Skills for Employment Investment Program (SEIP)

ASSESSMENT TOOL

FOR

CNC MACHINE OPERATION

(LIGHT ENGINEERING SECTOR)

Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh

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PART A – THE ASSESSOR

Instructions to Assessor

Assessment is the process of identifying a candidate's skills and knowledge set against the industry established standards in the workplace. It requires the candidate to consistently and over time demonstrate skills, knowledge and attitude that enable confident completion of workplace tasks in a variety of situations.

In judging assessment evidence, the assessor must ensure that the evidence is:

- authentic (the candidate's own work)
- valid (directly related to the current version of the endorsed competency standard)
- reliable (show that the candidate consistently meets the endorsed unit of competency)
- current (reflects the candidate's current capacity to perform the aspect of work covered by the endorsed unit of competency)
- sufficient (covers the full range of elements in the relevant unit of competency)

There are a number of assessment methods that may be employed including but not limited to:

- written examination
- oral questioning
- practical demonstration

A single unit of competency may be assessed or a group of units of competency may be assessed, either in an actual workplace or a simulated workplace environment.

Conducting Assessment

Prior to commencement of assessment, candidates must have the tasks clearly explained to them. Also, the assessor should provide candidates with clear advice and information about the:

- date, time and place for assessment
- structure of assessment
- number of times performance must be demonstrated or observed
- amount or type of assistance candidates can expect
- assessment environment
- resources required for assessment
- performance standards or benchmarks relevant to the qualification

As well as informing the candidate of what they will be required to do during the assessment, the assessor will also need to explain what evidence they will need to provide in response to the various assessment tasks.

If a candidate is required to submit evidence, any explanation must include specific guidance on:

- what to include as evidence
- how to present the evidence
- how to submit the evidence and to whom

Assessing Competence

Competency-based assessment does not award grades, but simply identifies if the candidate has the skills, knowledge and attitudes to undertake the required task to the specified standard.

Therefore, when assessing competency an assessor has two possible results (assessment decisions) that can be awarded:

- Competent (C)
- Not Yet Competent (NYC)

Competent (C)

If the candidate is able to successfully answer and demonstrate what is required to the expected standard of the assessment criteria, they will be deemed as 'Competent'.

The assessor will award 'Competent' if they feel the candidate has the necessary skills, knowledge and attitudes in all assessment tasks for a given package.

Not Yet Competent (NYC)

If the candidate is unable to answer and demonstrate competency to the expected standard, they will be deemed to be 'Not Yet Competent'.

This does not mean the candidate will need to complete all the assessment tasks again. When applying for reassessment, the focus will be on the specific assessment tasks that were not performed to the required standard.

The candidate may be required to:

(a) undertake further training or instruction

(b) undertake the specific assessment task again until they are deemed to be competent

Recording Assessment Information

When all assessment tasks are concluded, the evidence summary sheet should be completed, signed by all parties, and any outstanding activities or issues actioned.

The assessor should ensure that all appropriate forms are completed and signed by all parties.

CHECKLIST FOR ASSESSOR		
Prior to the assessment I have:	**Tick (✓)**	**Remarks**
Ensured the candidate is informed about the venue and schedule of assessment.		
Received current copies of the assessment criteria to be assessed, assessment plan and evidence plan.		
Reviewed the assessment criteria and evidence plan to ensure I clearly understood the instructions and the requirements of the assessment process.		
Identified and accommodated any special needs of the candidate.		
Checked the set-up and resources for the assessment.		
During the assessment I have:		
Introduced myself and confirmed identities of candidates.		
Collected the admission slips.		
Put candidates at ease by being friendly and helpful.		
Checked completed self-assessment guide.		
Explained to candidates the purpose, context and benefits of the assessment.		
Ensured candidates understood the assessment process and the assessment procedure.		
Provided candidates with an overview of the assessment criteria to be used.		
Gave specific and clear instructions to the candidates.		
Observed carefully the specified time limits provided in the assessment package.		
Stayed at the assessment area during the entire duration of the assessment activity.		
Ensured notes are made on unusual conditions or situations during the assessment and include these in the report.		
Did not provide any assistance during the assessment or indicated in any way whether the candidate is or is not performing the activity correctly (intervened only for health and safety reasons).		

Implemented the evidence gathering process and ensured its validity, reliability, fairness and flexibility.		
Collected appropriate evidence and matched relevance to the elements, performance criteria, range of variables and evidence guide in the relevant units of competency.		
Explained the results reporting procedure to the candidate.		
Encouraged candidates to seek clarifications if in doubt about the pre- and post-assessment activity procedures.		
Asked candidates for feedback on the assessment.		
Explained legal, health and safety, and ethical issues, if applicable.		
After the assessment I have:		
Provided feedback on the assessment decision. This includes the following: ▪ clear and constructive feedback on the assessment decision ▪ information on ways of addressing any identified gaps in competency revealed by the assessment ▪ opportunity to discuss the assessment process and outcome ▪ information on reassessment process (if necessary) ▪ information on appeal (if necessary)		
Prepared the necessary assessment reports. This includes the following: ▪ record the assessment decision using the prescribed rating sheet ▪ maintain records of the assessment procedures, evidence collected and assessment decision ▪ endorse assessment decision to BTEB ▪ prepare recommendations for the issuance of certificate		
Thanked candidate for participating in the assessment.		

Assessment Evidence Guide

The purpose of assessment is to confirm that an individual can perform to the standards expected by in the workplace, as expressed in the competency standards.

To attain the certificate of **CNC Machine Operation**, a candidate must demonstrate competent skill and knowledge in all the units of competency listed below. Upon successful completion of all assessment activities, a candidate shall be awarded with a certificate.

CODE	UNIT OF COMPETENCY
Generic Competencies	
SEIP-LE-CNC-01-G	Use basic mathematical concepts
SEIP-LE-CNC-02-G	Carry out workplace interaction
SEIP-LE-CNC-03-G	Operate in a team environment
SEIP-LE-CNC-05-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-CNC-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-CNC-02-S	Read and interpret sketches and drawings
SEIP-LE-CNC-03-S	Use hand and power tools
SEIP-LE-CNC-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-CNC-01-O	Perform basic lathe machine operations
SEIP-LE-CNC-02-O	Perform basic milling machine operations
SEIP-LE-CNC-03-O	Carry out CNC lathe machine operations
SEIP-LE-CNC-04-O	Carry out CNC milling operations
SEIP-LE-CNC-05-O	Carry out CNC wire cut machine operations
SEIP-LE-CNC-06-O	Apply knowledge of CAM

Assessment Evidence Plan

An assessment evidence plan is a document that assists in establishing what evidence needs to be collected by the assessor to ensure that the candidate meets all the appropriate requirements of the competency standard. It usually contains a record of:

- evidence requirements as set out in the competency standard
- who will collect the evidence
- time period needed to collect the evidence

Occupation:	CNC Machine Operation					
Unit Name:	Use basic mathematical concepts					
Unit Code:	SEIP-LE-CNC-01-G					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
Element	**Performance Criteria**			**P**	**O**	**W**
1. Identify calculation requirements in the workplace	**1.1.** Calculation requirements are identified from workplace information.					√
	1.2. Mathematical problems are constructed from workplace.					√
2. Select appropriate mathematical methods/concepts for the calculation	**2.1.** Appropriate method is selected to carry out calculation requirements.					√
	2.2. Constructed mathematical problems are solved with appropriate method.					√
3. Use tools and instrument to perform calculations	**3.1.** Tools and instruments required for computation are identified.					√
	3.2. Calculation is performed using appropriate tools and equipment accurately.					√

Occupation:	CNC Machine Operation					
Unit Name:	Carry out workplace interaction					
Unit Code:	SEIP-LE-CNC-02-G					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
Element	**Performance Criteria**			**P**	**O**	**W**
	1.1. Workplace codes of conduct are interpreted as per organisational guidelines.				√	

1. Interpret workplace communication and etiquette	**1.2.** Appropriate lines of communication are maintained with supervisors and colleagues.		√	
	1.3. Workplace interactions are conducted in a courteous manner to gather and convey information.		√	
	1.4. Workplace procedures and matters are comprehended.	√		
2. Read and understand workplace documents	**2.1.** Workplace documents are interpreted correctly.		√	
	2.2. Visual information/symbols/signage are understood correctly and followed.	√		
	2.3. Specific and relevant information are accessed from appropriate sources.		√	
	2.4. Appropriate medium is used to transfer information and ideas.		√	
3. Participate in workplace meetings and discussions	**3.1.** Team meetings are attended on time.		√	
	3.2. Meeting procedures and etiquette are followed.		√	
	3.3. Active participation is ensured, opinions are expressed and heard.		√	
	3.4. Inputs are provided and interpreted in line with the meeting purpose.		√	
4. Practice professional ethics at work	**4.1.** Responsibilities as a team member are performed.	√		
	4.2. Tasks are performed in accordance with workplace procedures.	√		
	4.3. Confidentiality is maintained.	√		
	4.4. Inappropriate and conflicting situations are avoided.		√	

Occupation:	CNC Machine Operation					
Unit Name:	Operate in a team environment					
Unit Code:	SEIP-LE- CNC -03-G					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
Element	**Performance Criteria**			**P**	**O**	**W**
1. Identify team goals and work processes	**1.1.** Roles and objectives of the team are identified and interpreted.				√	
	1.2. Roles and responsibilities of team members are identified and interpreted.					√

2. Identify own role and responsibilities within team	**2.1.** Personal role and responsibilities are identified within the team environment.	√		
	2.2. Reporting relationships are interpreted within team and external to team.		√	
3. Communicate and co-operate with team members	**3.1.** Other teammates' tasks are identified and support provided when requested.	√		
	3.2. The team is encouraged through sharing information or expertise, working together to solve problems, and putting team success first.	√		
	3.3. Views and opinions of other team members are interpreted and respected.	√	√	
4. Practice problem solving within the team	**4.1.** Problems faced at the individual and team level are identified and showed insight into the root-causes of the problems.			√
	4.2. A range of solutions and courses of action are identified together with benefits, costs, and risks associated with each.			√
	4.3. The good ideas of others to help develop solutions are recognised and advice sought from those who have solved similar problems.			√
	4.4. It is looked beyond the obvious and not stopped at the first answers.		√	

Occupation:	CNC Machine Operation		
Unit Name:	Apply basic IT skills		
Unit Code:	SEIP-LE-CNC-04-G		
Assessment Method:	**P**	**O**	**W**
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	**Performance Criteria**	**P**	**O**	**W**
1. Identify and use most commonly used IT tools	**1.1.** History of information technology (IT) is identified and summarised.		√	√
	1.2. Commonly used IT tools are identified and described.		√	
2. Understand use of computer	**2.1.** Basic parts of a computer are identified.		√	
	2.2. Turning on and off technique of a computer is performed.	√		
	2.3. Working environment, functions and features of operating system is interpreted.		√	
	2.4. Simple trouble-shooting techniques are applied.	√		

3. Work with word processing application	**3.1.** Word processing application appropriate to perform activity is operated.		√	
	3.2. Basic typing technique to document is applied.			√
	3.3. Word processing techniques to document are employed.		√	
	3.4. Personal CV writing using suitable word processing techniques is practiced.			√
	3.5. Saving and retrieving technique of a document is used.	√		
4. Work with spreadsheets	**4.1.** Spreadsheet working environment, functions and features are identified and interpreted.		√	
	4.2. Data entry on spreadsheet appropriate to perform activity is performed.		√	
	4.3. Data manipulation techniques to spreadsheet document are applied.			√
	4.4. Spreadsheet document is created and saved.		√	
5. Access email and search the internet	**5.1.** Use of email account in online environment is explained.		√	
	5.2. Writing and sending of workplace emails is completed.			√
	5.3. Different browsers to work online are identified and selected.		√	
	5.4. Browse different web portals and apply proper search techniques.		√	

Occupation:	CNC Machine Operation				
Unit Name:	Apply occupational health and safety (OHS) practice in the workplace				
Unit Code:	SEIP-LE-CNC-01-S				
Assessment Method:	**P**	**O**	**W**		
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*		
Element	**Performance Criteria**			**P**	**O**	**W**
1. Identify OHS policies and procedures	**1.1.** OHS policies and safe operating procedures are interpreted.					√
	1.2. Safety signs and symbols are identified and followed.			√	√	
	1.3. Response, evacuation procedures and other contingency measures are interpreted correctly.				√	
2. Apply personal health and safety practices	**2.1.** OHS policies and procedures are applied in the workplace including personal protective equipment (PPE).			√		

	2.2. Common health issues are recognised.		√	
	2.3. Common safety issues are identified.	√		
3. Report hazards and risks	**3.1.** Hazards and risks are identified.	√		
	3.2. Hazards and risks assessment and controls are interpreted.		√	
4. Respond to emergencies	**4.1.** Respond to alarms and warning devices.	√		
	4.2. Emergency response plans and procedures are responded to.		√	
	4.3. First aid procedures during emergency situations are identified.		√	

Occupation:	CNC Machine Operation		
Unit Name:	Read and interpret sketches and drawings		
Unit Code:	SEIP-LE-CNC-02-S		
Assessment Method:	**P**	**O**	**W**
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	**Performance Criteria**	**P**	**O**	**W**
1. Interpret information and specifications	**1.1.** Appropriate manuals for work activity are identified and collected.	√		
	1.2. Information and specifications in the manuals is interpreted and applied.	√		
2. Read and interpret sketches and drawings	**2.1.** Relevant sketches and drawings are identified for job requirement.	√		
	2.2. Key terms and abbreviations are identified and interpreted.			√
	2.3. Signs and symbols are identified and interpreted.		√	
	2.4. Schedules, dimensions, sketches, drawings and specifications are correctly read and interpreted.		√	

Occupation:	CNC Machine Operation		
Unit Name:	Use hand and power tools		
Unit Code:	SEIP-LE-CNC-03-S		
Assessment Method:	**P**	**O**	**W**
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	Performance Criteria	P	O	W
1. Identify and inspect hand and power tools	**1.1.** Appropriate hand and power tools are identified.	√		
	1.2. Application of hand and power tools is recognised.		√	
	1.3. Usability of hand and power tools is checked and verified.	√		
2. Use hand tools properly and safely	**2.1.** Appropriate hand tools are selected.	√		
	2.2. Safety precautions are ensured before using hand tools.	√		
	2.3. Unsafe or faulty hand tools are identified and marked for repair.	√		
	2.4. Measuring tools are checked and calibrated before use.	√		
	2.5. Use hand tools properly and safely to perform work activity.	√		
3. Operate power tools properly and safely	**3.1.** Appropriate power tools are selected.	√		
	3.2. Power supply outlet and electrical cord are inspected and confirmed safe for use in accordance with established workplace safety requirements.	√		
	3.3. Safety precautions are ensured before using power tools in accordance with manufacturer's operating specification.	√		
	3.4. Proper sequence of operation applied for using power tools.	√		
	3.5. Unsafe or faulty power tools are identified and marked for repair.	√		
	3.6. Operate power tools properly and safely to perform work activity.	√		
4. Clean and maintain hand and power tools	**4.1.** Dust and foreign matter is removed from hand and power tools in accordance to workplace standards.	√		
	4.2. Condition of hand and power tools is checked after use and reported.	√		
	4.3. Appropriate lubricant is applied after use and prior to storage.	√		
	4.4. Measuring tools are checked and calibrated after use.	√		
	4.5. Defective hand and power tools are inspected and repaired or replaced.		√	√
	4.6. Hand and power tools are stored and secured in accordance with workplace requirements.		√	

Occupation:	CNC Machine Operation		
Unit Name:	Apply quality system		
Unit Code:	SEIP-LE-CNC-04-S		
Assessment Method:	**P**	**O**	**W**
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	**Performance Criteria**	**P**	**O**	**W**
1. Work within a quality system	**1.1.** Instructions and procedures are strictly followed in accordance with quality improvement system.	√		
	1.2. Duties are performed in accordance with demand of quality improvement system.	√		
	1.3. Defects are detected and reported according to standard operating procedures.	√		
	1.4. Quality service is ensured and delivered to customer in providing a product or service.	√		
2. Apply and monitor quality system improvement	**2.1.** Performance measurement systems are identified.		√	
	2.2. Specifications and standard operating procedure are identified and established.		√	
	2.3. Performance is assessed at regular intervals.	√		
	2.4. Defects are detected and reported to authority according to standard operating procedure.			√
	2.5. Process improvement procedures are contributed to and implemented.	√		
	2.6. Improvement of internal/external customer and supplier relationships is contributed to.		√	
	2.7. Performance of operation or quality of product or service is monitored to ensure customer satisfaction.	√		
3. Apply standard procedures for each job	**3.1.** Concept of supplying product or service to meet the customer's requirements is understood and applied accordingly.		√	
	3.2. Responsibility is taken for quality of own work.	√		
	3.3. Quality system procedures for each job are followed.	√		
	3.4. Conformance to specification is ensured in every case at all situations.			√

Occupation:	CNC Machine operation
Unit Name:	Perform basic lathe machine operations
Unit Code:	SEIP-LE-CNC-01-O

Assessment Method:	P	O	W
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	Performance Criteria	P	O	W
1. Identify and prepare work requirements	**1.1.** Drawings are read and interpreted to grind tools conforming to job specifications.			√
	1.2. Tool holding devices are selected according to the job requirements.	√		
	1.3. Cutting tools are selected according to job requirements.	√		
	1.4. Job materials are selected and collected in accordance with the job requirements.			√
2. Prepare for lathe operations	**2.1.** Appropriate type of lathe machine is selected for lathe operations.	√		
	2.2. Different parts of lathe machine are identified.	√		
	2.3. Lathe accessories are selected and used in accordance with job specification.	√		
	2.4. Cutting speed and feed rate are selected in accordance with job specification.	√		
	2.5. Drawings are read and interpreted to produce component in accordance to the job specification.	√		
	2.6. Sequence of operation is determined to produce products to meet job specification.	√		
3. Perform basic lathe machine operations	**3.1.** RPM, cutting speed, feed rate and depth of cut are calculated in accordance with the job requirement.	√		
	3.2. Machine performance is checked in conformance with standard operating procedure.	√		
	3.3. Coolant is applied to prevent over heating of work piece and cutting tool.		√	
	3.4. Basic lathe operations are performed to produce component.	√		
	3.5. Corrective measures and/or adjustments are performed, if necessary.	√		
	3.6. Work piece is checked and measured in conformance to job specification using appropriate methods, measuring tools and equipment.	√		
4. Clean and store machinery, tools and equipment	**4.1.** Tools, equipment and milling machine is cleaned.	√		
	4.2. Workplace is cleaned.	√		
	4.3. Waste materials are disposed of correctly.			√
	4.4. Tools, equipment and finished product are stored safely pursuant to workplace guidelines.		√	

Occupation:	CNC Machine Operation					
Unit Name:	Perform basic milling operations					
Unit Code:	SEIP-LE-CNC-02-O					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
1. Identify and prepare work requirements	**1.1.** Drawings are read and interpreted to grind tools conforming to job specifications.			√		
	1.2. Tool holding devices are selected according to the job requirements.			√		
	1.3. Cutting tools are selected according to job requirements.					√
	1.4. Job materials are selected and collected in accordance with the job requirements.			√		
2. Prepare for milling operations	**2.1.** Appropriate type of milling machine is selected for milling operations.			√		
	2.2. Different parts of milling machine are identified.			√		
	2.3. Milling accessories are selected and used in accordance with job specification.			√		
	2.4. Cutting speed and feed rate are selected in accordance with job specification.			√		
	2.5. Drawings are read and interpreted to produce component in accordance to the job specification.			√		
	2.6. Milling cutters are selected in accordance with the requirements of the operation.			√		
	2.7. Sequence of operation is determined to produce products to meet job specification.			√		
3. Perform basic milling operations	**3.1.** Operating parameters of milling machine are identified in accordance with job requirement.			√		
	3.2. Machine performance is checked in conformance with standard operating procedure.			√		
	3.3. Coolant is applied to prevent over heating of work piece and cutting tool.			√		
	3.4. Basic milling operations are performed to produce component.			√		
	3.5. Corrective measures and/or adjustments are performed, if necessary.				√	
	3.6. Work piece is checked and measured in conformance to job specification using appropriate methods, measuring tools and equipment.			√		
4. Clean and store machinery, tools and equipment	**4.1.** Tools, equipment and milling machine is cleaned.			√		
	4.2. Workplace is cleaned.			√		

	4.3. Waste materials are disposed of correctly.	√		
	4.4. Waste materials and finished product are stored safely pursuant to workplace guidelines.	√		

Occupation:	CNC Machine Operation					
Unit Name:	Carry out CNC lathe machine operations					
Unit Code:	SEIP-LE-CNC-03-O					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
Element	**Performance Criteria**			**P**	**O**	**W**
1. Set-up CNC lathe machine	**1.1.** Oil coolant is checked as per manufacturer's specification.				√	
	1.2. Air and hydraulic pressure is checked as per manufacturer's specification.			√		
	1.3. Machine zero point is set to the required position.				√	
	1.4. Cutting tools are set and tightened according to standard operating procedures.			√		
	1.5. Clamping devices are set and tightened according to standard operating procedures.			√		
	1.6. Tool set-up is performed as per standard operating procedures.			√		
	1.7. Work piece is mounted and centred on clamping device to required level of accuracy as per workplace procedures.			√		
2. Download and input program	**2.1.** Program is downloaded and inputted into the machine using appropriate device.			√		
	2.2. Program is simulated to determine the correctness of the tool path and other work parameters.			√		
3. Cut model and sample work piece	**3.1.** Dry run is performed in accordance with the desired tool movement.			√		
	3.2. Work piece is cut as programmed.			√		
	3.3. Work piece is checked and measured using appropriate measuring tools.			√		
	3.4. Program is edited and tool parameters are corrected as required.			√		
4. Perform CNC lathe machine operations	**4.1.** Work piece is mounted as per standard operating procedures.			√		
	4.2. CNC lathe operations are carried out to produce component as per program.			√		

	4.3. Corrective measures are performed, if necessary.	√		
5. Check and measure work piece	**5.1.** Work piece is checked and measured against specification using appropriate methods and measuring tools.	√		
	5.2. Defective work pieces are marked, recorded and reported for proper action.	√		
6. Maintain tools, equipment, machinery and systems	**6.1.** Proper shutdown is carried out in accordance with standard operating procedure.	√		
	6.2. Ensure security data, including regular back-ups and virus checks are performed as per standard operating procedure.		√	
	6.3. Basic file maintenance procedures are carried out in line with the standard operating procedure.		√	
	6.4. Systems and workplace is cleaned according to worksite procedures.		√	
	6.5. CNC lathe machine is cleaned and maintained as per standard operating procedure.	√		
	6.6. Tools, equipment, machinery and materials are cleaned and stored safely.	√		

Occupation:	CNC Machine Operation					
Unit Name:	Carry out CNC milling machine operations					
Unit Code:	SEIP-LE-CNC-04-O					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
Element	**Performance Criteria**			**P**	**O**	**W**
1. Set-up CNC milling machine	**1.1.** Oil coolant is checked as per manufacturer's specification.				√	
	1.2. Air and hydraulic pressure is checked as per manufacturer's specification.			√		
	1.3. Machine zero point is set to the required position.				√	
	1.4. Cutting tools are set and tightened according to standard operating procedures.			√		
	1.5. Clamping devices are set and tightened according to standard operating procedures.			√		
	1.6. Tool set-up is performed as per standard operating procedures.			√		
	1.7. Work piece is mounted and centred on clamping device to required level of accuracy as per workplace procedures.			√		

2. Download and input program	**2.1.** Program is downloaded and inputted into the machine using appropriate device.	√		
	2.2. Program is simulated to determine the correctness of the tool path and other work parameters.	√		
3. Cut model and sample work piece	**3.1.** Dry run is performed in accordance with the desired tool movement.	√		
	3.2. Work piece is cut as programmed.	√		
	3.3. Work piece is checked and measured using appropriate measuring tools.	√		
	3.4. Program is edited and tool parameters are corrected as required.	√		
4. Perform CNC milling machine operations	**4.1.** Work piece is mounted as per standard operating procedures.	√		
	4.2. CNC milling operations are carried out to produce component as per program.	√		
	4.3. Corrective measures are performed, if necessary.	√		
5. Check and measure work piece	**5.1.** Work piece is checked and measured against specification using appropriate methods and measuring tools.	√		
	5.2. Defective work pieces are marked, recorded and reported for proper action.	√		
6. Maintain tools, equipment, machinery and systems	**6.1.** Proper shutdown is carried out in accordance with standard operating procedure.	√		
	6.2. Ensure security data, including regular back-ups and virus checks are performed as per standard operating procedure.		√	
	6.3. Basic file maintenance procedures are carried out in line with the standard operating procedure.		√	
	6.4. Systems and workplace is cleaned according to worksite procedures.		√	
	6.5. CNC milling machine is cleaned and maintained as per standard operating procedure.	√		
	6.6. Tools, equipment, machinery and materials are cleaned and stored safely.	√		

Occupation:	CNC Machine Operation		
Unit Name:	Carry out CNC wire cut machine operations		
Unit Code:	SEIP-LE-CNC-05-O		
Assessment Method:		**O**	**W**
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	Performance Criteria	P	O	W
1. Prepare for CNC wire cut machine operations	**1.1.** Tools and wire (electrode) for CNC wire cut operations are selected as per job requirement.		√	
	1.2. Routine maintenance is performed to prepare machine for operation.	√		
	1.3. Drawings are read and interpreted to produce component to job specification.	√		
2. Set-up machine, wire and work piece	**2.1.** Machine zero position is set as per job specification (offset setting).	√		
	2.2. Wire and feed roller are set according to sequence of operations.	√		
	2.3. Clamping device is tightened as per standard operating procedure.	√		
	2.4. Work piece is mounted on clamping device using tools and instruments as per workplace guidelines.	√		
3. Download and input program	**3.1.** Engineering drawings are read and interpreted to define optimum tool path geometry.	√		
	3.2. Program is downloaded and inputted into machine using appropriate device.	√		
	3.3. Program is simulated to determine the correctness of tool path and work parameters.	√		
	3.4. Program is stored as per standard operating procedure.	√		
	3.5. Operation sheet is completed as per standard operating procedure	√		
4. Perform CNC wire cut operations in auto mode	**4.1.** Door is closed to ensure safe operation.	√		
	4.2. Machining parameters including wire offset, wire speed, and power settings are selected.	√		
	4.3. Machine is prepared, work piece is loaded and aligned, and data reference points are established as per standard operating procedures.	√		
	4.4. Program is reset to ensure start position from the first program block.	√		
	4.5. Machine is operated to test program and work piece positioning.	√		
	4.6. Finished component is checked for conformance with job specification and drawing.	√		
5. Clean and store machinery tools and equipment	**5.1.** Tools, equipment and machinery is cleaned.	√		
	5.2. Workplace is cleaned.	√		
	5.3. Waste materials are disposed of correctly.	√		
	5.4. Tools, equipment and finished product are stored safely pursuant to workplace guidelines.	√		

Occupation:	CNC Machine Operation				
Unit Name:	Apply knowledge of CAM				
Unit Code:	SEIP-LE-CNC-06-O				
Assessment Method:	**P**	**O**	**W**		
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*		
Element	**Performance Criteria**			**P**	**O**	**W**
1. Prepare for CAM program	**1.1.** Work piece, drawing, model or concept of a new design are analysed to produce CAM program.			√		
	1.2. CNC parameters are identified and selected according to the job requirement.			√		
	1.3. Tools and equipment are gathered to produce drawing as per job requirement.			√		
	1.4. Relevant materials, instructions, manuals and operating procedures are obtained according to job requirement.			√		
2. Import CAD model	**2.1.** Basic parameters of CNC machine are set pursuant to instruction manual.					√
	2.2. Drawing reference point is established based on job requirement and work piece to be produced.				√	
	2.3. Profile, shape, and contour of work piece is imported using CAD as per job requirement and drawing standards.			√		
	2.4. Imported drawings are edited according to drawing standards.			√		
3. Test the quality of the material	**3.1.** CAM parameters are identified and set as per job requirement.			√		
	3.2. Tools are identified, selected and loaded based on job requirement.			√		
	3.3. Coordinates are set tool path or machining functions based on CNC machine.			√		
	3.4. Work piece zero position is identified based on the CNC machine.			√		
	3.5. Tool paths generated in accordance with appropriate software used.			√		
	3.6. Tool paths are simulated and correctness of tool movements determined and other work parameters.			√		
	3.7. CNC program generated through post processor in accordance with selected CNC machine control standard.			√		
	4.1. Program is loaded using appropriate device.			√		

4. Load and run program	**4.2.** Dry run/simulation is performed as per standard operating procedure.	√		
	4.3. Program is executed to produce work piece.	√		
	4.4. Production issues are recorded and reported to appropriate authority.	√		
	4.5. Tools, equipment and machinery is cleaned and stored as per standard operating procedure.	√		

PART B – THE CANDIDATE

Instructions to Candidate

To be assessed as competent, you must provide evidence which demonstrates that you can perform to the necessary standard the various elements of this unit of competency that comprise of the Certificate in CNC Machine Operation. Assessment of competency requires you to consistently demonstrate skill, knowledge and aptitude (through a variety of assessment tools such as multiple choice, short-answer questions, oral questioning, workplace observation, and practical demonstration) that enables confident completion of workplace tasks in a variety of situations.

In judging the evidence, your assessor must ensure that the evidence is:

- authentic (your own work)
- valid (directly related to the current version of the units of competency)
- reliable (consistently demonstrates of your knowledge and skill)
- current (shows your current capacity to perform the work)
- sufficient (covers the full range of elements comprised within the units of competency)

Furthermore, the assessment process must:

- provide for valid, reliable, flexible and fair assessment
- provide for judgment to be made on the basis of sufficient evidence
- offer valid, authentic and current evidence
- include workplace requirements

There are two types of assessment:

1. Knowledge Assessment - is designed to enable assessment against the various *elements* contained within the units of competency through a variety of activities such as multiple choice, short-answer questions, oral questioning. It is essentially examining your theoretical knowledge.

   This provides the assessor with substantial evidence of your knowledge and aptitude to perform the work relating to the specific unit of competency, in conjunction with other assessment tools such as workplace observation.

   You should complete the knowledge assessment as directed by the assessor and follow all instructions as and when given. If you are unable to complete the knowledge assessment, please speak to the assessor about alternative assessment solutions.

2. Skill Assessment - is designed to enable assessment against the various *performance criteria* contained within the units of competency through, for example, demonstration of skill in a simulated or actual work environment. In essence, it is an examination of your practical ability.

   This provides the assessor with substantial evidence of your ability to perform the work relating to the specific unit of competency to the standard expected by industry (the benchmark).

   You should complete the skill assessment as directed by the assessor and follow all instructions as and when given, ensuring your own health and safety.

Once you have been assessed as competent against all of the units of competency comprising of the qualification being undertaken, you will be awarded your certificate.

You assessor will discuss in more detail the requirements for assessment for each unit of competency at the appropriate time.

And please do not panic if you are not assessed as competent on any part of your qualification at your first attempt. Your assessor will discuss with you any identified skill and knowledge gaps, work through those with you and assist you as much as possible in attaining competency.

Self-Assessment Guide

Before undertaking any assessment, you should review the list of skills, knowledge and aptitudes relating to the assessment (drawn from the units of competency, its various elements and performance criteria) to determine whether you have current competency in these areas.

If you believe you can demonstrate the skills and knowledge required and can successfully complete the various assessment activities, you should then proceed to discuss your assessment with the assessor and complete Assessment Agreement.

However, should you not believe, for whatever reason, that you are not able to successfully complete the various assessment activities, then speak with the assessor. The assessor will assist you in identifying any skill and knowledge gaps, work through those with you and assist you as much as possible in attaining competency.

Please complete the self-assessment checklist below and discuss with the assessor.

Qualification:	**CNC Machine Operation**
Units of competency:	**Generic units:** Use basic mathematical concepts Carry out workplace interaction Operate in a team environment Apply basic IT skills **Sector-specific units:** Apply occupational health and safety (OHS) practice in the workplace Read and interpret sketches and drawings Use hand and power tools Apply quality system **Occupation-specific units:** Perform basic lathe machine operations Perform basic milling machine operations Carry out CNC lathe machine operations Carry out CNC milling machine operations Carry out wire cut machine operations Apply knowledge of CAM

Instructions:

- Read each of the questions in the left-hand column of the chart
- Place a tick (√) in the appropriate box opposite each question to indicate your answer

Can I?	**YES**	**NO**
▪ Identify calculation requirements from workplace information		
▪ Construct mathematical problems from workplace		
▪ Select appropriate method to carry out calculation requirement		

▪ Solve constructed mathematical problems with appropriate method		
▪ Identify tools and instruments required for computation		
▪ Perform calculation using appropriate tools and equipment		
▪ Interpret workplace codes of conduct as per organizational guidelines		
▪ Maintain appropriate lines of communication with supervisors and colleagues.		
▪ Conduct workplace interactions in a courteous manner to gather and convey information		
▪ Comprehend workplace procedures and matters		
▪ Interpret correctly workplace documents		
▪ Understand correctly and follow visual information/symbol/signage		
▪ Access specific and relevant information from appropriate sources		
▪ Use appropriate medium to transfer information and ideas		
▪ Attend team meetings on time to ensure active participation		
▪ Follow meeting procedures and etiquette		
▪ Ensure active participation, express and hear opinions		
▪ Respect opinions and ideas of others and their importance in the development of relationships		
▪ Provide and interpret inputs in line with the meeting purpose		
▪ Perform responsibilities as a team member		
▪ Perform tasks in accordance with workplace procedures		
▪ Maintain confidentiality		
▪ Avoid inappropriate and conflicting situations		
▪ Interpret roles and objectives of the team		
▪ Interpret roles and responsibilities of the team members		
▪ Identify personal role and responsibilities within the team environment		
▪ Interpret reporting relationships within team and external to team		
▪ Identify and provide support t other teammates' tasks		
▪ Encourage the team through sharing information or expertise, working together to solve problems putting team success first		
▪ Interpret and respect views and opinions of other team members		
▪ Identify problems faced at the individual and team level and shows insight into the root-causes of the problems		
▪ Identify a range of solutions and courses of action together with benefits, costs, and risks associated with each		

▪ Recognise the good ideas of others to help develop solutions and seek advice from those who've solved similar problems		
▪ Look beyond the obvious and not stop at the first answers		
▪ Identify and summarise history of information technology (IT)		
Identify and describe commonly used IT tools		
▪ Identify basic parts of a computer		
▪ Perform turning on and off technique of a computer		
▪ Interpret working environment, functions and features of operating system		
▪ Apply simple trouble-shooting techniques		
▪ Operate word processing application appropriate to perform activity		
▪ Apply basic typing technique to document		
▪ Employ word processing techniques to document		
▪ Practice personal CV writing using suitable word processing techniques		
▪ Use saving and retrieving techniques of a document		
▪ Explain use of email account in online environment		
▪ Complete writing and sending of workplace emails		
▪ Identify different browsers to work online		
▪ Browse different web portals and apply proper search techniques		
▪ Interpret OSH policies and safe operating procedures		
▪ Identify and follow safety signs and symbols		
▪ Interpret response, evacuation procedures and other contingency measures correctly.		
▪ Apply OSH policies and procedures in the workplace including personal protective equipment (PPE)		
▪ Recognise common health issues		
▪ Identify common safety issues		
▪ Identify hazards and risks		
▪ Interpret hazards and risks assessment		
▪ Respond to alarms and warning devices		
▪ Respond to emergency response plans and procedures		
▪ Identify first aid procedures during emergency situations		
▪ Identify and collect appropriate manuals for work activity		
▪ Interpret and apply information and specifications in the manuals		
▪ Identify relevant sketches and drawings for job requirement		

▪ Identify and interpret key terms and abbreviations		
▪ Identify and interpret key terms and techniques		
▪ Read and interpret schedules, dimensions, sketches, drawings and specification correctly		
▪ Identify appropriate hand and power tools		
▪ Recognise application of hand and power tools		
▪ Drawings are read and interpreted to grind tools conforming to job specifications		
▪ Tools holding devices are selected according to the job requirements		
▪ Cutting tools are selected according to job requirements		
▪ Appropriate type of lathe machine is selected for lathe operations		
▪ Lathe accessories are selected and used in accordance with job specification		
▪ Drawings are read and interpreted to grind tools conforming to job specifications		
▪ Cutting tools are selected according to job requirements		
▪ Job materials are selected and collected in accordance with the job requirements		
▪ Operating parameters of milling machine are identified in accordance with job requirement		
▪ Coolant is applied to prevent over heating of work piece and cutting tool		
▪ Basic milling operations are performed to produce component		
▪ Workpiece is checked and measured in conformance to job specification using appropriate methods, measuring tools and equipment		
▪ Oil coolant is checked as per manufacturer's specification		
▪ Air and hydraulic pressure is checked as per manufacturer's specification		
▪ Machine zero point is set to the required position		
▪ Clamping devices are set and tightened according to standard operating procedures		
▪ Work piece is cut as programmed		
▪ Workpiece is checked and measured using appropriate measuring tools		
▪ Corrective measures are performed, if necessary		
▪ Tools and wire (electrode) for CNC wire cut operations are selected as per job requirement		
▪ Routine maintenance is performed to prepare machine for operation		

▪ Machining parameters including wire offset, wire speed, and power settings are selected		
▪ Work piece, drawing, model or concept of a new design are analysed to produce CAM program		
▪ CNC parameters are identified and selected according to the job requirement		
▪ Basic parameters of CNC machine are set pursuant to instruction manual		
▪ Profile, shape, and contour of work piece is imported using CAD as per job requirement and drawing standards		
▪ CAM parameters are identified and set as per job requirement		
▪ Program is loaded using appropriate device		
▪ Production issues are recorded and reported to appropriate authority		
▪ Tools, equipment and machinery is cleaned and stored as per standard operating procedure		

I agree to undertake assessment in the knowledge that the information gathered will only be used for educational and professional development purposes and can only be accessed by concerned assessment personnel and my manager/supervisor.

Candidate's signature:		**Date:**	

PART C – THE ASSESSMENT

Assessment Agreement – CNC Machine Operation

The purpose of assessment is to confirm that you can perform to the standards expected in the workplace of an occupation, as expressed in the competency standards (after completion of self-assessment and in agreement with assessor).

To help achieve this, an assessment agreement is required to navigate both you and the assessor through the assessment process.

The assessment agreement is designed to provide a clear understanding of what and how you will be assessed and to nominate the tools that may be used to collect the assessment evidence.

You, the assessor and/or workplace supervisor should agree on the assessment requirements, dates and deadlines.

Therefore, to attain the Certificate of CNC Machine Operation, you must demonstrate competence in the following units, as established in the assessment agreement:

After successful completion of learning and assessment, you shall be awarded with a certificate.

CODE	UNIT OF COMPETENCY
Generic Competencies	
SEIP-LE-CNC-01-G	Use basic mathematical concepts
SEIP-LE-CNC-02-G	Carry out workplace interaction
SEIP-LE-CNC-03-G	Operate in a team environment
SEIP-LE-CNC-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-CNC-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-CNC-02-S	Read and interpret sketches and drawings
SEIP-LE-CNC-03-S	Use hand and power tools
SEIP-LE-CNC-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-CNC-01-O	Perform basic lathe machine operations
SEIP-LE-CNC-02-O	Perform basic milling machine operations
SEIP-LE-CNC-03-O	Carry out CNC lathe machine operations
SEIP-LE-CNC-04-O	Carry out milling machine operations
SEIP-LE-CNC-05-O	Carry out wire cut machine operations
SEIP-LE-CNC-06-O	Apply knowledge of CAM

After successful completion of learning and assessment, you shall be awarded with a certificate.

Assessment Agreement	
Occupation:	CNC Machine Operation
Assessment Centre:	
Candidate Name:	
Assessor Name:	
Unit of Competency	
Generic Competencies	
SEIP-LE-CNC-01-G	Use basic mathematical concepts
SEIP-LE-CNC-02-G	Carry out workplace interaction
SEIP-LE-CNC-03-G	Operate in a team environment
SEIP-LE-CNC-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-CNC-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-CNC-02-S	Read and interpret sketches and drawings
SEIP-LE-CNC-03-S	Use hand and power tools
SEIP-LE-CNC-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-CNC-01-O	Perform basic lathe machine operations
SEIP-LE-CNC-02-O	Perform basic milling machine operations
SEIP-LE-CNC-03-O	Carry out CNC lathe machine operations
SEIP-LE-CNC-04-O	Carry out CNC milling machine operations
SEIP-LE-CNC-05-O	Carry out wire cut machine operations
SEIP-LE-CNC-06-O	Apply knowledge of CAM
Resources Required for Assessment	
Candidates must have access to the following: ▪ copies of activities, questions, projects nominated by the assessor ▪ relevant organisational policies, protocols and procedural documents (if required) ▪ devices or tools to record answers ▪ appropriate actual or simulated workplace ▪ all necessary tools and equipment used in performance of the work-based task ▪ any other resources normally used in the workplace	
Assessment Instructions	
Candidates should respond to the formative and summative assessments either verbally or in writing as agreed with the assessor. Written responses can be recorded in the spaces provided (if more space is required attach additional pages) or submitted in a word-processed document. If candidates answer verbally, the assessor should record their answers in detail. Candidates should also undertake observable tasks that provide evidence of performance. The assessor must provide instruction to candidates on what is expected during observation and arrange a suitable time and location for demonstration of these skills.	

Candidates must fully understand what they are required to do to complete these assessment tasks successfully, then sign the declaration.

Performance Standards

To receive a **satisfactory** result for the assessments, candidates must complete all activities, questions, projects, and tasks nominated by the assessor, to the required standard.

Completion of all tasks for a unit of competency, to a satisfactory level, will contribute to an assessment of competence for that specific individual unit (or units if holistic assessment approach is taken).

Successful completion of all the units of competency that comprise of the qualification **CNC Machine operation**, will result in the candidate being issued with the relevant, nationally recognised certificate.

Assessors must clearly explain the required performance standards.

Declaration

I declare that:

- the assessment requirements have been clearly explained to me
- all the work completed towards assessment will be my own
- cheating and plagiarism are unacceptable

Candidate Signature:		**Date:**	
Assessor Signature:		**Date:**	

PART D – ASSESSMENT TOOLS

Specific Instructions to Assessor

Please read carefully and prepare as necessary:

1. The assessor shall (practical demonstration assessment activities):

    - provide the candidate with the necessary tools, equipment, machinery and materials for completion of one (1) set of the following practical demonstration activities (for both basic and advanced machine operation):

        - Set A (basic machine operation):

            - make a machine component using lathe machine
            - make a hexagonal head and the slot using milling machine

        - Set A (advanced machine operation:

            - make a typical round part using CNC lathe machine
            - make a typical flat part using CNC milling machine
            - write a program for CNC milling

        - Set B (basic machine operation):

            - make a machine component with taper turning using lathe machine
            - make a hexagon from round rod by using a milling machine

        - Set B (advanced machine operation):

            - make a cylindrical work piece with knurling using CNC lathe machine
            - make a typical flat part with different holes using CNC milling machine
            - write a program for CNC milling

        - Set C (basic machine operation):

            - make a spur gear using milling machine
            - make a machine component using step turning and taper turning on a lathe machine

        - Set C (advanced machine operation):

            - make a cylindrical work piece using CNC lathe machine
            - make a typical flat part using CNC milling machine
            - write a program for CNC lathe

    - provide the candidate with the copy of the specific instruction to candidate

    - allow each practical demonstration to be performed within two (2) hours including preparation of the materials

    - ensure that the candidate **FULLY** understands the instructions before proceeding to the performance of the assessment activity

    - allow fifteen (15) minutes for the candidate to familiarise themselves with the resources to be used during the practical demonstrations

    - ensure that the candidate is wearing appropriate personal protective equipment (PPE) before allowing them to proceed with the assessment activity

2. Assessment shall be based on the performance criteria in each of the units of competency. The evidence gathering method shall be comprised of:

    (a) Written Test (1 hour) – **knowledge evidence**

(b) Practical Demonstration (basic machine operation) (4 hours) – **performance evidence**

(c) Practical Demonstration (advance machine operation) (6 hours) – **performance evidence**

The basic machine operation practical demonstration activities will be divided into two (2) tasks (contained in one set):

(i) Practical Demonstration 1 (2 hours)
(ii) Practical Demonstration 2 (2 hours)

The advanced machine operation practical demonstration activities will be divided into three (3) tasks (contained in one set):

(i) Practical Demonstration 3 (2 hours)
(ii) Practical Demonstration 4 (2 hours)
(iii) Practical Demonstration 5 (2 hours)

3. Final assessment is your responsibility as the accredited/certified assessor.

4. At the conclusion of each assessment activity, you will provide feedback to the candidate of the assessment result. The feedback will indicate whether the candidate is:

❑ **COMPETENT**

❑ **NOT YET COMPETENT**

5. The list of tools, equipment, machinery and materials to be provided for completion of the practical demonstration assessment activities can be found at:

- Basic machine operation:
  - Set A – Practical Demonstration 1: page 46
  - Set A – Practical Demonstration 2: page 50
  - Set B – Practical Demonstration 1: page 66
  - Set B – Practical Demonstration 2: page 69-70
  - Set C – Practical Demonstration 1: page 85-86
  - Set C – Practical Demonstration 2: page 90
- Advance machine operation:
  - Set A – Practical Demonstration 3: page 54
  - Set A – Practical Demonstration 4: page 58
  - Set A – Practical Demonstration 5: page 62
  - Set B – Practical Demonstration 3: page 74
  - Set B – Practical Demonstration 4: page 78
  - Set B – Practical Demonstration 5: page 82
  - Set C – Practical Demonstration 3: page 94
  - Set C – Practical Demonstration 4: page 98
  - Set C – Practical Demonstration 5: page 102

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Specific Instructions to Candidate

You should respond to the assessment either in writing or verbally as agreed with the assessor. Written responses can be recorded in the spaces provided; if more space is required attach additional pages) or submit a word-processed document.

If you answer verbally, the assessor should record your answers in detail. Please check your recorded answers carefully and thoroughly to ensure that they are accurate.

You may also be undertaking observable activities (i.e. practical demonstration) that provide evidence of performance. The assessor must provide you with clear instructions on what is expected during this type of assessment and arrange a suitable time and location for demonstration of these skills.

To receive a satisfactory result for the assessments, you must complete all of the assessment activities; including questions, projects and tasks nominated by the assessor, to the required standard.

This assessment is based upon the units of competency in CNC Machine Operation. Using the performance criteria as a benchmark, evidence will be gathered through:

1. Written Test (1 hour) – a variety of multiple-choice, true of false and short answer theory questions to support your competence with regard to the required knowledge (**knowledge evidence**).

2. Practical Demonstration (4 hours or 6 hours) – observable tasks outlined in the elements and performance criteria of the units of competency, completed to support a judgement of satisfactory performance to the required standard (**performance evidence**).

   There will be one (1) set of practical demonstration activities to complete. The assessor will direct you as to which 'set' you will be required to complete out of the following:

   - Set A (basic machine operation):
     - make a machine component using lathe machine (2 hours)
     - make a hexagonal head and the slot using milling machine (2 hours)
   - Set A (advanced machine operation:
     - make a typical round part using CNC lathe machine (2 hours)
     - make a typical flat part using CNC milling machine (2 hours)
     - write a program for CNC milling (2 hours)
   - Set B (basic machine operation):
     - make a machine component with taper turning using lathe machine (2 hours)
     - make a hexagon from round rod by using a milling machine (2 hours)
   - Set B (advanced machine operation):
     - make a cylindrical work piece with knurling using CNC lathe machine (2 hours)
     - make a typical flat part with different holes using CNC milling machine (2 hours)
     - write a program for CNC milling (2 hours)
   - Set C (basic machine operation):
     - make a spur gear using milling machine (2 hours)
     - make a machine component using step turning and taper turning on a lathe machine (2 hours)
   - Set C (advanced machine operation):
     - make a cylindrical work piece using CNC lathe machine (2 hours)
     - make a typical flat part using CNC milling machine (2 hours)
     - write a program for CNC lathe (2 hours)

3. The assessor will provide all necessary tools, equipment, machinery and materials required to complete each assessment activity.

4. These assessments cover all units of competency for CNC Machine Operation.

5. The assessor will provide you with feedback of your performance after completion of each assessment activity. This feedback shall indicate whether you are:

   ❑ **COMPETENT**

   ❑ **NOT YET COMPETENT**

6. Complete of all assessment activities, to a satisfactory level, will contribute to a final assessment of competence.

Written Test

WRITTEN TEST - INSTRUCTIONS	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Unit of Competency	
Generic Competencies	
SEIP-LE-CNC-01-G	Use basic mathematical concepts
SEIP-LE-CNC-02-G	Carry out workplace interaction
SEIP-LE-CNC-03-G	Operate in a team environment
SEIP-LE-CNC-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-CNC-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-CNC-02-S	Read and interpret sketches and drawings
SEIP-LE-CNC-03-S	Use hand and power tools
SEIP-LE-CNC-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-CNC-01-O	Perform basic machine operations
SEIP-LE-CNC-02-O	Perform milling machine operations
SEIP-LE-CNC-03-O	Carry out CNC lathe machine operations
SEIP-LE-CNC-04-O	Carry out CNC milling machine operations
SEIP-LE-CNC-05-O	Carry out wire cut machine operations
SEIP-LE-CNC-06-O	Apply knowledge of CAM
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
Read and understand the directions carefully: ▪ this written examination is based on the performance criteria from all the units of competency in CNC Machine Operation ▪ this assessment activity will be used to measure your underpinning knowledge ▪ write your answers on the paper provided ▪ answer all the questions as best as possible ▪ you have 1 (one) hour to complete this test	

WRITTEN TEST		
Multiple Choice		
This is a **multiple-choice** of test. Choose the appropriate answer and circle the letter that corresponds with your answer.		
1.	Lathe centres are provided with the following standard taper?	a. Morse b. British c. Metric d. Sharpe
2.	Which of the following lathe operations requires that the cutting edge of a tool bit be placed exactly on the work centreline?	a. Boring b. Drilling c. Facing d. Turning
3.	In lathe, the carriage and tail stock are guided on?	a. Same guideways b. Different guideway c. Any of the above d. Not guided on guideway
4.	How many grams of raw materials do you have in 25,000 kilograms?	a. 250,000,000 b. 250,000 c. 2,500,000 d. 25,000,000
5.	A half nut is connected with?	a. Milling machine b. Locking device c. Jigs and fixture d. Thread cutting plate
6.	Shaping can be performed effectively by _____ milling machine.	a. Horizontal b. Vertical c. Downward d. Upward
7.	Slab milling can be performed more effectively by _____ milling machine.	a. Horizontal b. Vertical c. Downward d. Upward
8.	Straddle milling can be performed more effectively by _____ milling machine.	a. Horizontal b. Vertical

		c. Downward d. Upward
9.	Boring can be performed more effectively by _____ milling machine.	a. Horizontal b. Vertical c. Downward d. Upward
10.	Which of the following does all the work of lathe machine?	a. Turning centre of CNC type b. Machining centre of CNC and machining c. Turning centre of CNC type and machining centre of CNC type d. Bone of the above
True of False Quiz		
Tick (√) the box corresponding to the correct answer.		
11.	Polite words should be utilized when doing official communication through the email.	True ☐ False ☐
12.	Marina knows that she has a meeting by 9:00 in the morning, it is part of professional ethics to come to the meeting even if she is late by 1 hour, anyway, the team members will wait for her.	True ☐ False ☐
13.	Wearing PPE inside the production area for yarn manufacturing protects the worker and also the production process.	True ☐ False ☐
Fill in the Missing Blanks		
Write the word or group of words needed to complete the following sentences.		
14.	CNC machining centre does all the work _____.	
15.	The CNC code that cancels the mirror image coordinates for double turret turning centres is _____.	
Short Answer		
Write a short answer in the space provided (not to exceed more than approximately twenty-five (25) words).		
16.	With CNC turning machine and miscellaneous (M) codes what does a “M03” represent?	

17.	When referring to CNC programming, what is the program format for circular interpolation in a counter clockwise direction?	
18.	Which CNC codes relate to “spindle on” counter clockwise at constant surface speed?	
19.	What is CNC milling?	
20.	What is CNC programming?	

Feedback to candidate:

Assessment decision for this assessment activity:

☐ **Competent** ☐ **Not Yet Competent**

Candidate’s Signature:		**Date:**	
Assessor’s Signature:		**Date:**	

Written Test - Answers

Answers are highlighted in **bold** and *italics*.

Multiple Choice		
1.	Lathe centres are provided with the following standard taper?	***a. Morse*** b. British c. Metric d. Sharpe
2.	Which of the following lathe operations requires that the cutting edge of a tool bit be placed exactly on the work centreline	a. Boring b. Drilling ***c. Facing*** d. Turning
3.	In lathe, the carriage and tail stock are guided on?	a. Same guideways ***b. Different guideway*** c. Any of the above d. Not guided on guideway
4.	How many grams of raw materials do you have in 25,000 kilograms?	a. 250,000,000 b. 250,000 c. 2,500,000 ***d. 25,000,000***
5.	A half nut is connected with?	a. Milling machine b. Locking device c. Jigs and fixture ***d. Thread cutting plate***
6.	Shaping can be performed effectively by _____ milling machine.	a. Horizontal ***b. Vertical*** c. Downward d. Upward
7.	Slab milling can be performed more effectively by _____ milling machine.	***a. Horizontal*** b. Vertical c. Downward d. Upward
8.	Straddle milling can be performed more effectively by _____ milling machine.	***a. Horizontal*** b. Vertical c. Downward

		d. Upward
9.	Boring can be performed more effectively by _____ milling machine.	a. Horizontal ***b. Vertical*** c. Downward d. Upward
10.	Which of the following does all the work of lathe machine?	***a. Turning centre of CNC type*** b. Machining centre of CNC and machining c. Turning centre of CNC type and machining centre of CNC type d. None of the above
True of False Quiz		
11.	Polite words should be utilized when doing official communication through the email.	***True*** √ False ☐
12.	Marina knows that she has a meeting by 9:00 in the morning, it is part of professional ethics to come to the meeting even if she is late by 1 hour, anyway, the team members will wait for her.	*True* ☐ ***False*** √
13.	Wearing PPE inside the production area for yarn manufacturing protects the worker and also the production process.	***True*** √ False ☐
Fill in the Missing Blanks		
14.	CNC machining centre does all the work ***for milling and drilling machine***.	
15.	The CNC code that cancels the mirror image coordinates for double turret turning centres is ***G69***.	
Short Answer		
16.	With CNC turning machine and miscellaneous (M) codes what does a “M03” represent?	***Spindle on in clockwise rotation***
17.	When referring to CNC programming, what is the program format for circular interpolation in a counter clockwise direction?	***G17 G03 X_Y_I_J_F_;***
18.	Which CNC codes relates to “spindle on” counter clockwise at constant surface speed?	***N040 M04 S500 G96***
19.	What is CNC milling?	***CNC milling is a specific form of computer numerical controlled (CNC) machining. Milling itself is a machining process similar to both drilling and cutting, and able to achieve many of the operations performed by cutting and drilling machines. Like drilling, milling uses a rotating cylindrical cutting tool.***

20.	What is CNC programming?	***Most NC today is computer (or computerized) numerical control (CNC), in which computers play an integral part of the control. In modern CNC systems, end-to-end component design is highly automated using computer-aided design (CAD) and computer-aided manufacturing (CAM) programs.***

Set A: Practical Demonstration 1 (basic machine operation)

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine operation
Task:	Make a machine component using lathe machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

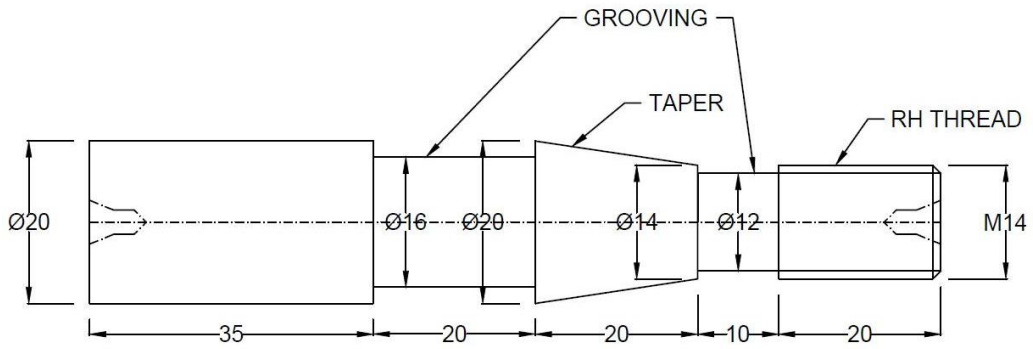
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Hold the bar in a three-jaw chuck and face the end with a right-hand facing tool.
2. Make central hole with a centre drill.
3. Repeat this operation for the other end of the bar.
4. Replace the chuck by a Dog plate (centre plate) and hold the work piece in a carrier between centres.
5. Turn the bar to the required diameter with rough cuts.
6. Face the steps and finishes the diameters to the required sizes.
7. Machine the groove with form tools.
8. Machine the taper with the help of the cross-slide swivelling arrangement required surface.
9. Cut the threads.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	Single point tool
Equipment:	N/A
Machinery:	Lathe machine
Materials:	Mild steel (AISI 1040 steel)
PPE:	Apron Mask Gloves Safety shoes

Set A: Practical Demonstration 1 – Observation Checklist (basic machine operation)

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a machine component using lathe machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Read and interpreted drawings to grind tools conforming to job specifications	☐	☐
Selected tool holding devices according to the job requirements	☐	☐
Selected cutting tools according to the job requirements	☐	☐
Selected and collected job materials in accordance with the job requirements	☐	☐
Selected appropriate type of lathe machine for the lathe operation	☐	☐
Identified different types of lathe machine	☐	☐

Selected and use lathe accessories in accordance with the job requirements	☐	☐
Selected cutting speed and feed rate in accordance with job specification	☐	☐
Read and interpreted drawings to produce component in accordance to the job specification	☐	☐
Calculated RPM, cutting speed, feed rate and depth of cut in accordance with the job requirement	☐	☐
Checked machine performance in conformance with standard operating procedure	☐	☐
Applied coolant to prevent over heating of work piece and cutting tool	☐	☐
Performed basic lathe operations to produce component	☐	☐
Performed corrective measures and/or adjustments	☐	☐
Checked and measured work piece in conformance to job specification using appropriate methods, measuring tools and equipment	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set A: Practical Demonstration 2 (basic machine operation)

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a hexagonal head and the slot using milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

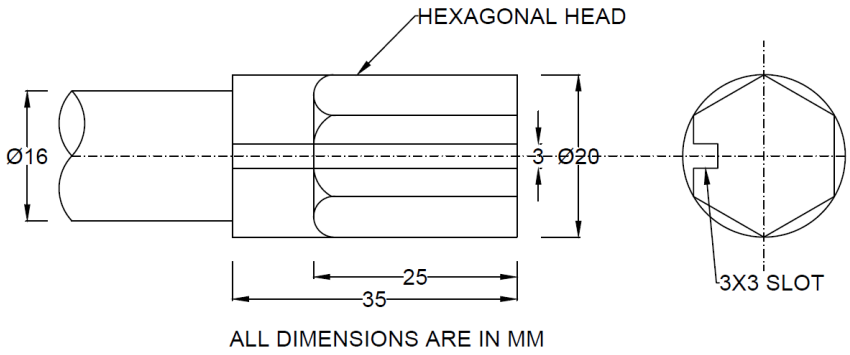
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Fit the helical cutter on the Arbor and the specimen between the centres of the dividing head and the tail centre.
2. Carefully adjust the work piece so that the cutter just touches the top surface of the specimen.
3. Calculate the necessary depth of cut and then mill the six *faces* of the hexagonal head in succession.
4. Change the cutter and mill the rectangular slot.
5. Clean the workplace.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	Milling cutter (different types)
Equipment:	N/A
Machinery:	Milling machine
Materials:	Mild Steel (AISI 1040 Steel)
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set A: Practical Demonstration 2 – Observation Checklist (basic machine operation)

PRACTICAL DEMONSTRATION 2 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a hexagonal head and the slot using milling machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Read and interpreted drawings to grind tools conforming to job specifications	☐	☐
Selected tool holding devices according to the job requirements	☐	☐
Selected cutting tools according to the job requirements	☐	☐
Selected and collected job materials in accordance with the job requirements	☐	☐
Selected appropriate type of milling machine for the milling operation	☐	☐
Identified different types of milling machine	☐	☐

Selected and use milling accessories in accordance with the job requirements	☐	☐
Selected cutting speed and feed rate in accordance with job specification	☐	☐
Read and interpreted drawings to produce component in accordance to the job specification	☐	☐
Selected milling cutters in accordance with the requirements of the operation	☐	☐
Determined sequence operation to produce products to meet job specification	☐	☐
Identified operating parameters of milling machine in accordance with job requirement	☐	☐
Checked machine performance in conformance with standard operating procedure	☐	☐
Applied coolant to prevent over heating of work piece and cutting tool	☐	☐
Performed basic milling operations to produce component	☐	☐
Performed corrective measures and/or adjustments	☐	☐
Checked and measured work piece in conformance to job specification using appropriate methods, measuring tools and equipment	☐	☐
Cleaned tools, equipment and milling machine	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐

Feedback to candidate:

Assessment decision for this assessment activity:

☐ **Competent** ☐ **Not Yet Competent**

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set A: Practical Demonstration 3 (advance machine operation)

PRACTICAL DEMONSTRATION 3	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical round part using CNC lathe machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

Indicates the X Z 0 (zero) location which is the starting point for programming.

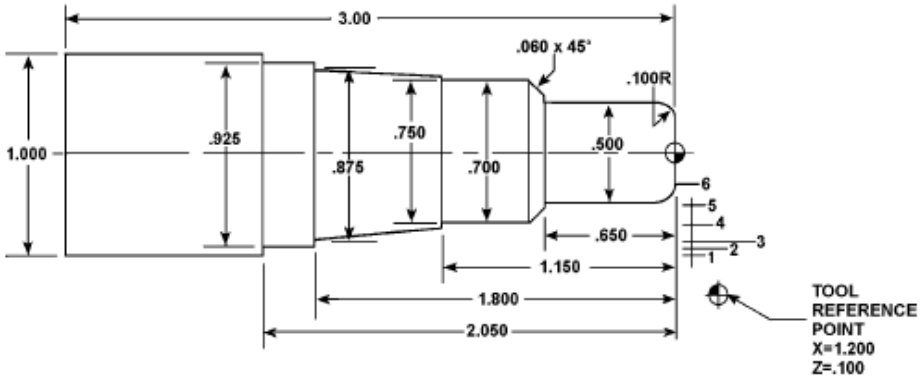
Indicates the tool-change position.

A G92 code will reset the axis register position coordinates to this position.

For a program to run on a machine, it must contain the following codes:

M03	To start the spindle/cutter revolving.
Sxxx	The spindle speed code to set the r/min.
Fxx	The feedrate code to move the cutting tool or workpiece to the desired position.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	CNC lathe tools (different types)
Equipment:	N/A
Machinery:	CNC lathe machine
Materials:	Mild steel (AISI 1040 steel)
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set A: Practical Demonstration 3 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 3 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical round part using CNC lathe machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Checked oil coolant as per manufacturer's specification	☐	☐
Checked air and hydraulic pressure as per manufacturer's specification	☐	☐
Set cutting tools according to the required sequence	☐	☐
Downloaded program and inputted into the machine using appropriate device	☐	☐
Simulated program to determine the correctness of the tools path and other work parameters	☐	☐
Cut work piece as programmed	☐	☐

Checked and measured work piece using appropriate measuring tools	☐	☐
Carried out CNC lathe operations to produce component as per program	☐	☐
Carried out proper shut down in accordance with standard operating procedure	☐	☐
Cleaned systems and workplace according to worksite procedures	☐	☐
Cleaned and maintained CNC lathe machine as per standard	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set A: Practical Demonstration 4 (advance machine operation)

PRACTICAL DEMONSTRATION 4	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical flat part using CNC milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

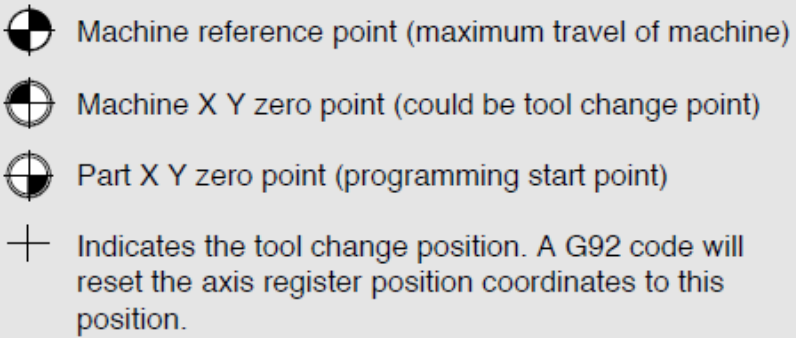
Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have one (2) hours to complete this demonstration

Procedure:

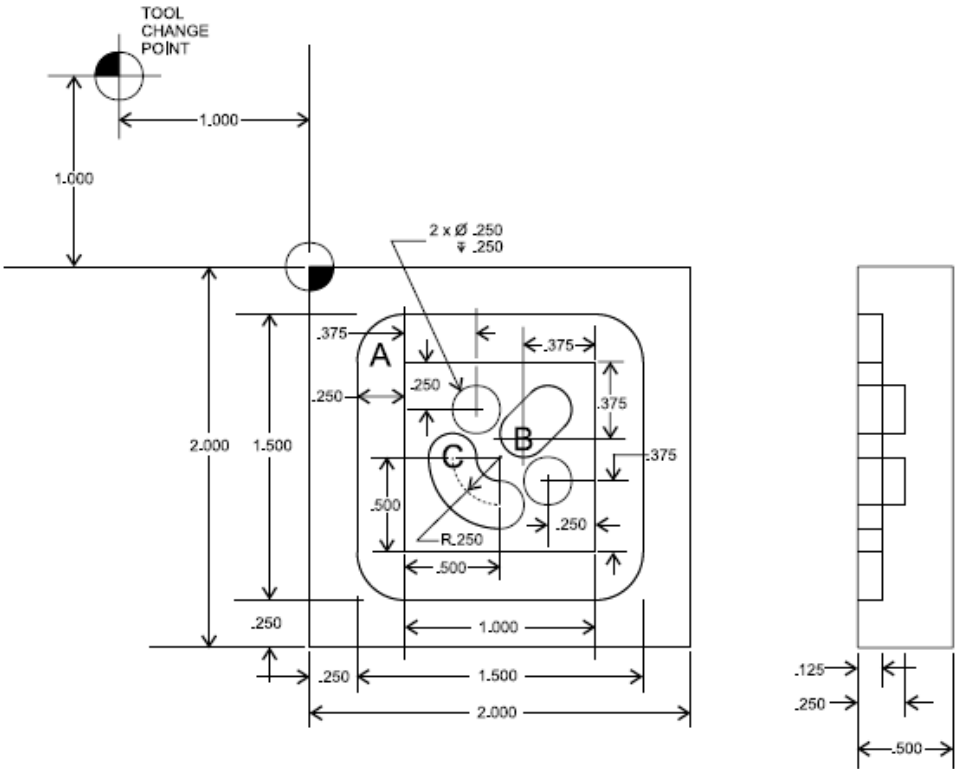
- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:



For a program to run on a machine, it must contain the following codes:

M03	To start the spindle/cutter revolving.
Sxxx	The spindle speed code to set the r/min.
Fxx	The feed rate code to move the cutting tool or workpiece to the desired position.

Drawing, Plan, Diagram or Sketch:	
	
Resources Required:	
Tools:	CNC milling cutters (different types)
Equipment:	N/A
Machinery:	CNC milling machine
Materials:	Aluminium flat plate
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set A: Practical Demonstration 4 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 4 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical flat part using CNC milling machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Checked oil and coolant as per manufacturer's specification	☐	☐
Checked air and hydraulic pressure as per manufacturer's specification	☐	☐
Set cutting tools according to required sequence of operation	☐	☐
Set clamping devices and tightened according to standard operating procedures	☐	☐
Downloaded program and inputted into the machine using appropriate device	☐	☐
Simulated program to determine the correctness of the tool path and other work parameters	☐	☐

Cut work piece as programmed	☐	☐
Carried out CNC milling operations to produce component as per program	☐	☐
Carried out proper shut down in accordance with standard operating procedure	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set A: Practical Demonstration 5 (advance machine operation)

PRACTICAL DEMONSTRATION 5	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Write a program for CNC milling
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

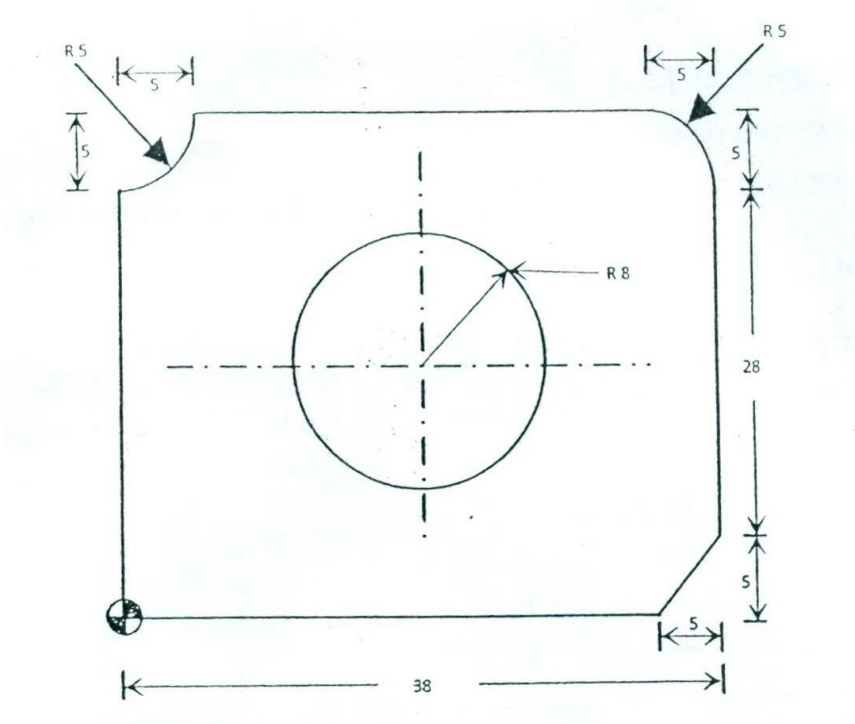
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Work piece, drawing, model or concept of a new design are analysed to produce CAM program.
2. CNC parameters are identified and selected according to the job requirement.
3. Basic parameters of CNC machine are set pursuant to instruction manual.
4. Profile, shape, and contour of work piece is imported using CAD as per job requirement and drawing standards.
5. CAM parameters are identified and set as per job requirement.
6. Program is loaded using appropriate device.
7. Production issues are recorded and reported to appropriate authority.
8. Tools, equipment and machinery is cleaned and stored as per standard operating procedure.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	N/A
Equipment:	Master CAM, EDGE CAM, CATIA
Machinery:	N/A
Materials:	Writing materials Eraser
PPE:	Apron

Set A: Practical Demonstration 5 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 5 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Write a program for CNC milling
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Analysed work piece, drawing, model or concept of a new design to produce a CAM program	☐	☐
Identified and selected CNC parameters according to the job requirement	☐	☐
Imported profile, shape and contour of work piece using CAD as per job requirement	☐	☐
Identified CAM parameters and set as per job requirement	☐	☐
Set coordinates for tools path or machining functions based on CNC machine	☐	☐
Loaded program using appropriate device	☐	☐

Executed program to produce work piece	☐	☐
Recorded and reported production issues to appropriate authorities	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set B: Practical Demonstration 1 (basic machine operation)

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a machine component with taper turning using lathe machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

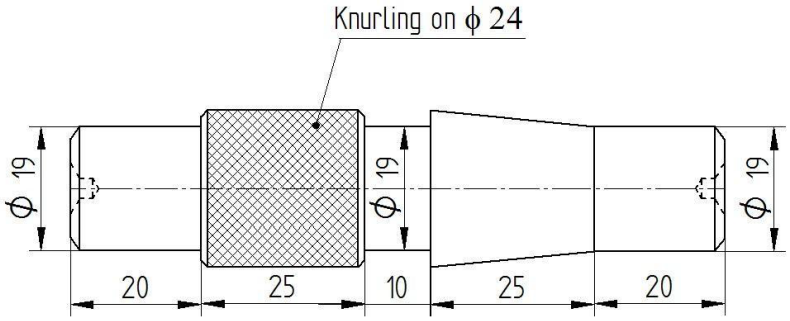
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Study the drawing.
2. Hold the workpiece on 3 jaw chuck by keeping 60 to 70 mm outside and face the workpiece to clear the roughness.
3. Centre drilling on the face of the work.
4. Plain turn Ø24 to maximum length.
5. Step turn Ø19 to 20 mm length.
6. Undercut Ø19 to 10 width.
7. Taper turning.
8. Chamfering 0.5 all sharp corners.
9. Repeat the work on the reverse side.

Drawing, Plan, Diagram or Sketch:



(All dimensions in mm)

Resources Required:	
Tools:	Single point tool
Equipment:	N/A
Machinery:	Lathe machine
Materials:	Mild steel (AISI 1040 steel)
PPE:	Apron Mask Gloves Safety shoes

Set B: Practical Demonstration 1 – Observation Checklist (basic machine operation)

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a machine component with taper turning using lathe machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Read and interpreted drawings to grind tools conforming to job specifications	☐	☐
Selected tool holding devices according to the job requirements	☐	☐
Selected cutting tools according to the job requirements	☐	☐
Selected and collected job materials in accordance with the job requirements	☐	☐
Selected appropriate type of lathe machine for the lathe operation	☐	☐
Identified different types of lathe machine	☐	☐

Selected and use lathe accessories in accordance with the job requirements	☐	☐
Selected cutting speed and feed rate in accordance with job specification	☐	☐
Read and interpreted drawings to produce component in accordance to the job specification	☐	☐
Calculated RPM, cutting speed, feed rate and depth of cut in accordance with the job requirement	☐	☐
Checked machine performance in conformance with standard operating procedure	☐	☐
Applied coolant to prevent over heating of work piece and cutting tool	☐	☐
Performed basic lathe operations to produce component	☐	☐
Performed corrective measures and/or adjustments	☐	☐
Checked and measured work piece in conformance to job specification using appropriate methods, measuring tools and equipment	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set B: Practical Demonstration 2 (basic machine operation)

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a hexagon from round rod by using a milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

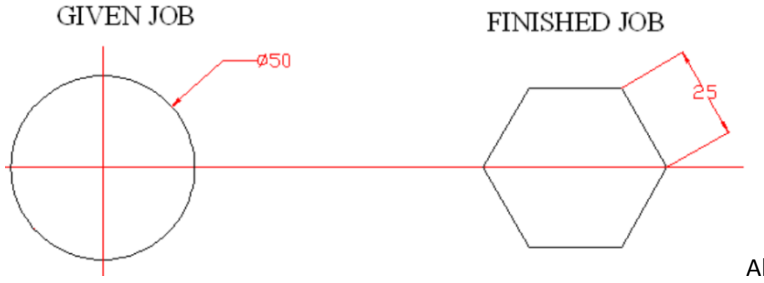
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. The given work piece is measured for its initial dimensions.
2. With the help of scriber, mark the hexagon dimensions in the work piece.
3. Fix the work piece in the vice of the milling machine.
4. After fixing the work piece and the milling tool, allow the spindle to rotate.
5. Start the milling process by giving the required depth by lowering the tool.
6. Slowly increase the depth of cut and repeat the procedure to make the hexagon shape.
7. The work piece is now checked for final dimensions.

Drawing, Plan, Diagram or Sketch:



All dimensions are in mm

Resources Required:

Tools:	Milling cutter (different types)

Equipment:	N/A
Machinery:	Milling Machine
Materials:	Aluminium block (approximately 2" x 3")
PPE:	Apron Mask Gloves Safety shoes

Set B: Practical Demonstration 2 – Observation Checklist (Basic Machine Operation)

PRACTICAL DEMONSTRATION 2 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a hexagon from round rod by using a milling machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Read and interpreted drawings to grind tools conforming to job specifications	☐	☐
Selected tool holding devices according to the job requirements	☐	☐
Selected cutting tools according to the job requirements	☐	☐
Selected and collected job materials in accordance with the job requirements	☐	☐
Selected appropriate type of milling machine for the milling operation	☐	☐
Identified different types of milling machine	☐	☐

Selected and use milling accessories in accordance with the job requirements	☐	☐
Selected cutting speed and feed rate in accordance with job specification	☐	☐
Read and interpreted drawings to produce component in accordance to the job specification	☐	☐
Selected milling cutters in accordance with the requirements of the operation	☐	☐
Determined sequence operation to produce products to meet job specification	☐	☐
Identified operating parameters of milling machine in accordance with job requirement	☐	☐
Checked machine performance in conformance with standard operating procedure	☐	☐
Applied coolant to prevent over heating of work piece and cutting tool	☐	☐
Performed basic milling operations to produce component	☐	☐
Performed corrective measures and/or adjustments	☐	☐
Checked and measured work piece in conformance to job specification using appropriate methods, measuring tools and equipment	☐	☐
Cleaned tools, equipment and milling machine	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐

Feedback to candidate:

Assessment decision for this assessment activity:

☐ **Competent** ☐ **Not Yet Competent**

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set B: Practical Demonstration 3 (advance machine operation)

PRACTICAL DEMONSTRATION 3	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a cylindrical work piece with knurling using CNC lathe machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Establish job requirements and work piece specifications.
2. Identify and select correct tools and equipment.
3. Check oil and coolant as per manufacturer's specification.
4. Cut work piece as programmed.
5. Carried out CNC lathe operations to produce component as per program.
6. Carried out proper shut down in accordance with standard operating procedure.
7. Check and measure work pieces.
8. Cleaned workplace.

Drawing, Plan, Diagram or Sketch:

Resources Required:	
Tools:	CNC lathe tools (different types)
Equipment:	N/A
Machinery:	CNC lathe machine
Materials:	Cylindrical job
PPE:	Apron Mask Gloves Safety shoes

Set B: Practical Demonstration 3 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 3 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a cylindrical work piece with knurling using CNC lathe machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Checked oil coolant as per manufacturer's specification	☐	☐
Checked air and hydraulic pressure as per manufacturer's specification	☐	☐
Set cutting tools according to the required sequence	☐	☐
Downloaded program and inputted into the machine using appropriate device	☐	☐
Simulated program to determine the correctness of the tools path and other work parameters	☐	☐
Cut work piece as programmed	☐	☐

Checked and measured work piece using appropriate measuring tools	☐	☐
Carried out CNC lathe operations to produce component as per program	☐	☐
Carried out proper shut down in accordance with standard operating procedure	☐	☐
Cleaned systems and workplace according to worksite procedures	☐	☐
Cleaned and maintained CNC lathe machine as per standard	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set B: Practical Demonstration 4 (advance machine operation)

PRACTICAL DEMONSTRATION 4	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical flat part with different holes using CNC milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Establishing job requirements and work piece specifications.
2. Identifying and selecting correct tools and equipment.
3. Check oil and coolant as per manufacturer's specification.
4. Cut work piece as programmed.
5. Carried out CNC milling operations to produce component as per program.
6. Carried out proper shut down in accordance with standard operating procedure.
7. Check and measure work pieces.
8. Cleaned workplace.

Drawing, Plan, Diagram or Sketch:

Resources Required:	
Tools:	CNC milling cutters (different types)
Equipment:	N/A
Machinery:	CNC milling machine
Materials:	Aluminium flat plate
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set B: Practical Demonstration 4 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 4 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical flat part with different holes using CNC milling machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Checked oil and coolant as per manufacturer's specification	☐	☐
Checked air and hydraulic pressure as per manufacturer's specification	☐	☐
Set cutting tools according to required sequence of operation	☐	☐
Set clamping devices and tightened according to standard operating procedures	☐	☐
Downloaded program and inputted into the machine using appropriate device	☐	☐
Simulated program to determine the correctness of the tool path and other work parameters	☐	☐

Cut work piece as programmed	☐	☐
Carried out CNC milling operations to produce component as per program	☐	☐
Carried out proper shut down in accordance with standard operating procedure	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set B: Practical Demonstration 5 (advance machine operation)

PRACTICAL DEMONSTRATION 5	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Write a program for CNC milling
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

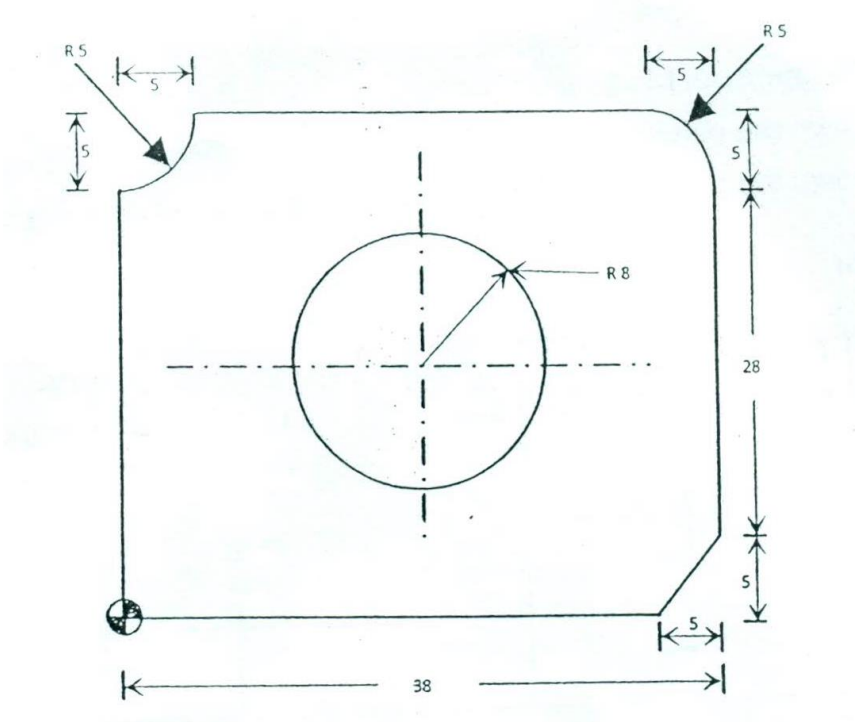
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Work piece, drawing, model or concept of a new design are analysed to produce CAM program.
2. CNC parameters are identified and selected according to the job requirement.
3. Basic parameters of CNC machine are set pursuant to instruction manual.
4. Profile, shape, and contour of work piece is imported using CAD as per job requirement and drawing standards.
5. CAM parameters are identified and set as per job requirement.
6. Program is loaded using appropriate device.
7. Production issues are recorded and reported to appropriate authority.
8. Tools, equipment and machinery is cleaned and stored as per standard operating procedure.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	N/A
Equipment:	Master CAM, EDGE CAM, CATIA
Machinery:	N/A
Materials:	Writing materials Eraser
PPE:	Apron

Set B: Practical Demonstration 5 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 5 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Write a program for CNC milling
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Analysed work piece, drawing, model or concept of a new design to produce a CAM program	☐	☐
Identified and selected CNC parameters according to the job requirement	☐	☐
Imported profile, shape and contour of work piece using CAD as per job requirement	☐	☐
Identified CAM parameters and set as per job requirement	☐	☐
Set coordinates for tools path or machining functions based on CNC machine	☐	☐
Loaded program using appropriate device	☐	☐

Executed program to produce work piece	☐	☐
Recorded and reported production issues to appropriate authorities	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set C: Practical Demonstration 1 (basic machine operation)

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a spur gear using milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Mounting and aligning of the dividing head and tail stock on the horizontal milling machine.
2. Mounting of gear milling cutter on the cutter Arbor and checking for concentric running.
3. Clamping of work piece between centres and setting to the centre of the cutter.
4. Adjusting the sector arms for the indexing head (dividing head).
5. Setting of revolution and feed for milling.
6. Cutter should have slightly on the work piece.
7. Milling of first tooth space.
8. With drawing work from the cut, and turning the indexing handle by the tooth pitch, milling of the next tooth space.
9. Milling of remaining tooth.

Drawing, Plan, Diagram or Sketch:

N/A

Resources Required:

Tools:	Gear blank mandrel Indexing head Vernier calliper

Equipment:	N/A
Machinery:	Universal milling machine
Materials:	Mild steel specimen
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set C: Practical Demonstration 1 – Observation Checklist (basic machine operation)

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a spur gear using milling machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Read and interpreted drawings to grind tools conforming to job specifications	☐	☐
Selected tool holding devices according to the job requirements	☐	☐
Selected cutting tools according to the job requirements	☐	☐
Selected and collected job materials in accordance with the job requirements	☐	☐
Selected appropriate type of milling machine for the milling operation	☐	☐
Identified different types of milling machine	☐	☐

Selected and use milling accessories in accordance with the job requirements	☐	☐
Selected cutting speed and feed rate in accordance with job specification	☐	☐
Read and interpreted drawings to produce component in accordance to the job specification	☐	☐
Selected milling cutters in accordance with the requirements of the operation	☐	☐
Determined sequence operation to produce products to meet job specification	☐	☐
Identified operating parameters of milling machine in accordance with job requirement	☐	☐
Checked machine performance in conformance with standard operating procedure	☐	☐
Applied coolant to prevent over heating of work piece and cutting tool	☐	☐
Performed basic milling operations to produce component	☐	☐
Performed corrective measures and/or adjustments	☐	☐
Checked and measured work piece in conformance to job specification using appropriate methods, measuring tools and equipment	☐	☐
Cleaned tools, equipment and milling machine	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐

Feedback to candidate:

Assessment decision for this assessment activity:

☐ **Competent** ☐ **Not Yet Competent**

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set C: Practical Demonstration 2 (basic machine operation)

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a machine component using step turning and taper turning on a lathe machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

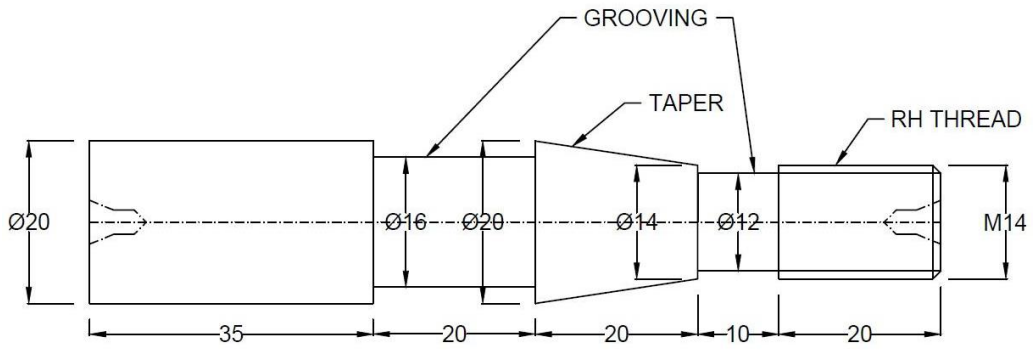
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Hold the bar in a three jaw chuck and face the end with a right hand facing tool.
2. Make central hole with a centre drill.
3. Repeat this operation for the other end of the bar.
4. Replace the chuck by a Dog plate (centre plate) and hold the work piece in a carrier between centres.
5. Turn the bar to the required diameter with rough cuts.
6. Face the steps and finishes the diameters to the required sizes.
7. Machine the groove with form tools.
8. Machine the taper with the help of the cross-slide swivelling arrangement required surface.
9. Cut the threads.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	Single point tool
Equipment:	N/A
Machinery:	Lathe machine
Materials:	Mild steel (AISI 1040 steel)
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set C: Practical Demonstration 2 – Observation Checklist (basic machine operation)

PRACTICAL DEMONSTRATION 2 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a machine component using step turning and taper turning on a lathe machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Read and interpreted drawings to grind tools conforming to job specifications	☐	☐
Selected tool holding devices according to the job requirements	☐	☐
Selected cutting tools according to the job requirements	☐	☐
Selected and collected job materials in accordance with the job requirements	☐	☐
Selected appropriate type of lathe machine for the lathe operation	☐	☐
Identified different types of lathe machine	☐	☐

Selected and use lathe accessories in accordance with the job requirements	☐	☐
Selected cutting speed and feed rate in accordance with job specification	☐	☐
Read and interpreted drawings to produce component in accordance to the job specification	☐	☐
Calculated RPM, cutting speed, feed rate and depth of cut in accordance with the job requirement	☐	☐
Checked machine performance in conformance with standard operating procedure	☐	☐
Applied coolant to prevent over heating of work piece and cutting tool	☐	☐
Performed basic lathe operations to produce component	☐	☐
Performed corrective measures and/or adjustments	☐	☐
Checked and measured work piece in conformance to job specification using appropriate methods, measuring tools and equipment	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set C: Practical Demonstration 3 (advance machine operation)

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a cylindrical work piece using CNC lathe machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

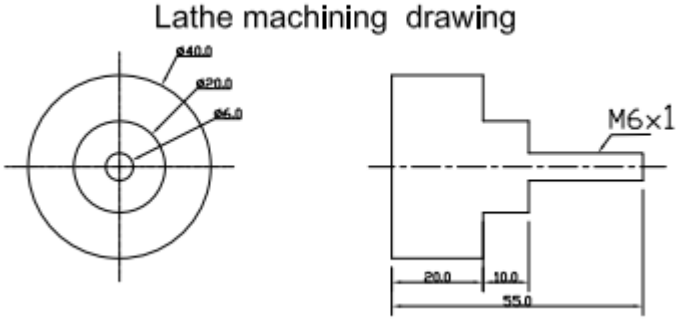
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Establish job requirements and work piece specifications.
2. Identify and select correct tools and equipment.
3. Check oil and coolant as per manufacturer's specification.
4. Cut work piece as programmed.
5. Carried out CNC lathe operations to produce component as per program.
6. Carried out proper shut down in accordance with standard operating procedure.
7. Check and measure work pieces.
8. Cleaned workplace.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	CNC lathe tools (different types)
Equipment:	N/A
Machinery:	CNC lathe machine
Materials:	Cylindrical job
PPE:	Apron Mask Gloves Safety shoes

Set C: Practical Demonstration 3 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 3 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a cylindrical work piece using CNC lathe machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Checked oil coolant as per manufacturer's specification	☐	☐
Checked air and hydraulic pressure as per manufacturer's specification	☐	☐
Set cutting tools according to the required sequence	☐	☐
Downloaded program and inputted into the machine using appropriate device	☐	☐
Simulated program to determine the correctness of the tools path and other work parameters	☐	☐
Cut work piece as programmed	☐	☐

Checked and measured work piece using appropriate measuring tools	☐	☐
Carried out CNC lathe operations to produce component as per program	☐	☐
Carried out proper shut down in accordance with standard operating procedure	☐	☐
Cleaned systems and workplace according to worksite procedures	☐	☐
Cleaned and maintained CNC lathe machine as per standard	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set C: Practical Demonstration 4 (advance machine operation)

PRACTICAL DEMONSTRATION 4	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical flat part using CNC milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

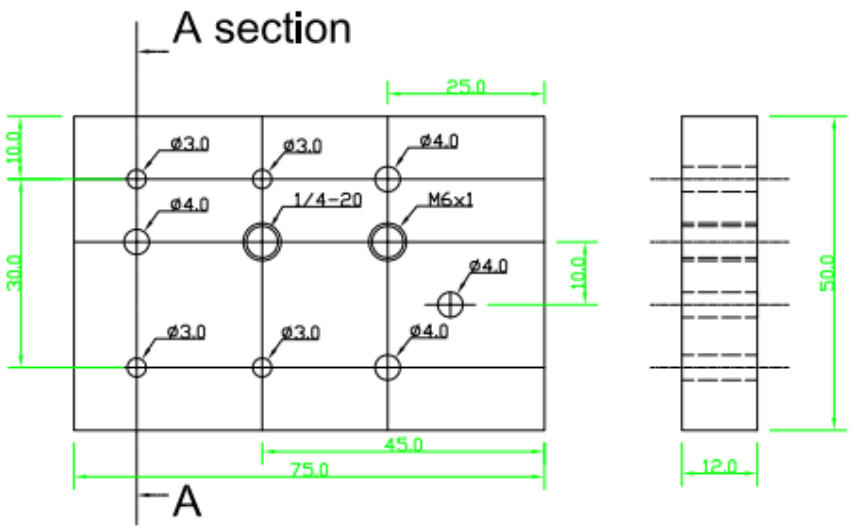
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Establish job requirements and work piece specifications.
2. Identify and select correct tools and equipment.
3. Check oil and coolant as per manufacturer's specification.
4. Cut work piece as programmed.
5. Carry out CNC milling operations to produce component as per program.
6. Carried out proper shut down in accordance with standard operating procedure.
7. Check and measure work pieces.
8. Cleaned workplace.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	CNC milling cutters (different types)
Equipment:	N/A
Machinery:	CNC milling machine
Materials:	Aluminium flat plate
PPE:	Apron Mask Gloves Safety shoes

Set C: Practical Demonstration 4 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 4 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Make a typical flat part with different holes using CNC milling machine
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Checked oil and coolant as per manufacturer's specification	☐	☐
Checked air and hydraulic pressure as per manufacturer's specification	☐	☐
Set cutting tools according to required sequence of operation	☐	☐
Set clamping devices and tightened according to standard operating procedures	☐	☐
Downloaded program and inputted into the machine using appropriate device	☐	☐
Simulated program to determine the correctness of the tool path and other work parameters	☐	☐

Cut work piece as programmed	☐	☐
Carried out CNC milling operations to produce component as per program	☐	☐
Carried out proper shut down in accordance with standard operating procedure	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐

Feedback to candidate:

Assessment decision for this assessment activity:

☐ **Competent** ☐ **Not Yet Competent**

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Set C: Practical Demonstration 5 (advance machine operation)

PRACTICAL DEMONSTRATION 5	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Write a program for CNC lathe
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

- this practical demonstration is based on the performance criteria from all or some of the units of competency in CNC Machine Operation
- this assessment activity will be used to measure your underpinning skills
- you will have fifteen (15) minutes to familiarise yourself with the resources to be used
- you have two (2) hours to complete this demonstration

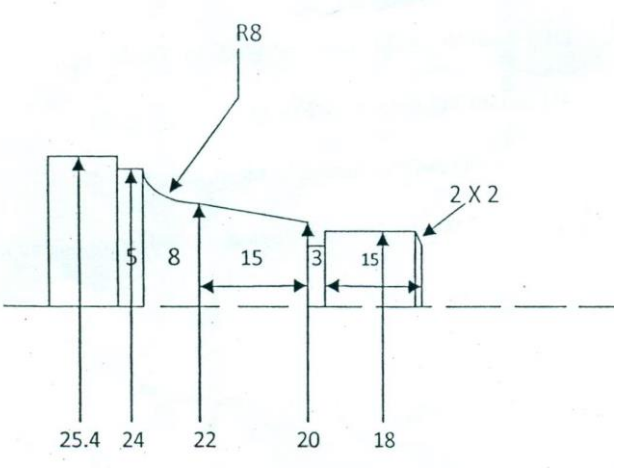
Procedure:

- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all times

Job Specification Information:

1. Collect needed materials for the job.
2. Prepare the machine, computer for the program preparation.
3. Operate the computer to produce the required program for CNC lathe.
4. Shutdown the process following workplace standards.

Drawing, Plan, Diagram or Sketch:



Resources Required:	
Tools:	N/A
Equipment:	Computer and peripherals
Machinery:	N/A
Materials:	Writing and printing materials
PPE:	Gloves Goggles Apron Safety shoes

Set C: Practical Demonstration 5 – Observation Checklist (advance machine operation)

PRACTICAL DEMONSTRATION 5 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Task:	Write a program for CNC lathe
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Identified and followed safety signs and symbols	☐	☐
Selected and used personal protective equipment (PPE)	☐	☐
Maintained personal hygiene	☐	☐
Determined application of tools to job requirements	☐	☐
Identified, selected and prepared hand and power tools	☐	☐
Used appropriate hand and power tools for the job	☐	☐
Analysed work piece, drawing, model or concept of a new design to produce a CAM program	☐	☐
Identified and selected CNC parameters according to the job requirement	☐	☐
Imported profile, shape and contour of work piece using CAD as per job requirement	☐	☐
Identified CAM parameters and set as per job requirement	☐	☐
Set coordinates for tools path or machining functions based on CNC machine	☐	☐
Loaded program using appropriate device	☐	☐

Executed program to produce work piece	☐	☐
Recorded and reported production issues to appropriate authorities	☐	☐
Cleaned workplace	☐	☐
Disposed waste materials correctly	☐	☐
Stored safely tools, equipment and finished product safely pursuant to workplace guidelines	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Oral Questions (Optional)

ORAL QUESTIONS - INSTRUCTIONS	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in CNC Machine Operation
Unit of Competency	
Generic Competencies	
SEIP-LE-CNC-01-G	Use basic mathematical concepts
SEIP-LE-CNC-02-G	Carry out workplace interaction
SEIP-LE-CNC-03-G	Operate in a team environment
SEIP-LE-CNC-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-CNC-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-CNC-02-S	Read and interpret sketches and drawings
SEIP-LE-CNC-03-S	Use hand and power tools
SEIP-LE-CNC-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-CNC-01-O	Perform basic lathe machine operations
SEIP-LE-CNC-01-O	Perform basic milling machine operations
SEIP-LE-CNC-01-O	Carry out CNC lathe machine operations
SEIP-LE-CNC-01-O	Carry out CNC milling machine operations
SEIP-LE-CNC-01-O	Carry out wire cut machine operations
SEIP-LE-CNC-01-O	Apply knowledge of CAM
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	

Read and understand the directions carefully:

- these oral questions are based on the performance criteria from all the units of competency in CNC Machine operation.
- oral questions are designed to enable additional assessment of your underpinning knowledge
- you should present your responses as directed by the assessor
- answer all the questions asked by the assessor as best as possible

ORAL QUESTIONS			
Question		Place a ✓ in the appropriate box to show if evidence has been demonstrated competently	
		Yes	**No**
1.	What are principle parts of the lathe?	☐	☐
2.	State the various parts mounted on the carriage?	☐	☐
3.	What are the specifications of the milling machine?	☐	☐
4.	Mention the various movements of universal milling machine table?	☐	☐
5.	What Is G Code?	☐	☐
6.	What does a CNC Machine Operator do?	☐	☐
7.	What Is APT language?	☐	☐
8.	What is 'part program'?	☐	☐
9.	What is the Machine Control Unit?	☐	☐
10.	What are the activities of CAM?	☐	☐
Feedback to candidate:			
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**			
Candidate's Signature:		**Date:**	
Assessor's Signature:		**Date:**	

Oral Questioning Guideline

General Guidelines For Effective Questioning
▪ Keep questions short and focused on one key concept
▪ Ensure that questions are structured
▪ Test the questions to check that they are not ambiguous
▪ Use `open-ended questions such as `what if...?' and `why...?' questions, rather than closed questions
▪ Keep questions clear and straight forward and ask one at a time
▪ Use words that the candidate is able to understand
▪ Look at the candidate when asking questions
▪ Check to ensure that the candidate fully understands the questions
▪ Ask the candidate to clarify or re-phrase their answer if the assessor does not understand the initial response
▪ Confirm the candidate's response by repeating the answer back in his/her own words
▪ Encourage a conversational approach with the candidate when appropriate, to put him or her at ease
▪ Use questions or statements as prompts for keeping focused on the purpose of the questions and the kind of evidence being collected
▪ Use language at a suitable level for the candidate
▪ Listen carefully to the answers for opportunities to find unexpected evidence
▪ Follow up responses with further questions, if useful, to draw out more evidence or to make links between knowledge areas
▪ Compile a list of acceptable responses to ensure reliability of assessments

Oral Questions (Optional) - Answers

Answers are highlighted in **bold** and *italics*.

ORAL QUESTIONS		
Question		**Answer**
1.	What are principle parts of the lathe?	***Bed, headstock, tailstock, carriage, cross slide, tool post.***
2.	State the various parts mounted on the carriage?	***Saddle, compound rest, cross slide, tool post.***
3.	What are the specifications of the milling machine?	***1. The table length and width.*** ***2. Number of spindle speeds and feeds.***
4.	Mention the various movements of universal milling machine table?	***1. Vertical movement-through the knee.*** ***2. Cross wise movement through the saddle.***
5.	What Is G Code?	***G Code is the generic name for a control language for CNC machines. It is a way for you to tell the machine to move to various points at a desired speed, control the spindle speed, turn on and off various coolants, and all sorts of other things.***
6.	What does a CNC Machine Operator do?	***CNC machine operators set up and work with computer numerically controlled (CNC) machines, a type of equipment that is usually found in the metalworking industry. Their jobs often involve repetitive tasks and the monitoring of multiple machines.***
7.	What Is APT language?	***APT [automated programming language]is a computer program, it automatically calculates the tool path, generates program and controls the machine by receiving general high-level languages.***
8.	What is 'part program'?	***Part program is a high-level language containing the instructions for machining a part to various standard words, codes and symbols.***
9.	What is the Machine Control Unit?	***The machine control unit (MCU) is the heart of a CNC system. It is used to perform the following functions: To read the coded instructions. To decode the coded instructions. To implement interpolations (linear, circular, and helical) to generate axis motion commands.***
10.	What are the activities of CAM?	***A CAM activity includes process planning, NC part programming,***

		production scheduling, and computer production monitoring and computer process control.

Assessment Evidence Summary Sheet

EVIDENCE SUMMARY SHEET			
Candidate Name:			
Assessor Name:			
Qualification:	Certificate in CNC Machine Operation		
Assessment Centre:			
Date(s) of Assessment:			
The performance of the candidate in the following unit or units of competency and the methods engaged to assess performance are as follows:			
Unit of Competency	**Assessment Method**	**Competent**	**Not Yet Competent**
All units of competency comprising of the qualification	Written Test	☐	☐
	Practical Demonstration 1 (Set ....)	☐	☐
	Practical Demonstration 2 (Set ....)	☐	☐
	Practical Demonstration 3 (Set ....)	☐	☐
	Practical Demonstration 4 (Set ....)	☐	☐
	Practical Demonstration 5 (Set ....)	☐	☐
	Oral Questioning (optional)	☐	☐
Note: Issuance of a certificate will only be given to a candidate who has successfully been assessed as competent for **ALL** units of competency.			

Recommendation		
❑ Issuance of Statement of Achievement *(indicate title of SOA, if full Certificate is not met)*	❑ Submission of additional documents Specify:	❑ Reassessment Specify:

Did the candidate overall performance meet the required evidence/standard?		☐ Yes	☐ No
Overall Evaluation:	❑ **Competent**	❑ **Not Yet Competent**	
General Comments:			
Candidate Signature:		Date:	
Assessor Signature:		Date:	

Institution Manager Signature:		Date:	

CANDIDATES COPY

(Please presents this form when you claim your Certificate)

ASSESSMENT RESULTS SUMMARY			
Qualification:	Certificate in CNC Machine Operation		
Name of Candidate:		**Date:**	
Name at Assessment Centre:		**Date:**	
Assessment Results:	❑ **Competent** ❑ **Not Yet Competent**		
Recommendation:	❑ Issuance of SOA *(indicate title of SOA, if full certificate is not met)*		
	❑ Submission of additional documents – specify:		
	❑ Reassessment - specify:		
Assessed by: (name and signature)		**Date:**	
Attested by: (name and signature):		**Date**	

Assessment Validation Map

This identifies how the assessment tools in this resource may assess:

- elements and performance criteria
- critical aspects of assessment
- skills and knowledge
- employability skills

Unit of Competency:	SEIP-LE-CNC-01-G – Use basic mathematical concepts		
Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Identify calculation requirements in the workplace.	4	A1-5 B1-5 C1-5	2
2. Select appropriate mathematical methods/concepts for the calculation.	4, 18	A1-5 B1-5 C1-5	2
3. Use tools and instruments to perform calculations.	4	A1-5 B1-5 C1-5	
Unit of Competency:	SEIP-LE-CNC-02-G – Carry out workplace interaction		
Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Interpret workplace communication and etiquette.	12	A1-5 B1-5 C1-5	
2. Read and understand workplace documents.	12	A1-5 B1-5 C1-5	
3. Participate in workplace meetings and discussions.	12		
4. Practice professional ethics at work.	12		
Unit of Competency:	SEIP-LE-CNC-03-G – Operate in a team environment		
Element	**Assessment Method**		
	Written	**Practical**	**Oral**

1. Identify team goals and work processes.		A1-5 B1-5 C1-5	
2. Identify own role and responsibilities within team.	8		
3. Communicate and co-operate with team members.		A1-5 B1-5 C1-5	
4. Practice problem solving within team.		A1-5 B1-5 C1-5	

Unit of Competency:	SEIP-LE-CNC-04-G – Apply basic IT skills

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Identify and use most commonly used IT tools.	11	A5, B5, C5	
2. Understand use of computer.	11	A5, B5, C5	
3. Work with word processing application.	11		
4. Access email and search the internet.	11		

Unit of Competency:	SEIP-LE-CNC-01-S – Apply occupational health and safety (OHS) practice in the workplace

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Identify OHS Policies and procedures.	13	A1-5 B1-5 C1-5	
2. Apply personal health and safety practices.	13	A1-5 B1-5 C1-5	
3. Report hazards and risks.	13	A1-5 B1-5 C1-5	
4. Respond to emergencies.	13	A1-5 B1-5	

		C1-5	

Unit of Competency:	SEIP-LE-CNC-02-S – Read and interpret sketches and drawings		
Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Interpret information and specifications.		A1-5 B1-5 C1-5	
2. Read and interpret sketches and drawings.		A1-5 B1-5 C1-5	

Unit of Competency:	SEIP-LE-CNC-03-S – Use hand and power tools		
Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Identify and inspect hand and power tools.		A1-5 B1-5 C1-5	
2. Use hand tools properly and safely.		A1-5 B1-5 C1-5	
3. Operate power tools properly and safely.		A1-5 B1-5 C1-5	
4. Clean and maintain hand and power tools.		A1-5 B1-5 C1-5	

Unit of Competency:	SEIP-LE-CNC-04-S – Apply quality system		
Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Work within a quality system.	1	A1-5 B1-5 C1-5	
2. Apply and monitor a quality system.	1	A1-5 B1-5	

		C1-5	
3. Apply standard procedures for each job.	1	A1-5 B1-5 C1-5	

Unit of Competency:	SEIP-LE-CNC-01-O – Perform basic lathe machine operations

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Identify and prepare work requirements.	1	A1, B1, C1	1, 2
2. Prepare for lathe operations.	1, 2, 3	A1, B1, C1	2
3. Perform basic lathe machine operations.	2, 3	A1, B1, C1	2
4. Clean and store machinery, tools and equipment.	3	A1, B1, C1	2

Unit of Competency:	SEIP-LE-CNC-02-O – Perform basic milling machine operations

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Identify and prepare work requirements.	5, 6, 7, 8, 9	A2, B2, C1	3, 4
2. Prepare for milling operations.	5, 7, 8,9	A2, B2, C1	4
3. Perform basic milling machine operations.	5, 6, 7, 8, 9	A2, B2, C1	4
4. Clean and store machinery, tools and equipment.	5, 7, 8, 9	A2, B2, C1	4

Unit of Competency:	SEIP-LE-CNC-03-O – Carry out CNC lathe machine operations

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Set-up CNC lathe machine.	10	A3, B3, C3	5, 6
2. Download and input program.	10	A3, B3, C3	
3. Cut model and sample work piece.		A3, B3, C3	

4. Perform CNC lathe machine operations.		A3, B3, C3	
5. Check and measure work piece.		A3, B3, C3	
6. Maintain tools, equipment, machinery and systems.		A3, B3, C3	

Unit of Competency:	SEIP-LE-CNC-04-O – Carry out CNC milling machine operations

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Set-up CNC milling machine.	14, 19	A4, B4, C4	6
2. Download and input program.	15	A4, B4, C4	
3. Cut model and sample work piece.		A4, B4, C4	
4. Perform machine operations.		A4, B4, C4	
5. Check and measure work piece.		A4, B4, C4	
6. Maintain tools, equipment and machinery and systems.		A4, B4, C4	

Unit of Competency:	SEIP-LE-CNC-05-O – Carry out wire cut machine operations

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Prepare for CNC wire cut machine operations.	16	A3-4, B3-4, C3-4	
2. Set-up machine, wire and work piece.	16	A3-4, B3-4, C3-4	9
3. Download and input program.	17	A3-4, B3-4, C3-4	
4. Perform CNC wire cut operations in auto mode.	18	A3-4, B3-4, C3-4	

5. Clean and store machinery, tools and equipment.		A3-4, B3-4, C3-4	

Unit of Competency:	SEIP-LE-CNC-06-O – Apply knowledge of CAM

Element	**Assessment Method**		
	Written	**Practical**	**Oral**
1. Prepare for CAM program.	20	A5, B5, C5	7, 10
2. Import CAD model.	20	A5, B5, C5	8
3. Edit program.		A5, B5, C5	
4. Load and run program.	20	A5, B5, C5	