



## Qualification Pack

# Sr. Technician/ Supervisor - Tool and Die

QP Code: MSME/CSC/Q4801

Version: 1.0

NSQF Level: 4.5

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## Qualification Pack

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## Qualification Pack

### MSME/CSC/Q4801: Sr. Technician/ Supervisor - Tool and Die

#### Brief Job Description

To get an employment in Engineering/ Manufacturing industries.

#### Personal Attributes

To get an employment in Engineering/ Manufacturing industries.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [MSME/CSC/N4809: ON JOB TRAINING](#)
2. [MSME/CSC/N4807: PROJECT WORK-TOOL & DIE MAKING](#)
3. [MSME/CSC/N4804: INDUSTRIAL MANAGEMENT](#)
4. [MSME/CSC/N4803: WORKSHOP PRACTICE-V](#)
5. [MSME/CSC/N4802: TOOL DESIGN- ADVANCED PLASTIC MOULD](#)
6. [MSME/CSC/N4801: TOOL DESIGN- ADVANCED PLASTIC MOULD](#)
7. [MSME/CSC/N4810: EMPLOYBILITY SKILL 0000](#)
8. [MSME/CSC/N4808: EMPLOYBILITY SKILL 00](#)
9. [MSME/CSC/N4806: MAINTENANCE & SAFETY ENGINEERING](#)
10. [MSME/CSC/N4805: HYDRAULICS AND PNEUMATICS](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools
<b>Occupation</b>	Tool & Die Making
<b>Country</b>	India



## Qualification Pack

<b>NSQF Level</b>	4.5
<b>Credits</b>	40
<b>Aligned to NCO/ISCO/ISIC Code</b>	3115.13 (Tool Room Supervisor)
<b>Minimum Educational Qualification &amp; Experience</b>	Not Applicable (Technician- Tool and Die (Level-4) from MSME Technology Center)
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	15 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	30/04/2027
<b>NSQF Approval Date</b>	30/04/2024
<b>Version</b>	1.0
<b>Reference code on NQR</b>	QG-4.5-CG-02414-2024-V1-MSME
<b>NQR Version</b>	1.0



## Qualification Pack

### MSME/CSC/N4809: ON JOB TRAINING

#### Description

ON JOB TRAINING

#### Scope

The scope covers the following :

- ON JOB TRAINING

#### Elements and Performance Criteria

##### *MSME/DTE/40 ON JOB TRAINING*

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

- PC1.**
- OJT Report:
    - Mentioning the process and procedure carried by the trainee for completing the assign task duly endorsed by the authorized personnel and The report must contain:
      - ● Details of Department/ Organization
      - ● Brief Job description & work activity
      - ● Specific problem faces if any with the solution.
      - ● Technical Books referred during the OJT
      - ● Conclusion



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/40 ON JOB TRAINING</i>	-	-	100	100
<b>PC1.</b> <ul style="list-style-type: none"><li>• OJT Report:</li><li>• Mentioning the process and procedure carried by the trainee for completing the assign task duly endorsed by the authorized personnel and The report must contain:<ul style="list-style-type: none"><li>• ● Details of Department/ Organization</li><li>• ● Brief Job description &amp; work activity</li><li>• ● Specific problem faces if any with the solution.</li><li>• ● Technical Books referred during the OJT</li><li>• ● Conclusion</li></ul></li></ul>	-	-	-	-
<b>NOS Total</b>	-	-	100	100



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4809
<b>NOS Name</b>	ON JOB TRAINING
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	18
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQC Clearance Date</b>	30/04/2024



## Qualification Pack

# MSME/CSC/N4807: PROJECT WORK-TOOL & DIE MAKING

## Description

Get knowledge about practical work in workshop

## Scope

The scope covers the following :

- Get knowledge about practical work in workshop

## Elements and Performance Criteria

### *MSME/DTE/38 PROJECT WORK-TOOL & DIE MAKING*

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

- PC1.**
- Project Report Mentioning the process and procedure carried by the trainee for completing the assign task duly endorsed by the authorized personnel and The report must contain:
    - □ Details of Department/ Organization
    - □ Brief Job description & work activity
    - □ Specific problem faces if any with the solution.
    - □ Technical Books referred during the OJT
    - □ Conclusion



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/38 PROJECT WORK-TOOL &amp; DIE MAKING</i>	-	100	-	-
<b>PC1.</b> <ul style="list-style-type: none"><li>• Project Report Mentioning the process and procedure carried by</li><li>• the trainee for completing the assign task duly endorsed by the</li><li>• authorized personnel and The report must contain:<ul style="list-style-type: none"><li>• □ Details of Department/ Organization</li><li>• □ Brief Job description &amp; work activity</li><li>• □ Specific problem faces if any with the solution.</li><li>• □ Technical Books referred during the OJT</li><li>• □ Conclusion</li></ul></li></ul>	-	-	-	-
<b>NOS Total</b>	-	100	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4807
<b>NOS Name</b>	PROJECT WORK-TOOL & DIE MAKING
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQF Clearance Date</b>	30/04/2024



## Qualification Pack

### MSME/CSC/N4804: INDUSTRIAL MANAGEMENT

#### Description

Get knowledge about the management concepts, human behavior, organizational structure, supervisory functions.

#### Scope

The scope covers the following :

- Get knowledge about the management concepts, human behavior, organizational structure, supervisory
- functions.

#### Elements and Performance Criteria

##### *MSME/DTE/35 INDUSTRIAL MANAGEMENT*

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

- PC1.** • understand the system concept, management concept and  
• scientific management
- PC2.** Human relation
- PC3.** Structure of Industrial organization
- PC4.** Supervision & leadership
- PC5.** Industrial legislation
- PC6.** Wages and incentives
- PC7.** Accounting & budgeting
- PC8.** Purchase management



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/35 INDUSTRIAL MANAGEMENT</i>	<b>100</b>	-	-	-
<b>PC1.</b> • understand the system concept, management concept and • scientific management	-	-	-	-
<b>PC2.</b> Human relation	-	-	-	-
<b>PC3.</b> Structure of Industrial organization	-	-	-	-
<b>PC4.</b> Supervision & leadership	-	-	-	-
<b>PC5.</b> Industrial legislation	-	-	-	-
<b>PC6.</b> Wages and incentives	-	-	-	-
<b>PC7.</b> Accounting & budgeting	-	-	-	-
<b>PC8.</b> Purchase management	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4804
<b>NOS Name</b>	INDUSTRIAL MANAGEMENT
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQF Clearance Date</b>	30/04/2024



## Qualification Pack

### MSME/CSC/N4803: WORKSHOP PRACTICE-V

#### Description

Get knowledge about practical work in workshop.

#### Scope

The scope covers the following :

- Get knowledge about practical work in workshop.

#### Elements and Performance Criteria

##### *MSME/DTE/34 WORKSHOP PRACTICE-V*

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

- PC1.** • understand about selection of component according to the  
• requirement
- PC2.** • understand about component design based on the  
• selection of component and also selecting material as well.
- PC3.** • understand about material testing and selection based on  
• the selection of component and also selecting material as  
• well.
- PC4.** • understand about design of mould for the component  
• according to the requirement.
- PC5.** • understand about Design of core and cavity insert  
• material based on component.
- PC6.** • learn about preparation of part process sheet of various  
• parts of press tool.
- PC7.** • understand according to the design proper selection raw  
• material size and finally manufacturing the various parts of  
• the mould.
- PC8.** • learn about the assembly sequences of manufactured  
• mould parts during the workshop practice



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/34 WORKSHOP PRACTICE-V</i>	-	100	-	-
<b>PC1.</b> <ul style="list-style-type: none"><li>• understand about selection of component according to the</li><li>• requirement</li></ul>	-	-	-	-
<b>PC2.</b> <ul style="list-style-type: none"><li>• understand about component design based on the</li><li>• selection of component and also selecting material as well.</li></ul>	-	-	-	-
<b>PC3.</b> <ul style="list-style-type: none"><li>• understand about material testing and selection based on</li><li>• the selection of component and also selecting material as</li><li>• well.</li></ul>	-	-	-	-
<b>PC4.</b> <ul style="list-style-type: none"><li>• understand about design of mould for the component</li><li>• according to the requirement.</li></ul>	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>• understand about Design of core and cavity insert</li><li>• material based on component.</li></ul>	-	-	-	-
<b>PC6.</b> <ul style="list-style-type: none"><li>• learn about preparation of part process sheet of various</li><li>• parts of press tool.</li></ul>	-	-	-	-
<b>PC7.</b> <ul style="list-style-type: none"><li>• understand according to the design proper selection raw</li><li>• material size and finally manufacturing the various parts of</li><li>• the mould.</li></ul>	-	-	-	-
<b>PC8.</b> <ul style="list-style-type: none"><li>• learn about the assembly sequences of manufactured</li><li>• mould parts during the workshop practice</li></ul>	-	-	-	-
<b>NOS Total</b>	-	100	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4803
<b>NOS Name</b>	WORKSHOP PRACTICE-V
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	8
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQC Clearance Date</b>	30/04/2024



## Qualification Pack

# MSME/CSC/N4802: TOOL DESIGN- ADVANCED PLASTIC MOULD

## Description

Understand different types of moulding methods.

## Scope

The scope covers the following :

- Understand different types of moulding methods.

## Elements and Performance Criteria

### *MSME/DTE/33 TOOL DESIGN- ADVANCED PLASTIC MOULD*

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

- PC1.** Understand the classification of plastic.
- PC2.** Get knowledge about the concept of mould.
- PC3.** Application of mould.
- PC4.** Different types of injection moulding machine.
- PC5.**
  - Functions of compression moulding machines and their
  - process application
- PC6.** Transfer moulding machine and process
- PC7.**
  - Functions of transfer moulding machines and their process
  - application
- PC8.** understand the hot runner system,
- PC9.** feeding system,
- PC10.** heating system,
- PC11.** ejection system,
- PC12.** core & cavity retainer plates
- PC13.** Transfer mould and application
- PC14.**
  - understand different types of mould compression moulds
  - and transfer moulds
- PC15.**
  - Get knowledge about different parts of mould according
  - to different types of mould.
- PC16.**
  - Get knowledge about parting surface , relief of parting
  - surface
- PC17.** Get knowledge about selection of material for all parts.
- PC18.**
  - Understand process of manufacturing of each parts its
  - costing of manufacturing.
- PC19.** Perfect design of plastic mould.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/33 TOOL DESIGN- ADVANCED PLASTIC MOULD</i>	-	<b>100</b>	-	-
<b>PC1.</b> Understand the classification of plastic.	-	-	-	-
<b>PC2.</b> Get knowledge about the concept of mould.	-	-	-	-
<b>PC3.</b> Application of mould.	-	-	-	-
<b>PC4.</b> Different types of injection moulding machine.	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>• Functions of compression moulding machines and their</li><li>• process application</li></ul>	-	-	-	-
<b>PC6.</b> Transfer moulding machine and process	-	-	-	-
<b>PC7.</b> <ul style="list-style-type: none"><li>• Functions of transfer moulding machines and their process</li><li>• application</li></ul>	-	-	-	-
<b>PC8.</b> understand the hot runner system,	-	-	-	-
<b>PC9.</b> feeding system,	-	-	-	-
<b>PC10.</b> heating system,	-	-	-	-
<b>PC11.</b> ejection system,	-	-	-	-
<b>PC12.</b> core & cavity retainer plates	-	-	-	-
<b>PC13.</b> Transfer mould and application	-	-	-	-
<b>PC14.</b> <ul style="list-style-type: none"><li>• understand different types of mould compression moulds</li><li>• and transfer moulds</li></ul>	-	-	-	-
<b>PC15.</b> <ul style="list-style-type: none"><li>• Get knowledge about different parts of mould according</li><li>• to different types of mould.</li></ul>	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC16.</b> <ul style="list-style-type: none"><li>• Get knowledge about parting surface , relief of parting</li><li>• surface</li></ul>	-	-	-	-
<b>PC17.</b> Get knowledge about selection of material for all parts.	-	-	-	-
<b>PC18.</b> <ul style="list-style-type: none"><li>• Understand process of manufacturing of each parts its</li><li>• costing of manufacturing.</li></ul>	-	-	-	-
<b>PC19.</b> Perfect design of plastic mould.	-	-	-	-
<b>NOS Total</b>	-	<b>100</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4802
<b>NOS Name</b>	TOOL DESIGN- ADVANCED PLASTIC MOULD
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQF Clearance Date</b>	30/04/2024



## Qualification Pack

# MSME/CSC/N4801: TOOL DESIGN- ADVANCED PLASTIC MOULD

## Description

Understand different types of moulding methods.

## Scope

The scope covers the following :

- Understand different types of moulding methods.

## Elements and Performance Criteria

### *MSME/DTE/33 TOOL DESIGN- ADVANCED PLASTIC MOULD*

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

- PC1.** Understand the classification of plastic.
- PC2.** Get knowledge about the concept of mould.
- PC3.** Application of mould.
- PC4.** Different types of injection moulding machine.
- PC5.**
  - Functions of compression moulding machines and their
  - process application
- PC6.** Transfer moulding machine and process
- PC7.**
  - Functions of transfer moulding machines and their process
  - application
- PC8.** understand the hot runner system,
- PC9.** feeding system,
- PC10.** heating system,
- PC11.** ejection system,
- PC12.** core & cavity retainer plates
- PC13.** Transfer mould and application
- PC14.**
  - understand different types of mould compression moulds
  - and transfer moulds
- PC15.**
  - Get knowledge about different parts of mould according
  - to different types of mould.
- PC16.**
  - Get knowledge about parting surface , relief of parting
  - surface
- PC17.** Get knowledge about selection of material for all parts.
- PC18.**
  - Understand process of manufacturing of each parts its
  - costing of manufacturing.
- PC19.** Perfect design of plastic mould.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/33 TOOL DESIGN- ADVANCED PLASTIC MOULD</i>	<b>100</b>	-	-	-
<b>PC1.</b> Understand the classification of plastic.	-	-	-	-
<b>PC2.</b> Get knowledge about the concept of mould.	-	-	-	-
<b>PC3.</b> Application of mould.	-	-	-	-
<b>PC4.</b> Different types of injection moulding machine.	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>• Functions of compression moulding machines and their</li><li>• process application</li></ul>	-	-	-	-
<b>PC6.</b> Transfer moulding machine and process	-	-	-	-
<b>PC7.</b> <ul style="list-style-type: none"><li>• Functions of transfer moulding machines and their process</li><li>• application</li></ul>	-	-	-	-
<b>PC8.</b> understand the hot runner system,	-	-	-	-
<b>PC9.</b> feeding system,	-	-	-	-
<b>PC10.</b> heating system,	-	-	-	-
<b>PC11.</b> ejection system,	-	-	-	-
<b>PC12.</b> core & cavity retainer plates	-	-	-	-
<b>PC13.</b> Transfer mould and application	-	-	-	-
<b>PC14.</b> <ul style="list-style-type: none"><li>• understand different types of mould compression moulds</li><li>• and transfer moulds</li></ul>	-	-	-	-
<b>PC15.</b> <ul style="list-style-type: none"><li>• Get knowledge about different parts of mould according</li><li>• to different types of mould.</li></ul>	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC16.</b> <ul style="list-style-type: none"><li>• Get knowledge about parting surface , relief of parting</li><li>• surface</li></ul>	-	-	-	-
<b>PC17.</b> Get knowledge about selection of material for all parts.	-	-	-	-
<b>PC18.</b> <ul style="list-style-type: none"><li>• Understand process of manufacturing of each parts its</li><li>• costing of manufacturing.</li></ul>	-	-	-	-
<b>PC19.</b> Perfect design of plastic mould.	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4801
<b>NOS Name</b>	TOOL DESIGN- ADVANCED PLASTIC MOULD
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQF Clearance Date</b>	30/04/2024



## Qualification Pack

### MSME/CSC/N4810: EMPLOYABILITY SKILL 0000

#### Description

Understanding employability skills

#### Scope

The scope covers the following :

- Understanding employability skills

#### Elements and Performance Criteria

##### *MSME/DTE/41 EMPLOYABILITY SKILL*

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

- PC1.** Create a career development plan.
- PC2.** identify well-defined short- and long-term goals
- PC3.** Draft a professional Curriculum Vitae (CV)
- PC4.**
  - Do job search sources on employment exchanges,
  - recruitment agencies, and job portals respectively



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/41 EMPLOYABILITY SKILL</i>	<b>100</b>	-	-	-
<b>PC1.</b> Create a career development plan.	-	-	-	-
<b>PC2.</b> identify well-defined short- and long-term goals	-	-	-	-
<b>PC3.</b> Draft a professional Curriculum Vitae (CV)	-	-	-	-
<b>PC4.</b> <ul style="list-style-type: none"><li>• Do job search sources on employment exchanges,</li><li>• recruitment agencies, and job portals respectively</li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4810
<b>NOS Name</b>	EMPLOYABILITY SKILL 0000
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQC Clearance Date</b>	30/04/2024



## Qualification Pack

### MSME/CSC/N4808: EMPLOYABILITY SKILL 00

#### Description

Understand about employability

#### Scope

The scope covers the following :

- Understand about employability

#### Elements and Performance Criteria

##### *MSME/DTE/39 EMPLOYABILITY SKILL*

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

- PC1.** • The process of identifying opportunities for potential  
• business and relevant regulatory and statutory  
• requirements
- PC2.** A sample business plan
- PC3.** Different types of customers
- PC4.** Various tools used to collect customer feedback



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/39 EMPLOYABILITY SKILL</i>	<b>100</b>	-	-	-
<b>PC1.</b> <ul style="list-style-type: none"><li>• The process of identifying opportunities for potential</li><li>• business and relevant regulatory and statutory requirements</li></ul>	-	-	-	-
<b>PC2.</b> A sample business plan	-	-	-	-
<b>PC3.</b> Different types of customers	-	-	-	-
<b>PC4.</b> Various tools used to collect customer feedback	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4808
<b>NOS Name</b>	EMPLOYABILITY SKILL 00
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQC Clearance Date</b>	30/04/2024



## Qualification Pack

# MSME/CSC/N4806: MAINTENANCE & SAFETY ENGINEERING

## Description

Understand the basics of maintenance and general practice in industry.

## Scope

The scope covers the following :

- Understand the basics of maintenance and general practice in industry.

## Elements and Performance Criteria

### *MSME/DTE/37 MAINTENANCE & SAFETY ENGINEERING*

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

- PC1.** Understand importance of maintenance, need and scope
- PC2.** Understand methods of maintenance, preparation methods
- PC3.**
  - To understand effects of wear on performance, methods of
  - measurement of wear
- PC4.** Understand types of lubricants
- PC5.** Lubricating methods
- PC6.** Procedure of applying lubrication.
- PC7.**
  - Understand troubles during maintenance and their
  - remedies
- PC8.** Understand leakages and its prevention methods
- PC9.**
  - Understand types of assembly and disassembly and its
  - procedure
- PC10.**
  - Understand hydraulic system, pneumatic system, valves,
  - cylinder
- PC11.**
  - Understand the importance of preventive maintenance in
  - industry, methods of preventive maintenance
- PC12.**
  - Understand the safety principles and practices, safe
  - layout, safety aspects of machines to include putting
  - guards, provision of interlocking and vibration damping
  - etc.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/37 MAINTENANCE &amp; SAFETY ENGINEERING</i>	<b>100</b>	-	-	-
<b>PC1.</b> Understand importance of maintenance, need and scope	-	-	-	-
<b>PC2.</b> Understand methods of maintenance, preparation methods	-	-	-	-
<b>PC3.</b> • To understand effects of wear on performance, methods of • measurement of wear	-	-	-	-
<b>PC4.</b> Understand types of lubricants	-	-	-	-
<b>PC5.</b> Lubricating methods	-	-	-	-
<b>PC6.</b> Procedure of applying lubrication.	-	-	-	-
<b>PC7.</b> • Understand troubles during maintenance and their • remedies	-	-	-	-
<b>PC8.</b> Understand leakages and its prevention methods	-	-	-	-
<b>PC9.</b> • Understand types of assembly and disassembly and its • procedure	-	-	-	-
<b>PC10.</b> • Understand hydraulic system, pneumatic system, valves, • cylinder	-	-	-	-
<b>PC11.</b> • Understand the importance of preventive maintenance in • industry, methods of preventive maintenance	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> <ul style="list-style-type: none"><li>• Understand the safety principles and practices, safe</li><li>• layout, safety aspects of machines to include putting</li><li>• guards, provision of interlocking and vibration damping</li><li>• etc.</li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4806
<b>NOS Name</b>	MAINTENANCE & SAFETY ENGINEERING
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQF Clearance Date</b>	30/04/2024



## Qualification Pack

# MSME/CSC/N4805: HYDRAULICS AND PNEUMATICS

## Description

Grasp the basics of hydraulics and pneumatics and be aware of the safety measures associated with these systems.

## Scope

The scope covers the following :

- Grasp the basics of hydraulics and pneumatics and be aware of the safety measures associated with these
- systems.

## Elements and Performance Criteria

### *MSME/DTE/36 HYDRAULICS AND PNEUMATICS*

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

- PC1.** • Grasp the basics of hydraulics and pneumatics and be
  - aware of the safety measures associated with these
  - systems.
- PC2.** • Analyze fluid properties and understand how pressure and
  - flow affect fluid behavior.
- PC3.** • Students will be proficient in designing, assembling, and
  - troubleshooting hydraulic systems.
- PC4.** • Students will gain the skills required to design, build, and
  - maintain pneumatic systems.
- PC5.** • Students will understand the diverse applications of fluid
  - power systems in industrial settings
- PC6.** • Students will be aware of advanced fluid power
  - technologies and future trends in the field.
- PC7.** • Students will demonstrate their ability to apply their
  - knowledge to a real-world project and pass the final
  - assessment.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/DTE/36 HYDRAULICS AND PNEUMATICS</i>	<b>100</b>	-	-	-
<b>PC1.</b> <ul style="list-style-type: none"><li>Grasp the basics of hydraulics and pneumatics and be</li><li>aware of the safety measures associated with these</li><li>systems.</li></ul>	-	-	-	-
<b>PC2.</b> <ul style="list-style-type: none"><li>Analyze fluid properties and understand how pressure and</li><li>flow affect fluid behavior.</li></ul>	-	-	-	-
<b>PC3.</b> <ul style="list-style-type: none"><li>Students will be proficient in designing, assembling, and</li><li>troubleshooting hydraulic systems.</li></ul>	-	-	-	-
<b>PC4.</b> <ul style="list-style-type: none"><li>Students will gain the skills required to design, build, and</li><li>maintain pneumatic systems.</li></ul>	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>Students will understand the diverse applications of fluid</li><li>power systems in industrial settings</li></ul>	-	-	-	-
<b>PC6.</b> <ul style="list-style-type: none"><li>Students will be aware of advanced fluid power</li><li>technologies and future trends in the field.</li></ul>	-	-	-	-
<b>PC7.</b> <ul style="list-style-type: none"><li>Students will demonstrate their ability to apply their</li><li>knowledge to a real-world project and pass the final</li><li>assessment.</li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N4805
<b>NOS Name</b>	HYDRAULICS AND PNEUMATICS
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Tool & Die Making
<b>NSQF Level</b>	4.5
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/04/2024
<b>Next Review Date</b>	30/04/2027
<b>NSQC Clearance Date</b>	30/04/2024

### 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.)

#### Minimum Passing % at NOS Level: 40

**(Please note:** A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

#### Assessment Weightage

Compulsory NOS



### Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MSME/CSC/N4809.ON JOB TRAINING	-	-	100	100	200	10
MSME/CSC/N4807.PROJECT WORK-TOOL & DIE MAKING	-	100	-	-	100	10
MSME/CSC/N4804.INDUSTRIAL MANAGEMENT	100	-	-	-	100	10
MSME/CSC/N4803.WORKSHOP PRACTICE-V	-	100	-	-	100	10
MSME/CSC/N4802.TOOL DESIGN-ADVANCED PLASTIC MOULD	-	100	-	-	100	10
MSME/CSC/N4801.TOOL DESIGN-ADVANCED PLASTIC MOULD	100	-	-	-	100	10
MSME/CSC/N4810.EMPLOYBILITY SKILL 0000	100	-	-	-	100	10
MSME/CSC/N4808.EMPLOYBILITY SKILL 00	100	-	-	-	100	10
MSME/CSC/N4806.MAINTENANCE & SAFETY ENGINEERING	100	-	-	-	100	10
MSME/CSC/N4805.HYDRAULICS AND PNEUMATICS	100	-	-	-	100	10
<b>Total</b>	<b>600</b>	<b>300</b>	<b>100</b>	<b>100</b>	<b>1100</b>	<b>100</b>



## Qualification Pack

### Acronyms

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



## Qualification Pack

### Glossary

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



## Qualification Pack

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