



## Qualification Pack

# JR. DESIGNER - TOOL

QP Code: MSME/CSC/Q3201

Version: 1.0

NSQF Level: 4.5

MSME TECHNOLOGY CENTRE ||  
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## Qualification Pack

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## Qualification Pack

### MSME/CSC/Q3201: JR. DESIGNER - TOOL

#### Brief Job Description

The learner who attend this qualification shall be able to Assist the Sr. Tool Designer in Designing the Tool

#### Personal Attributes

The learner who attend this qualification shall be able to Assist the Sr. Tool Designer in Designing the Tool

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [MSME/CSC/N3201: Create & Modify Part Model using CAD Software](#)
2. [MSME/CSC/N3210: Design of Moulds](#)
3. [MSME/CSC/N3209: Design of Mould](#)
4. [MSME/CSC/N3208: Design of Press Tools](#)
5. [MSME/CSC/N3207: Design of Press Tools](#)
6. [MSME/CSC/N3206: Design of Jigs & Fixtures](#)
7. [MSME/CSC/N3205: Design of Jigs & Fixtures](#)
8. [MSME/CSC/N3204: Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software](#)
9. [MSME/CSC/N3203: Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software](#)
10. [MSME/CSC/N3202: Create & Modify Part Model using CAD Software](#)
11. [MSME/CSC/N3211: Employability skills 04](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools



## Qualification Pack

<b>Occupation</b>	Designing
<b>Country</b>	India
<b>NSQF Level</b>	4.5
<b>Credits</b>	20
<b>Aligned to NCO/ISCO/ISIC Code</b>	(Tool Designer)
<b>Minimum Educational Qualification &amp; Experience</b>	Pursuing 3rd year of 3-year diploma after 10th with NA of experience OR Pursuing 3rd year of 3-year diploma after 10th with NA of experience OR Certificate-NSQF (NSQF Level 4 in the field of Mechanical Design / Tool Design ) with 1.5 years of experience
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 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>	NCVET- QG-4.5-CG-02406-2024-V1-MSME
<b>NQR Version</b>	1.0



## Qualification Pack

### MSME/CSC/N3201: Create & Modify Part Model using CAD Software

#### Description

After completion of course Student should be able to Understand types of different CAD/CAM/CAE software.

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand types of different CAD/CAM/CAE software.

#### Elements and Performance Criteria

##### *MSME/MCCTD/01 Create & Modify Part Model using CAD Software*

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

- PC1.** • Gather accurate information on the requirements of the CAD/CAM/CAE software in Existing industries.
- PC2.** Identify any unique or specific features that need particular consideration.
- PC3.** Identify the system requirement to run the CAD/CAM/CAE Software
- PC4.** • Record all relevant information in the appropriate information systems for future use
- PC5.** • Confirm the operational and functional requirements of the CAD/CAM/CAE Software
- PC6.** Identify the field to use CAD/CAM/CAE Software use
- PC7.** Ensure that the design brief captures all the requirements of the customer
- PC8.** Ensure the use of CAD technology to design and design documentation
- PC9.** Describe and classify types drawing generation using CAD Software
- PC10.** .Define the dimension and symbol in drawing sheet using CAD
- PC11.** Generation of different types of view using Different CAD Software
- PC12.** Create different type of table hole table, Bill of material, Revision table etc.
- PC13.** To generate the associative drawing using medium end and high end software
- PC14.** Stetting of drawing for print by using plotter, printer using CAD
- PC15.** Create drawing template for production drawing in CAD
- PC16.** Mange the drawing properties using CAD
- PC17.** Edit or modify the CAD Drawing / Model using Solidworks.
- PC18.** • Understand Basic Part Modeling, Basic Modeling, Terminology, Choosing the Best Profile, Choosing the Sketch Plane, Details of the Part feature.
- PC19.** • Clarify of Knowledge to the assembly constraint & develop different types of assembly design by using Solid Work.
- PC20.** • Obtain and review existing information with reference to the specified design requirement like 2D drawing and 3D model, existing sample, etc.
- PC21.** Deliver the designs in the appropriate format to the customers



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- PC22.** Confirm and agree understanding of the design requirements
- PC23.** Deal with problems relating to the design requirements and agreed solutions
- PC24.** • Identify design options which will meet requirements and the design  
• specification
- PC25.** • Ensure that the designs comply with all relevant regulations, standards  
• directives or codes of practice
- PC26.** • Deal promptly and effectively with problems within your control and seek help  
• and guidance from the relevant people if you have problems that you cannot  
• resolve
- PC27.** Ensure that the designs are protected in line with organizational procedures
- PC28.** • Evaluate the design against the established criteria, using appropriate  
• evaluation methods
- PC29.** • Develop a schedule for the design process e.g. works order date, plan date,  
• actual completion date.
- PC30.** Save and store the design documentation as per organizational guidelines
- PC31.** • Communicate information to the appropriate people using various company  
• specific media



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/01 Create &amp; Modify Part Model using CAD Software</i>	<b>100</b>	-	-	-
<b>PC1.</b> <ul style="list-style-type: none"><li>Gather accurate information on the requirements of the CAD/CAM/CAE software in Existing industries.</li></ul>	-	-	-	-
<b>PC2.</b> Identify any unique or specific features that need particular consideration.	-	-	-	-
<b>PC3.</b> Identify the system requirement to run the CAD/CAM/CAE Software	-	-	-	-
<b>PC4.</b> <ul style="list-style-type: none"><li>Record all relevant information in the appropriate information systems for</li><li>future use</li></ul>	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>Confirm the operational and functional requirements of the CAD/CAM/CAE</li><li>Software</li></ul>	-	-	-	-
<b>PC6.</b> Identify the field to use CAD/CAM/CAE Software use	-	-	-	-
<b>PC7.</b> Ensure that the design brief captures all the requirements of the customer	-	-	-	-
<b>PC8.</b> Ensure the use of CAD technology to design and design documentation	-	-	-	-
<b>PC9.</b> Describe and classify types drawing generation using CAD Software	-	-	-	-
<b>PC10.</b> Define the dimension and symbol in drawing sheet using CAD	-	-	-	-
<b>PC11.</b> Generation of different types of view using Different CAD Software	-	-	-	-
<b>PC12.</b> Create different type of table hole table, Bill of material, Revision table etc.	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> To generate the associative drawing using medium end and high end software	-	-	-	-
<b>PC14.</b> Stetting of drawing for print by using plotter, printer using CAD	-	-	-	-
<b>PC15.</b> Create drawing template for production drawing in CAD	-	-	-	-
<b>PC16.</b> Mange the drawing properties using CAD	-	-	-	-
<b>PC17.</b> Edit or modify the CAD Drawing / Model using Solidworks.	-	-	-	-
<b>PC18.</b> <ul style="list-style-type: none"><li>• Understand Basic Part Modeling, Basic Modeling, Terminology, Choosing the</li><li>• Best Profile, Choosing the Sketch Plane, Details of the Part feature.</li></ul>	-	-	-	-
<b>PC19.</b> <ul style="list-style-type: none"><li>• Clarify of Knowledge to the assembly constraint &amp; develop different types of</li><li>• assembly design by using Solid Work.</li></ul>	-	-	-	-
<b>PC20.</b> <ul style="list-style-type: none"><li>• Obtain and review existing information with reference to the specified design</li><li>• requirement like 2D drawing and 3D model, existing sample, etc.</li></ul>	-	-	-	-
<b>PC21.</b> Deliver the designs in the appropriate format to the customers	-	-	-	-
<b>PC22.</b> Confirm and agree understanding of the design requirements	-	-	-	-
<b>PC23.</b> Deal with problems relating to the design requirements and agreed solutions	-	-	-	-
<b>PC24.</b> <ul style="list-style-type: none"><li>• Identify design options which will meet requirements and the design</li><li>• specification</li></ul>	-	-	-	-
<b>PC25.</b> <ul style="list-style-type: none"><li>• Ensure that the designs comply with all relevant regulations, standards</li><li>• directives or codes of practice</li></ul>	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC26.</b> <ul style="list-style-type: none"><li>Deal promptly and effectively with problems within your control and seek help</li><li>and guidance from the relevant people if you have problems that you cannot</li><li>resolve</li></ul>	-	-	-	-
<b>PC27.</b> Ensure that the designs are protected in line with organizational procedures	-	-	-	-
<b>PC28.</b> <ul style="list-style-type: none"><li>Evaluate the design against the established criteria, using appropriate</li><li>evaluation methods</li></ul>	-	-	-	-
<b>PC29.</b> <ul style="list-style-type: none"><li>Develop a schedule for the design process e.g. works order date, plan date,</li><li>actual completion date.</li></ul>	-	-	-	-
<b>PC30.</b> Save and store the design documentation as per organizational guidelines	-	-	-	-
<b>PC31.</b> <ul style="list-style-type: none"><li>Communicate information to the appropriate people using various company</li><li>specific media</li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3201
<b>NOS Name</b>	Create & Modify Part Model using CAD Software
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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/N3210: Design of Moulds

#### Description

After completion of course Student should be able to Understand clearly the tool design parameters of Mould

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand clearly the tool design parameters of Mould

#### Elements and Performance Criteria

##### *MSME/MCCTD/05 Design of Mould*

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

- PC1.** Describe terminology in moulds
- PC2.** List different types moulds & elements of moulds
- PC3.** Describe the functions of element / component of tools
- PC4.** To select standard moulds system
- PC5.** To explain significance of parting surface
- PC6.** To select split molds
- PC7.** To use standard parts for split molds
- PC8.** Understand side cores and cavities
- PC9.** Design molding with undercuts
- PC10.** To identify and apply various design features
- PC11.** To understand injection mold.
- PC12.** To draw the conceptual drawing for appropriate mould
- PC13.** Perform design calculation for tooling
- PC14.** To select different standard element.
- PC15.** To draw final tool design.
- PC16.** Prepare bill of material.
- PC17.**
  - Describe the tool design procedure as,
    1. Identify types of mould tool
    2. Analyze number of cavity
    3. Calculate core & cavity size
    4. Determine the sizes of core and cavity plate
    5. Select standard mould base
    6. Draw conceptual design with tentative bill of material
    7. Validate design in consultation with group/faculty
    8. Final design



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/05 Design of Mould</i>	<b>100</b>	-	-	-
<b>PC1.</b> Describe terminology in moulds	-	-	-	-
<b>PC2.</b> List different types moulds & elements of moulds	-	-	-	-
<b>PC3.</b> Describe the functions of element / component of tools	-	-	-	-
<b>PC4.</b> To select standard moulds system	-	-	-	-
<b>PC5.</b> To explain significance of parting surface	-	-	-	-
<b>PC6.</b> To select split molds	-	-	-	-
<b>PC7.</b> To use standard parts for split molds	-	-	-	-
<b>PC8.</b> Understand side cores and cavities	-	-	-	-
<b>PC9.</b> Design molding with undercuts	-	-	-	-
<b>PC10.</b> To identify and apply various design features	-	-	-	-
<b>PC11.</b> To understand injection mold.	-	-	-	-
<b>PC12.</b> To draw the conceptual drawing for appropriate mould	-	-	-	-
<b>PC13.</b> Perform design calculation for tooling	-	-	-	-
<b>PC14.</b> To select different standard element.	-	-	-	-
<b>PC15.</b> To draw final tool design.	-	-	-	-
<b>PC16.</b> Prepare bill of material.	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC17.</b> <ul style="list-style-type: none"><li>Describe the tool design procedure as,<ol style="list-style-type: none"><li>1. Identify types of mould tool</li><li>2. Analyze number of cavity</li><li>3. Calculate core &amp; cavity size</li><li>4. Determine the sizes of core and cavity plate</li><li>5. Select standard mould base</li><li>6. Draw conceptual design with tentative bill of material</li><li>7. Validate design in consultation with group/faculty</li><li>8. Final design</li></ol></li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3210
<b>NOS Name</b>	Design of Moulds
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<b>NSQF Level</b>	4.5
<b>Credits</b>	4
<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/N3209: Design of Mould

#### Description

After completion of course Student should be able to Understand clearly the tool design parameters of Mould

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand clearly the tool design parameters of Mould

#### Elements and Performance Criteria

##### *MSME/MCCTD/05 Design of Mould*

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

- PC1.** Describe terminology in moulds
- PC2.** List different types moulds & elements of moulds
- PC3.** Describe the functions of element / component of tools
- PC4.** To select standard moulds system
- PC5.** To explain significance of parting surface
- PC6.** To select split molds
- PC7.** To use standard parts for split molds
- PC8.** Understand side cores and cavities
- PC9.** Design molding with undercuts
- PC10.** To identify and apply various design features
- PC11.** To understand injection mold.
- PC12.** To draw the conceptual drawing for appropriate mould
- PC13.** Perform design calculation for tooling
- PC14.** To select different standard element.
- PC15.** To draw final tool design.
- PC16.** Prepare bill of material.
- PC17.**
  - Describe the tool design procedure as,
    1. Identify types of mould tool
    2. Analyze number of cavity
    3. Calculate core & cavity size
    4. Determine the sizes of core and cavity plate
    5. Select standard mould base
    6. Draw conceptual design with tentative bill of material
    7. Validate design in consultation with group/faculty
    8. Final design



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/05 Design of Mould</i>	<b>100</b>	-	-	-
<b>PC1.</b> Describe terminology in moulds	-	-	-	-
<b>PC2.</b> List different types moulds & elements of moulds	-	-	-	-
<b>PC3.</b> Describe the functions of element / component of tools	-	-	-	-
<b>PC4.</b> To select standard moulds system	-	-	-	-
<b>PC5.</b> To explain significance of parting surface	-	-	-	-
<b>PC6.</b> To select split molds	-	-	-	-
<b>PC7.</b> To use standard parts for split molds	-	-	-	-
<b>PC8.</b> Understand side cores and cavities	-	-	-	-
<b>PC9.</b> Design molding with undercuts	-	-	-	-
<b>PC10.</b> To identify and apply various design features	-	-	-	-
<b>PC11.</b> To understand injection mold.	-	-	-	-
<b>PC12.</b> To draw the conceptual drawing for appropriate mould	-	-	-	-
<b>PC13.</b> Perform design calculation for tooling	-	-	-	-
<b>PC14.</b> To select different standard element.	-	-	-	-
<b>PC15.</b> To draw final tool design.	-	-	-	-
<b>PC16.</b> Prepare bill of material.	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC17.</b> <ul style="list-style-type: none"><li>Describe the tool design procedure as,<ol style="list-style-type: none"><li>1. Identify types of mould tool</li><li>2. Analyze number of cavity</li><li>3. Calculate core &amp; cavity size</li><li>4. Determine the sizes of core and cavity plate</li><li>5. Select standard mould base</li><li>6. Draw conceptual design with tentative bill of material</li><li>7. Validate design in consultation with group/faculty</li><li>8. Final design</li></ol></li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3209
<b>NOS Name</b>	Design of Mould
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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



## Qualification Pack

### MSME/CSC/N3208: Design of Press Tools

#### Description

After completion of course Student should be able to Understand clearly the tool design parameters of Press Tools

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand clearly the tool design parameters of Press Tools

#### Elements and Performance Criteria

##### *MSME/MCCTD/04 Design of Press Tools*

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

- PC1.** Understand and classify Press machines
- PC2.** Describe the characteristics of press machines
- PC3.** Understand feeding and unloading equipment
- PC4.** Have fundamental knowledge of Design principles of presses
- PC5.** Explain shearing theory
- PC6.** List different type of tools
- PC7.** Perform mathematical calculations for designing
- PC8.** Will be able to calculate best economy for production.
- PC9.** Describe and select elements of press tool
- PC10.** Perform Design calculation for elements
- PC11.** Apply alignment system design for press tool.
- PC12.** Explain compound and progressive dies
- PC13.** Design Compound and progressive tool
- PC14.**
  - Describe the tool design procedure as,
    1. Identify types of press tool as per needs
    2. Calculate cutting clearance
    3. Determine punch and die size
    4. Decide best suitable strip layout based on efficiency
    5. Calculate die dimensions like margin, thickness, length & width
    6. Calculate total height of punch, area of punch block
    7. Select Die set and fasteners standard size
    8. Bill of material
    9. Draw assembly drawing



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/04 Design of Press Tools</i>	-	<b>100</b>	-	-
<b>PC1.</b> Understand and classify Press machines	-	-	-	-
<b>PC2.</b> Describe the characteristics of press machines	-	-	-	-
<b>PC3.</b> Understand feeding and unloading equipment	-	-	-	-
<b>PC4.</b> Have fundamental knowledge of Design principles of presses	-	-	-	-
<b>PC5.</b> Explain shearing theory	-	-	-	-
<b>PC6.</b> List different type of tools	-	-	-	-
<b>PC7.</b> Perform mathematical calculations for designing	-	-	-	-
<b>PC8.</b> Will be able to calculate best economy for production.	-	-	-	-
<b>PC9.</b> Describe and select elements of press tool	-	-	-	-
<b>PC10.</b> Perform Design calculation for elements	-	-	-	-
<b>PC11.</b> Apply alignment system design for press tool.	-	-	-	-
<b>PC12.</b> Explain compound and progressive dies	-	-	-	-
<b>PC13.</b> Design Compound and progressive tool	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> <ul style="list-style-type: none"><li>Describe the tool design procedure as,<ol style="list-style-type: none"><li>1. Identify types of press tool as per needs</li><li>2. Calculate cutting clearance</li><li>3. Determine punch and die size</li><li>4. Decide best suitable strip layout based on efficiency</li><li>5. Calculate die dimensions like margin, thickness, length &amp; width</li><li>6. Calculate total height of punch, area of punch block</li><li>7. Select Die set and fasteners standard size</li><li>8. Bill of material</li><li>9. Draw assembly drawing</li></ol></li></ul>	-	-	-	-
<b>NOS Total</b>	-	<b>100</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3208
<b>NOS Name</b>	Design of Press Tools
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<b>NSQF Level</b>	4.5
<b>Credits</b>	4
<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/N3207: Design of Press Tools

#### Description

After completion of course Student should be able to Understand clearly the tool design parameters of Press Tools

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand clearly the tool design parameters of Press Tools

#### Elements and Performance Criteria

##### *MSME/MCCTD/04 Design of Press Tools*

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

- PC1.** Understand and classify Press machines
- PC2.** Describe the characteristics of press machines
- PC3.** Understand feeding and unloading equipment
- PC4.** Have fundamental knowledge of Design principles of presses
- PC5.** Explain shearing theory
- PC6.** List different type of tools
- PC7.** Perform mathematical calculations for designing
- PC8.** Will be able to calculate best economy for production.
- PC9.** Describe and select elements of press tool
- PC10.** Perform Design calculation for elements
- PC11.** Apply alignment system design for press tool.
- PC12.** Explain compound and progressive dies
- PC13.** Design Compound and progressive tool
- PC14.**
  - Describe the tool design procedure as,
    1. Identify types of press tool as per needs
    2. Calculate cutting clearance
    3. Determine punch and die size
    4. Decide best suitable strip layout based on efficiency
    5. Calculate die dimensions like margin, thickness, length & width
    6. Calculate total height of punch, area of punch block
    7. Select Die set and fasteners standard size
    8. Bill of material
    9. Draw assembly drawing



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/04 Design of Press Tools</i>	<b>100</b>	-	-	-
<b>PC1.</b> Understand and classify Press machines	-	-	-	-
<b>PC2.</b> Describe the characteristics of press machines	-	-	-	-
<b>PC3.</b> Understand feeding and unloading equipment	-	-	-	-
<b>PC4.</b> Have fundamental knowledge of Design principles of presses	-	-	-	-
<b>PC5.</b> Explain shearing theory	-	-	-	-
<b>PC6.</b> List different type of tools	-	-	-	-
<b>PC7.</b> Perform mathematical calculations for designing	-	-	-	-
<b>PC8.</b> Will be able to calculate best economy for production.	-	-	-	-
<b>PC9.</b> Describe and select elements of press tool	-	-	-	-
<b>PC10.</b> Perform Design calculation for elements	-	-	-	-
<b>PC11.</b> Apply alignment system design for press tool.	-	-	-	-
<b>PC12.</b> Explain compound and progressive dies	-	-	-	-
<b>PC13.</b> Design Compound and progressive tool	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> <ul style="list-style-type: none"><li>Describe the tool design procedure as,<ol style="list-style-type: none"><li>1. Identify types of press tool as per needs</li><li>2. Calculate cutting clearance</li><li>3. Determine punch and die size</li><li>4. Decide best suitable strip layout based on efficiency</li><li>5. Calculate die dimensions like margin, thickness, length &amp; width</li><li>6. Calculate total height of punch, area of punch block</li><li>7. Select Die set and fasteners standard size</li><li>8. Bill of material</li><li>9. Draw assembly drawing</li></ol></li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3207
<b>NOS Name</b>	Design of Press Tools
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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



## Qualification Pack

### MSME/CSC/N3206: Design of Jigs & Fixtures

#### Description

After completion of course Student should be able to Understand clearly the tool design parameters of Jigs, fixtures and Gauges

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand clearly the tool design parameters of Jigs, fixtures and Gauges

#### Elements and Performance Criteria

##### *MSME/MCCTD/03 Design of Jigs & Fixtures*

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

- PC1.** Describe and classify types of Jigs & fixture.
- PC2.** Explain locating principle and methods in jigs & fixture
- PC3.** Select locating devices, Use standard pts.
- PC4.** Explain Tool making processes in Jigs & Fixture.
- PC5.**
  - Explain working of Pneumatics and hydraulic actuation clamping in jigs and
  - fixture
- PC6.** Describe the use of Guiding Elements & its type.
- PC7.** Calculate clamping force & Design procedure for different jigs
- PC8.** Identify application of each part and importance in there
- PC9.** Understand the Selection process of Standard Element for design data book.
- PC10.** Selection of Jigs & fixture body Construction
- PC11.** Select material in Jig & Fixture design
- PC12.** Understand deign of Jigs & fixture
- PC13.** Understand the conceptual design of Jigs & Fixture.
- PC14.** Use of CAD/CAM in Jigs and Fixture Design
- PC15.**
  - Describe the tool design procedure as,
  - 1. Design of locator and supporting block
  - 2. Design/selection of clamp
  - 3. Design/selection of bush
  - 4. Design/selection of fasteners
  - 5. Design of jig plate
  - 6. Prepare Bill of material
  - 7. Assembly drawing.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/03 Design of Jigs &amp; Fixtures</i>	-	<b>100</b>	-	-
<b>PC1.</b> Describe and classify types of Jigs & fixture.	-	-	-	-
<b>PC2.</b> Explain locating principle and methods in jigs & fixture	-	-	-	-
<b>PC3.</b> Select locating devices, Use standard pts.	-	-	-	-
<b>PC4.</b> Explain Tool making processes in Jigs & Fixture.	-	-	-	-
<b>PC5.</b> • Explain working of Pneumatics and hydraulic actuation clamping in jigs and • fixture	-	-	-	-
<b>PC6.</b> Describe the use of Guiding Elements & its type.	-	-	-	-
<b>PC7.</b> Calculate clamping force & Design procedure for different jigs	-	-	-	-
<b>PC8.</b> Identify application of each part and importance in there	-	-	-	-
<b>PC9.</b> Understand the Selection process of Standard Element for design data book.	-	-	-	-
<b>PC10.</b> Selection of Jigs & fixture body Construction	-	-	-	-
<b>PC11.</b> Select material in Jig & Fixture design	-	-	-	-
<b>PC12.</b> Understand deign of Jigs & fixture	-	-	-	-
<b>PC13.</b> Understand the conceptual design of Jigs & Fixture.	-	-	-	-
<b>PC14.</b> Use of CAD/CAM in Jigs and Fixture Design	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> <ul style="list-style-type: none"><li>Describe the tool design procedure as,<ol style="list-style-type: none"><li>1. Design of locator and supporting block</li><li>2. Design/selection of clamp</li><li>3. Design/selection of bush</li><li>4. Design/selection of fasteners</li><li>5. Design of jig plate</li><li>6. Prepare Bill of material</li><li>7. Assembly drawing.</li></ol></li></ul>	-	-	-	-
<b>NOS Total</b>	-	<b>100</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3206
<b>NOS Name</b>	Design of Jigs & Fixtures
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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



## Qualification Pack

### MSME/CSC/N3205: Design of Jigs & Fixtures

#### Description

After completion of course Student should be able to Understand clearly the tool design parameters of Jigs, fixtures and Gauges

#### Scope

The scope covers the following :

- After completion of course Student should be able to Understand clearly the tool design parameters of Jigs, fixtures and Gauges

#### Elements and Performance Criteria

##### *MSME/MCCTD/03 Design of Jigs & Fixtures*

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

- PC1.** Describe and classify types of Jigs & fixture.
- PC2.** Explain locating principle and methods in jigs & fixture
- PC3.** Select locating devices, Use standard pts.
- PC4.** Explain Tool making processes in Jigs & Fixture.
- PC5.**
  - Explain working of Pneumatics and hydraulic actuation clamping in jigs and
  - fixture
- PC6.** Describe the use of Guiding Elements & its type.
- PC7.** Calculate clamping force & Design procedure for different jigs
- PC8.** Identify application of each part and importance in there
- PC9.** Understand the Selection process of Standard Element for design data book.
- PC10.** Selection of Jigs & fixture body Construction
- PC11.** Select material in Jig & Fixture design
- PC12.** Understand deign of Jigs & fixture
- PC13.** Understand the conceptual design of Jigs & Fixture.
- PC14.** Use of CAD/CAM in Jigs and Fixture Design
- PC15.**
  - Describe the tool design procedure as,
  - 1. Design of locator and supporting block
  - 2. Design/selection of clamp
  - 3. Design/selection of bush
  - 4. Design/selection of fasteners
  - 5. Design of jig plate
  - 6. Prepare Bill of material
  - 7. Assembly drawing.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/03 Design of Jigs &amp; Fixtures</i>	<b>100</b>	-	-	-
<b>PC1.</b> Describe and classify types of Jigs & fixture.	-	-	-	-
<b>PC2.</b> Explain locating principle and methods in jigs & fixture	-	-	-	-
<b>PC3.</b> Select locating devices, Use standard pts.	-	-	-	-
<b>PC4.</b> Explain Tool making processes in Jigs & Fixture.	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>• Explain working of Pneumatics and hydraulic actuation clamping in jigs and</li><li>• fixture</li></ul>	-	-	-	-
<b>PC6.</b> Describe the use of Guiding Elements & its type.	-	-	-	-
<b>PC7.</b> Calculate clamping force & Design procedure for different jigs	-	-	-	-
<b>PC8.</b> Identify application of each part and importance in there	-	-	-	-
<b>PC9.</b> Understand the Selection process of Standard Element for design data book.	-	-	-	-
<b>PC10.</b> Selection of Jigs & fixture body Construction	-	-	-	-
<b>PC11.</b> Select material in Jig & Fixture design	-	-	-	-
<b>PC12.</b> Understand deign of Jigs & fixture	-	-	-	-
<b>PC13.</b> Understand the conceptual design of Jigs & Fixture.	-	-	-	-
<b>PC14.</b> Use of CAD/CAM in Jigs and Fixture Design	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> <ul style="list-style-type: none"><li>Describe the tool design procedure as,<ol style="list-style-type: none"><li>Design of locator and supporting block</li><li>Design/selection of clamp</li><li>Design/selection of bush</li><li>Design/selection of fasteners</li><li>Design of jig plate</li><li>Prepare Bill of material</li><li>Assembly drawing.</li></ol></li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3205
<b>NOS Name</b>	Design of Jigs & Fixtures
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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



## Qualification Pack

# MSME/CSC/N3204: Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software

## Description

After completion of course Student should be able to Understand advance Computer aided design software (UNIGRAPHICS CAD & UNIGRAPHICS CAM) as compare to other CAD software.

## Scope

The scope covers the following :

- After completion of course Student should be able to Understand advance Computer aided design software (UNIGRAPHICS CAD & UNIGRAPHICS CAM) as compare to other CAD software.

## Elements and Performance Criteria

### *MSME/MCCTD/02 Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software*

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

- PC1.** Describe various feature in CAD and CAM software.
- PC2.** Explain about limitation & advantages of each CAD/CAM
- PC3.** Explain working of CAD/CAM
- PC4.** Create and Edit 2D geometric sketches by using Unigraphics NX software.
- PC5.** Develop 3D modeling by using advanced command.
- PC6.**
  - Apply assembly constraint & develop different types of assembly design by
  - using CAD Software like Unigraphics NX
- PC7.** List the CAM software that is use for Tool Path generation
- PC8.** Plan the machining activities before starting them.
- PC9.**
  - Access and use the correct CAM software and tools e.g. Using UG-CAM
  - software
- PC10.**
  - Calculate parameters like speed feed, depth of cut etc. And set a references for
  - the various operations
- PC11.** Create / import entities in 3D space as per job requirement
- PC12.** Modify entities in 3D space as per job requirement
- PC13.**
  - Create 3-D views on the screen by manipulating drawing planes and inserting 3-
  - D geometric shapes
- PC14.** Perform programming for solid modeling
- PC15.**
  - Produce a model for export to the following manufacturing systems
  - Manufacturing systems: DNC (Direct Numerically controlled) /CNC (Computer
  - Numerically controlled) machines; 3D printer; other specific system
- PC16.**
  - Produce CAM program which comply with organizational guidelines; statutory
  - regulations and codes of practice; CAM software standards; national and
  - international standards
- PC17.**
  - Confirm that the program is as per job specifications and contains all relevant
  - information



## Qualification Pack

- PC18.**      • Use appropriate techniques to create program that are sufficiently and clearly  
                 • detailed
- PC19.**      Use codes and other references that follow the required conventions
- PC20.**      Make sure that programs are checked and approved by the appropriate person
- PC21.**      Save the program in the appropriate file type and location.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/02 Create &amp; Modify Part Model and Generate Part Program Using CAD/ CAM Software</i>	-	<b>100</b>	-	-
<b>PC1.</b> Describe various feature in CAD and CAM software.	-	-	-	-
<b>PC2.</b> Explain about limitation & advantages of each CAD/CAM	-	-	-	-
<b>PC3.</b> Explain working of CAD/CAM	-	-	-	-
<b>PC4.</b> Create and Edit 2D geometric sketches by using Unigraphics NX software.	-	-	-	-
<b>PC5.</b> Develop 3D modeling by using advanced command.	-	-	-	-
<b>PC6.</b> • Apply assembly constraint & develop different types of assembly design by • using CAD Software like Unigraphics NX	-	-	-	-
<b>PC7.</b> List the CAM software that is use for Tool Path generation	-	-	-	-
<b>PC8.</b> Plan the machining activities before starting them.	-	-	-	-
<b>PC9.</b> • Access and use the correct CAM software and tools e.g. Using UG-CAM • software	-	-	-	-
<b>PC10.</b> • Calculate parameters like speed feed, depth of cut etc. And set a references for • the various operations	-	-	-	-
<b>PC11.</b> Create / import entities in 3D space as per job requirement	-	-	-	-
<b>PC12.</b> Modify entities in 3D space as per job requirement	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> <ul style="list-style-type: none"><li>• Create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes</li></ul>	-	-	-	-
<b>PC14.</b> Perform programming for solid modeling	-	-	-	-
<b>PC15.</b> <ul style="list-style-type: none"><li>• Produce a model for export to the following manufacturing systems</li><li>• Manufacturing systems: DNC (Direct Numerically controlled) /CNC (Computer Numerically controlled) machines; 3D printer; other specific system</li></ul>	-	-	-	-
<b>PC16.</b> <ul style="list-style-type: none"><li>• Produce CAM program which comply with organizational guidelines; statutory regulations and codes of practice; CAM software standards; national and international standards</li></ul>	-	-	-	-
<b>PC17.</b> <ul style="list-style-type: none"><li>• Confirm that the program is as per job specifications and contains all relevant information</li></ul>	-	-	-	-
<b>PC18.</b> <ul style="list-style-type: none"><li>• Use appropriate techniques to create program that are sufficiently and clearly detailed</li></ul>	-	-	-	-
<b>PC19.</b> Use codes and other references that follow the required conventions	-	-	-	-
<b>PC20.</b> Make sure that programs are checked and approved by the appropriate person	-	-	-	-
<b>PC21.</b> Save the program in the appropriate file type and location.	-	-	-	-
<b>NOS Total</b>	-	<b>100</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3204
<b>NOS Name</b>	Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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/N3203: Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software

## Description

After completion of course Student should be able to Understand advance Computer aided design software (UNIGRAPHICS CAD & UNIGRAPHICS CAM) as compare to other CAD software.

## Scope

The scope covers the following :

- After completion of course Student should be able to Understand advance Computer aided design software (UNIGRAPHICS CAD & UNIGRAPHICS CAM) as compare to other CAD software.

## Elements and Performance Criteria

### *MSME/MCCTD/02 Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software*

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

- PC1.** Describe various feature in CAD and CAM software.
- PC2.** Explain about limitation & advantages of each CAD/CAM
- PC3.** Explain working of CAD/CAM
- PC4.** Create and Edit 2D geometric sketches by using Unigraphics NX software.
- PC5.** Develop 3D modeling by using advanced command.
- PC6.**
  - Apply assembly constraint & develop different types of assembly design by
  - using CAD Software like Unigraphics NX
- PC7.** List the CAM software that is use for Tool Path generation
- PC8.** Plan the machining activities before starting them.
- PC9.**
  - Access and use the correct CAM software and tools e.g. Using UG-CAM
  - software
- PC10.**
  - Calculate parameters like speed feed, depth of cut etc. And set a references for
  - the various operations
- PC11.** Create / import entities in 3D space as per job requirement
- PC12.** Modify entities in 3D space as per job requirement
- PC13.**
  - Create 3-D views on the screen by manipulating drawing planes and inserting 3-
  - D geometric shapes
- PC14.** Perform programming for solid modeling
- PC15.**
  - Produce a model for export to the following manufacturing systems
  - Manufacturing systems: DNC (Direct Numerically controlled) /CNC (Computer
  - Numerically controlled) machines; 3D printer; other specific system
- PC16.**
  - Produce CAM program which comply with organizational guidelines; statutory
  - regulations and codes of practice; CAM software standards; national and
  - international standards
- PC17.**
  - Confirm that the program is as per job specifications and contains all relevant
  - information



## Qualification Pack

- PC18.**      • Use appropriate techniques to create program that are sufficiently and clearly  
                 • detailed
- PC19.**      Use codes and other references that follow the required conventions
- PC20.**      Make sure that programs are checked and approved by the appropriate person
- PC21.**      Save the program in the appropriate file type and location.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/02 Create &amp; Modify Part Model and Generate Part Program Using CAD/ CAM Software</i>	<b>100</b>	-	-	-
<b>PC1.</b> Describe various feature in CAD and CAM software.	-	-	-	-
<b>PC2.</b> Explain about limitation & advantages of each CAD/CAM	-	-	-	-
<b>PC3.</b> Explain working of CAD/CAM	-	-	-	-
<b>PC4.</b> Create and Edit 2D geometric sketches by using Unigraphics NX software.	-	-	-	-
<b>PC5.</b> Develop 3D modeling by using advanced command.	-	-	-	-
<b>PC6.</b> • Apply assembly constraint & develop different types of assembly design by • using CAD Software like Unigraphics NX	-	-	-	-
<b>PC7.</b> List the CAM software that is use for Tool Path generation	-	-	-	-
<b>PC8.</b> Plan the machining activities before starting them.	-	-	-	-
<b>PC9.</b> • Access and use the correct CAM software and tools e.g. Using UG-CAM • software	-	-	-	-
<b>PC10.</b> • Calculate parameters like speed feed, depth of cut etc. And set a references for • the various operations	-	-	-	-
<b>PC11.</b> Create / import entities in 3D space as per job requirement	-	-	-	-
<b>PC12.</b> Modify entities in 3D space as per job requirement	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> <ul style="list-style-type: none"><li>• Create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes</li></ul>	-	-	-	-
<b>PC14.</b> Perform programming for solid modeling	-	-	-	-
<b>PC15.</b> <ul style="list-style-type: none"><li>• Produce a model for export to the following manufacturing systems</li><li>• Manufacturing systems: DNC (Direct Numerically controlled) /CNC (Computer Numerically controlled) machines; 3D printer; other specific system</li></ul>	-	-	-	-
<b>PC16.</b> <ul style="list-style-type: none"><li>• Produce CAM program which comply with organizational guidelines; statutory regulations and codes of practice; CAM software standards; national and international standards</li></ul>	-	-	-	-
<b>PC17.</b> <ul style="list-style-type: none"><li>• Confirm that the program is as per job specifications and contains all relevant information</li></ul>	-	-	-	-
<b>PC18.</b> <ul style="list-style-type: none"><li>• Use appropriate techniques to create program that are sufficiently and clearly detailed</li></ul>	-	-	-	-
<b>PC19.</b> Use codes and other references that follow the required conventions	-	-	-	-
<b>PC20.</b> Make sure that programs are checked and approved by the appropriate person	-	-	-	-
<b>PC21.</b> Save the program in the appropriate file type and location.	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3203
<b>NOS Name</b>	Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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



## Qualification Pack

# MSME/CSC/N3202: Create & Modify Part Model using CAD Software

## Description

After completion of course Student should be able to Understand types of different CAD/CAM/CAE software.

## Scope

The scope covers the following :

- After completion of course Student should be able to Understand types of different CAD/CAM/CAE software.

## Elements and Performance Criteria

### *MSME/MCCTD/01 Create & Modify Part Model using CAD Software*

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

- PC1.** • Gather accurate information on the requirements of the CAD/CAM/CAE software in Existing industries.
- PC2.** Identify any unique or specific features that need particular consideration.
- PC3.** Identify the system requirement to run the CAD/CAM/CAE Software
- PC4.** • Record all relevant information in the appropriate information systems for future use
- PC5.** • Confirm the operational and functional requirements of the CAD/CAM/CAE Software
- PC6.** Identify the field to use CAD/CAM/CAE Software use
- PC7.** Ensure that the design brief captures all the requirements of the customer
- PC8.** Ensure the use of CAD technology to design and design documentation
- PC9.** Describe and classify types drawing generation using CAD Software
- PC10.** .Define the dimension and symbol in drawing sheet using CAD
- PC11.** Generation of different types of view using Different CAD Software
- PC12.** Create different type of table hole table, Bill of material, Revision table etc.
- PC13.** To generate the associative drawing using medium end and high end software
- PC14.** Stetting of drawing for print by using plotter, printer using CAD
- PC15.** Create drawing template for production drawing in CAD
- PC16.** Mange the drawing properties using CAD
- PC17.** Edit or modify the CAD Drawing / Model using Solidworks.
- PC18.** • Understand Basic Part Modeling, Basic Modeling, Terminology, Choosing the Best Profile, Choosing the Sketch Plane, Details of the Part feature.
- PC19.** • Clarify of Knowledge to the assembly constraint & develop different types of assembly design by using Solid Work.
- PC20.** • Obtain and review existing information with reference to the specified design requirement like 2D drawing and 3D model, existing sample, etc.
- PC21.** Deliver the designs in the appropriate format to the customers



## Qualification Pack

- PC22.** Confirm and agree understanding of the design requirements
- PC23.** Deal with problems relating to the design requirements and agreed solutions
- PC24.** • Identify design options which will meet requirements and the design  
• specification
- PC25.** • Ensure that the designs comply with all relevant regulations, standards  
• directives or codes of practice
- PC26.** • Deal promptly and effectively with problems within your control and seek help  
• and guidance from the relevant people if you have problems that you cannot  
• resolve
- PC27.** Ensure that the designs are protected in line with organizational procedures
- PC28.** • Evaluate the design against the established criteria, using appropriate  
• evaluation methods
- PC29.** • Develop a schedule for the design process e.g. works order date, plan date,  
• actual completion date.
- PC30.** Save and store the design documentation as per organizational guidelines
- PC31.** • Communicate information to the appropriate people using various company  
• specific media



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCTD/01 Create &amp; Modify Part Model using CAD Software</i>	-	100	-	-
<b>PC1.</b> <ul style="list-style-type: none"><li>Gather accurate information on the requirements of the CAD/CAM/CAE software in Existing industries.</li></ul>	-	-	-	-
<b>PC2.</b> Identify any unique or specific features that need particular consideration.	-	-	-	-
<b>PC3.</b> Identify the system requirement to run the CAD/CAM/CAE Software	-	-	-	-
<b>PC4.</b> <ul style="list-style-type: none"><li>Record all relevant information in the appropriate information systems for</li><li>future use</li></ul>	-	-	-	-
<b>PC5.</b> <ul style="list-style-type: none"><li>Confirm the operational and functional requirements of the CAD/CAM/CAE</li><li>Software</li></ul>	-	-	-	-
<b>PC6.</b> Identify the field to use CAD/CAM/CAE Software use	-	-	-	-
<b>PC7.</b> Ensure that the design brief captures all the requirements of the customer	-	-	-	-
<b>PC8.</b> Ensure the use of CAD technology to design and design documentation	-	-	-	-
<b>PC9.</b> Describe and classify types drawing generation using CAD Software	-	-	-	-
<b>PC10.</b> Define the dimension and symbol in drawing sheet using CAD	-	-	-	-
<b>PC11.</b> Generation of different types of view using Different CAD Software	-	-	-	-
<b>PC12.</b> Create different type of table hole table, Bill of material, Revision table etc.	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> To generate the associative drawing using medium end and high end software	-	-	-	-
<b>PC14.</b> Stetting of drawing for print by using plotter, printer using CAD	-	-	-	-
<b>PC15.</b> Create drawing template for production drawing in CAD	-	-	-	-
<b>PC16.</b> Mange the drawing properties using CAD	-	-	-	-
<b>PC17.</b> Edit or modify the CAD Drawing / Model using Solidworks.	-	-	-	-
<b>PC18.</b> <ul style="list-style-type: none"><li>• Understand Basic Part Modeling, Basic Modeling, Terminology, Choosing the</li><li>• Best Profile, Choosing the Sketch Plane, Details of the Part feature.</li></ul>	-	-	-	-
<b>PC19.</b> <ul style="list-style-type: none"><li>• Clarify of Knowledge to the assembly constraint &amp; develop different types of</li><li>• assembly design by using Solid Work.</li></ul>	-	-	-	-
<b>PC20.</b> <ul style="list-style-type: none"><li>• Obtain and review existing information with reference to the specified design</li><li>• requirement like 2D drawing and 3D model, existing sample, etc.</li></ul>	-	-	-	-
<b>PC21.</b> Deliver the designs in the appropriate format to the customers	-	-	-	-
<b>PC22.</b> Confirm and agree understanding of the design requirements	-	-	-	-
<b>PC23.</b> Deal with problems relating to the design requirements and agreed solutions	-	-	-	-
<b>PC24.</b> <ul style="list-style-type: none"><li>• Identify design options which will meet requirements and the design</li><li>• specification</li></ul>	-	-	-	-
<b>PC25.</b> <ul style="list-style-type: none"><li>• Ensure that the designs comply with all relevant regulations, standards</li><li>• directives or codes of practice</li></ul>	-	-	-	-



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC26.</b> <ul style="list-style-type: none"><li>Deal promptly and effectively with problems within your control and seek help</li><li>and guidance from the relevant people if you have problems that you cannot</li><li>resolve</li></ul>	-	-	-	-
<b>PC27.</b> Ensure that the designs are protected in line with organizational procedures	-	-	-	-
<b>PC28.</b> <ul style="list-style-type: none"><li>Evaluate the design against the established criteria, using appropriate</li><li>evaluation methods</li></ul>	-	-	-	-
<b>PC29.</b> <ul style="list-style-type: none"><li>Develop a schedule for the design process e.g. works order date, plan date,</li><li>actual completion date.</li></ul>	-	-	-	-
<b>PC30.</b> Save and store the design documentation as per organizational guidelines	-	-	-	-
<b>PC31.</b> <ul style="list-style-type: none"><li>Communicate information to the appropriate people using various company</li><li>specific media</li></ul>	-	-	-	-
<b>NOS Total</b>	-	<b>100</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3202
<b>NOS Name</b>	Create & Modify Part Model using CAD Software
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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/N3211: Employability skills 04

#### Description

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

#### Scope

The scope covers the following :

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

#### Elements and Performance Criteria

##### *MSME/ES/01 Employability skills*

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.**
  - Write short messages, notes, letters, e-mails etc. in English & Understand the difference between job and career
- PC12.**
  - Prepare a career development plan with short- and long-term goals, based on aptitude & Discuss the main types of electronic funds transfers



## Qualification Pack

- 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.
- 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.



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ES/01 Employability skills</i>	<b>100</b>	-	-	-
<b>PC1.</b> Explain occupational health and Safety.	-	-	-	-
<b>PC2.</b> Explain about safety rules.	-	-	-	-
<b>PC3.</b> • State the name and location of people responsible for health and safety in the • workplace	-	-	-	-
<b>PC4.</b> • Identify employability skills required for jobs in various industries. & Identify • and explore learning and employability portals	-	-	-	-
<b>PC5.</b> • 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.	-	-	-	-
<b>PC6.</b> • Follow environmentally sustainable practices. & Recognize the significance of • 21st Century Skills for employment	-	-	-	-
<b>PC7.</b> • 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	-	-	-	-
<b>PC8.</b> • Use basic English for everyday conversation in different contexts, in person and • over the telephone.	-	-	-	-
<b>PC9.</b> How to Minimize the team conflicts & Explain Ethics & values?	-	-	-	-



## Qualification Pack

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



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC19.</b> <ul style="list-style-type: none"><li>Identify different types of Entrepreneurship and Enterprises and assess</li><li>opportunities for potential business through research &amp; develop a business</li><li>plan and a work model, considering the 4Ps of Marketing Product, Price, Place</li><li>and</li><li>Promotion.</li></ul>	-	-	-	-
<b>PC20.</b> <ul style="list-style-type: none"><li>Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles</li><li>for the potential business opportunity</li></ul>	-	-	-	-
<b>PC21.</b> <ul style="list-style-type: none"><li>Identify different types of customers &amp; identify and respond to customer</li><li>requests and needs in a professional manner.</li></ul>	-	-	-	-
<b>NOS Total</b>	<b>100</b>	-	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	MSME/CSC/N3211
<b>NOS Name</b>	Employability skills 04
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	
<b>Occupation</b>	Designing
<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

### 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/CSC/N3201.Create & Modify Part Model using CAD Software	100	-	-	-	100	10
MSME/CSC/N3210.Design of Moulds	100	-	-	-	100	10
MSME/CSC/N3209.Design of Mould	100	-	-	-	100	10
MSME/CSC/N3208.Design of Press Tools	-	100	-	-	100	10
MSME/CSC/N3207.Design of Press Tools	100	-	-	-	100	10
MSME/CSC/N3206.Design of Jigs & Fixtures	-	100	-	-	100	10
MSME/CSC/N3205.Design of Jigs & Fixtures	100	-	-	-	100	10
MSME/CSC/N3204.Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software	-	100	-	-	100	10
MSME/CSC/N3203.Create & Modify Part Model and Generate Part Program Using CAD/ CAM Software	100	-	-	-	100	10
MSME/CSC/N3202.Create & Modify Part Model using CAD Software	-	100	-	-	100	5
MSME/CSC/N3211.Employability skills 04	100	-	-	-	100	5
<b>Total</b>	<b>700</b>	<b>400</b>	<b>-</b>	<b>-</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.