



Qualification Pack

Sr. Product Manager (Aerospace Manufacturing)

QP Code: MSME/CSC/Q2501

Version: 1.0

NSQF Level: 6

MSME TECHNOLOGY CENTRE ||
B-36 CHANDAKA INDUSTRIAL AREA || email:msmeexamcell@gmail.com



Qualification Pack

Contents

MSME/CSC/Q2501: Sr. Product Manager (Aerospace Manufacturing)	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
MSME/CSC/N2506: QMS & FAI, AS 9100, Quality Control & Inspection	5
MSME/CSC/N2505: Understanding & Application of Aerospace Materials	8
MSME/CSC/N2504: Computer Aided Design with Analysis.	11
MSME/CSC/N2503: Computer Aided Manufacturing	17
MSME/CSC/N2502: CNC Technology	21
MSME/CSC/N2501: Production Process Planning with ERP	25
MSME/CSC/N2507: Employability Skills 09	31
Assessment Guidelines and Weightage	36
<i>Assessment Guidelines</i>	36
<i>Assessment Weightage</i>	36
Acronyms	38
Glossary	39



Qualification Pack

MSME/CSC/Q2501: Sr. Product Manager (Aerospace Manufacturing)

Brief Job Description

After Completion of This Qualification Candidate can be able to Manufacture Aerospace Product

Personal Attributes

After Completion of This Qualification Candidate can be able to Manufacture Aerospace Product

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [MSME/CSC/N2506: QMS & FAI, AS 9100, Quality Control & Inspection](#)
2. [MSME/CSC/N2505: Understanding & Application of Aerospace Materials](#)
3. [MSME/CSC/N2504: Computer Aided Design with Analysis.](#)
4. [MSME/CSC/N2503: Computer Aided Manufacturing](#)
5. [MSME/CSC/N2502: CNC Technology](#)
6. [MSME/CSC/N2501: Production Process Planning with ERP](#)
7. [MSME/CSC/N2507: Employability Skills 09](#)

Qualification Pack (QP) Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools
Occupation	Office Supervisor
Country	India
NSQF Level	6
Credits	20
Aligned to NCO/ISCO/ISIC Code	Manufacturing Supervisors



Qualification Pack

Minimum Educational Qualification & Experience	B.E./B.Tech (Completed BE/B.Tech (Mechanical, Production, Aerospace)) with NA of experience OR Previous relevant Qualification of NSQF Level (NSQF Level 5.5) with 1.5 years of experience OR Previous relevant Qualification of NSQF Level (NSQF Level 5) with 3 Years of experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	15/03/2027
NSQC Approval Date	15/03/2024
Version	1.0
Reference code on NQR	NCVET- QG-06-CG-02551-2024-V1-MSME
NQR Version	1.0



Qualification Pack

MSME/CSC/N2506: QMS & FAI, AS 9100, Quality Control & Inspection

Description

After completion of course Student should be able to Select right tools for the machining

Scope

The scope covers the following :

- After completion of course Student should be able to Select right tools for the machining

Elements and Performance Criteria

MSME/MCCARM/06 QMS & FAI, AS 9100, Quality Control & Inspection

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

- PC1.** Explain the Concept of 7QC Tools
- PC2.** Explain the document procedure required for FAI
- PC3.** Explain the document procedure required for AS Standard
- PC4.** Importance of different inspection tools for precision manufacturing or Aerospace manufacturing
- PC5.** Explain the concept of Total Quality Managements



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCARM/06 QMS & FAI, AS 9100, Quality Control & Inspection</i>	100	-	-	-
PC1. Explain the Concept of 7QC Tools	-	-	-	-
PC2. Explain the document procedure required for FAI	-	-	-	-
PC3. Explain the document procedure required for AS Standard	-	-	-	-
PC4. Importance of different inspection tools for precision manufacturing or Aerospace manufacturing	-	-	-	-
PC5. Explain the concept of Total Quality Managements	-	-	-	-
NOS Total	100	-	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2506
NOS Name	QMS & FAI, AS 9100, Quality Control & Inspection
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	1
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024



Qualification Pack

MSME/CSC/N2505: Understanding & Application of Aerospace Materials

Description

After completion of course Student should be able to Select Aerospace materials as required.

Scope

The scope covers the following :

- After completion of course Student should be able to Select Aerospace materials as required.

Elements and Performance Criteria

MSME/MCCARM/05 Aerospace Materials

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

- PC1.** Explain the classification of aerospace material
- PC2.** Categorize of Alloying elements
- PC3.** Explain the different heat treatment process
- PC4.** Explain the concept of Microstructures of materials
- PC5.** Explain the concept of Materials failure analysis
- PC6.** Explain the surface treatment, procedure treatment, solution treatment and precipitation hardening.
- PC7.** Explain the NDT, Surface Coating and Cleaning



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCARM/05 Aerospace Materials</i>	100	-	-	-
PC1. Explain the classification of aerospace material	-	-	-	-
PC2. Categorize of Alloying elements	-	-	-	-
PC3. Explain the different heat treatment process	-	-	-	-
PC4. Explain the concept of Microstructures of materials	-	-	-	-
PC5. Explain the concept of Materials failure analysis	-	-	-	-
PC6. Explain the surface treatment, procedure treatment, solution treatment and precipitation hardening.	-	-	-	-
PC7. Explain the NDT, Surface Coating and Cleaning	-	-	-	-
NOS Total	100	-	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2505
NOS Name	Understanding & Application of Aerospace Materials
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	1
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024



Qualification Pack

MSME/CSC/N2504: Computer Aided Design with Analysis.

Description

Prepare components Drawings using high end CAD Software

Scope

The scope covers the following :

- Prepare components Drawings using high end CAD Software

Elements and Performance Criteria

MSME/MCCARM/04 Computer Aided Design with Analysis.

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

- PC1.** Explain the Importance of Engineering drawing,
- PC2.** Explanation the scope and objective of Engineering Drawing
- PC3.**
 - Demonstrate and explain drawing Standards: Size of drawing sheets – Layout of drawing sheet – Title
 - Blocks – Types of lines – Folding of drawing sheets.
- PC4.** Use of dimensioning techniques according to Standard of dimensions
- PC5.** Demonstrate orthographic & Isometric projection by using a viewing box and a model
- PC6.** Demonstrate first angle and third angle projection
- PC7.** Use of symbol in projections -Front view, top view and side view
- PC8.** Demonstrate the use of CAD and CAD interface (AutoCAD, Catia, Solidworks)
- PC9.** Apply coordinates systems in CAD
- PC10.** Demonstrate the use of tool bars.
- PC11.** Create solid field area (Hatching, Gradient)
- PC12.** Edit objects using the object property tool bar and various methods.
- PC13.** Use sketch settings and Style toolbar (text style, Multileader style etc.)
- PC14.** Edit object using object property toolbar & various method.
- PC15.** Create the replica of model using copy, array command
- PC16.** Work with models in the modify toolbar
- PC17.** Identify the appropriate Tool to create and modify the model
- PC18.** Change the orientation of the object by aligns, offset, rotate command
- PC19.** Apply standard dimension in a mechanical component
- PC20.** Use of dimensioning Methods: Linear, Align, ordinates, Radius, Diameter, Arc length, angular etc
- PC21.** Use of leader with text, block reference
- PC22.** Edit or modify the CAD Drawings
- PC23.** Use of layers Management and its applications
- PC24.** Apply GD& T Symbols in drawings



Qualification Pack

- PC25.** Develop proper drawing layout.
- PC26.** Use of Surfacing in Cad
- PC27.** Use of sheet metal in cad
- PC28.** Explain & Demonstrate the Assembly module in CAD
- PC29.** Explain the interference Clash and parameterizations analysis
- PC30.** Understand the need Analysis and need of CAE Software
- PC31.** Different file format use in CAE Software
- PC32.** Export and Import of different file format in CAE
- PC33.** Define the different parameter for analysis
- PC34.** Generate the mesh file
- PC35.** Define the load and boundary parameter for the CAD model
- PC36.** Simulate the result
- PC37.** Validate the result
- PC38.** Optimize the result
- PC39.** Generate the macro file for the analysis
- PC40.** Generate the different types of graphs
- PC41.** Publish the graphs
- PC42.** Generate the report



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCARM/04 Computer Aided Design with Analysis.</i>	-	100	-	-
PC1. Explain the Importance of Engineering drawing,	-	-	-	-
PC2. Explanation the scope and objective of Engineering Drawing	-	-	-	-
PC3. • Demonstrate and explain drawing Standards: Size of drawing sheets – Layout of drawing sheet – Title • Blocks – Types of lines – Folding of drawing sheets.	-	-	-	-
PC4. Use of dimensioning techniques according to Standard of dimensions	-	-	-	-
PC5. Demonstrate orthographic & Isometric projection by using a viewing box and a model	-	-	-	-
PC6. Demonstrate first angle and third angle projection	-	-	-	-
PC7. Use of symbol in projections -Front view, top view and side view	-	-	-	-
PC8. Demonstrate the use of CAD and CAD interface (AutoCAD, Catia, Solidworks)	-	-	-	-
PC9. Apply coordinates systems in CAD	-	-	-	-
PC10. Demonstrate the use of tool bars.	-	-	-	-
PC11. Create solid field area (Hatching, Gradient)	-	-	-	-
PC12. Edit objects using the object property tool bar and various methods.	-	-	-	-
PC13. Use sketch settings and Style toolbar (text style, Multileader style etc.)	-	-	-	-
PC14. Edit object using object property toolbar & various method.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. Create the replica of model using copy, array command	-	-	-	-
PC16. Work with models in the modify toolbar	-	-	-	-
PC17. Identify the appropriate Tool to create and modify the model	-	-	-	-
PC18. Change the orientation of the object by aligns, offset, rotate command	-	-	-	-
PC19. Apply standard dimension in a mechanical component	-	-	-	-
PC20. Use of dimensioning Methods: Linear, Align, ordinates, Radius, Diameter, Arc length, angular etc	-	-	-	-
PC21. Use of leader with text, block reference	-	-	-	-
PC22. Edit or modify the CAD Drawings	-	-	-	-
PC23. Use of layers Management and its applications	-	-	-	-
PC24. Apply GD& T Symbols in drawings	-	-	-	-
PC25. Develop proper drawing layout.	-	-	-	-
PC26. Use of Surfacing in Cad	-	-	-	-
PC27. Use of sheet metal in cad	-	-	-	-
PC28. Explain & Demonstrate the Assembly module in CAD	-	-	-	-
PC29. Explain the interference Clash and parameterizations analysis	-	-	-	-
PC30. Understand the need Analysis and need of CAE Software	-	-	-	-
PC31. Different file format use in CAE Software	-	-	-	-
PC32. Export and Import of different file format in CAE	-	-	-	-
PC33. Define the different parameter for analysis	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. Generate the mesh file	-	-	-	-
PC35. Define the load and boundary parameter for the CAD model	-	-	-	-
PC36. Simulate the result	-	-	-	-
PC37. Validate the result	-	-	-	-
PC38. Optimize the result	-	-	-	-
PC39. Generate the macro file for the analysis	-	-	-	-
PC40. Generate the different types of graphs	-	-	-	-
PC41. Publish the graphs	-	-	-	-
PC42. Generate the report	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2504
NOS Name	Computer Aided Design with Analysis.
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	3
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024



Qualification Pack

MSME/CSC/N2503: Computer Aided Manufacturing

Description

After completion of course Student should be able to Prepare CAM models using advanced hand software

Scope

The scope covers the following :

- After completion of course Student should be able to Prepare CAM models using advanced hand software

Elements and Performance Criteria

MSME/MCCARM/03 Computer Aided Manufacturing

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

- PC1.** Calculate parameters like speed feed, depth of cut etc. And set a references for the various operations
- PC2.** Create / import entities in 3D space as per job requirement
- PC3.** Modify entities in 3D space as per job requirement
- PC4.** Create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes
- PC5.** Perform programming for solid modeling
- PC6.**
 - 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
- PC7.**
 - Produce CAM program which comply with organizational guidelines; statutory regulations and codes of practice; CAM software standards; national and international standards
- PC8.** Confirm that the program is as per job specifications and contains all relevant information
- PC9.** Use appropriate techniques to create program that are sufficiently and clearly detailed
- PC10.** Use codes and other references that follow the required conventions
- PC11.** Make sure that programs are checked and approved by the appropriate person
- PC12.** 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/MCCARM/03 Computer Aided Manufacturing</i>	-	100	-	-
PC1. Calculate parameters like speed feed, depth of cut etc. And set a references for the various operations	-	-	-	-
PC2. Create / import entities in 3D space as per job requirement	-	-	-	-
PC3. Modify entities in 3D space as per job requirement	-	-	-	-
PC4. Create 3-D views on the screen by manipulating drawing planes and inserting 3-D geometric shapes	-	-	-	-
PC5. Perform programming for solid modeling	-	-	-	-
PC6. • 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	-	-	-	-
PC7. • Produce CAM program which comply with organizational guidelines; statutory regulations and codes of • practice; CAM software standards; national and international standards	-	-	-	-
PC8. Confirm that the program is as per job specifications and contains all relevant information	-	-	-	-
PC9. Use appropriate techniques to create program that are sufficiently and clearly detailed	-	-	-	-
PC10. Use codes and other references that follow the required conventions	-	-	-	-
PC11. Make sure that programs are checked and approved by the appropriate person	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. Save the program in the appropriate file type and location.	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2503
NOS Name	Computer Aided Manufacturing
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	3
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024



Qualification Pack

MSME/CSC/N2502: CNC Technology

Description

Manufacture Precision jobs using conventional and CNC machines.

Scope

The scope covers the following :

- Manufacture Precision jobs using conventional and CNC machines.

Elements and Performance Criteria

MSME/MCCARM/02 CNC Technology

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

- PC1.** Plan the machining activities before starting them.
- PC2.**
 - Use appropriate sources to obtain the required information e.g. Numerical control on CNC machine, types of
 - CNC control
- PC3.** Calculation of technological data for CNC machining
- PC4.** Check that all the equipment is correctly connected and in a safe and usable working condition
- PC5.**
 - Select Appropriate Raw Material as per size of the Parts to be manufactured mentioned in drawing and
 - specification
- PC6.** Calculate parameters like speed feed, depth of cut etc. and set a references for the various operations
- PC7.** Use appropriate techniques to create CNC program that are sufficiently and clearly detailed
- PC8.** Use codes and other references that follow the required conventions
- PC9.** Make sure that programs are checked and approved by the appropriate person
- PC10.** Save the program in the appropriate file type and location
- PC11.**
 - Deal promptly and effectively within your control, and seek help and guidance from the relevant people if
 - you have problems that you cannot resolve
- PC12.**
 - Prepare correct programs, demonstrate, simulate and operate CNC lathe / milling / EDM / WEDM machines
 - for various machining operations.
- PC13.**
 - Describe and explain Modern CNC systems and explain its importance in manufacturing.
 - Execute program and inspect simple geometrical forms / standard parts.



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCARM/02 CNC Technology</i>	-	100	-	-
PC1. Plan the machining activities before starting them.	-	-	-	-
PC2. • Use appropriate sources to obtain the required information e.g. Numerical control on CNC machine, types of • CNC control	-	-	-	-
PC3. Calculation of technological data for CNC machining	-	-	-	-
PC4. Check that all the equipment is correctly connected and in a safe and usable working condition	-	-	-	-
PC5. • Select Appropriate Raw Material as per size of the Parts to be manufactured mentioned in drawing and • specification	-	-	-	-
PC6. Calculate parameters like speed feed, depth of cut etc. and set a references for the various operations	-	-	-	-
PC7. Use appropriate techniques to create CNC program that are sufficiently and clearly detailed	-	-	-	-
PC8. Use codes and other references that follow the required conventions	-	-	-	-
PC9. Make sure that programs are checked and approved by the appropriate person	-	-	-	-
PC10. Save the program in the appropriate file type and location	-	-	-	-
PC11. • Deal promptly and effectively within your control, and seek help and guidance from the relevant people if • you have problems that you cannot resolve	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. • Prepare correct programs, demonstrate, simulate and operate CNC lathe / milling / EDM / WEDM machines • for various machining operations.	-	-	-	-
PC13. • Describe and explain Modern CNC systems and explain its importance in manufacturing. • Execute program and inspect simple geometrical forms / standard parts.	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2502
NOS Name	CNC Technology
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	4
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024



Qualification Pack

MSME/CSC/N2501: Production Process Planning with ERP

Description

Learn Workshop safety rules.

Scope

The scope covers the following :

- Learn Workshop safety rules.

Elements and Performance Criteria

MSME/MCCARM/01 Production Process Planning with ERP

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

- PC1.** Describe safety rules
- PC2.** Describe precautions to be taken for safety at work.
- PC3.** Explain the safety precautions required in the given set of work.
- PC4.** Explain the use of PPE while working in the workshop.
- PC5.** Describe the characteristics of the cutting tool materials.
- PC6.** Describe different types of materials used for cutting tools.
- PC7.** Identify tool materials and their properties
- PC8.** Select tool material for the specific cutting tool application
- PC9.** Explain & List different types of lathe machine w.r.t. its specifications.
- PC10.** Identify major parts and mechanism used in lathe
- PC11.** Explain the various lathe operation
- PC12.** Explain the parts and its function of milling machine.
- PC13.** Explain the parts and its function of grinding machine.
- PC14.** Explain engineering material with its type
- PC15.**
 - Describe the various property of material such as Mechanical, Electrical, magnetic, Chemical, Optical,
 - Physical.
- PC16.**
 - Describe mechanical property of material such as 1. Strength, 2. Elasticity, 3. Plasticity, 4. Stiffness, 5.
 - Resilience, 6. Toughness, 7. Ductility, 8. Malleability, 9. Hardness. 10. Brittleness, 11. Creep and 12, Fatigue
- PC17.** Explain the Engineering application of Tool material
- PC18.** Describe Metals: ferrous & nonferrous.
- PC19.** Explain Ferrous materials: Contain Iron as base.
- PC20.**
 - Describe Ferrous Metals & their alloys extensively used in Metallurgical and mechanical Industries for
 - shaping the products
- PC21.** Nonferrous materials: Aluminum, Copper, Lead, Zinc, Tin, Nickel, Magnesium



Qualification Pack

- PC22.** Write the factors consider in selection of material.
- PC23.** Compare ferrous material with non-ferrous material.
- PC24.** Identify the type of material (ferrous or non-ferrous)
- PC25.** Describe the use of iron: Pig Iron, wrought iron, cast iron
- PC26.** Describe the use of Steel: low carbon, high carbon, medium carbon, Alloy Steel.
- PC27.** Describe the steel making process & iron carbon diagram.
- PC28.** Describe the purpose of heat treatment of steel
- PC29.**
 - Explain the different heat treatment process such as Annealing, Stress relieving, Refining, Normalizing,
 - Tempering and Hardening
- PC30.** Overview of SAP Business one
- PC31.** Concept of Master Data and Documentation
- PC32.** Explain the concept of Resources
- PC33.** Concept of Inventory Management
- PC34.** Concept of Production Planning
- PC35.** Explain the MRP Concept



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/MCCARM/01 Production Process Planning with ERP</i>	-	100	-	-
PC1. Describe safety rules	-	-	-	-
PC2. Describe precautions to be taken for safety at work.	-	-	-	-
PC3. Explain the safety precautions required in the given set of work.	-	-	-	-
PC4. Explain the use of PPE while working in the workshop.	-	-	-	-
PC5. Describe the characteristics of the cutting tool materials.	-	-	-	-
PC6. Describe different types of materials used for cutting tools.	-	-	-	-
PC7. Identify tool materials and their properties	-	-	-	-
PC8. Select tool material for the specific cutting tool application	-	-	-	-
PC9. Explain & List different types of lathe machine w.r.t. its specifications.	-	-	-	-
PC10. Identify major parts and mechanism used in lathe	-	-	-	-
PC11. Explain the various lathe operation	-	-	-	-
PC12. Explain the parts and its function of milling machine.	-	-	-	-
PC13. Explain the parts and its function of grinding machine.	-	-	-	-
PC14. Explain engineering material with its type	-	-	-	-
PC15. - Describe the various property of material such as Mechanical, Electrical, magnetic, Chemical, Optical, - Physical.	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. Describe mechanical property of material such as 1. Strength, 2. Elasticity, 3. Plasticity, 4. Stiffness, 5. Resilience, 6. Toughness, 7. Ductility, 8. Malleability, 9. Hardness. 10. Brittleness, 11. Creep and 12, Fatigue	-	-	-	-
PC17. Explain the Engineering application of Tool material	-	-	-	-
PC18. Describe Metals: ferrous & nonferrous.	-	-	-	-
PC19. Explain Ferrous materials: Contain Iron as base.	-	-	-	-
PC20. - Describe Ferrous Metals & their alloys extensively used in Metallurgical and mechanical Industries for - shaping the products	-	-	-	-
PC21. Nonferrous materials: Aluminum, Copper, Lead, Zinc, Tin, Nickel, Magnesium	-	-	-	-
PC22. Write the factors consider in selection of material.	-	-	-	-
PC23. Compare ferrous material with non-ferrous material.	-	-	-	-
PC24. Identify the type of material (ferrous or non-ferrous)	-	-	-	-
PC25. Describe the use of iron: Pig Iron, wrought iron, cast iron	-	-	-	-
PC26. Describe the use of Steel: low carbon, high carbon, medium carbon, Alloy Steel.	-	-	-	-
PC27. Describe the steel making process & iron carbon diagram.	-	-	-	-
PC28. Describe the purpose of heat treatment of steel	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC29. • Explain the different heat treatment process such as Annealing, Stress relieving, Refining, Normalizing, • Tempering and Hardening	-	-	-	-
PC30. Overview of SAP Business one	-	-	-	-
PC31. Concept of Master Data and Documentation	-	-	-	-
PC32. Explain the concept of Resources	-	-	-	-
PC33. Concept of Inventory Management	-	-	-	-
PC34. Concept of Production Planning	-	-	-	-
PC35. Explain the MRP Concept	-	-	-	-
NOS Total	-	100	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2501
NOS Name	Production Process Planning with ERP
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	5
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024



Qualification Pack

MSME/CSC/N2507: Employability Skills 09

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/03 Employability skills

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

- PC1.** Discuss the Employability Skills required for jobs in various industries
- PC2.** List different learning and employability related GOI and private portals and their usage
- PC3.**
 - Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards
 - society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to
 - become a responsible citizen
- PC4.** Show how to practice different environmentally sustainable practices.
- PC5.** Discuss importance of relevant 21st century skills.
- PC6.**
 - Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive
 - thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to
 - learn etc. in personal or professional life.
- PC7.** Describe the benefits of continuous learning
- PC8.**
 - Show how to use basic English sentences for everyday conversation in different contexts, in person and
 - over the telephone
- PC9.** Read and interpret text written in basic English
- PC10.** Write a short note/paragraph / letter/e -mail using basic English
- PC11.** Create a career development plan with well-defined short- and long-term goals
- PC12.** Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
- PC13.** Explain the importance of active listening for effective communication



Qualification Pack

- PC14.** Discuss the significance of working collaboratively with others in a team
- PC15.** Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
- PC16.** Discuss the significance of escalating sexual harassment issues as per POSH act.
- PC17.** Outline the importance of selecting the right financial institution, product, and service
- PC18.** Demonstrate how to carry out offline and online financial transactions, safely and securely
- PC19.** List the common components of salary and compute income, expenditure, taxes, investments etc.
- PC20.** Discuss the legal rights, laws, and aids
- PC21.** Describe the role of digital technology in today's life
- PC22.**
- Demonstrate how to operate digital devices and use the associated applications and features, safely and
 - securely
- PC23.**
- Discuss the significance of displaying responsible online behavior while browsing, using various social
 - media platforms, e-mails, etc., safely and securely
- PC24.** Create sample word documents, excel sheets and presentations using basic features
- PC25.** utilize virtual collaboration tools to work effectively
- PC26.** Explain the types of entrepreneurship and enterprises
- PC27.**
- Discuss how to identify opportunities for potential business, sources of funding and associated financial
 - and legal risks with its mitigation plan
- PC28.** Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
- PC29.** Create a sample business plan, for the selected business opportunity
- PC30.** Describe the significance of analyzing different types and needs of customers
- PC31.** Explain the significance of identifying customer needs and responding to them in a professional manner.
- PC32.** Discuss the significance of maintaining hygiene and dressing appropriately
- PC33.** Create a professional Curriculum Vitae (CV)
- PC34.**
- Use various offline and online job search sources such as employment exchanges, recruitment agencies,
 - and job portals respectively
- PC35.**
- Discuss the significance of maintaining hygiene and confidence during an interview Perform a mock
 - interview
- PC36.** List the steps for searching and registering for apprenticeship opportunities



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>MSME/ES/03 Employability skills</i>	100	-	-	-
PC1. Discuss the Employability Skills required for jobs in various industries	-	-	-	-
PC2. List different learning and employability related GOI and private portals and their usage	-	-	-	-
PC3. • Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to • become a responsible citizen	-	-	-	-
PC4. Show how to practice different environmentally sustainable practices.	-	-	-	-
PC5. Discuss importance of relevant 21st century skills.	-	-	-	-
PC6. • Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive • thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to • learn etc. in personal or professional life.	-	-	-	-
PC7. Describe the benefits of continuous learning	-	-	-	-
PC8. • Show how to use basic English sentences for everyday conversation in different contexts, in person and • over the telephone	-	-	-	-
PC9. Read and interpret text written in basic English	-	-	-	-
PC10. Write a short note/paragraph / letter/e -mail using basic English	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. Create a career development plan with well-defined short- and long-term goals	-	-	-	-
PC12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.	-	-	-	-
PC13. Explain the importance of active listening for effective communication	-	-	-	-
PC14. Discuss the significance of working collaboratively with others in a team	-	-	-	-
PC15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD	-	-	-	-
PC16. Discuss the significance of escalating sexual harassment issues as per POSH act.	-	-	-	-
PC17. Outline the importance of selecting the right financial institution, product, and service	-	-	-	-
PC18. Demonstrate how to carry out offline and online financial transactions, safely and securely	-	-	-	-
PC19. List the common components of salary and compute income, expenditure, taxes, investments etc.	-	-	-	-
PC20. Discuss the legal rights, laws, and aids	-	-	-	-
PC21. Describe the role of digital technology in today's life	-	-	-	-
PC22. • Demonstrate how to operate digital devices and use the associated applications and features, safely and • securely	-	-	-	-
PC23. • Discuss the significance of displaying responsible online behavior while browsing, using various social • media platforms, e-mails, etc., safely and securely	-	-	-	-
PC24. Create sample word documents, excel sheets and presentations using basic features	-	-	-	-



Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. utilize virtual collaboration tools to work effectively	-	-	-	-
PC26. Explain the types of entrepreneurship and enterprises	-	-	-	-
PC27. • Discuss how to identify opportunities for potential business, sources of funding and associated financial • and legal risks with its mitigation plan	-	-	-	-
PC28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement	-	-	-	-
PC29. Create a sample business plan, for the selected business opportunity	-	-	-	-
PC30. Describe the significance of analyzing different types and needs of customers	-	-	-	-
PC31. Explain the significance of identifying customer needs and responding to them in a professional manner.	-	-	-	-
PC32. Discuss the significance of maintaining hygiene and dressing appropriately	-	-	-	-
PC33. Create a professional Curriculum Vitae (CV)	-	-	-	-
PC34. • Use various offline and online job search sources such as employment exchanges, recruitment agencies, • and job portals respectively	-	-	-	-
PC35. • Discuss the significance of maintaining hygiene and confidence during an interview Perform a mock • interview	-	-	-	-
PC36. List the steps for searching and registering for apprenticeship opportunities	-	-	-	-
NOS Total	100	-	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N2507
NOS Name	Employability Skills 09
Sector	Capital Goods
Sub-Sector	
Occupation	Office Supervisor
NSQF Level	6
Credits	3
Version	1.0
Last Reviewed Date	15/03/2024
Next Review Date	15/03/2027
NSQC Clearance Date	15/03/2024

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/N2506.QMS & FAI, AS 9100, Quality Control & Inspection	100	-	-	-	100	10
MSME/CSC/N2505.Understanding & Application of Aerospace Materials	100	-	-	-	100	10
MSME/CSC/N2504.Computer Aided Design with Analysis.	-	100	-	-	100	20
MSME/CSC/N2503.Computer Aided Manufacturing	-	100	-	-	100	20
MSME/CSC/N2502.CNC Technology	-	100	-	-	100	20
MSME/CSC/N2501.Production Process Planning with ERP	-	100	-	-	100	10
MSME/CSC/N2507.Employability Skills 09	100	-	-	-	100	10
Total	300	400	-	-	700	100



Qualification Pack

Acronyms

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



Qualification Pack

Glossary

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



Qualification Pack

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