Model Curriculum

QP Name: Mushroom Cultivator,V2

QP Code: STC - AGR/NSQF-2022/0231,V2

QP Version: 2.0

NSQF Level: 3

Model Curriculum Version: 2.0

West Bengal State Council of Technical & Vocational Education and Skill Development, Karigari Bhavan, (5th Floor), Plot-B/7, Action Area-III, New Town, Kolkata-700160

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Training Parameters

Sector	Agriculture
Sub-Sector	Other Allied
Occupation	Mushroom Cultivator
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	*6194.9900*
Minimum Educational Qualification and Experience	1.Grade 10 OR 2.Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 3.Grade 8 Pass with 2 year experience OR 4.5th Grade Pass with 5 yrs experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	3.5.2023
Next Review Date	3.5.2026
Version	2.0
NSQC Approval Date	3.5.2023
Model Curriculum Creation Date	3.5.2023
Model Curriculum Valid Upto Date	3.5.2026
Model Curriculum Version	2.0
Minimum Duration of the Course	360 hours
Maximum Duration of the Course	360 hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the participants will be able to:

- Identify the Scope & importance of Mushroom cultivation in India
- Prepare & pasteurize the compost necessary to cultivate mushrooms
- Select commercially important species of mushroom and design appropriate site to cultivate mushrooms
- Undertake disease control and pest management activities, casing and pinning for mushroom cultivation
- Demonstrate harvest & post-harvest procedures of mushrooms
- Work in real job situation with special emphasis on basic safety and hazards in this domain.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/0231/OC1 **Identify the Scope & importance of Mushroom cultivation in India** **NOS Version No. :2.0** **NSQF Level:3**	**20:00 Hours**	**10:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module1: Identify the Scope & importance of Mushroom cultivation in India.	20:00 Hours	10:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AGR/0231/OC2 **Prepare & pasteurize the compost necessary to cultivate mushrooms** **NOS Version No.:2.0** **NSQF Level: 3**	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module2:Prepare & pasteurize the compost necessary to cultivate mushrooms	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours

AGR/0231/OC3 **Select commercially important species of mushroom and design appropriate site to cultivate mushrooms** **NOS Version No.:2.0** **NSQF Level:3**	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module 3: Select commercially important species of mushroom and design appropriate site to cultivate mushrooms	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AGR/0231/OC4 **Undertake disease control and pest management activities, casing and pinning for mushroom cultivation** **NOS Version No.:2.0** **NSQF Level: 3**	**10:00 Hours**	**20:00 Hours**	**00:00Hours**	**00:00Hours**	**30:00 Hours**
Module 4: Undertake disease control and pest management activities, casing and pinning for mushroom cultivation	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
AGR/0231/OC5 **Demonstrate harvest & post-harvest procedures of mushrooms** **NOS Version No.: 2.0** **NSQF Level: 3**	**10:00 Hours**	**50:00 Hours**	**00:00Hours**	**00:00Hours**	**60:00 Hours**
Module 5: Demonstrate harvest & post-harvest procedures of mushrooms	10:00 Hours	50:00 Hours	00:00Hours	00:00Hours	60:00 Hours
AGR/0231/OC6 **Work in real job situation with special emphasis on basic safety and hazards in this domain.** **NOS Version No.: 2.0** **NSQF Level: 3**	**00:00 Hours**	**00:00 Hours**	**120:00Hours**	**00:00Hours**	**120:00 Hours**
Module 6: Work in real job situation with special emphasis on basic safety and hazards in this domain.	00:00 Hours	00.00 Hours	120:00Hours	00:00Hours	120:00 Hours
DGT/VSQ/N0102 **Employability Skills** **NOS Version No.: 1.0** **NSQF Level: 3**	**60:00 Hours**	**00:00Hour**	**00:00Hours**	**00:00Hours**	**60:00 Hours**
Module 7: Employability Skills	60:00 Hours	00:00Hour	00:00Hours	00:00Hours	60:00 Hours
Total Duration	**120:00 Hours**	**120:00 Hours**	**120:00Hours**	**00:00Hours**	**360:00 Hours**

Module Details

Module1: Identify the Scope & importance of Mushroom cultivation in India

Mapped to AGR/0231/OC1,V2.0

Terminal Outcomes:

- Identify the scope and importance of cultivation of mushroom in India scenario.
- Identify the market demand of mushroom
- Identify the role of mushroom cultivator.

Duration: *20:00*	Duration: *10:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
The student will be able to describe :- • Study the Scope & importance of Mushroom cultivation in India • Understand the usage & market demand for mushroom • Understand the Role of a 'Mushroom Grower'	The students will be able to demonstrate the followings:- • Identify the scope and importance of cultivation of mushroom in India scenario. • Identify the market demand of mushroom • Identify the role of mushroom cultivator.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Digital electronicsbalance, capacity :5mg-210 g,Physical rough balance Capacity=30Kg Refrigerator having fivestar BEE mark, Thermometer,0□C to 100C. Exhaust Fan, Iron Shelves Gas Oven, Digital pH Meter,Range : 0 to 14pH, Magnetic Starrer, withHot Plate B. O.D cooling incubator (imported :compressor), Digital Thermometer. Straw immersion tank, Paddy Straw, Wheat bran,Gypsum, Formalin (2%),Polythene Hand Sprayer, Calcium Sulphate, Calcium Carbonate, Dextrose, Agar Powder,Ethyl alcohol Formaldehyde, Chlorox, Lactic Acid, Lactophenol, Yeast Extract, Peptone, Malt Extract	

Module 2: Prepare & pasteurize the compost necessary to cultivate mushrooms
Mapped to AGR/0231/OC2,V2.0

Terminal Outcomes:

- Identify and Select appropriate materials to prepare the compost- base materials.
- Describe various agricultural by-products, materials rich in cellulose
- Select & apply chemicals for mineral deficiency rectification and stabilization
- Identify different types compost- natural & synthetic, formulation of different compost
- Select composting methods- short, long; indoor, outdoor
- Undertake compost rotation and ensure adequate moisture, carbohydrate, gas exchange etc
- Pasteurize the compost to kill insects, nematodes, pest fungi or other pests
- Explore good compost attributes role of composting in Mushroom cultivation.
- Prepare different types of compost by selecting appropriate materials.
- Determine of quality of compost
- Identify hazards & risks associated with composting and how to control injury to self.

Duration:10:00	Duration:20:00
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
The student will be able to describe:- • Select appropriate materials to prepare the compost- base materials from various agricultural by-products, materials rich in cellulose • Impart proper physical structure to the substrate, ensure adequate aeration during composting, and add bulk to the compost • Identify different types compost- natural & synthetic, formulation of different compost • Select composting methods- short, long; indoor, outdoor • Undertake compost rotation and ensure adequate moisture, carbohydrate, gas exchange etc • Understand good compost attributes	The student will be able to demonstrate:- • Role of composting in Mushroom cultivation • Appropriate materials to prepare different types of compost • Select & apply chemicals for mineral deficiency rectification and stabilization • Methods of composting – preparation and pasteurization • Pasteurize the compost to kill insects, nematodes, pest fungi, or other pests • Determination of quality of compost Hazards & risks associated with composting and how to control injury to self.
Classroom Aids:	
Computer,Projection Equipment, Power Point Presentation and software,Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	

Digital electronicsbalance, capacity :5mg-210 g,Physical rough balance Capacity=30Kg Refrigerator having fivestar BEE mark, Thermometer,0C to 100C. Exhaust Fan, Iron Shelves Gas Oven, Digital pH Meter,Range : 0 to 14pH, Magnetic Starrer, withHot Plate C. O.D cooling incubator (imported :compressor), Digital Thermometer.

Straw immersion tank, Paddy Straw, Wheat bran,Gypsum, Formalin (2%),Polythene Hand Sprayer, Calcium Sulphate, Calcium Carbonate, Dextrose, Agar Powder,Ethyl alcohol Formaldehyde, Chlorox, Lactic Acid, Lactophenol, Yeast Extract, Peptone, Malt Extract

Module 3: Select commercially important species of mushroom and design appropriate site to cultivate mushrooms

Mapped to AGR/0231/OC3,V2.0

Terminal Outcomes:

- Select commercially important type of mushroom based on market's demand.
- Selection of important types of Mushroom
- Procure mushroom spawns from authentic source
- Select appropriate mushroom cultivation site with proper drainage & water supply facility
- Design and construct mushroom farm according to the growing conditions required for different kinds of mushrooms
- Understand different types of mushroom growing facilities and fixtures
- Understand types, components and their specifications of bulk chamber conducive for good quality mushroom growing.
- Package of practices of White button Mushroom and Oyster Mushroom

Duration:10:00	Duration:20:00
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
• Select commercially important type of mushroom based on market's demand, climatic conditions of the farm, growing season, investments, etc. • Select appropriate mushroom cultivation site with proper drainage & water supply facility • Design and construct mushroom farm according to the growing conditions required for different kinds of mushrooms • Understand different types of mushroom growing facilities and fixtures Understand types, components and their specifications of bulk chamber conducive for good quality mushroom growing.	• Selection of important types of Mushroom • Selection of appropriate Mushroom cultivation sites • Procure mushroom spawns from authentic source • Design and construction of Mushroom farm
Classroom Aids:	
Computer,Projection Equipment,Power Point Presentation and software,Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Hot air oven (24''×24''×24'') inch size, Autoclave (18 x 24 inch) double coil, Rectangular hot plate of, (10''×16''×9'') inch size, High precision balance Capacity=1000 g. Digital electronicsbalance, capacity :5mg-210 g,Physical rough balance Capacity=30Kg Refrigerator having fivestar BEE mark, Thermometer,0□C to 100C. Exhaust Fan, Iron Shelves Gas Oven, Digital pH Meter,Range : 0 to 14pH, Magnetic Starrer, withHot Plate D.O.D cooling incubator (imported :compressor), Digital Thermometer. Straw immersion tank, Paddy Straw, Wheat bran,Gypsum, Formalin (2%),Polythene	

Hand Sprayer, Calcium Sulphate, Calcium Carbonate, Dextrose, Agar Powder,Ethyl alcohol Formaldehyde, Chlorox, Lactic Acid, Lactophenol, Yeast Extract, Peptone, Malt Extract

Module 4: Undertake disease control and pest management activities, casing and pinning for mushroom cultivation

Mapped to AGR/0231/OC4,V2.0

Terminal Outcomes:

- Inspect mushroom bags or beds carefully for early detection of pests and diseases
- Identify the diseases.
- Control diseases and exercise preventive care- spray pesticides/ fungicides etc
- Pasteurize the mushroom farm to remove nematode in mushroom cultivation
- Prepare casing soil to hold moisture
- Promote the formation of primordia, or mushroom pins by supplying water to the mycelium
- Detect the earliest formation of recognizable mushrooms from mycelium
- Use sterilized casing to control nematodes
- Spray fungicide after casing to check dry bubble
- Spray insecticide for control of mites
- Apply caustic chemicals top keep rodents away

Duration:10:00	Duration:20:00
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
The candidate will be to describe the followings:- ● Inspect mushroom bags or beds carefully for early detection of pests and diseases ● Control diseases and exercise preventive care- spray pesticides/ fungicides etc ● pasteurize the mushroom farm to remove nematode in mushroom cultivation ● Prepare casing soil to hold moisture ● Promote the formation of primordia, or mushroom pins by supplying water to the mycelium ● detect the earliest formation of recognizable mushrooms from mycelium case at a regular interval after harvesting or cover the holes after mushroom picking	The candidate will be to demonstrate the followings:- ● Inspection of Mushroom bags or beds for early detection of pests and diseases ● Using sterilized casing to control nematodes ● Spraying fungicide after casing to check dry bubble ● Spraying insecticide for control of mites ● Use of caustic chemicals top keep rodents away
Classroom Aids:	

Computer,Projection Equipment, Power Point Presentation and software,Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements

Hot air oven (24''×24''×24'') inch size, Autoclave (18 x 24 inch) double coil, Rectangular hot plate of, (10''×16''×9'') inch size, High precision balance Capacity=1000 g.

Digital electronicsbalance, capacity :5mg-210 g, Physical rough balance Capacity=30Kg
Refrigerator having fivestar BEE mark, Thermometer,0□C to 100C. Exhaust Fan, Iron Shelves
Gas Oven, Digital pH Meter,Range : 0 to 14pH, Magnetic Starrer, withHot Plate
E. O.D cooling incubator (imported :compressor), Digital Thermometer.

Straw immersion tank, Paddy Straw, Wheat bran,Gypsum, Formalin (2%),Polythene
Hand Sprayer, Calcium Sulphate, Calcium Carbonate, Dextrose, Agar Powder,Ethyl alcohol
Formaldehyde, Chlorox, Lactic Acid, Lactophenol, Yeast Extract, Peptone, Malt Extract.
Test tube ,borosilicate glass18x15 ml. Test tube ,borosilicate glass15x15 ml.Beaker, graduated , borosilicate glass 1000ml.Beaker, graduated ,borosilicate glass 500ml
Beaker, graduated , borosilicate glass250ml.Beaker, graduated ,borosilicate glass 100ml
Conical flask, graduated , borosilicate glass500ml.Conical flask, graduated , borosilicate glass250ml. Conical flask, graduated , borosilicate glass100ml
Pipette, graduated ,borosilicate glass 50ml.Pipette, graduated ,borosilicate glass 25ml
Burette 50ml , graduated , borosilicate glass (with ptfe stoppered), Volumetric flask, graduated, borosilicate glass 1000ml Volumetric flask ,graduated , borosilicate glass 500ml Volumetric flask ,graduated , borosilicate glass 250ml Volumetric flask ,graduated , borosilicate glass 100ml
Measuring cylinder, graduated , borosilicate glass 1000ml Measuring cylinder ,graduated , borosilicate glass 500ml Measuring cylinder ,graduated , borosilicate glass 250ml
Measuring cylinder. Funnel 60 deg angle long stem , borosilicate glass 75mm
Glass rod 150 mm long, 5-6 mm dia borosilicate glass. Porcelain basin 100 mm dia
Mortar/ pestle(porcelain) 100 mm. Mortar/ pestle(porcelain) 150 mm. Reagent bottle, borosilicate glass 250ml. Reagent bottle, borosilicate glass 500ml. Beaker, (Plastic)graduated, 1000ml
Beaker, (Plastic)graduated, 500ml. Beaker, (Plastic)graduated, 250ml. Beaker, (Plastic)graduated, 100ml, Plastic bucket, 5lit Plastic bucket, 9lit. Tray ,plastic, (12''×10''). Tray ,plastic, (17''×12'')
Tray ,plastic, (19''×13''). Tray,SS 2 NO, with handle Tray,SS 3 NO, with handle Tray,SS 4 NO, with handle. Spoon Spatula 6'' long ,SS. Spoon Spatula. 8'' long ,SS. Spoon Spatula 10'' long ,SS
Plane Desiccators Dia 300mm , plastic made Test tube holder (heavy). Burette stand with base and double clamp, (plastic PP made). Burette stand with base and single clamp, (plastic PP made)
Pipette stand (plastic PP made) (Horizontal). Pipette stand (plastic PP made) (Vertical)
Test tube stand (plastic PP made) Dia 20mm. Test tube stand (plastic PP made) Dia 25mm. Wash bottle, (plastic), 500 ml Filter stand with base and double clamp, (plastic PP made)
Test tube stand(plastic PP made) Dia 20mm. pH Paper.pH Buffer capsule/tablet, 10 caps in each pack,(pH 4, pH 7, pH 9.2), Sodium hydroxide pallet,500gm, Concentrated HClacid,1 lit
Potassium di hydrogen phosphate,500gm, Di potassium hydrogen phosphate,500gm
Potassium chloride,500gm, Sodium chloride,500gm,Phenolphthalein indicator(1% solution), 125 ml
Sodium bicarbonate,500gm,Petridish , borosilicate glass 80x17mm,Petridish , borosilicate glass100x17mm.Plastic pouch with zip (10''×12''),Plastic pouch with zip (12''×14'')
Spirit lamp SS with brass cover125ml, Bunsen Burner, brass made, with regulator
Spirit lamp SS with brass cover125ml, Bunsen Burner, brass made, with regulator
Rubber Gloves 14 no, pair, Inoculation needle with nicrome wire, best quality,Butter paper roll of 100 piece, Non absorbent cotton,400gm pack, Ordinary Filter paper, 125mm dia
Tissu paper roll, ordinary type, Brown paper roll 100 piece, Pipette jacket, SS made Micropipette

Module 5: Demonstrate harvest & post-harvest procedures of mushrooms

Mapped to AGR/0231/OC5,V2.0

Terminal Outcomes:

- Assess the maturity of mushroom and harvest periods
- Apply good harvesting practices
- Cut, clean and dry harvested mushroom using approved procedures
- Sort and grade the harvests as per required quality specifications
- Store, pack, label and transport produce
- Record the information, e.g. quality, quantity, type, expenditure incurred in operation, etc. in appropriate registers, record book and logs
- Utilize spent mushroom substrate in organic farming, vermi composting, bioremediation of contaminated soil etc
- Sorting the Mushrooms on the size and quality
- Packaging Mushrooms with labels containing month and year of harvesting, quantity and type of Mushroom etc
- Use of spent Mushroom in vermi-composting and in organic farming.

Duration: *10:00*	Duration: *50:00*
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
The student will able to describe the following:- ● Assess the maturity of mushroom and harvest periods ● Apply good harvesting practices ● Cut, clean and dry harvested mushroom using approved procedures ● sort and grade the harvests as per required quality specifications ● Store, pack, label and transport produce ● Record information, e.g. quality, quantity, type, expenditure incurred in operation, etc. in appropriate registers, record book and logs Utilize spent mushroom substrate in organic farming, vermicomposting, bioremediation of contaminated soil etc	The students will be able to do the following activities: ● Identification of right stage of Mushroom ● Methods of harvesting ● Using approved cutting techniques for harvesting ● Sorting the Mushrooms on the size and quality ● Packaging Mushrooms with labels containing month and year of harvesting, quantity and type of Mushroom etc ● Use of spent Mushroom in vermin-composting and in organic farming ● Preparation of value added products of Mushroom
Classroom Aids:	

Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements

Hot air oven (24''×24''×24'') inch size, Autoclave (18 x 24 inch) double coil, Rectangular hot plate of, (10''×16''×9'') inch size, High precision balance Capacity=1000 g.

Digital electronicsbalance, capacity :5mg-210 g, Physical rough balance Capacity=30Kg
Refrigerator having fivestar BEE mark, Thermometer,0□C to 100C. Exhaust Fan, Iron Shelves
Gas Oven, Digital pH Meter,Range : 0 to 14pH, Magnetic Starrer, withHot Plate
F. O.D cooling incubator (imported :compressor), Digital Thermometer.

Straw immersion tank, Paddy Straw, Wheat bran,Gypsum, Formalin (2%),Polythene
Hand Sprayer, Calcium Sulphate, Calcium Carbonate, Dextrose, Agar Powder,Ethyl alcohol
Formaldehyde, Chlorox, Lactic Acid, Lactophenol, Yeast Extract, Peptone, Malt Extract.
Test tube ,borosilicate glass18x15 ml. Test tube ,borosilicate glass15x15 ml.Beaker, graduated , borosilicate glass 1000ml.Beaker, graduated ,borosilicate glass 500ml
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Conical flask, graduated , borosilicate glass500ml.Conical flask, graduated , borosilicate glass250ml. Conical flask, graduated , borosilicate glass100ml
Pipette, graduated ,borosilicate glass 50ml.Pipette, graduated ,borosilicate glass 25ml
Burette 50ml , graduated , borosilicate glass (with ptfe stoppered), Volumetric flask, graduated, borosilicate glass 1000ml Volumetric flask ,graduated , borosilicate glass 500ml Volumetric flask ,graduated , borosilicate glass 250ml Volumetric flask ,graduated , borosilicate glass 100ml
Measuring cylinder, graduated , borosilicate glass 1000ml Measuring cylinder ,graduated , borosilicate glass 500ml Measuring cylinder ,graduated , borosilicate glass 250ml
Measuring cylinder. Funnel 60 deg angle long stem , borosilicate glass 75mm
Glass rod 150 mm long, 5-6 mm dia borosilicate glass. Porcelain basin 100 mm dia
Mortar/ pestle(porcelain) 100 mm. Mortar/ pestle(porcelain) 150 mm. Reagent bottle, borosilicate glass 250ml. Reagent bottle, borosilicate glass 500ml. Beaker, (Plastic)graduated, 1000ml
Beaker, (Plastic)graduated, 500ml. Beaker, (Plastic)graduated, 250ml. Beaker, (Plastic)graduated, 100ml, Plastic bucket, 5lit Plastic bucket, 9lit. Tray ,plastic, (12''×10''). Tray ,plastic, (17''×12'')
Tray ,plastic, (19''×13''). Tray,SS 2 NO, with handle Tray,SS 3 NO, with handle Tray,SS 4 NO, with handle. Spoon Spatula 6'' long ,SS. Spoon Spatula. 8'' long ,SS. Spoon Spatula 10'' long ,SS
Plane Desiccators Dia 300mm , plastic made Test tube holder (heavy). Burette stand with base and double clamp, (plastic PP made). Burette stand with base and single clamp, (plastic PP made)
Pipette stand (plastic PP made) (Horizontal). Pipette stand (plastic PP made) (Vertical)
Test tube stand (plastic PP made) Dia 20mm. Test tube stand (plastic PP made) Dia 25mm. Wash bottle, (plastic), 500 ml Filter stand with base and double clamp, (plastic PP made)
Test tube stand(plastic PP made) Dia 20mm. pH Paper.pH Buffer capsule/tablet, 10 caps in each pack,(pH 4, pH 7, pH 9.2), Sodium hydroxide pallet,500gm, Concentrated HClacid,1 lit
Potassium di hydrogen phosphate,500gm, Di potassium hydrogen phosphate,500gm
Potassium chloride,500gm, Sodium chloride,500gm,Phenolphthalein indicator(1% solution), 125 ml
Sodium bicarbonate,500gm,Petridish , borosilicate glass 80x17mm,Petridish , borosilicate glass100x17mm.Plastic pouch with zip (10''×12''),Plastic pouch with zip (12''×14'')
Spirit lamp SS with brass cover125ml, Bunsen Burner, brass made, with regulator
Spirit lamp SS with brass cover125ml, Bunsen Burner, brass made, with regulator
Rubber Gloves 14 no, pair, Inoculation needle with nicrome wire, best quality,Butter paper roll of 100 piece, Non absorbent cotton,400gm pack, Ordinary Filter paper, 125mm dia
Tissu paper roll, ordinary type, Brown paper roll 100 piece, Pipette jacket, SS made Micropipette

Module 6: Work in real job situation with special emphasis on basic safety and hazards in this domain

Mapped to **AGR/0231/OC6,V2.0**

Terminal Outcomes:

Assessor will check report prepared for this component of training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 150 Hours.)

Duration:*00:00*	**Duration: *120:00***
Theory–Key Learning Outcomes	**Practical–Key Learning Outcomes**
	• Assessor will check report prepared for the training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 150 Hours.)
Classroom Aids:	

Module 7: Employability skills

Mapped to DGT/VSQ/N0102, v 1.0

Terminal Outcomes:

1. Demonstrate a comprehensive knowledge of constitutional values and apply them in their actions, decisions, and interactions, thereby upholding the principles of the constitution.
2. Develop proficiency in basic English skills, including reading, writing, listening, and speaking, enabling effective communication in everyday situations.
3. Exhibit proficiency in basic communication skills, including active listening, effective verbal and nonverbal communication, and clarity in expressing ideas, fostering successful interpersonal interactions.
4. Explain financial and legal literacy, including understanding key financial concepts, making informed financial decisions, and navigating legal frameworks related to personal and business finances.
5. Interpret digital tools and technologies, navigating online platforms, and practicing safe and responsible digital behavior.

- Discuss the importance of Employability Skills in meeting the job requirements. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. Discuss 21st century skills such as Self-Awareness, Behavior 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.
- Use basic English for everyday conversation in different contexts, in person and over the telephone. Read and understand routine information, notes, instructions, mails, letters etc. written in English. Write short messages, notes, letters, e-mails etc. in English.
- Demonstrate how to communicate in a well -mannered way with others. Apply verbal and non-verbal communication etiquette and active listening techniques in various settings. Demonstrate working with others in a team
- Show how to conduct oneself appropriately with all genders and PwD.
- Select financial institutions, products and services as per requirement. Carry out offline and online financial transactions, safely and securely. identify common components of salary and compute income, expenses, taxes, investments etc.
- Show how to operate digital devices and use the associated applications and features, safely and securely. Use e-mail and social media platforms and virtual collaboration tools to work effectively. Use the features of word processor, spreadsheets and presentations. Create a biodata.
- Identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research. Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity
- Identify different types of customers. Identify and respond to customer requests and needs in a professional manner

Classroom Aids:

Computer, Projection Equipment, Power Point Presentation and software, Facilitator's Guide, Participant's Handbook

Details Syllabus Content

Theory Syllabus:

SL NO	CONTENT	DETAILS
1	**Introduction**	• Study the Scope & importance of Mushroom cultivation in India • Understand the usage & market demand for mushroom • Understand the Role of a 'Mushroom Grower'
2	**Prepare & pasteurize the compost necessary to cultivate mushrooms**	• Select appropriate materials to prepare the compost- base materials from various agricultural by-products, materials rich in cellulose • impart proper physical structure to the substrate, ensure adequate aeration during composting, and add bulk to the compost • select & apply chemicals for mineral deficiency rectification and stabilization • Identify different types compost- natural & synthetic, formulation of different compost • Select composting methods- short, long; indoor, outdoor • Undertake compost rotation and ensure adequate moisture, carbohydrate, gas exchange etc • Pasteurize the compost to kill insects, nematodes, pest fungi, or other pests • Understand good compost attributes
3	**Select commercially important species of mushroom and design appropriate site to cultivate mushrooms**	• Select commercially important type of mushroom based on market's demand, climatic conditions of the farm, growing season, investments, etc. • Procure mushroom spawns from authentic source • Select appropriate mushroom cultivation site with proper drainage & water supply facility • Design and construct mushroom farm according to the growing conditions required for different kinds of mushrooms • Understand different types of mushroom growing facilities and fixtures • Understand types, components and their specifications of bulk chamber conducive for good quality mushroom growing.
4	**Undertake disease control and pest management activities,**	• Inspect mushroom bags or beds carefully for early detection of pests and diseases • Control diseases and exercise preventive care- spray pesticides/ fungicides

	casing and pinning for mushroom cultivation	etc ● pasteurize the mushroom farm to remove nematode in mushroom cultivation ● Prepare casing soil to hold moisture ● Promote the formation of primordia, or mushroom pins by supplying water to the mycelium ● detect the earliest formation of recognizable mushrooms from mycelium ● case at a regular interval after harvesting or cover the holes after mushroom picking
5	**Undertake harvest & post-harvest procedures of mushrooms**	● Assess the maturity of mushroom and harvest periods ● Apply good harvesting practices ● Cut, clean and dry harvested mushroom using approved procedures ● sort and grade the harvests as per required quality specifications ● Store, pack, label and transport produce ● Record information, e.g. quality, quantity, type, expenditure incurred in operation, etc. in appropriate registers, record book and logs ● Utilize spent mushroom substrate in organic farming, vermicomposting, bioremediation of contaminated soil etc

Practical Syllabus:

SL NO	CONTENT	DETAILS
1	**Composting in Mushroom cultivation**	● Role of composting in Mushroom cultivation ● Appropriate materials to prepare different types of compost ● Methods of composting – preparation and pasteurization ● Determination of quality of compost ● Hazards & risks associated with composting and how to control injury to self.
2	**Selection of types of Mushroom and Sites**	● Selection of important types of Mushroom ● Selection of appropriate Mushroom cultivation sites ● Design and construction of Mushroom farm
3	**Mushroom cultivation - methods**	● Selection of commercially important types of Mushroom ● Purpose and process of using spawn and selection of correct spawn ● Different types of Mushroom growing facilities and fixtures ● Package of practices of White button Mushroom and Oyster Mushroom
4	**Disease control and pest Management**	● Inspection of Mushroom bags or beds for early detection of pests and diseases ● Using sterilized casing to control nematodes ● Spraying fungicide after casing to check dry bubble ● Spraying insecticide for control of mites

		• Use of caustic chemicals top keep rodents away
5	**Harvesting of Mushroom**	• Identification of right stage of Mushroom • Methods of harvesting • Using approved cutting techniques for harvesting
6	**Packaging storing and grading of Mushroom & post harvest procedures**	• Sorting the Mushrooms on the size and quality • Packaging Mushrooms with labels containing month and year of harvesting, quantity and type of Mushroom etc • Use of spent Mushroom in vermin-composting and in organic farming • Preparation of value added products of Mushroom

Syllabus of Employability Skill:

Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that arerequired to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptivethinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person andover the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy Duration:5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely andsecurely
23. Discuss the significance of displaying responsible online behavior while browsing, using various socialmedia platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financialand legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per Create a sample business plan, for the selected business opportunity

Customer ServiceDuration: 5 Hours

29. Describe the significance of analyzing different types and needs of customers
30. Explain the significance of identifying customer needs and responding to them in a professional manner.
31. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

32. Create a professional Curriculum Vitae (CV)
33. Use various offline and online job search sources such as employment exchanges, recruitment agencies,and job portals respectively
34. Discuss the significance of maintaining hygiene and confidence during an interview
35. Perform a mock interview
36. List the steps for searching and registering for apprenticeship opportunities

Tools and Equipment

(For a batch of 30 candidates)			
Sl No.	**Item Name**	**Item description/technical specification (Instruments and machinery)**	**Quantity**
1.	**Hot air oven** (24''×24''×24'') inch size	Hot air oven (24''×24''×24'') with blower digital temp (Multispan) and time control, inside made of 304SS of 20gage, outside of MS with powder coated finish, ball catcher heavy door. Three side heating elements, Standard double wall fabrication, Inner chamber made of highly polished stainless steel sheet, Exterior fabricated out of thick mild steel duly finished in white stoving enamel with mat finished colour combinations, Quick and uniform heating in range of 50°C to 250°C ±2°C controlled by capillary type thermostat, L-shaped thermometer is built-in type, Control panel is provided with selector switch of high or low rates of power thermostat control knob and indicators for mains& thermostat,	1 no.
2.	**Autoclave** (18 x 24 inch) double coil	**Autoclave** (18 x 24 inch) double coil, double wall, digital temperature controller, timer arrangement vertical with control cut off pressure (15-30psig) temperature indicator, inner and outer wall 304SS of 14gage , heavy lid and ring made of 304SS of 10gage, 304SS of 20gage perforated Basket with handle. It is equipped with pressure guage, steam release valve and safety valves. Pressure Controls by spring Valves, Fitted with silicon rubber gasket jointless, to work on 230 volts A./C. only. Autoclave have central out let at the bottom and also have water level indicator. The chamber is absolutely leak proof & can be operated at any selected point in between 5 to 30 pound persq.inch.	1 no.
3.	Rectangular hot plate of, (10''×16''×9'') inch size	Rectangular hot plate of, (10''×16''×9'') 304SS top of 10 gauge/fully SS body of 18 gauge, digital temperature indicatorcum controller in one side.	1 no.
4.	High precision balance Capacity=1 000 g	High precision balance Capacity=1000gm Readability=0.001 SS Pan size (mm) = 128×128	1 no.

5.	Digital electronics balance, capacity : 5mg-210 g	Digital electronics balance, capacity : 5mg-210gm, accuracy 0.001gm, SS pan	1no.
6.	Physical rough balance Capacity=30Kg	Physical rough balance Capacity=30Kg Readability=0.5gm SS Pan size (mm) = 250×330	2 nos.
7.	Refrigerator having five star BEE mark	Refrigerator having five star BEE mark with separate deep freezeand normal freeze,Capacity - 500lit and above. Supply with voltage stabilizer 3KV	1no.
8.	Thermometer,0□C to 100 ° C	Thermometer,0□C to 100 □ C glass	4 nos.
9.	Serological water bath	Serological water bath, Double wall insulation, total 304SS of 20gauge(inner and outer), capacity (12x250ml) (16''×12''×10'')304SS lid, Ambient to 110 □C and digital temperature indicator. one outlet with ball valve	1 no.
10.	Tray dryer, horizontal cross air flow system	Tray dryer, horizontal cross air flow system, inner 304SS wall of18 gauge & with six 304SS tray of 16gauge Tray size : (16''x32''x1'')inch Solid SS tray/perforated SS tray / wire net SS try, all trays adjustable type with gape of 6'' per tray. Digital PID type temperature controller. Temperature range 50˚-300˚C with accuracy ±1˚C 1HP . crompton brand motor with fittings of 304SS made blower.	1 no.
11.	Air Conditioner	2 ton	1 no.
12.	Exhaust Fan	12 inch	3 nos.
13.	Iron Shelves	Iron Shelves with 6 no shelves	6 nos.
14.	Gas Oven	Gas Oven double	1 no.
15.	Digital pH Meter, Range : 0 to 14pH	Digital pH Meter, Range : 0 to 14pH (mV upto 1999mV), Resolution : 0.01pH (±1mV), Accuracy : 0.01pH, □±1 digit (1mV, • ±1digit), Temperature compensation : 0°C to100°C (manual), 4 digit LED display with automatic polarity and decimal indications, With one combination electrode, stand , clamp, buffers,dust cover & manual. Supply with pH 4.01 buffer, pH 7.00 buffer pH 10.01 buffer	1 no.
16.	Magnetic Starrer, with Hot Plate	Magnetic Starrer, with Hot Plate, with Stepless Speed control &S.S. body and top. Stirring capacity 5lt liquid. It utilises magnetic filed created by a Heavy duty permanent magnet which induces variable speed stirring action. Stirring is accomplished by means of small teflon rotor, which when placed to be stirred is capable or rotation by magnetic field applied from below the container. Fitted with pilot lamp.	1 no.

17.	B.O.D cooling incubator (imported : compressor)	B.O.D COOLING INCUBATOR (IMPORTED :COMPRESSOR) Cooling BOD incubator, combined low & high temperature, provided with precise electronic temperature control with digital readout a) Construction: Double-walled with adequate polystyreneand glass wool insulation. b) Inner Chamber: Stainless Steel, (304SS of 20gauge)duly polished with different shelf positions. c) Outer Walls: CRC Steel Sheet, scraped and treatedwith anti-corrosive primer and finished with powder coating. d) Outer Door: The outer door will be double walled duly insulated and provided with magnetic strip gasket withproper sealing and locking device with anti-corrosive primer and finished with powder coating. e) Inner Door: An Acrylic door is provided. f)Inner chamber made of 304 grade quality Stainless Steel. Wall side 20 gauge thickness sheets & Tray side 20gauge thickness sheets. g) Temp. Digital controller - Multispan brand.Temperature Range : 5ºC to 60ºC Temperatures.Accuracy of Control : ± 0.50 Working Chamber Made of : Stainless Steel Sheet. Volume=285 Lt/ 10cft No. of Trays : 3 Numbers Perforated304SS Trays of 20 gauge. Operable on : 220/230 Volts, SinglePhase, 50 Cycles, AC Mains. Proper white light illumination is necessary in innerchamber Supply with Suitable stabilizer with surge suppresser(3KVA)	1 no. .
18.	Digital Thermometer	1. Temperature scale:oC or o F User-Selective 2. Resolution: 1 oC or 1 oF 3. Measurement Range: 0oC to200oC 4. Display: LCD	2 nos

19.	Horizontal Laminar airflow chamber LAMINAR FLOW (Horizontal)	Horizontal Laminar air flow chamberLAMINAR FLOW (Horizontal): 1 . HEPA filter with efficiency : 99.999% at 0.3 um.2 .Microprocessor control system , Led/LCD display 3. Air speed adjustable 4. UV timer Technical Specifications :- * External size (W * D *H) : 1300* 825 * 2000 mm * Internal Size : (W * D * H)): 1200 * 500 * 570mm * work surface height : 720 mm * Display : LCD display * Air flow Velocity : Average of 0.3 ~0.5m/s * Material : Main Body : cold-rolled steel with antibacteria powder coating Work table : 304 stainless steel Side and front window : 5 mm toughened glass , anti -ultraviolet radiation *Pre-Filter : polyster fibre ,washable . *HEPA Filter : 99. 999% efficiency at 0.3 µm . * Noise : <60dB * Front window : Motorized . * Max opening : 520 mm * Fluorescent Lamp : 28W *1 * UV Lamp : 30W * 1 * Consumption : 400W * Caster : Universal wheel with leveling feet . * Power supply : 110~220V +/- 10%50Hz/60Hz * Standard Accessory : Fluorescent lamp , UV lamp * 2 ,Base stand , Gas tap , Socket * 2 . * Gross weight : 165 kg * Package Size : (w * D * H) : 1470 * 1060 * 1600 mm * An acrylic block type manometer to measure static pressure in the chamber has been installed. Two way gastap for gas line and Bunsen burner brash made has also been provided. Product have ISO 9001:2008, ISO 13485, CE certification	1no.
20.	Straw immersion tank,	Straw immersion tank, made by SS304, 18 gaugesheet , 500 lt capacity	1 no.
21.	Paddy Straw	Paddy Straw bundle	20 nos.
22.	Wheat bran	Wheat bran, 1kg	20 nos.
23.	Gypsum	Gypsum, 1kg	2 nos.
24.	Formalin (2%)	Formalin (2%), 2.5 lt	2 nos.
25.	Polythene	Polythene, 10 meter	2 nos.
26.	Hand Sprayer	Hand Sprayer 1lt capacity	5 nos.
27.	Calcium Sulphate	Calcium Sulphate, 1 kg	3 nos.
28.	Calcium Carbonate	Calcium Carbonate, 1 kg	3 nos.
29.	Dextrose	Dextrose, 500 gm	3 nos.
30.	Agar Powder	Agar Powder, 500gm	3 nos.
31.	Ethyl alcohol	Ethyl alcohol, 500ml	6 nos.
32.	Formaldehyde	Formaldehyde, 500ml	3 nos.

33.	Chlorox	Chlorox, 500 gm	3 nos.
34.	Lactic Acid	Lactic Acid, 500 ml	3 nos.
35.	Lactophenol	Lactophenol, 500 ml	2 nos.
36.	Yeast Extract	Yeast Extract, 500 ml	2 nos.
37.	Peptone	Peptone, 500 ml	2 nos.
38.	Malt Extract	Malt Extract, 500 ml	2 nos.
39.	Test tube ,borosilicate glass 18x15 ml	Test tube ,borosilicate glass 18x15 ml Heat Resistant, Annealing Surface	50 nos.
40.	Test tube ,borosilicate glass 15x15 ml	Test tube ,borosilicate glass 15x15 ml Heat Resistant, Annealing Surface	50 nos.
41.	Beaker, graduated , borosilicate glass 1000ml	Beaker, graduated, borosilicate glass 1000ml Heat Resistant, Annealing Surface	5 nos.
42.	Beaker, graduated , borosilicate glass 500ml	Beaker, graduated, borosilicate glass 500ml Heat Resistant, Annealing Surface	10 nos.
43.	Beaker, graduated , borosilicate glass 250ml	Beaker, graduated, borosilicate glass 250ml Heat Resistant, Annealing Surface	10 nos.
44.	Beaker, graduated , borosilicate glass 100ml	Beaker, graduated, borosilicate glass 100ml Heat Resistant, Annealing Surface	10 nos.
45.	Conical flask, graduated , borosilicate glass 500ml	Conical flask, graduated , borosilicate glass 500ml Heat Resistant, Annealing Surface	5 nos.
46.	Conical flask, graduated , borosilicate glass 250ml	Conical flask, graduated , borosilicate glass 250ml Heat Resistant, Annealing Surface	10 nos.
47.	Conical flask, graduated ,	Conical flask, graduated , borosilicate glass 100ml Heat Resistant, Annealing Surface	10 nos.

	borosilicat e glass 100ml		
48.	Pipette, graduated , borosilicate glass 50ml	Pipette, graduated , borosilicate glass 50ml Heat Resistant, Annealing Surface	5 nos.
49.	Pipette, graduated , borosilicate glass 25ml	Pipette, graduated , borosilicate glass 25ml Heat Resistant, Annealing Surface	5 nos.
50.	Pipette, graduated , borosilicate glass 10ml	Pipette, graduated , borosilicate glass 10ml Heat Resistant, Annealing Surface	5 nos.
51.	Pipette, graduated , borosilicate glass 5ml	Pipette, graduated , borosilicate glass 5ml Heat Resistant, Annealing Surface	5 nos.
52.	Pipette, graduated , borosilicate glass 2ml	Pipette, graduated , borosilicate glass 2ml Heat Resistant, Annealing Surface	5 nos.
53.	Pipette, graduated , borosilicate glass1ml	Pipette, graduated , borosilicate glass1ml Heat Resistant, Annealing Surface	5 nos.
54.	Burette 50ml , graduated , borosilicate glass (with ptfe stoppered),	Burette 50ml , graduated , borosilicate glass Heat Resistant, Annealing Surface (with ptfe stoppered),	6 nos.
55.	Volumetric flask, graduated, borosilicate glass 1000ml	Volumetric flask, graduated , borosilicate glass 1000ml Heat Resistant, Annealing Surface	5 nos.
56.	Volumetric flask ,graduated , borosilicate glass 500ml	Volumetric flask ,graduated , borosilicate glass 500ml Heat Resistant, Annealing Surface	5 nos.
57.	Volumetric flask ,graduated , borosilicate glass 250ml	Volumetric flask ,graduated , borosilicate glass 250ml Heat Resistant, Annealing Surface	10 nos.
58.	Volumetric flask ,graduated , borosilicate glass 100ml	Volumetric flask ,graduated , borosilicate glass 100ml Heat Resistant, Annealing Surface	10 nos.

59.	Measuring cylinder, graduated , borosilicate glass 1000ml	Measuring cylinder, graduated , borosilicate glass 1000ml Heat Resistant, Annealing Surface	6 nos.
60.	Measuring cylinder ,graduated , borosilicate glass 500ml	Measuring cylinder ,graduated , borosilicate glass 500ml Heat Resistant, Annealing Surface	6 nos.
61.	Measuring cylinder ,graduated , borosilicate glass 250ml	Measuring cylinder ,graduated , borosilicate glass 250ml Heat Resistant, Annealing Surface	6 nos.
62.	Measuring cylinder ,graduated , borosilicate glass 100ml	Measuring cylinder ,graduated , borosilicate glass 100ml Heat Resistant, Annealing Surface	6 nos.
63.	Measuring cylinder ,graduated , borosilicate glass 50ml	Measuring cylinder ,graduated , borosilicate glass 50ml Heat Resistant, Annealing Surface	6 nos.
64.	Measuring cylinder ,graduated , borosilicate glass 25ml	Measuring cylinder ,graduated , borosilicate glass 25ml Heat Resistant, Annealing Surface	6 nos.
65.	Measuring cylinder ,graduated , borosilicate glass 10ml	Measuring cylinder ,graduated , borosilicate glass 10ml Heat Resistant, Annealing Surface	6 nos.
66.	Funnel 60 deg angle long stem , borosilicate glass 75mm	Funnel 60 deg angle long stem , borosilicate glass 75mm Heat Resistant, Annealing Surface	10 nos.
67.	Glass rod 150 mm long, 5-6 mm dia borosilicate glass	Glass rod 150 mm long, 5-6 mm dia borosilicate glass Heat Resistant, Annealing Surface	20 nos.
68.	Porcelain basin 100 mm dia	Porcelain basin 100 mm dia Heat Resistant,	6 nos.
69.	Mortar/ pestle(porcelain) 100 mm	Mortar/ pestle(porcelain) 100 mm	2 nos.

70.	Mortar/ pestle(porcelain) 150 mm	Mortar/ pestle(porcelain) 150 mm	2 nos.
71.	Reagent bottle, borosilicate glass 250ml	Reagent bottle, borosilicate glass 250ml Heat Resistant, Annealing Surface	10 nos.
72.	Reagent bottle, borosilicate glass 500ml	Reagent bottle, borosilicate glass 500ml Heat Resistant, Annealing Surface	10 nos.
73.	Beaker, (Plastic)graduated, 1000ml	Beaker, (Plastic)graduated, 1000ml	10 nos.
74.	Beaker, (Plastic)graduated, 500ml	Beaker, (Plastic)graduated, 500ml	10 nos.
75.	Beaker, (Plastic)graduated, 250ml	Beaker, (Plastic)graduated, 250ml	10 nos.
76.	Beaker, (Plastic)graduated, 100ml	Beaker, (Plastic)graduated, 100ml	10 nos.
77.	Plastic bucket, 5lit	Plastic bucket, 5lit, heavy gauge nylon made	2 nos.
78.	Plastic bucket, 9lit	Plastic bucket, 9lit, heavy gauge nylon made	2 nos.
79.	Tray ,plastic, (12''×10'')	Tray ,plastic, (12''×10''), heavy gauge nylon made	6 nos.
80.	Tray ,plastic, (17''×12'')	Tray ,plastic, (17''×12''), heavy gauge nylon made	6 nos.
81.	Tray ,plastic, (19''×13'')	Tray ,plastic, (19''×13''), heavy gauge nylon made	6 nos.
82.	Tray,SS 2 NO, with handle	Tray,SS 2 NO, with handle, made by high quality heavy gauge low carbon food grade steel	3 nos.
83.	Tray,SS 3 NO, with handle	Tray,SS 3 NO, with handle, made by high quality heavy gauge low carbon food grade steel	3 nos.
84.	Tray,SS 4 NO, with handle	Tray,SS 4 NO, with handle, made by high quality heavy gauge low carbon food grade steel	3 nos.
85.	Spoon Spatula 6'' long ,SS	Spoon Spatula non-magnetic stainless steel with high polish one side spoon, 6'' long ,SS	6 nos.
86.	Spoon Spatula 8'' long ,SS	Spoon Spatula non-magnetic stainless steel with high polish one side spoon , 8'' long ,SS	6 nos.
87.	Spoon Spatula 10'' long ,SS	Spoon Spatula non-magnetic stainless steel with high polish one side spoon , 10'' long ,SS	6 nos.

88.	Plane Desiccators Dia 300mm , plastic made	Desiccators Dia 300mm, plastic made	2 nos.
89	Test tube holder (heavy)	Test tube holder (heavy)	10 nos.
90	Burette stand with base and double clamp, (plastic PP made)	Burette stand with base and double clamp, (plastic PP made)	6 nos.
91	Burette stand with base and single clamp, (plastic PP made)	Burette stand with base and single clamp, (plastic PP made)	6 nos.
92	Pipette stand (plastic PP made) (Horizontal)	Pipette stand (plastic PP made) (Horizontal)	6 nos.
93.	Pipette stand (plastic PP made) (Vertical)	Pipette stand (plastic PP made) (Vertical)	6 nos.
94.	Test tube stand (plastic PP made) Dia 20mm	Test tube stand (plastic PP made) Dia 20mm	6 nos.
95.	Test tube stand (plastic PP made) Dia 25mm	Test tube stand (plastic PP made) Dia 25mm	6 nos.
96.	Wash bottle, (plastic), 500 ml	Wash bottle, (plastic), 500 ml	12 nos.
97.	Filter stand with base and double clamp, (plastic PP made)	Filter stand with base and double clamp, (plastic PP made)	6 nos.
98.	Test tube stand(plastic PP made) Dia 20mm	Test tube stand (plastic PP made) Dia20mm	6 nos.
99.	pH Paper	pH range 1 to 14	10 nos.
100.	pH Buffer capsule/tablet, 10 caps in each pack,(pH 4, pH	pH Buffer capsule/tablet, 10 caps in each pack,(pH 4, pH 7, pH 9.2) Highly Pure, Analytical Grade	3 nos.

	7, pH 9.2)		
101.	Sodium hydroxide pallet,500gm	Sodium hydroxide pallet,500gm Highly Pure, Analytical Grade	2 nos.
102.	Concentrated HClacid,1 lit	Concentrated HCl acid,1 lit Highly Pure, Analytical Grade	2 nos.
103.	Potassium di hydrogen phosphate,500gm	Potassium di hydrogen phosphate,500gm Highly Pure, Analytical Grade	2 nos.
104.	Di potassium hydrogen phosphate,500gm	Di potassium hydrogen phosphate,500gm Highly Pure, Analytical Grade	2 nos.
105.	Potassium chloride,500gm	Potassium chloride,500gm Highly Pure, Analytical Grade	2 nos.
106.	Sodium chloride,500gm	Sodium chloride,500gm Highly Pure, Analytical Grade	2 nos.
107.	Phenolphthalein indicator(1% solution), 125 ml	Phenolphthalein indicator(1% solution), 125 ml Highly Pure, Analytical Grade	2 nos.
108.	Sodium bicarbonate,500 gm	Sodium bicarbonate,500gm Highly Pure, Analytical Grade	2 nos.
109.	Petridish , borosilicate glass 80x17mm	Petridish , borosilicate glass 80x17mm Heat Resistant, Annealing Surface	40 nos.
110.	Petridish , borosilicate glass100x17mm	Petridish , borosilicate glass100x17mm Heat Resistant, Annealing Surface	40 nos.
111	Plastic pouch with zip (10''×12'')	Plastic pouch with zip (10''×12''), per pack	100 nos.
112.	Plastic pouch with zip (12''×14'')	Plastic pouch with zip (12''×14''), per pack	100 nos.
113.	Spirit lamp SS with brass cover125ml	Spirit lamp SS with brass cover125ml	6 nos.
114.	Bunsen Burner, brass made, with regulator	Bunsen Burner, brass made with regulator,	3 nos.
115.	Spirit lamp SS with brass cover125ml	Spirit lamp SS with brass cover125ml	6 nos.
116.	Bunsen Burner, brass made, with regulator	Bunsen Burner, brass made with regulator,	4 nos.

117.	Sessios SS of high quality 8” long	Sessios SS of high quality 8” long	3 nos.
118.	Sessios SS of high quality 10” long	Sessios SS of high quality 10” long	3 nos.
119.	Rubber Gloves 14 no, pair	Rubber Gloves 14 no, pair	6 nos.
120.	Inoculation needle with nicrome wire, best quality	Inoculation needle with nicrome wire, best quality	10 nos.
121.	Butter paper roll of 100 piece	Butter paper roll of 100 piece	2 nos.
122.	Non absorbent cotton,400gm pack	Non absorbent cotton,400gm pack	10 nos.
123.	Ordinary Filter paper, 125mm dia	Ordinary Filter paper, 125mm dia	6 nos.
124.	Tissu paper roll, ordinary type	Tissu paper roll, ordinary type	10 nos.
125.	Brown paper roll 100 piece	Brown paper roll 100 piece	2 nos.
126.	Pipette jacket, SS made	Pipette jacket, SS made, used for holding 25ml. 10ml,5ml pipette	2 nos.
127.	Micropipette	Range: 100 - 1000 ml , with PVC made respective disposable microtips	3 nos.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
CTS/ATS	Food production	5	In Mushroom Cultivation	1	On Mushroom Production Technology training	NA
B.SC (Hons.)/ DIPLOMA	Food and nutrition or Food processing technology /Food Technology	3		1		
B. Tech/BE	Food technology / Food Processing Technology/Biochemical Engineering	2		1		

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Mushroom Cultivator" - STC - AGR/NSQF-2022/0231.Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". Minimum accepted score is 80%

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
CTS/ATS	Food production	3	In Mushroom Cultivation	1	Assessment on similar job role	NA
B.SC (Hons.)	Food and nutrition	2		1		
B. Tech/BE	Food technology / Biochemical Engineering	1		1		

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Mushroom Cultivator" - STC - AGR/NSQF-2022/0231. Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0". Minimum accepted score is 80%

Assessment Strategy

Assessment will be based on the concept of Independent Assessors empaneled with West Bengal State Council of Technical & Vocational Education & Skill Development (WBSCT&VE&SD), identified, selected, trained and certified on Assessment techniques. These Assessors would be aligned to assess as per the laid down criteria.

WBSCT&VE&SD would conduct assessment only at the training centers or designated testing centers authorized by WBSCT&VE&SD.

Ideally, the assessment will be a continuous process comprising of two distinct steps:

A. Continuous assessment by Trainers
B. Term end /Final Assessment by WBSCT&VE&SD

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. Each Performance Criteria in the NOS will be assigned marks for theory and/or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets/question banks created by subject matter experts through WBSCT&VE&SD, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

i. Written Test: This will comprise of (i) True/False Statements and/or (ii)Multiple Choice Questions and/or (iii) Matching Type Questions. Online system for this will be preferred.
ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc.
iii. Structured Viva-voce: This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand.

Marks distribution as per outcome

Course Name	Sr No	Outcome No.	Outcome Name	Th Hrs	Pr Hrs	Total marks Th	Total marks Pr
Mushroom Cultivator	1	AGR/0231/OC1,V 2.0	Identify the Scope & importance of Mushroom cultivation in India	20	10	50	40
	2	AGR/0231/OC2,V 2.0	Prepare & pasteurize the compost necessary to cultivate mushrooms	10	20	24	60
	3	AGR/0231/OC3,V 2.0	Select commercially important species of mushroom and design appropriate site to cultivate mushrooms	10	20	26	60
	4	AGR/0231/OC4,V 2.0	Undertake disease control and pest management activities, casing and pinning for mushroom cultivation	10	20	24	60
	5	AGR/0231/OC5,V 2.0	Demonstrate harvest & post-harvest procedures of mushrooms	10	50	26	140
	6	AGR/0231/OC6,V 2.0	Work in real job situation with special emphasis on basic safety and hazards in this domain.	0	120	0	440
	7	DGT/VSQ/N0102, V2.0	Employability Skills- 60 hrs.	60		50	
	TOTAL Theory 60 Hrs, Practical 120 Hrs, OJT 120 Hrs, Employability Skill 60 Hrs					200	800

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to Be known and/or understood in order to accomplish or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training Outcome is specified in terms of knowledge, understanding(theory)and skills (practical application).
OJT(M)	On-the-job training(Mandatory);trainees are mandated to complete specified hours of training on site
OJT(R)	On-the-job training(Recommended);trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psycho motor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards