PC34.** Use electrostatic nozzle to avoid drift during the operation
- PC35.** assist end user to understand the report and to enhance decision making through accurate, reliable and timely information that have been obtained by ICT-driven tools and technologies

### *Precautions for storage of crop nutrients/ pesticides*

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

- PC36.** Maintain written inventory of all materials and with proper labelling
- PC37.** Ensure crop nutrients, herbicides, pesticides are separately stored in a secured building with absorbent spill kits in all liquid storage areas and regularly inspect
- PC38.** Ensure provision of emergency eyewash and emergency drench showers within or near the storage area, and dispose the excess or obsolete materials or chemicals in accordance with rules and regulations of manufacturer and state law

### *Undertake post operation drone maintenance*

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

- PC39.** examine the drone, their peripherals and relevant attachments post completion of operation for signs of wear and tear or damage
- PC40.** perform maintenance as per the respective manufacturer's instructions using appropriate and recommended tools and equipment
- PC41.** coordinate with the manufacturer to resolve any manufacturing-related issues experienced while drone operation
- PC42.** schedule periodic maintenance of drone, their peripherals and relevant attachments as per the maintenance schedule suggested by their respective manufacturers

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Principles of pesticide applications-Basic Principles, Drone Sop and Policy issues
- KU2.** Agriculture drone operations like-type of drone, parts of Agri drone, battery and their replacement, spray tank and balancing, Nozzle replacement etc.
- KU3.** obstacle in the area of operation for necessary mapping software adjustments
- KU4.** how to identify and resolve common error messages and corrections by debugging of Software
- KU5.** Critical parameter in Spraying viz drone parameter, Agrochemical parameter, environmental issues, operational Parameter, Non Target applications etc.
- KU6.** Nozzles and their use,type of nozzles,their classification,droplet measures,calibration of nozzle
- KU7.** the process of using drones to apply fertilisers, herbicides, pesticides and insecticides uniformly at the identified sites in the field
- KU8.** formulations and their types, various compatibility issues, formulation management and efficacy evaluation, dosage requirements etc.
- KU9.** Various types of spray equipment viz. High/Low/Ultra Low volume application equipments
- KU10.** applicable documentation requirements

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- KU11.** the process of obtaining the necessary regulatory approvals to use a drone for agricultural operations
- KU12.** how to select a drone appropriate for use according to the purpose and size of the agricultural field
- KU13.** spray dynamics, spray volume, droplet size, concentration, drift mechanism, specific nozzles, delivery mechanism and pressure
- KU14.** how to load pesticide/ fertilizer on the drone according to its payload capacity
- KU15.** how to use a drone to apply pesticides and fertilizers uniformly over an agricultural field
- KU16.** approved agrochemicals by Central Insecticides Board and Committee (CIB&RC)
- KU17.** Recommended dose of agrochemical for the crops and their droplet size for bio efficacy
- KU18.** agrochemical(liquid/solid) compatible with the drone spray system and their dilution requirements
- KU19.** CIB&RC specified guidelines for mixing of agrochemicals
- KU20.** Active ingredients dosage/ha and PHI interval
- KU21.** Comparison of drone spraying with other sprayer
- KU22.** How to attach the nozzle system in an efficient manner for continuity in spray swath during spray
- KU23.** How to make appropriate setting in drone software to self-adjust its altitude and speed for spraying on desired height above the crop
- KU24.** How to ensure GPS and map accuracy of the drone to demarcate the target area boundary and safety/buffer margins
- KU25.** Checking of leak proof drone spray system
- KU26.** Genral principle of calibration
- KU27.** Calibration of handheld/vehicle mounted sparyer
- KU28.** Calibration of the drone spray system
- KU29.** agrochemical safety guidelines prescribed by the manufacturer for their safe handling
- KU30.** recommended agro-chemical doses for specific crops
- KU31.** recommended spray schedule at various/ critical crop growth and infestation stages as per crop protection guidelines and phytotoxicity assessment
- KU32.** dilution methods of the agrochemical as per recommendations
- KU33.** how to perform crop spraying in safer and cost-effective way
- KU34.** troubleshooting for common malfunctions as per the manufacturer's instructions
- KU35.** ways to minimize spray drift in non-target field
- KU36.** The hazardous effect of agri. Inputs/chemicals
- KU37.** Critical operational parameters for drift management
- KU38.** Height and speed of application to minimize drift
- KU39.** Importance of emergency eyewash and emergency drench showers and absorbent spill kits within or near storage areas
- KU40.** How to dispose excess/ obsolete materials and chemicals in accordance with manufacturers recommendation and state law
- KU41.** Use of multispectral and hyperspectral imaging sensors to determine soil fertility in the field
- KU42.** spares and accessories, maintenance of battery

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- KU43.** different type of nozzles, their functions and maintenance
- KU44.** Difference between Recommended dose of fertilizer (RDF) protocol and real-time operation protocol
- KU45.** report preparation in graphical or tabular form as per client requirement
- KU46.** various ICT-driven tools and technologies in agriculture and allied sector
- KU47.** how to maintain necessary data and carry out documentation
- KU48.** usage of drone for scanning/mapping of agriculture field
- KU49.** various applications of drones in Agriculture
- KU50.** do's and don'ts in pesticide and nutrient spraying

## Generic Skills (GS)

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

- GS1.** maintain work-related notes and records
- GS2.** communicate clearly and effectively with co-workers and clients
- GS3.** read the relevant literature to get information about the latest developments in the field of work
- GS4.** plan and prioritise tasks to ensure timely completion
- GS5.** take quick decisions to deal with workplace emergencies/ accidents
- GS6.** listen attentively to understand the information/ instructions being shared by the speaker
- GS7.** identify possible disruptions to work and take appropriate preventive measures
- GS8.** co-ordinate with co-workers to achieve work objectives
- GS9.** evaluate all possible solutions to a problem to select the best one

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare the drone for application of pesticides and fertilizers</i>	3	4	-	3
<b>PC1.</b> select appropriate drones which can carry suitably sized reservoirs, which can be filled with fertilizers, herbicides, or pesticides for crop spraying	-	-	-	-
<b>PC2.</b> identify appropriate software and technology with reference to different farming practices for drone utilization in various agriculture activities	-	-	-	-
<b>PC3.</b> attach the nozzle system in an efficient manner for continuity in spray swath during spray from minimum permitted height above the uniformly distributed crop	-	-	-	-
<b>PC4.</b> make appropriate setting in drone software to self-adjust its altitude and speed for spraying on desired height above the crop.	-	-	-	-
<b>PC5.</b> Track the fields and fix the coordinates appropriately	-	-	-	-
<b>PC6.</b> ensure GPS and map accuracy of the drone to demarcate the target area boundary and safety/buffer margins	-	-	-	-
<b>PC7.</b> plan the appropriate route for the drone operation	-	-	-	-
<b>PC8.</b> check obstacle presence in the area of operation and make necessary mapping and adjustments in software or peripherals	-	-	-	-
<b>PC9.</b> make appropriate route adjustment as per applicable and available options in the software like row spacing, row number, borders indentation, obstacle boundary distance, route type and setting etc.	-	-	-	-
<b>PC10.</b> ensure for leak proof drone spray system to avoid any dripping of pesticides/ agrochemicals	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> calibrate the drone spray system to ensure recommended accuracy on amount of input to be sprayed	-	-	-	-
<b>PC12.</b> Inspect the field to know the extent of pest/disease/weeds infestation	-	-	-	-
<i>Apply pesticides and fertilizers using the drone</i>	<b>3</b>	<b>4</b>	-	<b>3</b>
<b>PC13.</b> select /use the agrochemicals duly included in SOP prepared by MoA	-	-	-	-
<b>PC14.</b> Follow critical parameters while applying in field by manual spraying or auto pilotining	-	-	-	-
<b>PC15.</b> ensure compatibility of selected agrochemicals with drone spray system and nozzles for the desired dilution to ensure stability of agrochemical solubility formulation	-	-	-	-
<b>PC16.</b> Ensure proper formulation and their management	-	-	-	-
<b>PC17.</b> Adhere to agrochemical safety guidelines prescribed by the manufacturer for their safe handling	-	-	-	-
<b>PC18.</b> Follow recommended spray schedule at various/ critical crop growth and infestation stages as per crop protection guidelines	-	-	-	-
<b>PC19.</b> dilute the agrochemical in clean water as per recommendations by the manufacturing company using appropriate PPE	-	-	-	-
<b>PC20.</b> perform crop spraying in safer and cost-effective way by its autonomous and pre-programmed run on specific schedules and routes.	-	-	-	-
<b>PC21.</b> Operate drone to apply soil/crop nutrients in the form/concentration of the nutrients being sprayed/ broadcasted using sensors/ spraying systems installed	-	-	-	-
<b>PC22.</b> Ensure efficient fertigation use of water using drone (depending on the sprayer system of the drone)	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC23.</b> Use different kinds of sprayer nozzles depending on the form and concentration of the nutrients to be applied	-	-	-	-
<b>PC24.</b> Evaluate residue and bio efficacy effects	-	-	-	-
<b>PC25.</b> Follow safe application standard	-	-	-	-
<b>PC26.</b> use the available advance feature of the software for accurate movement of drone and its control as per manifested various parameters like battery discharge or low voltage in the area operation	-	-	-	-
<b>PC27.</b> identify and resolve common error messages and corrections by debugging of Software appropriately	-	-	-	-
<b>PC28.</b> ensure the drone is at home position after task completion	-	-	-	-
<i>Safeguard the non-target while pesticide application</i>	<b>3</b>	<b>4</b>	-	<b>3</b>
<b>PC29.</b> Maintain sufficient buffer zone to counter agrichemical drift between the adjacent farm or different crops to avoid spray on non-target considering the severity of the agrochemical on the non-targets	-	-	-	-
<b>PC30.</b> maintain suitable distance from the drone and avoid windward direction as much as possible during the spray operation	-	-	-	-
<b>PC31.</b> Conduct Drone based spray operations at an appropriate distance from water bodies, residential areas, fodder crops, public utilities, dairy, poultry etc.as per DGCA or other concerned authority guidelines and ensure no human or animal movement within or in the close proximity of the farm during and immediately after the spray operations.	-	-	-	-
<i>Drone, sensors data processing software and soil nutrient spraying system</i>	<b>3</b>	<b>4</b>	-	<b>3</b>

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC32.</b> Use Recommended Dose of Fertilizer (RDF) Protocol to assess the soil nutrient status and post-process the data to generate the GPS tagged precision nutrient requirements map of the field as an input logic to the nutrient spraying drone with the help of soil indices	-	-	-	-
<b>PC33.</b> Use real-time operation protocol to live process the data from multispectral camera for spraying the nutrients simultaneously	-	-	-	-
<b>PC34.</b> Use electrostatic nozzle to avoid drift during the operation	-	-	-	-
<b>PC35.</b> assist end user to understand the report and to enhance decision making through accurate, reliable and timely information that have been obtained by ICT-driven tools and technologies	-	-	-	-
<i>Precautions for storage of crop nutrients/ pesticides</i>	<b>3</b>	<b>4</b>	-	<b>3</b>
<b>PC36.</b> Maintain written inventory of all materials and with proper labelling	-	-	-	-
<b>PC37.</b> Ensure crop nutrients, herbicides, pesticides are separately stored in a secured building with absorbent spill kits in all liquid storage areas and regularly inspect	-	-	-	-
<b>PC38.</b> Ensure provision of emergency eyewash and emergency drench showers within or near the storage area, and dispose the excess or obsolete materials or chemicals in accordance with rules and regulations of manufacturer and state law	-	-	-	-
<i>Undertake post operation drone maintenance</i>	<b>3</b>	<b>4</b>	-	<b>3</b>
<b>PC39.</b> examine the drone, their peripherals and relevant attachments post completion of operation for signs of wear and tear or damage	-	-	-	-
<b>PC40.</b> perform maintenance as per the respective manufacturer's instructions using appropriate and recommended tools and equipment	-	-	-	-
<b>PC41.</b> coordinate with the manufacturer to resolve any manufacturing-related issues experienced while drone operation	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC42.</b> schedule periodic maintenance of drone, their peripherals and relevant attachments as per the maintenance schedule suggested by their respective manufacturers	-	-	-	-
<b>NOS Total</b>	<b>18</b>	<b>24</b>	<b>-</b>	<b>18</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1030
<b>NOS Name</b>	Carry out drone based pesticide and crop nutrient application
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	3
<b>Credits</b>	2
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	29/02/2024
<b>Next Review Date</b>	01/03/2027
<b>NSQC Clearance Date</b>	29/02/2024

## Qualification Pack

### AGR/N1020: Ensure adherence of precautionary measures before, during and post-operation for drone based pesticide application

#### Description

This OS is about various precautionary measures that need to be adhered to before, during and post-operation for drone based pesticide application and emergency measures to be undertaken.

#### Scope

The scope covers the following :

- Undertake pre-application precautionary measures
- Follow precautionary measures during application
- Adhere to post application precautionary measures
- Administer appropriate emergency procedures

#### Elements and Performance Criteria

##### *Undertake pre-application precautionary measures*

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

- PC1.** confirm not to fly in the drone-forbidden area (airport or electronic station)
- PC2.** adhere to the local aviation laws and regulations in area of operation
- PC3.** ensure that no alcoholic drinks have been taken within 8 hours preceding operation
- PC4.** calibrate drone spray system to ensure nozzle output and accurate application of labelled rates
- PC5.** check that drone is in good condition and there is no leak in the spraying system
- PC6.** confirm place for take-off and landing, tank mix operations etc.
- PC7.** check and mark the obstacles (wall, trees) around the field for safe operation
- PC8.** set up at least buffer zone (as specified by DGCA) between drone treatment and the non-target crop
- PC9.** confirm water sources and do not spray pesticides near water sources (less than 100 m) to avoid polluting water sources
- PC10.** Confirm selectivity nature of plant protection chemicals, especially herbicides

##### *Follow precautionary measures during application*

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

- PC11.** adhere to health and safety guidelines carefully
- PC12.** wear appropriate personal protective equipment(ppe) while solution preparation and spraying
- PC13.** avoid eating, drinking or smoking while solution preparation and carrying out spraying operation
- PC14.** confirm the flying route to minimize turn around
- PC15.** ensure that operation team always stay at the downwind end of the field and backlight direction

## Qualification Pack

- PC16.** spray with pure water first to test operation for at least 5 min
- PC17.** follow two step dilutions to fully dissolve the pesticide
- PC18.** adopt proper pressure for optimized droplet spectrum (>100µm).
- PC19.** check appropriate weather conditions for e.g wind speed, temperature, relative humidity etc.
- PC20.** ensure appropriate flying height for the target crop, flying speed etc.
- PC21.** avoid walking through crop which has been contaminated by drifting spray
- PC22.** ensure not to spray during active bee foraging period of the day
- PC23.** abide by the product label requirements and take effective measures to avoid any associated risks
- PC24.** use anti-drift nozzle to decrease/avoid drift to human, environment, flowering nectar crop, non-target organisms such as fish, birds and silkworm etc.

### *Adhere to post application precautionary measures*

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

- PC25.** ensure timely evacuation and transfer to fresh air post completion of the pesticide spray operation
- PC26.** rinse the empty container appropriately to avoid any contamination for next operation
- PC27.** dispose off the waste/ spills safely at appropriate place in correct manner as per the legal regulations and law
- PC28.** ensure that hazardous waste is never burnt or buried
- PC29.** dispose empty containers as per the insecticide rule 1971 and never leave empty containers in the field
- PC30.** set up warning signs in the spray area for reminding people
- PC31.** take a shower and put on clean cloths
- PC32.** ensure that leakage of remaining plant protection products is prevented in the process of transport
- PC33.** store the plant protection products securely away from unauthorized people, animals and food
- PC34.** follow the maintenance schedule of drone and their peripherals as prescribed by drone manufacturers

### *Administer appropriate emergency procedures*

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

- PC35.** follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements
- PC36.** use emergency equipment in accordance with manufacturer's specifications and workplace requirements
- PC37.** provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques
- PC38.** recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate
- PC39.** report details of first aid administered in accordance with workplace procedures

## Knowledge and Understanding (KU)



## Qualification Pack

The individual on the job needs to know and understand:

- KU1.** permissible and drone-forbidden area
- KU2.** local aviation laws and regulations applicable the in area of operation
- KU3.** calibration of drone spray system
- KU4.** working and leak proof condition of the drone spraying system
- KU5.** where to take-off and land and perform tank mix operations etc.
- KU6.** demarcation of obstacles for safe operation
- KU7.** how to set up buffer zone (as specified by DGCA) between drone treatment and the non-target crop
- KU8.** health and safety guidelines
- KU9.** requirements and use of personal protective equipment(PPE)
- KU10.** do and don't while solution preparation and carrying out spraying operation
- KU11.** how to fix flying route to minimize turn around
- KU12.** workplace procedures and requirements for the prevention and treatment of workplace injuries/illnesses.
- KU13.** basic emergency first aid procedure
- KU14.** local emergency services
- KU15.** why accidents, incidents and problems should be reported and the appropriate actions to be taken
- KU16.** correct position of operation team during spray
- KU17.** how to perform dilution of agro-chemical as per recommendation
- KU18.** appropriate weather conditions for agro-chemical spray
- KU19.** how to select flying height as per target crop
- KU20.** how to ensure vicinity of the drone
- KU21.** risk in entering contaminated area affected by drifting spray
- KU22.** correct timing for carrying out recommended agro chemical spray operation
- KU23.** product label requirements and effective measures to avoid any associated risks
- KU24.** use of anti-drift nozzle to decrease/avoid drift to human, environment, non-target organisms, crops etc.
- KU25.** evacuation timing and transfer to fresh air post completion of the pesticide spray operation
- KU26.** how to rinse the empty container to avoid any contamination for next operation
- KU27.** how to do safe disposal of the hazardous waste/ spills at appropriate place in correct manner as per the legal regulations and law
- KU28.** the insecticide rule 1971
- KU29.** warning signs to be setup in the spray area for people awareness
- KU30.** health and safety requirements post agro-chemical operation
- KU31.** preventative measure during transport for leakage of remaining plant protection products
- KU32.** how to store the plant protection products
- KU33.** maintenance prescription given by the manufacturer of drone and their peripherals

## Generic Skills (GS)

## Qualification Pack

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

- GS1.** read the relevant literature to get updated information about the field of work
- GS2.** write work-related notes
- GS3.** communicate politely and professionally
- GS4.** take quick decisions to deal with workplace emergencies/ accidents
- GS5.** identify likely problems in the work processes and take appropriate preventive action
- GS6.** listen attentively to understand the information/ instructions being given
- GS7.** evaluate all possible solutions to a problem to select the best one
- GS8.** identify areas of customer dissatisfaction and take appropriate action to enhance customer satisfaction
- GS9.** co-ordinate with the co-workers to achieve the work objectives

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Undertake pre-application precautionary measures</i>	<b>5</b>	<b>5</b>	-	<b>5</b>
<b>PC1.</b> confirm not to fly in the drone-forbidden area (airport or electronic station)	-	-	-	-
<b>PC2.</b> adhere to the local aviation laws and regulations in area of operation	-	-	-	-
<b>PC3.</b> ensure that no alcoholic drinks have been taken within 8 hours preceding operation	-	-	-	-
<b>PC4.</b> calibrate drone spray system to ensure nozzle output and accurate application of labelled rates	-	-	-	-
<b>PC5.</b> check that drone is in good condition and there is no leak in the spraying system	-	-	-	-
<b>PC6.</b> confirm place for take-off and landing, tank mix operations etc.	-	-	-	-
<b>PC7.</b> check and mark the obstacles (wall, trees) around the field for safe operation	-	-	-	-
<b>PC8.</b> set up at least buffer zone (as specified by DGCA) between drone treatment and the non-target crop	-	-	-	-
<b>PC9.</b> confirm water sources and do not spray pesticides near water sources (less than 100 m) to avoid polluting water sources	-	-	-	-
<b>PC10.</b> Confirm selectivity nature of plant protection chemicals, especially herbicides	-	-	-	-
<i>Follow precautionary measures during application</i>	<b>5</b>	<b>5</b>	-	<b>5</b>
<b>PC11.</b> adhere to health and safety guidelines carefully	-	-	-	-
<b>PC12.</b> wear appropriate personal protective equipment(ppe) while solution preparation and spraying	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> avoid eating, drinking or smoking while solution preparation and carrying out spraying operation	-	-	-	-
<b>PC14.</b> confirm the flying route to minimize turn around	-	-	-	-
<b>PC15.</b> ensure that operation team always stay at the downwind end of the field and backlight direction	-	-	-	-
<b>PC16.</b> spray with pure water first to test operation for at least 5 min	-	-	-	-
<b>PC17.</b> follow two step dilutions to fully dissolve the pesticide	-	-	-	-
<b>PC18.</b> adopt proper pressure for optimized droplet spectrum (>100µm).	-	-	-	-
<b>PC19.</b> check appropriate weather conditions for e.g wind speed, temperature, relative humidity etc.	-	-	-	-
<b>PC20.</b> ensure appropriate flying height for the target crop, flying speed etc.	-	-	-	-
<b>PC21.</b> avoid walking through crop which has been contaminated by drifting spray	-	-	-	-
<b>PC22.</b> ensure not to spray during active bee foraging period of the day	-	-	-	-
<b>PC23.</b> abide by the product label requirements and take effective measures to avoid any associated risks	-	-	-	-
<b>PC24.</b> use anti-drift nozzle to decrease/avoid drift to human, environment, flowering nectar crop, non-target organisms such as fish, birds and silkworm etc.	-	-	-	-
<i>Adhere to post application precautionary measures</i>	<b>4</b>	<b>2</b>	-	<b>4</b>
<b>PC25.</b> ensure timely evacuation and transfer to fresh air post completion of the pesticide spray operation	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC26.</b> rinse the empty container appropriately to avoid any contamination for next operation	-	-	-	-
<b>PC27.</b> dispose off the waste/ spills safely at appropriate place in correct manner as per the legal regulations and law	-	-	-	-
<b>PC28.</b> ensure that hazardous waste is never burnt or buried	-	-	-	-
<b>PC29.</b> dispose empty containers as per the insecticide rule 1971 and never leave empty containers in the field	-	-	-	-
<b>PC30.</b> set up warning signs in the spray area for reminding people	-	-	-	-
<b>PC31.</b> take a shower and put on clean cloths	-	-	-	-
<b>PC32.</b> ensure that leakage of remaining plant protection products is prevented in the process of transport	-	-	-	-
<b>PC33.</b> store the plant protection products securely away from unauthorized people, animals and food	-	-	-	-
<b>PC34.</b> follow the maintenance schedule of drone and their peripherals as prescribed by drone manufacturers	-	-	-	-
<i>Administer appropriate emergency procedures</i>	<b>2</b>	<b>4</b>	-	<b>4</b>
<b>PC35.</b> follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements	-	-	-	-
<b>PC36.</b> use emergency equipment in accordance with manufacturer's specifications and workplace requirements	-	-	-	-
<b>PC37.</b> provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques	-	-	-	-
<b>PC38.</b> recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC39.</b> report details of first aid administered in accordance with workplace procedures	-	-	-	-
<b>NOS Total</b>	<b>16</b>	<b>16</b>	<b>-</b>	<b>18</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1020
<b>NOS Name</b>	Ensure adherence of precautionary measures before, during and post-operation for drone based pesticide application
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	3
<b>Credits</b>	2
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	29/02/2024
<b>Next Review Date</b>	01/03/2027
<b>NSQC Clearance Date</b>	29/02/2024



## Qualification Pack

### DGT/VSQ/N0101: Employability Skills (30 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
- 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.** understand the significance of employability skills in meeting the job requirements

##### *Constitutional values – Citizenship*

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

**PC2.** identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

##### *Becoming a Professional in the 21st Century*

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

**PC3.** explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

##### *Basic English Skills*

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

**PC4.** speak with others using some basic English phrases or sentences

##### *Communication Skills*

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

**PC5.** follow good manners while communicating with others

**PC6.** work with others in a team

## Qualification Pack

### *Diversity & Inclusion*

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

**PC7.** communicate and behave appropriately with all genders and PwD

**PC8.** report any issues related to sexual harassment

### *Financial and Legal Literacy*

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

**PC9.** use various financial products and services safely and securely

**PC10.** calculate income, expenses, savings etc.

**PC11.** approach the concerned authorities for any exploitation as per legal rights and laws

### *Essential Digital Skills*

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

**PC12.** operate digital devices and use its features and applications securely and safely

**PC13.** use internet and social media platforms securely and safely

### *Entrepreneurship*

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

**PC14.** identify and assess opportunities for potential business

**PC15.** identify sources for arranging money and associated financial and legal challenges

### *Customer Service*

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

**PC16.** identify different types of customers

**PC17.** identify customer needs and address them appropriately

**PC18.** follow appropriate hygiene and grooming standards

### *Getting ready for apprenticeship & Jobs*

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

**PC19.** create a basic biodata

**PC20.** search for suitable jobs and apply

**PC21.** identify and register apprenticeship opportunities as per requirement

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** need for employability skills

**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 basic spoken English language

**KU6.** Do and dont of effective communication

**KU7.** inclusivity and its importance

**KU8.** different types of disabilities and appropriate communication and behaviour towards PwD

**KU9.** different types of financial products and services

## Qualification Pack

- KU10.** how to compute income and expenses
- KU11.** importance of maintaining safety and security in financial transactions
- KU12.** different legal rights and laws
- KU13.** how to operate digital devices and applications safely and securely
- KU14.** ways to identify business opportunities
- KU15.** types of customers and their needs
- KU16.** how to apply for a job and prepare for an interview
- KU17.** apprenticeship scheme and the process of registering on apprenticeship portal

## Generic Skills (GS)

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

- GS1.** communicate effectively using appropriate language
- GS2.** behave politely and appropriately with all
- GS3.** perform basic calculations
- GS4.** solve problems effectively
- GS5.** be careful and attentive at work
- GS6.** use time effectively
- GS7.** maintain hygiene and sanitisation 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>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> understand the significance of employability skills in meeting the job requirements	-	-	-	-
<i>Constitutional values – Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC2.</b> identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>1</b>	<b>3</b>	-	-
<b>PC3.</b> explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
<i>Basic English Skills</i>	<b>2</b>	<b>3</b>	-	-
<b>PC4.</b> speak with others using some basic English phrases or sentences	-	-	-	-
<i>Communication Skills</i>	<b>1</b>	<b>1</b>	-	-
<b>PC5.</b> follow good manners while communicating with others	-	-	-	-
<b>PC6.</b> work with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>1</b>	-	-
<b>PC7.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC8.</b> report any issues related to sexual harassment	-	-	-	-
<i>Financial and Legal Literacy</i>	<b>3</b>	<b>4</b>	-	-
<b>PC9.</b> use various financial products and services safely and securely	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> calculate income, expenses, savings etc.	-	-	-	-
<b>PC11.</b> approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
<i>Essential Digital Skills</i>	<b>4</b>	<b>6</b>	-	-
<b>PC12.</b> operate digital devices and use its features and applications securely and safely	-	-	-	-
<b>PC13.</b> use internet and social media platforms securely and safely	-	-	-	-
<i>Entrepreneurship</i>	<b>3</b>	<b>5</b>	-	-
<b>PC14.</b> identify and assess opportunities for potential business	-	-	-	-
<b>PC15.</b> identify sources for arranging money and associated financial and legal challenges	-	-	-	-
<i>Customer Service</i>	<b>2</b>	<b>2</b>	-	-
<b>PC16.</b> identify different types of customers	-	-	-	-
<b>PC17.</b> identify customer needs and address them appropriately	-	-	-	-
<b>PC18.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>1</b>	<b>3</b>	-	-
<b>PC19.</b> create a basic biodata	-	-	-	-
<b>PC20.</b> search for suitable jobs and apply	-	-	-	-
<b>PC21.</b> identify and register apprenticeship opportunities as per requirement	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	DGT/VSQ/N0101
<b>NOS Name</b>	Employability Skills (30 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	2
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	29/03/2023
<b>Next Review Date</b>	29/03/2026
<b>NSQC Clearance Date</b>	29/03/2023

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/optional set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 50% of % aggregate marks to successfully clear the assessment.

## Qualification Pack

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

### Minimum Aggregate Passing % at QP Level : 50

(**Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

## Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N1039.Undertake drone flying ensuring adherence to laws/procedures	5	-	-	5	10	5
AGR/N1030.Carry out drone based pesticide and crop nutrient application	18	24	-	18	60	45
AGR/N1020.Ensure adherence of precautionary measures before, during and post-operation for drone based pesticide application	16	16	-	18	50	45
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	5
<b>Total</b>	<b>59</b>	<b>70</b>	<b>-</b>	<b>41</b>	<b>170</b>	<b>100</b>

## Qualification Pack

### Acronyms

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



## Qualification Pack

### Glossary

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

## Qualification Pack

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