



Qualification Pack



Technician - Machine Maintenance (mechatronics)

QP Code: MSME/PSS/Q4602

Version: 1.0

NSQF Level: 4.5

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Qualification Pack

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MSME/PSS/Q4602: Technician - Machine Maintenance (mechatronics)

Brief Job Description

This is a course specially designed to upgrade the Skills of ITI passed in the field of Industrial Maintenance to deal with the technological change, in which learners tend to get excellent career opportunities in the field of Machine maintenance. Learners who attain this are competent in Machine Maintenance and can get a job as Maintenance Technician.

Personal Attributes

Qualifying learners attain skills to work in the Maintenance department to carry out different types of Maintenance work for various machines & equipment used in Industry. Qualified learners will also become an entrepreneur.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [MSME/PSS/N4609: Machine Maintenance \(mechanical\)](#)
2. [MSME/PSS/N4608: Machine Maintenance \(Mechanical\)](#)
3. [MSME/PSS/N4607: Basics of Machine operation](#)
4. [MSME/PSS/N4606: Basics of Machine Operation](#)
5. [MSME/PSS/N4605: Machine Maintenance \(Electrical\)](#)
6. [MSME/PSS/N4604: Machine Maintenance \(Electrical\)](#)
7. [MSME/PSS/N4603: PLC Programming](#)
8. [MSME/PSS/N4602: Transmission & Control](#)
9. [MSME/PSS/N4601: Single Line diagram with ECAD](#)
10. [MSME/PSS/N4610: Employability skill](#)

Qualification Pack (QP) Parameters

Sector	Power
Sub-Sector	Maintenance Management



Qualification Pack

Occupation	Green Hydrogen - Operation & Maintenance
Country	India
NSQF Level	4.5
Credits	67
Aligned to NCO/ISCO/ISIC Code	7412.0801 (Electrical Mechanics and Fitters)
Minimum Educational Qualification & Experience	10th grade pass plus 2-year NTC OR Completed 2nd year of 3-year diploma (after 10th) and pursuing regular diploma OR Grade 8 pass with 2 years of (NTC/ NAC) after 8th with 3 Years of experience Relevant Experience OR Previous relevant Qualification of NSQF Level (4) OR Previous relevant Qualification of NSQF Level (3.5) with 1.5 years of experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	NA
Next Review Date	08/05/2028
NSQF Approval Date	08/05/2025
Version	1.0
Reference code on NQR	QG-4.5-PW-04169-2025-V1-MSME
NQR Version	1.0



Qualification Pack

MSME/PSS/N4609: Machine Maintenance (mechanical)

Description

Get practical knowledge about maintenance of machines. Understand different parts of machines. Get knowledge about find out problem from machines and understand problem. Understand how to solve the problem.

Scope

The scope covers the following :

- Get practical knowledge about maintenance of machines.
- Understand different parts of machines.
- Get knowledge about find out problem from machines and understand problem.
- Understand how to solve the problem.

Elements and Performance Criteria

MSME/ACCMM/06

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

- PC1.** • Explain types of maintenance, Preventive Maintenance, Corrective Maintenance, Breakdown Maintenance & CBM
- PC2.** • Explain about different mechanical component used in machines like gear, bearing, belts etc
- PC3.** Demonstrate gear dismounting and mounting procedure.
- PC4.** Demonstrate different dismounting and mounting procedure of Bearings.
- PC5.** • Demonstrate dismounting and mounting procedure of belts and other mechanical components.
- PC6.** Demonstrate different mechanism used in different conventional machines.
- PC7.** • Explain about pneumatic & hydraulic system, Advantages & Limitations of pneumatic & hydraulic system applications.
- PC8.** Explain about safety precaution in pneumatic and hydraulic operations.
- PC9.** • Demonstrate the pressure Measurement by different pressure gauges (Digital and Analog type).
- PC10.** Demonstrate different valves used in Pneumatic system
- PC11.** Explain about pneumatic linear actuators and Rotary actuators.
- PC12.** Demonstration of different pneumatic cylinders & motor actuation
- PC13.** • Explain about pneumatic components symbols and pneumatic schematic control logic diagrams
- PC14.** Explain about electro pneumatic system and electrical safety.
- PC15.** • Demonstration of different electro pneumatic components as switches, relays, sensors, AC and DC supply
- PC16.** • Explain about electro-pneumatic component symbols and electro- pneumatic schematic control logic diagrams.



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- PC17.** Demonstration of different electro pneumatic industrial control operations
- PC18.** Demonstration of OPC-Server communication with PC and electro-pneumatic system
- PC19.** Demonstration of PLC communication with PC and electro-pneumatic system.
- PC20.** Demonstrate hydraulics Basic controlling equipment and its use.
- PC21.** Demonstrate different parts of hydraulic pressure generation unit.
- PC22.** Explain about different filters and their application in hydraulic system
- PC23.** Demonstrate different valves used in Hydraulic system.
- PC24.** Explain about hydraulic linear actuators and Rotary actuators.
- PC25.** Demonstrate of different hydraulic cylinders & motor actuation
- PC26.**
 - Explain about hydraulic components symbols and hydraulic schematic control logic
 - diagrams
- PC27.** Explain about electro-hydraulic system and electrical safety
- PC28.**
 - Demonstration of different electro -hydraulic components as switches, relays, sensors,
 - AC and DC supply.
- PC29.**
 - Explain about electro-hydraulic component symbols and electro- hydraulic schematic
 - control logic diagrams
- PC30.** Demonstration of different electro-hydraulic industrial control operations.
- PC31.** Demonstration of OPC-Server communication with PC and electro-hydraulic system.
- PC32.** Demonstration of PLC communication with PC and electro-hydraulic system.
- PC33.** Demonstrate maintenance of hydraulic & pneumatic system.
- PC34.** Demonstrate different types of air compressor and its parts
- PC35.**
 - Demonstrate preventive and breakdown maintenance of different types of air
 - compressor
- PC36.** Demonstrate different types of industrial pumps and its parts.
- PC37.** Demonstrate installation procedure of different types of Industrial pump.
- PC38.**
 - Demonstrate preventive and breakdown maintenance of different types industrial
 - pump.
- PC39.**
 - Demonstrate preventive and breakdown Maintenance procedure of different machine
 - like turning, milling, grinding and drilling
- PC40.** Demonstrate different mechanism used in CNC machines.
- PC41.** Demonstrate different parts of CNC machines and its functions.
- PC42.** Demonstrate Preventive and breakdown maintenance of different CNC machines.



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/06</i>	-	100	-	-
PC1. <ul style="list-style-type: none">• Explain types of maintenance, Preventive Maintenance, Corrective Maintenance,• Breakdown Maintenance & CBM	-	-	-	-
PC2. <ul style="list-style-type: none">• Explain about different mechanical component used in machines like gear, bearing,• belts etc	-	-	-	-
PC3. Demonstrate gear dismounting and mounting procedure.	-	-	-	-
PC4. Demonstrate different dismounting and mounting procedure of Bearings.	-	-	-	-
PC5. <ul style="list-style-type: none">• Demonstrate dismounting and mounting procedure of belts and other mechanical• components.	-	-	-	-
PC6. Demonstrate different mechanism used in different conventional machines.	-	-	-	-
PC7. <ul style="list-style-type: none">• Explain about pneumatic & hydraulic system, Advantages & Limitations of pneumatic• & hydraulic system applications.	-	-	-	-
PC8. Explain about safety precaution in pneumatic and hydraulic operations.	-	-	-	-
PC9. <ul style="list-style-type: none">• Demonstrate the pressure Measurement by different pressure gauges (Digital and• Analog type).	-	-	-	-
PC10. Demonstrate different valves used in Pneumatic system	-	-	-	-
PC11. Explain about pneumatic linear actuators and Rotary actuators.	-	-	-	-
PC12. Demonstration of different pneumatic cylinders & motor actuation	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. <ul style="list-style-type: none">• Explain about pneumatic components symbols and pneumatic schematic control logic• diagrams	-	-	-	-
PC14. Explain about electro pneumatic system and electrical safety.	-	-	-	-
PC15. <ul style="list-style-type: none">• Demonstration of different electro pneumatic components as switches, relays,• sensors, AC and DC supply	-	-	-	-
PC16. <ul style="list-style-type: none">• Explain about electro-pneumatic component symbols and electro- pneumatic• schematic control logic diagrams.	-	-	-	-
PC17. Demonstration of different electro pneumatic industrial control operations	-	-	-	-
PC18. Demonstration of OPC-Server communication with PC and electro-pneumatic system	-	-	-	-
PC19. Demonstration of PLC communication with PC and electro-pneumatic system.	-	-	-	-
PC20. Demonstrate hydraulics Basic controlling equipment and its use.	-	-	-	-
PC21. Demonstrate different parts of hydraulic pressure generation unit.	-	-	-	-
PC22. Explain about different filters and their application in hydraulic system	-	-	-	-
PC23. Demonstrate different valves used in Hydraulic system.	-	-	-	-
PC24. Explain about hydraulic linear actuators and Rotary actuators.	-	-	-	-
PC25. Demonstrate of different hydraulic cylinders & motor actuation	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. <ul style="list-style-type: none">• Explain about hydraulic components symbols and hydraulic schematic control logic• diagrams	-	-	-	-
PC27. Explain about electro-hydraulic system and electrical safety	-	-	-	-
PC28. <ul style="list-style-type: none">• Demonstration of different electro -hydraulic components as switches, relays, sensors,• AC and DC supply.	-	-	-	-
PC29. <ul style="list-style-type: none">• Explain about electro-hydraulic component symbols and electro- hydraulic schematic• control logic diagrams	-	-	-	-
PC30. Demonstration of different electro-hydraulic industrial control operations.	-	-	-	-
PC31. Demonstration of OPC-Server communication with PC and electro-hydraulic system.	-	-	-	-
PC32. Demonstration of PLC communication with PC and electro-hydraulic system.	-	-	-	-
PC33. Demonstrate maintenance of hydraulic & pneumatic system.	-	-	-	-
PC34. Demonstrate different types of air compressor and its parts	-	-	-	-
PC35. <ul style="list-style-type: none">• Demonstrate preventive and breakdown maintenance of different types of air• compressor	-	-	-	-
PC36. Demonstrate different types of industrial pumps and its parts.	-	-	-	-
PC37. Demonstrate installation procedure of different types of Industrial pump.	-	-	-	-
PC38. <ul style="list-style-type: none">• Demonstrate preventive and breakdown maintenance of different types industrial• pump.	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC39. <ul style="list-style-type: none">• Demonstrate preventive and breakdown Maintenance procedure of different machine• like turning, milling, grinding and drilling	-	-	-	-
PC40. Demonstrate different mechanism used in CNC machines.	-	-	-	-
PC41. Demonstrate different parts of CNC machines and its functions.	-	-	-	-
PC42. Demonstrate Preventive and breakdown maintenance of different CNC machines.	-	-	-	-
NOS Total	-	100	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4609
NOS Name	Machine Maintenance (mechanical)
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	12
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4608: Machine Maintenance (Mechanical)

Description

Get practical knowledge about maintenance of machines. Understand different parts of machines. Get knowledge about find out problem from machines and understand problem. Understand how to solve the problem.

Scope

The scope covers the following :

- Get practical knowledge about maintenance of machines.
- Understand different parts of machines.
- Get knowledge about find out problem from machines and understand problem.
- Understand how to solve the problem.

Elements and Performance Criteria

MSME/ACCMM/06

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

- PC1.** • Explain types of maintenance, Preventive Maintenance, Corrective Maintenance, Breakdown Maintenance & CBM
- PC2.** • Explain about different mechanical component used in machines like gear, bearing, belts etc
- PC3.** Demonstrate gear dismounting and mounting procedure.
- PC4.** Demonstrate different dismounting and mounting procedure of Bearings.
- PC5.** • Demonstrate dismounting and mounting procedure of belts and other mechanical components.
- PC6.** Demonstrate different mechanism used in different conventional machines.
- PC7.** • Explain about pneumatic & hydraulic system, Advantages & Limitations of pneumatic & hydraulic system applications.
- PC8.** Explain about safety precaution in pneumatic and hydraulic operations.
- PC9.** • Demonstrate the pressure Measurement by different pressure gauges (Digital and Analog type).
- PC10.** Demonstrate different valves used in Pneumatic system
- PC11.** Explain about pneumatic linear actuators and Rotary actuators.
- PC12.** Demonstration of different pneumatic cylinders & motor actuation
- PC13.** • Explain about pneumatic components symbols and pneumatic schematic control logic diagrams
- PC14.** Explain about electro pneumatic system and electrical safety.
- PC15.** • Demonstration of different electro pneumatic components as switches, relays, sensors, AC and DC supply
- PC16.** • Explain about electro-pneumatic component symbols and electro- pneumatic schematic control logic diagrams.



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- PC17.** Demonstration of different electro pneumatic industrial control operations
- PC18.** Demonstration of OPC-Server communication with PC and electro-pneumatic system
- PC19.** Demonstration of PLC communication with PC and electro-pneumatic system.
- PC20.** Demonstrate hydraulics Basic controlling equipment and its use.
- PC21.** Demonstrate different parts of hydraulic pressure generation unit.
- PC22.** Explain about different filters and their application in hydraulic system
- PC23.** Demonstrate different valves used in Hydraulic system.
- PC24.** Explain about hydraulic linear actuators and Rotary actuators.
- PC25.** Demonstrate of different hydraulic cylinders & motor actuation
- PC26.**
 - Explain about hydraulic components symbols and hydraulic schematic control logic
 - diagrams
- PC27.** Explain about electro-hydraulic system and electrical safety
- PC28.**
 - Demonstration of different electro -hydraulic components as switches, relays, sensors,
 - AC and DC supply.
- PC29.**
 - Explain about electro-hydraulic component symbols and electro- hydraulic schematic
 - control logic diagrams
- PC30.** Demonstration of different electro-hydraulic industrial control operations.
- PC31.** Demonstration of OPC-Server communication with PC and electro-hydraulic system.
- PC32.** Demonstration of PLC communication with PC and electro-hydraulic system.
- PC33.** Demonstrate maintenance of hydraulic & pneumatic system.
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- PC37.** Demonstrate installation procedure of different types of Industrial pump.
- PC38.**
 - Demonstrate preventive and breakdown maintenance of different types industrial
 - pump.
- PC39.**
 - Demonstrate preventive and breakdown Maintenance procedure of different machine
 - like turning, milling, grinding and drilling
- PC40.** Demonstrate different mechanism used in CNC machines.
- PC41.** Demonstrate different parts of CNC machines and its functions.
- PC42.** Demonstrate Preventive and breakdown maintenance of different CNC machines.



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/06</i>	100	-	-	-
PC1. <ul style="list-style-type: none">• Explain types of maintenance, Preventive Maintenance, Corrective Maintenance,• Breakdown Maintenance & CBM	-	-	-	-
PC2. <ul style="list-style-type: none">• Explain about different mechanical component used in machines like gear, bearing,• belts etc	-	-	-	-
PC3. Demonstrate gear dismounting and mounting procedure.	-	-	-	-
PC4. Demonstrate different dismounting and mounting procedure of Bearings.	-	-	-	-
PC5. <ul style="list-style-type: none">• Demonstrate dismounting and mounting procedure of belts and other mechanical• components.	-	-	-	-
PC6. Demonstrate different mechanism used in different conventional machines.	-	-	-	-
PC7. <ul style="list-style-type: none">• Explain about pneumatic & hydraulic system, Advantages & Limitations of pneumatic• & hydraulic system applications.	-	-	-	-
PC8. Explain about safety precaution in pneumatic and hydraulic operations.	-	-	-	-
PC9. <ul style="list-style-type: none">• Demonstrate the pressure Measurement by different pressure gauges (Digital and• Analog type).	-	-	-	-
PC10. Demonstrate different valves used in Pneumatic system	-	-	-	-
PC11. Explain about pneumatic linear actuators and Rotary actuators.	-	-	-	-
PC12. Demonstration of different pneumatic cylinders & motor actuation	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. <ul style="list-style-type: none">• Explain about pneumatic components symbols and pneumatic schematic control logic• diagrams	-	-	-	-
PC14. Explain about electro pneumatic system and electrical safety.	-	-	-	-
PC15. <ul style="list-style-type: none">• Demonstration of different electro pneumatic components as switches, relays,• sensors, AC and DC supply	-	-	-	-
PC16. <ul style="list-style-type: none">• Explain about electro-pneumatic component symbols and electro- pneumatic• schematic control logic diagrams.	-	-	-	-
PC17. Demonstration of different electro pneumatic industrial control operations	-	-	-	-
PC18. Demonstration of OPC-Server communication with PC and electro-pneumatic system	-	-	-	-
PC19. Demonstration of PLC communication with PC and electro-pneumatic system.	-	-	-	-
PC20. Demonstrate hydraulics Basic controlling equipment and its use.	-	-	-	-
PC21. Demonstrate different parts of hydraulic pressure generation unit.	-	-	-	-
PC22. Explain about different filters and their application in hydraulic system	-	-	-	-
PC23. Demonstrate different valves used in Hydraulic system.	-	-	-	-
PC24. Explain about hydraulic linear actuators and Rotary actuators.	-	-	-	-
PC25. Demonstrate of different hydraulic cylinders & motor actuation	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. <ul style="list-style-type: none">• Explain about hydraulic components symbols and hydraulic schematic control logic• diagrams	-	-	-	-
PC27. Explain about electro-hydraulic system and electrical safety	-	-	-	-
PC28. <ul style="list-style-type: none">• Demonstration of different electro -hydraulic components as switches, relays, sensors,• AC and DC supply.	-	-	-	-
PC29. <ul style="list-style-type: none">• Explain about electro-hydraulic component symbols and electro- hydraulic schematic• control logic diagrams	-	-	-	-
PC30. Demonstration of different electro-hydraulic industrial control operations.	-	-	-	-
PC31. Demonstration of OPC-Server communication with PC and electro-hydraulic system.	-	-	-	-
PC32. Demonstration of PLC communication with PC and electro-hydraulic system.	-	-	-	-
PC33. Demonstrate maintenance of hydraulic & pneumatic system.	-	-	-	-
PC34. Demonstrate different types of air compressor and its parts	-	-	-	-
PC35. <ul style="list-style-type: none">• Demonstrate preventive and breakdown maintenance of different types of air• compressor	-	-	-	-
PC36. Demonstrate different types of industrial pumps and its parts.	-	-	-	-
PC37. Demonstrate installation procedure of different types of Industrial pump.	-	-	-	-
PC38. <ul style="list-style-type: none">• Demonstrate preventive and breakdown maintenance of different types industrial• pump.	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC39. <ul style="list-style-type: none">• Demonstrate preventive and breakdown Maintenance procedure of different machine• like turning, milling, grinding and drilling	-	-	-	-
PC40. Demonstrate different mechanism used in CNC machines.	-	-	-	-
PC41. Demonstrate different parts of CNC machines and its functions.	-	-	-	-
PC42. Demonstrate Preventive and breakdown maintenance of different CNC machines.	-	-	-	-
NOS Total	100	-	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4608
NOS Name	Machine Maintenance (Mechanical)
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	12
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4607: Basics of Machine operation

Description

understand about the type of Conventional & Non-Conventional Machines Understand about the cutting techniques like milling, turning, drilling, grinding understand about the simulate and operate CNC lathe and CNC milling. And others machine

Scope

The scope covers the following :

- understand about the type of Conventional & Non-Conventional Machines
- Understand about the cutting techniques like milling, turning, drilling, grinding
- understand about the simulate and operate CNC lathe and CNC milling. And others machine

Elements and Performance Criteria

MSME/ACCMM/05

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

- PC1.** Explain the types of Conventional & Non-Conventional Machines
- PC2.** Explain safety precautions followed in workshop
- PC3.** Explain Co-ordinate systems & points mode.
- PC4.** Identify Cutting Tools and Tool Holders from the standard (ISO Standard)
- PC5.** Explain selection procedure of standard tools/ cutters/Tool Holders as per requirement
- PC6.** Define Turning Insert Shapes
- PC7.** Describe Operating Conditions
- PC8.** Explain Work holding methods
- PC9.** Identify and Explain Tool holding Devices.
- PC10.** Explain the need of different oils & lubricants used.
- PC11.** Explain different conventional machine like lathe, milling, grinding machine etc
- PC12.** Describe different machine parts & accessories. Understand about the different types of operations
- PC13.** Explain the methods of machining.
- PC14.** Explain different cutting techniques like milling, turning, drilling, grinding etc.
- PC15.**
 - Describe different machine operations like: Plain & Step turning, Parting, Facing,
 - Profile, Drilling, Tapping, Reaming, polishing etc.
- PC16.**
 - Describe standard mathematical formula used in calculation required for machine tool
 - operation.
- PC17.** Calculations of machining parameters like cutting speed, cutting feed, depth of cut etc.
- PC18.** Explain different CNC machines like CNC milling and CNC turning machine.
- PC19.** Explain Axis – Orientation
- PC20.** Define Work sketch and Calculation



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- PC21.** Prepare programs, demonstrate, simulate and operate CNC lathe and CNC milling.
- PC22.** Prepare basic program and cut the material in auto/single auto mode.
- PC23.** Execute program and inspect simple geometrical forms / standard parts.
- PC24.**
 - Explain handling of tools, equipment & CNC Machines & Personal safety tool as per
 - company product requirement.



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/05</i>	-	100	-	-
PC1. Explain the types of Conventional & Non-Conventional Machines	-	-	-	-
PC2. Explain safety precautions followed in workshop	-	-	-	-
PC3. Explain Co-ordinate systems & points mode.	-	-	-	-
PC4. Identify Cutting Tools and Tool Holders from the standard (ISO Standard)	-	-	-	-
PC5. Explain selection procedure of standard tools/ cutters/Tool Holders as per requirement	-	-	-	-
PC6. Define Turning Insert Shapes	-	-	-	-
PC7. Describe Operating Conditions	-	-	-	-
PC8. Explain Work holding methods	-	-	-	-
PC9. Identify and Explain Tool holding Devices.	-	-	-	-
PC10. Explain the need of different oils & lubricants used.	-	-	-	-
PC11. Explain different conventional machine like lathe, milling, grinding machine etc	-	-	-	-
PC12. Describe different machine parts & accessories. Understand about the different types of operations	-	-	-	-
PC13. Explain the methods of machining.	-	-	-	-
PC14. Explain different cutting techniques like milling, turning, drilling, grinding etc.	-	-	-	-
PC15. <ul style="list-style-type: none">• Describe different machine operations like: Plain & Step turning, Parting, Facing,• Profile, Drilling, Tapping, Reaming, polishing etc.	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. <ul style="list-style-type: none">Describe standard mathematical formula used in calculation required for machine tool & operation.	-	-	-	-
PC17. Calculations of machining parameters like cutting speed, cutting feed, depth of cut etc.	-	-	-	-
PC18. Explain different CNC machines like CNC milling and CNC turning machine.	-	-	-	-
PC19. Explain Axis - Orientation	-	-	-	-
PC20. Define Work sketch and Calculation	-	-	-	-
PC21. Prepare programs, demonstrate, simulate and operate CNC lathe and CNC milling.	-	-	-	-
PC22. Prepare basic program and cut the material in auto/single auto mode.	-	-	-	-
PC23. Execute program and inspect simple geometrical forms / standard parts.	-	-	-	-
PC24. <ul style="list-style-type: none">Explain handling of tools, equipment & CNC Machines & Personal safety tool as per company product requirement.	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4607
NOS Name	Basics of Machine operation
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	4
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4606: Basics of Machine Operation

Description

understand about the type of Conventional & Non-Conventional Machines Understand about the cutting techniques like milling, turning, drilling, grinding understand about the simulate and operate CNC lathe and CNC milling. And others machine

Scope

The scope covers the following :

- understand about the type of Conventional & Non-Conventional Machines
- Understand about the cutting techniques like milling, turning, drilling, grinding
- understand about the simulate and operate CNC lathe and CNC milling. And others machine

Elements and Performance Criteria

MSME/ACCMM/05

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

- PC1.** Explain the types of Conventional & Non-Conventional Machines
- PC2.** Explain safety precautions followed in workshop
- PC3.** Explain Co-ordinate systems & points mode.
- PC4.** Identify Cutting Tools and Tool Holders from the standard (ISO Standard)
- PC5.** Explain selection procedure of standard tools/ cutters/Tool Holders as per requirement
- PC6.** Define Turning Insert Shapes
- PC7.** Describe Operating Conditions
- PC8.** Explain Work holding methods
- PC9.** Identify and Explain Tool holding Devices.
- PC10.** Explain the need of different oils & lubricants used.
- PC11.** Explain different conventional machine like lathe, milling, grinding machine etc
- PC12.** Describe different machine parts & accessories. Understand about the different types of operations
- PC13.** Explain the methods of machining.
- PC14.** Explain different cutting techniques like milling, turning, drilling, grinding etc.
- PC15.**
 - Describe different machine operations like: Plain & Step turning, Parting, Facing,
 - Profile, Drilling, Tapping, Reaming, polishing etc.
- PC16.**
 - Describe standard mathematical formula used in calculation required for machine tool
 - operation.
- PC17.** Calculations of machining parameters like cutting speed, cutting feed, depth of cut etc.
- PC18.** Explain different CNC machines like CNC milling and CNC turning machine.
- PC19.** Explain Axis – Orientation
- PC20.** Define Work sketch and Calculation



Qualification Pack

- PC21.** Prepare programs, demonstrate, simulate and operate CNC lathe and CNC milling.
- PC22.** Prepare basic program and cut the material in auto/single auto mode.
- PC23.** Execute program and inspect simple geometrical forms / standard parts.
- PC24.**
 - Explain handling of tools, equipment & CNC Machines & Personal safety tool as per
 - company product requirement.



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/05</i>	100	-	-	-
PC1. Explain the types of Conventional & Non-Conventional Machines	-	-	-	-
PC2. Explain safety precautions followed in workshop	-	-	-	-
PC3. Explain Co-ordinate systems & points mode.	-	-	-	-
PC4. Identify Cutting Tools and Tool Holders from the standard (ISO Standard)	-	-	-	-
PC5. Explain selection procedure of standard tools/ cutters/Tool Holders as per requirement	-	-	-	-
PC6. Define Turning Insert Shapes	-	-	-	-
PC7. Describe Operating Conditions	-	-	-	-
PC8. Explain Work holding methods	-	-	-	-
PC9. Identify and Explain Tool holding Devices.	-	-	-	-
PC10. Explain the need of different oils & lubricants used.	-	-	-	-
PC11. Explain different conventional machine like lathe, milling, grinding machine etc	-	-	-	-
PC12. Describe different machine parts & accessories. Understand about the different types of operations	-	-	-	-
PC13. Explain the methods of machining.	-	-	-	-
PC14. Explain different cutting techniques like milling, turning, drilling, grinding etc.	-	-	-	-
PC15. <ul style="list-style-type: none">• Describe different machine operations like: Plain & Step turning, Parting, Facing,• Profile, Drilling, Tapping, Reaming, polishing etc.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. <ul style="list-style-type: none">Describe standard mathematical formula used in calculation required for machine tooloperation.	-	-	-	-
PC17. Calculations of machining parameters like cutting speed, cutting feed, depth of cut etc.	-	-	-	-
PC18. Explain different CNC machines like CNC milling and CNC turning machine.	-	-	-	-
PC19. Explain Axis - Orientation	-	-	-	-
PC20. Define Work sketch and Calculation	-	-	-	-
PC21. Prepare programs, demonstrate, simulate and operate CNC lathe and CNC milling.	-	-	-	-
PC22. Prepare basic program and cut the material in auto/single auto mode.	-	-	-	-
PC23. Execute program and inspect simple geometrical forms / standard parts.	-	-	-	-
PC24. <ul style="list-style-type: none">Explain handling of tools, equipment & CNC Machines & Personal safety tool as percompany product requirement.	-	-	-	-
NOS Total	100	-	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4606
NOS Name	Basics of Machine Operation
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	4
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4605: Machine Maintenance (Electrical)

Description

Understand different types of machines and its function. Understand different moving mechanism of machine parts. Understand different parts in machine. Get knowledge about machine tool accessories

Scope

The scope covers the following :

- Understand different types of machines and its function.
- Understand different moving mechanism of machine parts.
- Understand different parts in machine.
- Get knowledge about machine tool accessories

Elements and Performance Criteria

MSME/ACCMM/04

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

- PC1.** Explain about basic fundamental of electricity
- PC2.** Demonstrate the PPE in Industrial Safety, Common hand tools used for electrical maintenance work
- PC3.** Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety
- PC4.** Demonstrate about Electrical shock and its effect, effect of electrical current on human being, method of avoiding electrical shock, first aid for victim of electric shock
- PC5.** Explain about types of fires and fire extinguishers and their appropriate using procedure
- PC6.** Explain Nature of electricity and fundamental laws. Single phase & three phase system
- PC7.** Demonstrate different switches like push button, selector switch, limit switch etc.
- PC8.** Demonstrate different electro- mechanical switching components as: relay, contactor and timer and testing of Relay, contactor and timer.
- PC9.** Demonstrate different control and power circuits using relay, contactor and timers.
- PC10.** Demonstrate about different sensors as: proximity inductive, proximity capacitive, proximity optical.
- PC11.** Demonstrate different control and power circuits using Sensors and relay.
- PC12.** Demonstrate the wiring and testing of control and power circuit of 3- ϕ star-delta starter and Electrical fault finding in both control and power circuit.
- PC13.** Explain about different types of earthings
- PC14.** Demonstrate the procedure of earth testing.
- PC15.** Demonstration of different types of electrical protective device as fuse, MCB, MCCB, RCCB, ELCB, OLR, MPCB.
- PC16.** Explain about different types of electrical cables, specifications, selection procedure, uses, and advantages.



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- PC17.** Demonstration of underground cable laying methods. Socketing, Glanding, Fault measuring
- PC18.** Explain types of maintenance, Preventive Maintenance, Corrective Maintenance, And Breakdown Maintenance
- PC19.** Demonstrate Installation, test and run of an electric DC motors.
- PC20.** Demonstrate Principle of Single phase and three phase motor and its application.
- PC21.** • Install and test an electric single phase AC motors and an electric 3 phase motor using
• different starters.
- PC22.** • Demonstrate MOTOR Preventive Maintenance, Corrective Maintenance and
• Breakdown Maintenance. Motor meggering, overhauling.
- PC23.** • Explain about different types of transformers, working principle, specification and
• calculations
- PC24.** Explain about different electronic components, applications and advantages
- PC25.** • Demonstrate different electronic component like resister, capacitor, diode, IC,
• transistor, SCR and its application.
- PC26.** • Demonstrate op-amp and its application. Use op-amp to design various electronic
• circuits, identify the pins of op-amp IC.
- PC27.** Demonstrate Analog & Digital IC testing by using IC tester.
- PC28.** • Demonstrate Function and working of oscilloscope and also measuring different
• quantities.
- PC29.** Demonstrate Function of frequency generator, counter & wave shaping etc
- PC30.** Explain procedures for preparing logic diagrams for different conventional machines.
- PC31.** • Demonstrate preparation of different machine logic circuit using different electrical
• components
- PC32.** • Demonstrate machine panel wiring, electrical fault finding procedures of different
• conventional machines.
- PC33.** • Demonstrate LT panel wiring using different electrical components and circuit
• breakers.
- PC34.** Explain the procedures for studing the wiring diagram of different CNC machines.
- PC35.** • Demonstrate CNC machine panel wiring, electrical fault finding procedures of different
• CNC machines.



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/04</i>	-	97	-	-
PC1. Explain about basic fundamental of electricity	-	-	-	-
PC2. Demonstrate the PPE in Industrial Safety, Common hand tools used for electrical maintenance work	-	-	-	-
PC3. Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety	-	-	-	-
PC4. Demonstrate about Electrical shock and its effect, effect of electrical current on human being, method of avoiding electrical shock, first aid for victim of electric shock	-	-	-	-
PC5. Explain about types of fires and fire extinguishers and their appropriate using procedure	-	-	-	-
PC6. Explain Nature of electricity and fundamental laws. Single phase & three phase system	-	-	-	-
PC7. Demonstrate different switches like push button, selector switch, limit switch etc.	-	-	-	-
PC8. Demonstrate different electro- mechanical switching components as: relay, contactor and timer and testing of Relay, contactor and timer.	-	-	-	-
PC9. Demonstrate different control and power circuits using relay, contactor and timers.	-	-	-	-
PC10. Demonstrate about different sensors as: proximity inductive, proximity capacitive, proximity optical.	-	-	-	-
PC11. Demonstrate different control and power circuits using Sensors and relay.	-	-	-	-
PC12. Demonstrate the wiring and testing of control and power circuit of 3- \emptyset star-delta starter and Electrical fault finding in both control and power circuit.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. Explain about different types of earthings	-	-	-	-
PC14. Demonstrate the procedure of earth testing.	-	-	-	-
PC15. Demonstration of different types of electrical protective device as fuse, MCB, MCCB, RCCB, ELCB, OLR, MPCB.	-	-	-	-
PC16. Explain about different types of electrical cables, specifications, selection procedure, uses, and advantages.	-	-	-	-
PC17. Demonstration of underground cable laying methods. Socketing, Glanding, Fault measuring	-	-	-	-
PC18. Explain types of maintenance, Preventive Maintenance, Corrective Maintenance, And Breakdown Maintenance	-	-	-	-
PC19. Demonstrate Installation, test and run of an electric DC motors.	-	-	-	-
PC20. Demonstrate Principle of Single phase and three phase motor and its application.	-	-	-	-
PC21. <ul style="list-style-type: none">• Install and test an electric single phase AC motors and an electric 3 phase motor using• different starters.	-	-	-	-
PC22. <ul style="list-style-type: none">• Demonstrate MOTOR Preventive Maintenance, Corrective Maintenance and• Breakdown Maintenance. Motor meggering, overhauling.	-	-	-	-
PC23. <ul style="list-style-type: none">• Explain about different types of transformers, working principle, specification and• calculations	-	-	-	-
PC24. Explain about different electronic components, applications and advantages	-	-	-	-
PC25. <ul style="list-style-type: none">• Demonstrate different electronic component like resister, capacitor, diode, IC,• transistor, SCR and its application.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. <ul style="list-style-type: none">• Demonstrate op-amp and its application. Use op-amp to design various electronic circuits, identify the pins of op-amp IC.	-	-	-	-
PC27. Demonstrate Analog & Digital IC testing by using IC tester.	-	-	-	-
PC28. <ul style="list-style-type: none">• Demonstrate Function and working of oscilloscope and also measuring different quantities.	-	-	-	-
PC29. Demonstrate Function of frequency generator, counter & wave shaping etc	-	-	-	-
PC30. Explain procedures for preparing logic diagrams for different conventional machines.	-	-	-	-
PC31. <ul style="list-style-type: none">• Demonstrate preparation of different machine logic circuit using different electrical components	-	-	-	-
PC32. <ul style="list-style-type: none">• Demonstrate machine panel wiring, electrical fault finding procedures of different conventional machines.	-	-	-	-
PC33. <ul style="list-style-type: none">• Demonstrate LT panel wiring using different electrical components and circuit breakers.	-	-	-	-
PC34. Explain the procedures for studying the wiring diagram of different CNC machines.	-	-	-	-
PC35. <ul style="list-style-type: none">• Demonstrate CNC machine panel wiring, electrical fault finding procedures of different CNC machines.	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4605
NOS Name	Machine Maintenance (Electrical)
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance, Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	11
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4604: Machine Maintenance (Electrical)

Description

Understand different types of machines and its function. Understand different moving mechanism of machine parts. Understand different parts in machine. Get knowledge about machine tool accessories

Scope

The scope covers the following :

- Understand different types of machines and its function.
- Understand different moving mechanism of machine parts.
- Understand different parts in machine.
- Get knowledge about machine tool accessories

Elements and Performance Criteria

MSME/ACCMM/04

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

- PC1.** Explain about basic fundamental of electricity
- PC2.** Demonstrate the PPE in Industrial Safety, Common hand tools used for electrical maintenance work
- PC3.** Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety
- PC4.** Demonstrate about Electrical shock and its effect, effect of electrical current on human being, method of avoiding electrical shock, first aid for victim of electric shock
- PC5.** Explain about types of fires and fire extinguishers and their appropriate using procedure
- PC6.** Explain Nature of electricity and fundamental laws. Single phase & three phase system
- PC7.** Demonstrate different switches like push button, selector switch, limit switch etc.
- PC8.** Demonstrate different electro- mechanical switching components as: relay, contactor and timer and testing of Relay, contactor and timer.
- PC9.** Demonstrate different control and power circuits using relay, contactor and timers.
- PC10.** Demonstrate about different sensors as: proximity inductive, proximity capacitive, proximity optical.
- PC11.** Demonstrate different control and power circuits using Sensors and relay.
- PC12.** Demonstrate the wiring and testing of control and power circuit of 3- ϕ star-delta starter and Electrical fault finding in both control and power circuit.
- PC13.** Explain about different types of earthings
- PC14.** Demonstrate the procedure of earth testing.
- PC15.** Demonstration of different types of electrical protective device as fuse, MCB, MCCB, RCCB, ELCB, OLR, MPCB.
- PC16.** Explain about different types of electrical cables, specifications, selection procedure, uses, and advantages.



Qualification Pack

- PC17.** Demonstration of underground cable laying methods. Socketing, Glanding, Fault measuring
- PC18.** Explain types of maintenance, Preventive Maintenance, Corrective Maintenance, And Breakdown Maintenance
- PC19.** Demonstrate Installation, test and run of an electric DC motors.
- PC20.** Demonstrate Principle of Single phase and three phase motor and its application.
- PC21.** • Install and test an electric single phase AC motors and an electric 3 phase motor using
• different starters.
- PC22.** • Demonstrate MOTOR Preventive Maintenance, Corrective Maintenance and
• Breakdown Maintenance. Motor meggering, overhauling.
- PC23.** • Explain about different types of transformers, working principle, specification and
• calculations
- PC24.** Explain about different electronic components, applications and advantages
- PC25.** • Demonstrate different electronic component like resister, capacitor, diode, IC,
• transistor, SCR and its application.
- PC26.** • Demonstrate op-amp and its application. Use op-amp to design various electronic
• circuits, identify the pins of op-amp IC.
- PC27.** Demonstrate Analog & Digital IC testing by using IC tester.
- PC28.** • Demonstrate Function and working of oscilloscope and also measuring different
• quantities.
- PC29.** Demonstrate Function of frequency generator, counter & wave shaping etc
- PC30.** Explain procedures for preparing logic diagrams for different conventional machines.
- PC31.** • Demonstrate preparation of different machine logic circuit using different electrical
• components
- PC32.** • Demonstrate machine panel wiring, electrical fault finding procedures of different
• conventional machines.
- PC33.** • Demonstrate LT panel wiring using different electrical components and circuit
• breakers.
- PC34.** Explain the procedures for studing the wiring diagram of different CNC machines.
- PC35.** • Demonstrate CNC machine panel wiring, electrical fault finding procedures of different
• CNC machines.



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/04</i>	100	-	-	-
PC1. Explain about basic fundamental of electricity	-	-	-	-
PC2. Demonstrate the PPE in Industrial Safety, Common hand tools used for electrical maintenance work	-	-	-	-
PC3. Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety	-	-	-	-
PC4. Demonstrate about Electrical shock and its effect, effect of electrical current on human being, method of avoiding electrical shock, first aid for victim of electric shock	-	-	-	-
PC5. Explain about types of fires and fire extinguishers and their appropriate using procedure	-	-	-	-
PC6. Explain Nature of electricity and fundamental laws. Single phase & three phase system	-	-	-	-
PC7. Demonstrate different switches like push button, selector switch, limit switch etc.	-	-	-	-
PC8. Demonstrate different electro- mechanical switching components as: relay, contactor and timer and testing of Relay, contactor and timer.	-	-	-	-
PC9. Demonstrate different control and power circuits using relay, contactor and timers.	-	-	-	-
PC10. Demonstrate about different sensors as: proximity inductive, proximity capacitive, proximity optical.	-	-	-	-
PC11. Demonstrate different control and power circuits using Sensors and relay.	-	-	-	-
PC12. Demonstrate the wiring and testing of control and power circuit of 3- \emptyset star-delta starter and Electrical fault finding in both control and power circuit.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. Explain about different types of earthings	-	-	-	-
PC14. Demonstrate the procedure of earth testing.	-	-	-	-
PC15. Demonstration of different types of electrical protective device as fuse, MCB, MCCB, RCCB, ELCB, OLR, MPCB.	-	-	-	-
PC16. Explain about different types of electrical cables, specifications, selection procedure, uses, and advantages.	-	-	-	-
PC17. Demonstration of underground cable laying methods. Socketing, Glanding, Fault measuring	-	-	-	-
PC18. Explain types of maintenance, Preventive Maintenance, Corrective Maintenance, And Breakdown Maintenance	-	-	-	-
PC19. Demonstrate Installation, test and run of an electric DC motors.	-	-	-	-
PC20. Demonstrate Principle of Single phase and three phase motor and its application.	-	-	-	-
PC21. <ul style="list-style-type: none">• Install and test an electric single phase AC motors and an electric 3 phase motor using• different starters.	-	-	-	-
PC22. <ul style="list-style-type: none">• Demonstrate MOTOR Preventive Maintenance, Corrective Maintenance and• Breakdown Maintenance. Motor meggering, overhauling.	-	-	-	-
PC23. <ul style="list-style-type: none">• Explain about different types of transformers, working principle, specification and• calculations	-	-	-	-
PC24. Explain about different electronic components, applications and advantages	-	-	-	-
PC25. <ul style="list-style-type: none">• Demonstrate different electronic component like resister, capacitor, diode, IC,• transistor, SCR and its application.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. <ul style="list-style-type: none">• Demonstrate op-amp and its application. Use op-amp to design various electronic circuits, identify the pins of op-amp IC.	-	-	-	-
PC27. Demonstrate Analog & Digital IC testing by using IC tester.	-	-	-	-
PC28. <ul style="list-style-type: none">• Demonstrate Function and working of oscilloscope and also measuring different quantities.	-	-	-	-
PC29. Demonstrate Function of frequency generator, counter & wave shaping etc	-	-	-	-
PC30. Explain procedures for preparing logic diagrams for different conventional machines.	-	-	-	-
PC31. <ul style="list-style-type: none">• Demonstrate preparation of different machine logic circuit using different electrical components	-	-	-	-
PC32. <ul style="list-style-type: none">• Demonstrate machine panel wiring, electrical fault finding procedures of different conventional machines.	-	-	-	-
PC33. <ul style="list-style-type: none">• Demonstrate LT panel wiring using different electrical components and circuit breakers.	-	-	-	-
PC34. Explain the procedures for studying the wiring diagram of different CNC machines.	-	-	-	-
PC35. <ul style="list-style-type: none">• Demonstrate CNC machine panel wiring, electrical fault finding procedures of different CNC machines.	-	-	-	-
NOS Total	100	-	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4604
NOS Name	Machine Maintenance (Electrical)
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance, Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	11
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4603: PLC Programming

Description

Understand about basic PLC programming understand about the plc software and logic gate programming
Developing new different logic plc programming And basic logic gate programming. Understand and design full electrical pr

Scope

The scope covers the following :

- Understand about basic PLC programming
- understand about the plc software and logic gate programming
- Developing new different logic plc programming And basic logic gate programming.
- Understand and design full electrical pr

Elements and Performance Criteria

MSME/ACCMM/03

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

- PC1.** Explain about industrial Automation, different type of automation & control, advantages & disadvantages, area of application, Levels of automation.
- PC2.** Explain Role of automation in various industrial process & future scopes.
- PC3.** Explain about Programmable Logic Controller (PLC), types of PLC.
- PC4.** Explain about Scan cycle, Work Memory, Data memory, PLC hardware modules, communication protocols and gateway
- PC5.** Demonstration of PLC Hardware installation and communication.
- PC6.** Explain Diagnosis of communication errors by indication and error-messages. Correction of error
- PC7.** Identify of PLC Hardware and do Practice to Communicate PLC with PC/LAPTOP system Installation of PLC software & simulation
- PC8.** Explain about PLC-programming software& features, IEC-programming languages as LAD, FBD, and STL And Create and test LAD, FBD, STL program using bit & blockOperands
- PC9.** Demonstrate LAD, FBD, STL programming language Logic Gates, AND, OR, NAND, NOR, XOR
- PC10.** Demonstrate on TIMER, COUNTER, and COMPARATOR blocks, in software
- PC11.** Explain about analog control in PLC, analog sensors and Voltage control method with 0-10v dc I/O signal /Current control method with 4-20 mA DC I/O signal.
- PC12.** Demonstrate analog signal I/O of PLC using Voltage control method with 0-10 v DC I/O signal /Current control method with 4-20 mA DC I/O signal.
- PC13.** Demonstrate connection of I/O field devices in signal I/O of plc. Connection of different sensors & actuators with signal modules
- PC14.**
 - Demonstrate connection of remote I/O PLC with server PLC using profibus cable and
 - Fault analysis of Profibus / Ethernet network.



Qualification Pack

- PC15.** Demonstrate of connection between hard ware module & I/O field devices.
- PC16.** Demonstrate the Connection of multiple users with multiple PLC using Ethernet communication network (LAN) and Fault finding with indication and system messages



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/03</i>	-	100	-	-
PC1. Explain about industrial Automation, different type of automation & control, advantages & disadvantages, area of application, Levels of automation.	-	-	-	-
PC2. Explain Role of automation in various industrial process & future scopes.	-	-	-	-
PC3. Explain about Programmable Logic Controller (PLC), types of PLC.	-	-	-	-
PC4. Explain about Scan cycle, Work Memory, Data memory, PLC hardware modules, communication protocols and gateway	-	-	-	-
PC5. Demonstration of PLC Hardware installation and communication.	-	-	-	-
PC6. Explain Diagnosis of communication errors by indication and error-messages. Correction of error	-	-	-	-
PC7. Identify of PLC Hardware and do Practice to Communicate PLC with PC/LAPTOP system Installation of PLC software & simulation	-	-	-	-
PC8. Explain about PLC-programming software & features, IEC-programming languages as LAD, FBD, and STL And Create and test LAD, FBD, STL program using bit & blockOperands	-	-	-	-
PC9. Demonstrate LAD, FBD, STL programming language Logic Gates, AND, OR, NAND, NOR, XOR	-	-	-	-
PC10. Demonstrate on TIMER, COUNTER, and COMPARATOR blocks, in software	-	-	-	-
PC11. Explain about analog control in PLC, analog sensors and Voltage control method with 0-10v dc I/O signal /Current control method with 4-20 mA DC I/O signal.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. Demonstrate analog signal I/O of PLC using Voltage control method with 0-10 v DC I/O signal /Current control method with 4-20 mA DC I/O signal.	-	-	-	-
PC13. Demonstrate connection of I/O field devices in signal I/O of plc. Connection of different sensors & actuators with signal modules	-	-	-	-
PC14. <ul style="list-style-type: none">• Demonstrate connection of remote I/O PLC with server PLC using profibus cable and• Fault analysis of Profibus / Ethernet network.	-	-	-	-
PC15. Demonstrate of connection between hard ware module & I/O field devices.	-	-	-	-
PC16. Demonstrate the Connection of multiple users with multiple PLC using Ethernet communication network (LAN) and Fault finding with indication and system messages	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4603
NOS Name	PLC Programming
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	3
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4602: Transmission & Control

Description

Understand about basic concept of Transmission and control. Get knowledge about Use of Voltmeter, Ammeter, Wattmeter, Energy meter, frequency meter, Power factor meter, multi-meters, Etc. Understand how to utilize different components of electrical like motor, transformer, measuring instruments, etc. Understand circuit connection in electrical.

Scope

The scope covers the following :

- Understand about basic concept of Transmission and control.
- Get knowledge about Use of Voltmeter, Ammeter, Wattmeter, Energy meter, frequency meter, Power factor meter, multi-meters, Etc.
- Understand how to utilize different components of electrical like motor, transformer, measuring instruments, etc.
- Understand circuit connection in electrical.

Elements and Performance Criteria

MSME/ACCMM/02

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

- PC1.** Explain about electrical safety rules, use of safety precaution kit and tools.
- PC2.** Explain the PPE in transmission and distribution system.
- PC3.**
 - Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety.
- PC4.**
 - Demonstrate measuring instrument for electrical parameter, Use of Voltmeter, Ammeter, Wattmeter, Energy meter, frequency meter, Power factor meter, multimeters, Clamp meters, Megger, Earth tester etc.
- PC5.** Explain about Nonconventional & Conventional Methods of power generation.
- PC6.** Explain about LT and HT substations.
- PC7.** Demonstrate single line diagram of electrical substation with symbols
- PC8.** Explain the power transmission and distribution by overhead line.
- PC9.** Explain the difference between AC and DC transmission lines.
- PC10.**
 - Explain about the main components of overhead transmission line like, conductor, insulator, pole and tower.
- PC11.** Explain the line support used in transmission line.
- PC12.** Explain the types of power lines with respect to classification of voltage.
- PC13.** Explain about corona effect, sag and skin effect on overhead transmission line
- PC14.** Explain the types of measuring instruments used in transmission line.
- PC15.** Explain single phase and three phase three wire system in transmission system



Qualification Pack

- PC16.** • Demonstrate different types of switch gear mechanism used in transmission and
• distribution system.
- PC17.** Demonstrate different types protecting devices used in transmission system
- PC18.** Explain the steps followed for testing of overhead line



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACCMM/02</i>	-	100	-	-
PC1. Explain about electrical safety rules, use of safety precaution kit and tools.	-	-	-	-
PC2. Explain the PPE in transmission and distribution system.	-	-	-	-
PC3. <ul style="list-style-type: none">• Explain Basic injury prevention, Hazard identification and avoidance, safety signs for• Danger, Warning, caution & personal safety.	-	-	-	-
PC4. <ul style="list-style-type: none">• Demonstrate measuring instrument for electrical parameter, Use of Voltmeter,• Ammeter, Wattmeter, Energy meter, frequency meter, Power factor meter, multimeters, Clamp meters, Megger, Earth tester etc.	-	-	-	-
PC5. Explain about Nonconventional & Conventional Methods of power generation.	-	-	-	-
PC6. Explain about LT and HT substations.	-	-	-	-
PC7. Demonstrate single line diagram of electrical substation with symbols	-	-	-	-
PC8. Explain the power transmission and distribution by overhead line.	-	-	-	-
PC9. Explain the difference between AC and DC transmission lines.	-	-	-	-
PC10. <ul style="list-style-type: none">• Explain about the main components of overhead transmission line like, conductor,• insulator, pole and tower.	-	-	-	-
PC11. Explain the line support used in transmission line.	-	-	-	-
PC12. Explain the types of power lines with respect to classification of voltage.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. Explain about corona effect, sag and skin effect on overhead transmission line	-	-	-	-
PC14. Explain the types of measuring instruments used in transmission line.	-	-	-	-
PC15. Explain single phase and three phase three wire system in transmission system	-	-	-	-
PC16. <ul style="list-style-type: none">• Demonstrate different types of switch gear mechanism used in transmission and• distribution system.	-	-	-	-
PC17. Demonstrate different types protecting devices used in transmission system	-	-	-	-
PC18. Explain the steps followed for testing of overhead line	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4602
NOS Name	Transmission & Control
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	4
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4601: Single Line diagram with ECAD

Description

Understanding the basic software of ECAD. Develop Single line diagram in E CAD software. Designing and development of electrical single line diagram in ECAD. Demonstrate Applying GD& T Symbols in drawings and Develop proper drawing layout Understood the E CAD software to development of Forrev electrical ckt diagram. Understands Panel design of FR, AD, panel design of FR with SD, schematic and panel report generation

Scope

The scope covers the following :

- Understanding the basic software of ECAD.
- Develop Single line diagram in E CAD software.
- Designing and development of electrical single line diagram in ECAD.
- Demonstrate Applying GD& T Symbols in drawings and Develop proper drawing layout
- Understood the E CAD software to development of Forrev electrical ckt diagram.
- Understands Panel design of FR, AD, panel design of FR with SD, schematic and panel report generation

Elements and Performance Criteria

MSME/ACCMM/01

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

- PC1.** Explain the Importance, scope and objective of Engineering Drawing
- PC2.**
- Demonstrate and explain drawing Standards: Size of drawing sheets -
 - Layout of drawing sheet - Title Blocks - Types of lines - Folding of drawing sheets.
- PC3.** Use of dimensioning techniques according to Standard of dimensions
- PC4.**
- Demonstrate orthographic & Isometric projection by using a viewing box
 - and a model, Use of symbol in projections -Front view, top view and side view.
- PC5.**
- Demonstrate the use of Auto CAD and Auto CAD interface, Apply
 - coordinates systems in auto CAD
- PC6.**
- Demonstrate the use of tool bars, Create solid field area (Hatching, Gradient) and Edit objects using the object property tool bar and various methods
- PC7.**
- Explain sketch settings and Style toolbar (text style, Multileader style etc.)
 - and Edit object using object property toolbar & various method.
- PC8.**
- Demonstrate Creating the replica of model using copy, array command
 - and Work with models in the modify toolbar.
- PC9.**
- Identify the appropriate Tool to create and modify the model and Change
 - the orientation of the object by aligns, offset, rotate command
- PC10.** Demonstrate Applying of standard dimension in a mechanical component.



Qualification Pack

- PC11.** • Explain about Use of dimensioning Methods: Linear, Align, ordinates, Radius, Diameter, Arc length, angular etc and Use of leader with text, block reference.
- PC12.** • Demonstrate Applying GD& T Symbols in drawings and Develop proper drawing layout.
- PC13.** Explain about single line diagram used for electrical wiring diagram.
- PC14.** Explain about procedures for drawing the single line diagram.
- PC15.** • Explain Use of AutoCAD Electrical software Workspace Awareness, Tool Bars, Tool Pallets ,
- PC16.** • Demonstrate Inserting component working with project manager. Overview about relay, contactor, timer and old.
- PC17.** • Explain about drafting features-copy, move, delete, scoot, align, link component, attribute reverse/ flip component, retag and update component
- PC18.** • Demonstrate Creation of for/Rev Control circuit of 3ph induction motor using contactor and for/rev control circuit of 1ph dc motor using relay
- PC19.** Demonstrate creation of Star-Delta Control Circuit, Start-Delta with ForRev Control Ckt
- PC20.** • Demonstrate creation of Multibus, wire number, wire color, wire size, wire labeling, and overview on timer power ckt of F-R.
- PC21.** • Explain Symbol builder, cuircuit builder, icon menu wizard, power ckt of Star-Delta, Star-Delta with F-R.
- PC22.** • Explain Panel design of F-R, A-D, panel design of F-R with S-D, schematic and panel report generation, export data to excel format



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ACMM/01</i>	-	100	-	-
PC1. Explain the Importance, scope and objective of Engineering Drawing	-	-	-	-
PC2. <ul style="list-style-type: none">• Demonstrate and explain drawing Standards: Size of drawing sheets -• Layout of drawing sheet - Title Blocks - Types of lines - Folding of drawing sheets.	-	-	-	-
PC3. Use of dimensioning techniques according to Standard of dimensions	-	-	-	-
PC4. <ul style="list-style-type: none">• Demonstrate orthographic & Isometric projection by using a viewing box• and a model, Use of symbol in projections -Front view, top view and side view.	-	-	-	-
PC5. <ul style="list-style-type: none">• Demonstrate the use of Auto CAD and Auto CAD interface, Apply• coordinates systems in auto CAD	-	-	-	-
PC6. <ul style="list-style-type: none">• Demonstrate the use of tool bars, Create solid field area (Hatching, Gradient) and Edit objects using the object property tool bar and various• methods	-	-	-	-
PC7. <ul style="list-style-type: none">• Explain sketch settings and Style toolbar (text style, Multileader style etc.)• and Edit object using object property toolbar & various method.	-	-	-	-
PC8. <ul style="list-style-type: none">• Demonstrate Creating the replica of model using copy, array command• and Work with models in the modify toolbar.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. <ul style="list-style-type: none">Identify the appropriate Tool to create and modify the model and Changethe orientation of the object by aligns, offset, rotate command	-	-	-	-
PC10. Demonstrate Applying of standard dimension in a mechanical component.	-	-	-	-
PC11. <ul style="list-style-type: none">Explain about Use of dimensioning Methods: Linear, Align, ordinates,Radius, Diameter, Arc length, angular etc and Use of leader with text, blockreference.	-	-	-	-
PC12. <ul style="list-style-type: none">Demonstrate Applying GD& T Symbols in drawings and Develop properdrawing layout.	-	-	-	-
PC13. Explain about single line diagram used for electrical wiring diagram.	-	-	-	-
PC14. Explain about procedures for drawing the single line diagram.	-	-	-	-
PC15. <ul style="list-style-type: none">Explain Use of AutoCAD Electrical software Workspace Awareness, ToolBars, Tool Pallets ,	-	-	-	-
PC16. <ul style="list-style-type: none">Demonstrate Inserting component working with project manager.Overview about relay, contactor, timer and old.	-	-	-	-
PC17. <ul style="list-style-type: none">Explain about drafting features-copy, move, delete, scoot, align, linkcomponent, attribute reverse/ flip component, retag and updatecomponent	-	-	-	-
PC18. <ul style="list-style-type: none">Demonstrate Creation of for/Rev Control circuit of 3ph induction motorusing contactor and for/rev control circuit of 1ph dc motor using relay	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. Demonstrate creation of Star-Delta Control Circuit, Start-Delta with ForRev Control Ckt	-	-	-	-
PC20. <ul style="list-style-type: none">• Demonstrate creation of Multibus, wire number, wire color, wire size,• wire labeling, and overview on timer power ckt of F-R.	-	-	-	-
PC21. <ul style="list-style-type: none">• Explain Symbol builder, cuircuit builder, icon menu wizard, power ckt of• Star-Delta, Star-Delta with F-R.	-	-	-	-
PC22. <ul style="list-style-type: none">• Explain Panel design of F-R, A-D, panel design of F-R with S-D, schematic• and panel report generation, export data to excel format	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4601
NOS Name	Single Line diagram with ECAD
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQF Clearance Date	08/05/2025



Qualification Pack

MSME/PSS/N4610: Employability skill

Description

Employability Skills

Scope

The scope covers the following :

- Employability Skills

Elements and Performance Criteria

MSME/ES/04

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

- PC1.** Explain occupational health and Safety.
- PC2.** Explain about safety rules.
- PC3.** State the name and location of people responsible for health and safety in the workplace
- PC4.**
 - Identify employability skills required for jobs in various industries. & Identify and explore
 - learning and employability portals
- PC5.**
 - Recognize the significance of constitutional values, including civic rights and duties,
 - citizenship, responsibility towards society etc. and personal values and ethics such as
 - honesty, integrity, caring and respecting others, etc.
- PC6.**
 - Follow environmentally sustainable practices.& Recognize the significance of 21st Century
 - Skills for employment
- PC7.**
 - Practice the 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
- PC8.**
 - Use basic English for everyday conversation in different contexts, in person and over the
 - telephone.
- PC9.** How to Minimize the team conflicts & Explain Ethics & values
- PC10.**
 - Read and understand routine information, notes, instructions, mails, letters etc. written
 - in English
- PC11.**
 - Read and understand routine information, notes, instructions, mails, letters etc. written
 - in English
- PC12.**
 - Prepare a career development plan with short- and long-term goals, based on aptitude &
 - Discuss the main types of electronic funds transfers
- PC13.**
 - Follow verbal and non-verbal communication etiquette and active listening techniques in
 - various settings & work collaboratively with others in a team
- PC14.**
 - Communicate and behave appropriately with all genders and PwD & escalate any issues
 - related to sexual harassment at workplace according to POSH Act.
- PC15.**
 - Select financial institutions, products and services as per requirement & carry out offline
 - and online financial transactions, safely and securely.



Qualification Pack

- PC16.** • Identify common components of salary and compute income, expenses, taxes, investments etc & identify relevant rights and laws and use legal aids to fight against legal exploitation
- PC17.** • Operate digital devices and carry out basic internet operations securely and safely & use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC18.** Use basic features of word processor, spreadsheets, and presentations.
- PC19.** • Identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research & develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC20.** • Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity
- PC21.** • Identify different types of customers & identify and respond to customer requests and needs in a professional manner
- PC22.** Follow appropriate hygiene and grooming standards
- PC23.** • Create a professional Curriculum vitae (Résumé) & search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC24.** • Apply to identified job openings using offline /online methods as per requirement & answer questions politely, with clarity and confidence, during recruitment and selection
- PC25.** • identify apprenticeship opportunities and register for it as per guidelines and requirements



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ES/04</i>	100	-	-	-
PC1. Explain occupational health and Safety.	-	-	-	-
PC2. Explain about safety rules.	-	-	-	-
PC3. State the name and location of people responsible for health and safety in the workplace	-	-	-	-
PC4. • Identify employability skills required for jobs in various industries. & Identify and explore • learning and employability portals	-	-	-	-
PC5. • Recognize the significance of constitutional values, including civic rights and duties, • citizenship, responsibility towards society etc. and personal values and ethics such as • honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC6. • Follow environmentally sustainable practices.& Recognize the significance of 21st Century • Skills for employment	-	-	-	-
PC7. • Practice the 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	-	-	-	-
PC8. • Use basic English for everyday conversation in different contexts, in person and over the • telephone.	-	-	-	-
PC9. How to Minimize the team conflicts & Explain Ethics & values	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. <ul style="list-style-type: none">• Read and understand routine information, notes, instructions, mails, letters etc. written• in English	-	-	-	-
PC11. <ul style="list-style-type: none">• Read and understand routine information, notes, instructions, mails, letters etc. written• in English	-	-	-	-
PC12. <ul style="list-style-type: none">• Prepare a career development plan with short- and long-term goals, based on aptitude &• Discuss the main types of electronic funds transfers	-	-	-	-
PC13. <ul style="list-style-type: none">• Follow verbal and non-verbal communication etiquette and active listening techniques in• various settings & work collaboratively with others in a team	-	-	-	-
PC14. <ul style="list-style-type: none">• Communicate and behave appropriately with all genders and PwD & escalate any issues• related to sexual harassment at workplace according to POSH Act.	-	-	-	-
PC15. <ul style="list-style-type: none">• Select financial institutions, products and services as per requirement & carry out offline• and online financial transactions, safely and securely.	-	-	-	-
PC16. <ul style="list-style-type: none">• Identify common components of salary and compute income, expenses, taxes,• investments etc & identify relevant rights and laws and use legal aids to fight against• legal exploitation	-	-	-	-
PC17. <ul style="list-style-type: none">• Operate digital devices and carry out basic internet operations securely and safely & use• e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC18. Use basic features of word processor, spreadsheets, and presentations.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. <ul style="list-style-type: none">Identify different types of Entrepreneurship and Enterprises and assess opportunities forpotential business through research & develop a business plan and a work model,considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC20. <ul style="list-style-type: none">Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for thepotential business opportunity	-	-	-	-
PC21. <ul style="list-style-type: none">Identify different types of customers & identify and respond to customer requests andneeds in a professional manner	-	-	-	-
PC22. Follow appropriate hygiene and grooming standards	-	-	-	-
PC23. <ul style="list-style-type: none">Create a professional Curriculum vitae (Résumé) & search for suitable jobs using reliableoffline and online sources such as Employment exchange, recruitment agencies,newspapers etc. and job portals, respectively	-	-	-	-
PC24. <ul style="list-style-type: none">Apply to identified job openings using offline /online methods as per requirement &answer questions politely, with clarity and confidence, during recruitment andselection	-	-	-	-
PC25. <ul style="list-style-type: none">Identify apprenticeship opportunities and register for it as per guidelines andrequirements	-	-	-	-
NOS Total	100	-	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/PSS/N4610
NOS Name	Employability skill
Sector	Power
Sub-Sector	
Occupation	Green Hydrogen - Operation & Maintenance
NSQF Level	4.5
Credits	4
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQC Clearance Date	08/05/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

As per QP

Minimum Aggregate Passing % at QP Level : 40

(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



Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MSME/PSS/N4609.Machine Maintenance (mechanical)	-	100	-	-	100	10
MSME/PSS/N4608.Machine Maintenance (Mechanical)	100	-	-	-	100	10
MSME/PSS/N4607.Basics of Machine operation	-	100	-	-	100	10
MSME/PSS/N4606.Basics of Machine Operation	100	-	-	-	100	10
MSME/PSS/N4605.Machine Maintenance (Electrical)	-	100	-	-	100	10
MSME/PSS/N4604.Machine Maintenance (Electrical)	100	-	-	-	100	10
MSME/PSS/N4603.PLC Programming	-	100	-	-	100	10
MSME/PSS/N4602.Transmission & Control	-	100	-	-	100	10
MSME/PSS/N4601.Single Line diagram with ECAD	-	100	-	-	100	10
MSME/PSS/N4610.Employability skill	100	-	-	-	100	10
Total	400	600	-	-	1000	100



Qualification Pack

Acronyms

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



Qualification Pack

Glossary

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



Qualification Pack

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