



Skills for Employment Investment Program (SEIP)

ASSESSMENT TOOL FOR MASTER CRAFTSMANSHIP (*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:		
<p>Provided feedback on the assessment decision. This includes the following:</p> <ul style="list-style-type: none"> ▪ 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) 		
<p>Prepared the necessary assessment reports. This includes the following:</p> <ul style="list-style-type: none"> ▪ 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 **Master Craftsmanship**, 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-MAS-01-G	Use basic mathematical concepts
SEIP-LE- MAS -02-G	Carry out workplace interaction
SEIP-LE- MAS -03-G	Operate in a team environment
SEIP-LE- MAS -04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-MAS-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE- MAS -02-S	Read and interpret sketches and drawings
SEIP-LE- MAS -03-S	Use hand and power tools
SEIP-LE- MAS -04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-MAS-01-O	Apply fundamentals of welding metallurgy
SEIP-LE- MAS -02-O	Perform welding
SEIP-LE- MAS -03-O	Perform lathe machine operation
SEIP-LE- MAS -04-O	Perform milling machine operation
SEIP-LE-MAS-05-O	Perform grinding machine operation
SEIP-LE-MAS-06-O	Perform supervisory function

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:	Master Craftsmanship					
Unit Name:	Use basic mathematical concepts					
Unit Code:	SEIP-LE-MAS-01-G					
Assessment Method:	P	O	W			
	Performance <i>(including demonstration and observation)</i>	Oral questioning	Written examination <i>(including short-answer, multiple choice, and true or false questions)</i>			
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:	Master Craftsmanship					
Unit Name:	Carry out workplace interaction					
Unit Code:	SEIP-LE-MAS-02-G					
Assessment Method:	P	O	W			
	Performance <i>(including demonstration and observation)</i>	Oral questioning	Written examination <i>(including short-answer, multiple choice, and true or false questions)</i>			
Element	Performance Criteria			P	O	W
1. Interpret workplace communication and	1.1. Workplace codes of conduct are interpreted as per organisational guidelines.				✓	

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:	Master Craftsmanship					
Unit Name:	Operate in a team environment					
Unit Code:	SEIP-LE-MAS-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:	Master Craftsmanship					
Unit Name:	Apply basic IT skills					
Unit Code:	SEIP-LE-MAS-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. Access email and search the internet	4.1. Use of email account in online environment is explained.		√	√
	4.2. Writing and sending of workplace emails is completed.		√	
	4.3. Different browsers to work online are identified and selected.		√	
	4.4. Browse different web portals and apply proper search techniques.	√		

Occupation:	Master Craftsmanship					
Unit Name:	Apply occupational health and safety (OHS) practice in the workplace					
Unit Code:	SEIP-LE-MAS-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	3.1. Hazards and risks are identified.			√		

risks	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:	Master Craftsmanship					
Unit Name:	Read and interpret sketches and drawings					
Unit Code:	SEIP-LE-MAS-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:	Master Craftsmanship					
Unit Name:	Use hand and power tools					
Unit Code:	SEIP-LE-MAS-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	1.1. Appropriate hand and power tools are identified.		✓			

hand and power tools	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:	Master Craftsmanship
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Unit Name:	Apply quality system					
Unit Code:	SEIP-LE-MAS-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:	Master Craftsmanship
Unit Name:	Apply fundamentals of welding metallurgy
Unit Code:	SEIP-LE-MAS-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 the mechanical properties of metals	1.1.	Structure of metals and alloys are identified.		✓		
	1.2.	Mechanical properties of metals are identified.		✓		
	1.3.	Steel micro-structure is explained.		✓		
2. Explain the chemical properties of steel	2.1.	Chemical properties of steel are explained.		✓		
	2.2.	Types of carbon steel are identified.		✓		
	2.3.	Application of the different types of carbon steels are described in relation to welding processes.	✓			
3. Describe the effects of heat to the chemical properties in steels	3.1.	Chemical effects of elements to steel properties are described.		✓		
	3.2.	Affected elements in steel are identified.	✓			
	3.3.	Iron carbon diagram is explained.		✓		
4. Demonstrate application of heat treatment processes	4.1.	Application of heat treatment is explained.		✓		
	4.2.	Heat treatment processes are described.	✓			
	4.3.	Annealing of carbon steel is performed in accordance with workplace procedures.	✓			
	4.4.	Hardening of carbon steel is carried out in accordance with workplace procedures.	✓			
	4.5.	Tempering of carbon steel is performed in accordance with workplace procedure.	✓			
	4.6.	Heat treatment tools and equipment are identified.	✓			
	4.7.	PPE are selected and used when performing heat treatment processes.	✓			
5. Clean and store the tools and equipment	5.1.	Hand tools and equipment are maintained and cleaned as per instruction manual.	✓			
	5.2.	Work place is cleaned in accordance with environmental requirement.	✓			
	5.3.	Tools and equipment are stored safely in appropriate location according to standard workshop procedures.	✓			
	5.4.	Waste materials are disposed in proper place.	✓			

Occupation:	Master Craftsmanship
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Unit Name:	Perform welding					
Unit Code:	SEIP-LE-MAS-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)			
Element	Performance Criteria			P	O	W
1. Identify welding symbols and select electrodes	1.1. Different welding symbols are identified and interpreted according to drawing.			✓		
	1.2. Drawing symbols are demonstrated according to the welding diagram and drawings.			✓		
	1.3. Welding symbol charts are interpreted.			✓		
	1.4. Classifications of electrodes are demonstrated.				✓	
	1.5. Electrodes are selected according to requirements of the job specifications.			✓		
	1.6. Electrodes are kept in electrode drying oven about 2-3 hours at 260 degree Celsius.			✓		
	1.7. PPE is selected and used.			✓		
	1.8. Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed.			✓		
2. Carry out SMAW in 5G and 6G position	2.1. Routine maintenance is performed and SMAW welding machine is prepared in accordance with the requirement of the welding job.			✓		
	2.2. Mild steel pipe is marked, V-groove is cut and fixed in horizontal position.			✓		✓
	2.3. Welding is performed in 5G position in accordance with job requirement.			✓		
	2.4. Mild steel pipe is marked, V-groove is cut and fixed in 45-degree position.			✓		
	2.5. Welding is performed in accordance with welding joint and position in 6G.			✓		
	2.6. Welding area guards, work table/floor, dust collection devices are checked according to worksite requirements.			✓		
	2.7. Welds are cleaned, checked for quality and defects are identified.			✓		
	2.8. Defects are rectified to meet the standards of job specifications.			✓		
3. Carry out MIG and TIG welding in 3G and 4G position	3.1. Routine maintenance is performed and MIG and TIG welding machine are prepared in accordance with the requirement of the welding job.			✓		

	3.2. MIG and TIG welding machine, tools and equipment are selected according to the requirements.	✓		
	3.3. Base metals and MIG and TIG weld areas are prepared as per requirement.	✓		
	3.4. Shielding gases are selected for MIG & TIG welding.	✓		
	3.5. Mild steel plate is marked, V-groove is cut and set to vertical and overhead fixed position.	✓		
	3.6. Welding is performed in 3G and 4G position in accordance with job requirement.	✓		
	3.7. Welding area guards, work table/floor, dust collection devices are checked according to worksite procedure.	✓		
	3.8. Welds are cleaned, checked for quality and defects are identified.	✓		
4. Perform plasma cutting	4.1. Routine maintenance is performed and Plasma cutting machine is prepared.	✓		
	4.2. Plasma cutting machine is selected according to the job requirements.	✓		
	4.3. Plasma gas torch is set for cutting materials as per requirement.	✓		
	4.4. Plasma gas cutting performance is checked to conform with the job requirement.	✓		
	4.5. Plasma cutting is performed as per job requirement.	✓		✓
	4.6. Rough edges after cutting are removed, cleaned, checked for quality and defects are identified and corrective action is taken in accordance with standard cutting procedures.	✓		
5. Clean, maintain and store tools, equipment, materials and finished products	5.1. Tools, equipment and machines are cleaned and maintained.	✓		
	5.2. Workplace is cleaned.	✓		
	5.3. Waste materials are disposed in its designated/proper place.	✓		
	5.4. Tools, equipment and finished products are stored safely in an appropriate location in accordance with workplace procedures.	✓		

Occupation:	Master Craftsmanship		
Unit Name:	Perform lathe machine operations		
Unit Code:	SEIP-LE-MAS-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. Perform taper turning using attachment	1.1. Appropriate types of lathe machine, tools and equipment are selected for taper turning operations.	✓			
	1.2. Taper turning attachment is installed with the compound slide of the lathe machine to set up the taper attachment.	✓			
	1.3. Cutting speed and feed are selected according to the job specifications.	✓			
	1.4. Component drawing is interpreted and specifications identified.	✓			
	1.5. Job materials are selected and collected according to the job specifications.	✓			
	1.6. Single point cutting tools are selected according to the requirements of the operation.	✓			
	1.7. Taper turning operation is performed following the sequence of operation in producing the required specification of the product.	✓			
	1.8. Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment.	✓			
2. Cut multi start acme and squire thread	2.1. RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement.	✓			
	2.2. Machine performance is checked in conformance with the job requirement.	✓			
	2.3. Coolant is applied to prevent over heating of work piece and cutting tool.	✓			
	2.4. Acme and squire thread cutting tools are selected according to the requirements.	✓			
	2.5. Multi-start acme threads cutting is performed to cut threads to specifications as per drawing.	✓			
	2.6. Multi-start square threads cutting are performed to cut threads to specifications as per drawing.	✓			
	2.7. Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment.	✓			
3. Cut single start worm	3.1. RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement.	✓			
	3.2. Machine performance is checked in conformance to job requirement.	✓			
	3.3. Coolant is applied to prevent over heating of work piece and cutting tool.	✓			

	3.4. Worm thread cutting tools are selected according to the requirements.	✓		
	3.5. Single-start worm threads cutting is performed in accordance with specifications as per drawing.	✓		
	3.6. Work piece is checked/measured for conformance to specification using appropriate techniques, measuring tools and equipment.	✓		
4. Perform eccentric turning	4.1. RPM cutting speed, feed rate and depth of cut are calculated as per eccentric job requirement.	✓		
	4.2. Machine performance is checked to conform to the job requirement.	✓		
	4.3. Coolant is applied to prevent over heating of work piece and cutting tool.	✓		
	4.4. Eccentric turning method is selected according to the job requirement.	✓		
	4.5. Eccentric turning is performed in accordance with specifications in the drawing.	✓		
	4.6. Job is checked/measured for conformance to specification using appropriate techniques, measuring tools and equipment.	✓		
	4.7. Safe work practices are observed and personal protective equipment (PPE) worn at work.	✓		
5. Clean and store tools and equipment	5.1. Workplace, tools, equipment are cleaned and maintained in accordance with workplace requirements.	✓		
	5.2. Waste materials are disposed in proper place.	✓		
	5.3. Tools, equipment and finished products are stored safely in accordance with workplace procedures.	✓		

Occupation:	Master Craftsmanship					
Unit Name:	Perform milling machine operations					
Unit Code:	SEIP-LE-MAS-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. Determine job requirement	1.1. Operations for boring, external and internal key way, helical gear, bevel gear, rack and pinion are identified from working drawings and specifications.			✓		
	1.2. Milling accessories and attachment are used where appropriate to the requirements of the			✓		

	operation.			
	1.3. Sequence of operation is determined to produce the product according to specifications.	✓		
	1.4. Required material is selected according to job requirements.	✓		
	1.5. Cutting fluid is used in accordance with manufacturer's instruction.	✓		
	1.6. Milling cutters are selected according to the requirements of the job and the operation.	✓		
	1.7. PPE is selected and used.	✓		
	1.8. Safe work practices are observed and personal protective equipment (PPE) is worn at work	✓		
2. Perform boring using boring attachment	2.1. Horizontal/vertical machine is set up with a vice on the table and boring attachment/boring head is installed using horizontal/vertical arbor.	✓		
	2.2. Different parts boring head are identified and explained its functions.	✓		
	2.3. RPM cutting speed, feed and depth of cut are calculated as per job requirement.	✓		
	2.4. Machine performance is checked conforming to the job requirement.	✓		
	2.5. Coolant is applied to prevent over heating of work piece and cutting tool.	✓		
	2.6. Boring operation is performed using boring attachment with conventional milling methods to produce a pre- determined drill hole.	✓		
	2.7. Job is checked/measured for conformance to specification using appropriate techniques, measuring tools, and equipment.	✓		
3. Perform external and internal key way milling	3.1. Vertical milling machine is set up with a vice on the table and an end-milling cutter on the vertical arbor or adopter for cutting external key way.	✓		
	3.2. RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement.	✓		
	3.3. Machine performance is checked in conformance to the job requirement.	✓		
	3.4. Coolant is applied to prevent over heating of work piece and cutting tool.	✓		
	3.5. External key way is performed to produce key on shaft.	✓		
	3.6. Slot milling attachment is set up to cut internal key way using a key way fly cutter using a horizontal/ vertical milling machine.	✓	✓	
	3.7. Job is checked/measured in conformance to specification using appropriate techniques,	✓		

	measuring tools and equipment.			
4. Cut helical and bevel gear	4.1. Set up the horizontal/vertical machine with index head on the table and set gear cutter on the horizontal/vertical arbor as per requirement.	✓		
	4.2. Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	✓		
	4.3. RPM, cutting speed, feed rate, depth of cut, gear formula are calculated as per job requirement.	✓		
	4.4. Machine performance is checked in conformance with the job requirement.	✓		
	4.5. Coolant is applied to prevent over heating of work piece and cutting tool.	✓		
	4.6. Helical and bevel gear cutting is performed as per the job requirement.	✓	✓	
	4.7. Job is checked/measured in conformance to specification using appropriate techniques, measuring tools, and equipment.	✓		
5. Cut rack and pinion	5.1. Set up the horizontal/vertical machine with index head on the table and install gear cutter on the horizontal/vertical arbor as per requirement.	✓		
	5.2. Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained.	✓		
	5.3. RPM, cutting speed, feed depth of cut, gear formula are calculated as per job requirement.	✓		
	5.4. Machine performance is checked in conformance with the job requirement.	✓		
	5.5. Coolant is applied to prevent over heating of work piece and cutting tool.	✓		
	5.6. Rack and pinion gear cutting is performed as per the job requirement.	✓		
	5.7. Job is checked/measured in conformance withdrawing/specification using appropriate techniques, measuring tools, and equipment.	✓		
6. Clean and store the tools and equipment	6.1. Workplace, tools, equipment and milling machine are cleaned.	✓		
	6.2. Waste materials are disposed in proper place.	✓		
	6.3. Tools, equipment and finished products are stored safely in appropriate location in according with workplace policy.	✓		

Occupation:	Master Craftsmanship
Unit Name:	Perform grinding machine operation

Unit Code:	SEIP-LE-MAS-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. Operate grinding machine	1.1. Different types of grinding machine are identified.	√			
	1.2. Different parts of the grinding machine are identified.	√			
	1.3. RPM, cutting speed, feed rate and depth of grind are determined.	√			
	1.4. Grinding machine accessories and attachment are identified and set.	√			
	1.5. Different abrasive/grinding wheels are identified, selected and balanced according to the abrasive wheel specifications.	√			
	1.6. Machine is degreased, selected, handled and operated according to the machine instruction manual.	√			
	1.7. Machine electrical connection switches are identified.	√	√		
	1.8. PPE is selected and used.	√			
2. Carry out cylindrical grinding machine	2.1. Cylindrical grinding machine are selected and set according to the job requirement..	√			
	2.2. Grinding wheels are selected, balanced, and dressed according the requirement.	√			
	2.3. Cylindrical work piece is set between live and revolving centre.	√			
	2.4. RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement.	√			
	2.5. Machine performance is checked conforming to the job requirement.	√			
	2.6. Coolant is applied to prevent over heating of work piece and cutting tool.	√			
	2.7. Cylindrical grinding operation is performed according to the work place requirement	√			
	2.8. Job is checked/measured for conformance to specification using appropriate techniques, measuring tools, and equipment.	√			
3. Carry out surface grinding machine	3.1. Surface grinding machine are selected and set according to the job requirement.	√			
	3.2. Grinding wheels are selected, balanced, and	√			

	dressed according the job requirement.			
	3.3. Work piece is set on the machine vice/magnetic vice.	✓		✓
	3.4. RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement.	✓		
	3.5. Machine performance is checked conforming to the job requirement.	✓		
	3.6. Coolant is applied to prevent over heating of the work piece and grinding wheel.	✓		
	3.7. Surface grinding operation is performed according to the work place requirement.	✓		
	3.8. Job is checked/measured for conformance to specification using appropriate techniques, measuring tools, and equipment.	✓		
4. Perform universal tools and cutter grinding machine	4.1. Universal tools and cutter grinding machine are selected and set according to the job requirement.	✓		
	4.2. Grinding wheels are selected, set balanced, and dressed according the job requirement.	✓		
	4.3. Cutting tools and cutters are set on the machine vice/universal vice.	✓		
	4.4. RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement.	✓		
	4.5. Machine performance is checked conforming to the job requirement.	✓		
	4.6. Coolant is applied to prevent over heating of the work piece and grinding wheel.	✓		
	4.7. Universal tools and cutter grinding operation is performed according to the work place requirement.	✓		
	4.8. Job is checked/measured for conformance to specification using appropriate techniques, measuring tools, and equipment.	✓		
5. Clean and store the tools and equipment	5.1. Tools, equipment and milling machine are cleaned.	✓		
	5.2. Work place is clean.	✓		
	5.3. Waste materials are disposed in proper place.	✓		
	5.4. Tools, equipment and finished job are stored safely in appropriate location according to standard place and procedures.	✓		

Occupation:	Master Craftsmanship
Unit Name:	Perform supervisory function
Unit Code:	SEIP-LE-MAS-06-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. Demonstrate management skills	1.1. Management functions are defined.		✓		
	1.2. Shop management planning, organizing, coordinating and directing functions are demonstrated.	✓			
	1.3. Staff motivational needs are identified.		✓		
	1.4. Shop management problems are identified and controlled.		✓		
	1.5. Production input are selected and gathered.	✓			
2. Demonstrate leadership skills	2.1. Leadership skills of a supervisor is demonstrated.	✓			
	2.2. Leadership is shown to encourage, enhance, motivate for team commitment.	✓			
	2.3. Situational leadership skills model are demonstrated.	✓			
	2.4. Participative leadership skills and techniques are shared to the subordinates	✓			
	2.5. Tools and techniques for leadership are designed to improve performance.		✓		
	2.6. Effective face to face meeting with the staff are carried out.		✓		
3. Deal with conflict management with subordinates	3.1. Leadership skills of a supervisor is demonstrated.	✓			
	3.2. Leadership is shown to encourage, enhance, motivate for team commitment.	✓			
	3.3. Situational leadership skills model are demonstrated.	✓			
	3.4. Participative leadership skills and techniques are shared to the subordinates.	✓			
	3.5. Tools and techniques for leadership are designed to improve performance.		✓		
	3.6. Effective face to face meeting with the staff are carried out.		✓		
4. Apply Production Planning and Control (PPC) in the workplace	4.1. Production inputs and outputs are identified.	✓			
	4.2. Short term and long production management decisions are demonstrated.	✓			
	4.3. The control cycle of PPC is demonstrated.		✓		

	4.4. Products estimating and costing are calculated.			✓
	4.5. Quality dimensions and quality control of product is carried out.	✓		

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 Master Craftsmanship. 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.

Your 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:	Welding	
Units of competency:	<p>Generic units:</p> <p>Use basic mathematical concepts</p> <p>Carry out workplace interaction</p> <p>Operate in a team environment</p> <p>Apply basic IT skills</p> <p>Sector-specific units:</p> <p>Apply occupational health and safety (OHS) practice in the workplace</p> <p>Read and interpret sketches and drawings</p> <p>Use hand and power tools</p> <p>Apply quality system</p> <p>Occupation-specific units:</p> <p>Apply fundamentals of welding metallurgy</p> <p>Perform welding</p> <p>Perform lathe machine operation</p> <p>Perform milling machine operation</p> <p>Perform grinding machine operation</p> <p>Perform supervisory function</p>	
<p>Instructions:</p> <ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> ▪ Identify calculation requirements from workplace information 	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> ▪ Construct mathematical problems from workplace 	<input type="checkbox"/>	<input type="checkbox"/>

▪ 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 to 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		

<ul style="list-style-type: none"> ▪ Identify a range of solutions and courses of action together with benefits, costs, and risks associated with each 		
<ul style="list-style-type: none"> ▪ Recognise the good ideas of others to help develop solutions and seek advice from those who've solved similar problems 		
<ul style="list-style-type: none"> ▪ Look beyond the obvious and not stop at the first answers 		
<ul style="list-style-type: none"> ▪ Identify and summarise history of information technology (IT) 		
<ul style="list-style-type: none"> Identify and describe commonly used IT tools 		
<ul style="list-style-type: none"> ▪ Identify basic parts of a computer 		
<ul style="list-style-type: none"> ▪ Perform turning on and off technique of a computer 		
<ul style="list-style-type: none"> ▪ Interpret working environment, functions and features of operating system 		
<ul style="list-style-type: none"> ▪ Apply simple trouble-shooting techniques 		
<ul style="list-style-type: none"> ▪ Operate word processing application appropriate to perform activity 		
<ul style="list-style-type: none"> ▪ Apply basic typing technique to document 		
<ul style="list-style-type: none"> ▪ Employ word processing techniques to document 		
<ul style="list-style-type: none"> ▪ Practice personal CV writing using suitable word processing techniques 		
<ul style="list-style-type: none"> ▪ Use saving and retrieving techniques of a document 		
<ul style="list-style-type: none"> ▪ Explain use of email account in online environment 		
<ul style="list-style-type: none"> ▪ Complete writing and sending of workplace emails 		
<ul style="list-style-type: none"> ▪ Identify different browsers to work online 		
<ul style="list-style-type: none"> ▪ Browse different web portals and apply proper search techniques 		
<ul style="list-style-type: none"> ▪ Interpret OSH policies and safe operating procedures 		
<ul style="list-style-type: none"> ▪ Identify and follow safety signs and symbols 		
<ul style="list-style-type: none"> ▪ Interpret response, evacuation procedures and other contingency measures correctly. 		
<ul style="list-style-type: none"> ▪ Apply OSH policies and procedures in the workplace including personal protective equipment (PPE) 		
<ul style="list-style-type: none"> ▪ Recognise common health issues 		
<ul style="list-style-type: none"> ▪ Identify common safety issues 		
<ul style="list-style-type: none"> ▪ Identify hazards and risks 		
<ul style="list-style-type: none"> ▪ Interpret hazards and risks assessment 		
<ul style="list-style-type: none"> ▪ Respond to alarms and warning devices 		
<ul style="list-style-type: none"> ▪ Respond to emergency response plans and procedures 		
<ul style="list-style-type: none"> ▪ Identify first aid procedures during emergency situations 		
<ul style="list-style-type: none"> ▪ 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		
▪ Read and interpret specifications and instructions.		
▪ Identify and select appropriate personal protective equipment		
▪ Identify structure of metals and alloys		
▪ Identify mechanical properties of metals		
▪ steel micro-structure is explained		
▪ Explain chemical properties of steel		
▪ Identify types of carbon steel		
▪ Describe application of the different types of carbon steels in relation to welding processes		
▪ Describe chemical effects of elements to steel properties		
▪ Identify affected elements in steel		
▪ Explain iron carbon diagram		
▪ Explain application of heat treatment		
▪ Describe heat treatment processes		
▪ Perform annealing of carbon steel in accordance with workplace procedures		
▪ Carry out hardening of carbon steel in accordance with workplace procedures		
▪ Perform tempering of carbon steel in accordance with workplace procedure		
▪ Identify heat treatment tools and equipment		
▪ Select and use PPE when performing heat treatment processes		
▪ Maintain and clean hand tools and equipment as per instruction manual		
▪ Clean work place in accordance with environmental requirement		
▪ Store tools and equipment safely in appropriate location according to standard workshop procedures		
▪ Dispose waste materials in proper place		

<ul style="list-style-type: none"> Identify and interpret different welding symbols according to drawing 		
<ul style="list-style-type: none"> Demonstrate drawing symbols according to the welding diagram and drawings 		
<ul style="list-style-type: none"> Interpret welding symbol charts 		
<ul style="list-style-type: none"> Demonstrate classifications of electrodes 		
<ul style="list-style-type: none"> Select electrodes according to requirements of the job specifications 		
<ul style="list-style-type: none"> Keep electrodes in electrode drying oven about 2-3 hours at 260 degree Celsius 		
<ul style="list-style-type: none"> Observe safe work practices and personal protective equipment (PPE) ware as required for the work performed 		
<ul style="list-style-type: none"> Perform routine maintenance and prepare SMAW welding machine in accordance with the requirement of the welding job 		
<ul style="list-style-type: none"> Mark mild steel pipe, cut and fix v-groove in horizontal position 		
<ul style="list-style-type: none"> Perform welding in 5G position in accordance with job requirement 		
<ul style="list-style-type: none"> Mark mild steel pipe, cut v-groove and fix in 45-degree position 		
<ul style="list-style-type: none"> Perform welding in accordance with welding joint and position in 6G 		
<ul style="list-style-type: none"> Check welding area guards, work table/floor, dust collection devices according to worksite requirements 		
<ul style="list-style-type: none"> Clean welds check for quality and identify defects 		
<ul style="list-style-type: none"> Rectify defects to meet the standards of job specifications 		
<ul style="list-style-type: none"> Perform routine maintenance and MIG & TIG welding machine are prepared in accordance with the requirement of the welding job 		
<ul style="list-style-type: none"> Select MIG & TIG welding machine, tools and equipment according to the requirements 		
<ul style="list-style-type: none"> Prepare base metals and MIG&TIG weld areas as per requirement 		
<ul style="list-style-type: none"> Select shielding gases for MIG & TIG welding 		
<ul style="list-style-type: none"> Mark mild steel plate, cut v-groove and set to vertical and overhead fixed position. 		
<ul style="list-style-type: none"> Perform welding in 3G and 4G position in accordance with job requirement 		
<ul style="list-style-type: none"> Check welding area guards, work table/floor, dust collection devices according to worksite procedure 		
<ul style="list-style-type: none"> Clean welds, check for quality and identify defects 		
<ul style="list-style-type: none"> Prepare routine maintenance is performed and plasma cutting machine 		

▪ Select plasma cutting machine according to the job requirements		
▪ Set plasma gas torch for cutting materials as per requirement		
▪ Check plasma gas cutting performance to conform with the job requirement		
▪ Perform plasma cutting as per job requirement		
▪ Remove, clean, check rough edges after cutting for quality and Identify defects and corrective action is taken in accordance with standard cutting procedures.		
▪ Clean and maintain tools, equipment and machines		
▪ Clean workplace		
▪ Dispose waste materials in its designated/proper place		
▪ Store tools, equipment and finished products safely in an appropriate location in accordance with workplace procedures		
▪ Select appropriate types of lathe machine, tools and equipment for taper turning operations		
▪ Install taper turning attachment with the compound slide of the lathe machine to set up the taper attachment		
▪ Select cutting speed and feed according to the job specifications		
▪ Interpret component drawing and specifications identified		
▪ Select job materials and collected according to the job specifications		
▪ Select single point cutting tools according to the requirements of the operation		
▪ Perform taper turning operation following the sequence of operation in producing the required specification of the product.		
▪ Check/measure job in conformance to specification using appropriate techniques, measuring tools and equipment		
▪ Calculate rpm, cutting speed, feed rate and depth of cut as per job requirement		
▪ Check machine performance in conformance with the job requirement		
▪ Apply coolant to prevent over heating of work piece and cutting tool		
▪ Select ACME and SQUIRE thread cutting tools according to the requirements		
▪ Perform multi-start ACME threads cutting to cut threads to specifications is per drawing		
▪ Perform multi-start square threads cutting to cut threads to specifications as per drawing		
▪ Check/measure job in conformance to specification using appropriate techniques, measuring tools and equipment		

<ul style="list-style-type: none"> ▪ Calculate rpm, cutting speed, feed rate and depth of cut as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance in conformance to job requirement 		
<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of work piece and cutting tool 		
<ul style="list-style-type: none"> ▪ Select worm thread cutting tools according to the requirements 		
<ul style="list-style-type: none"> ▪ Perform single-start worm threads cutting in accordance with specifications as per drawing 		
<ul style="list-style-type: none"> ▪ Check/measure work piece for conformance to specification using appropriate techniques, measuring tools and equipment 		
<ul style="list-style-type: none"> ▪ Calculate rpm cutting speed, feed rate and depth of cut as per eccentric job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance to conform to the job requirement 		
<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of work piece and cutting tool 		
<ul style="list-style-type: none"> ▪ Select eccentric turning method according to the job requirement 		
<ul style="list-style-type: none"> ▪ Perform eccentric turning in accordance with specifications in the drawing 		
<ul style="list-style-type: none"> ▪ Check/measure job for conformance to specification using appropriate techniques, measuring tools and equipment 		
<ul style="list-style-type: none"> ▪ Observe safe work practices and wear personal protective equipment (PPE) at work 		
<ul style="list-style-type: none"> ▪ Clean and maintain workplace, tools, equipment in accordance with workplace requirements 		
<ul style="list-style-type: none"> ▪ Identify operations for boring, external and internal key way, helical gear, bevel gear, rack and pinion from working drawings and specifications 		
<ul style="list-style-type: none"> ▪ Use milling accessories and attachment where appropriate to the requirements of the operation 		
<ul style="list-style-type: none"> ▪ Determine sequence of operation to produce the product according to specifications 		
<ul style="list-style-type: none"> ▪ Select required material according to job requirements 		
<ul style="list-style-type: none"> ▪ Use cutting fluid in accordance with manufacturer's instruction 		
<ul style="list-style-type: none"> ▪ Select milling cutters according to the requirements of the job and the operation 		
<ul style="list-style-type: none"> ▪ Install horizontal/vertical machine is set up with a vise on the table and boring attachment/boring head using horizontal/vertical arbor 		
<ul style="list-style-type: none"> ▪ Identify and explain different parts boring head its functions 		
<ul style="list-style-type: none"> ▪ Calculate rpm cutting speed, feed and depth of cut as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance conforming to the job requirement 		

<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of work piece and cutting tool 		
<ul style="list-style-type: none"> ▪ Perform boring operation using boring attachment with conventional milling methods to produce a pre- determined drill hole 		
<ul style="list-style-type: none"> ▪ Check/measure job for conformance to specification using appropriate techniques, measuring tools, and equipment 		
<ul style="list-style-type: none"> ▪ Set up vertical milling machine with a vice on the table and an end-milling cutter on the vertical arbor or adopter for cutting external key way 		
<ul style="list-style-type: none"> ▪ Calculate RPM, cutting speed, feed rate and depth of cut as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance in conformance to the job requirement 		
<ul style="list-style-type: none"> ▪ Perform external key way to produce key on shaft 		
<ul style="list-style-type: none"> ▪ Set up slot milling attachment to cut internal key way using a key way fly cutter using a horizontal/ vertical milling machine 		
<ul style="list-style-type: none"> ▪ Check/measure job in conformance to specification using appropriate techniques, measuring tools and equipment 		
<ul style="list-style-type: none"> ▪ Set up the horizontal/vertical machine with index head on the table and set gear cutter on the horizontal/vertical arbor as per requirement 		
<ul style="list-style-type: none"> ▪ Identify and explain gear teeth nomenclature, formula, pressure angle, gear form cutter set 		
<ul style="list-style-type: none"> ▪ Calculate RPM, cutting speed, feed rate, depth of cut, gear formula as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance in conformance with the job requirement 		
<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of work piece and cutting tool 		
<ul style="list-style-type: none"> ▪ Perform helical and bevel gear cutting as per the job requirement 		
<ul style="list-style-type: none"> ▪ Check/measure job in conformance to specification using appropriate techniques, measuring tools, and equipment 		
<ul style="list-style-type: none"> ▪ Set up the horizontal/vertical machine with index head on the table and install gear cutter on the horizontal/vertical arbor as per requirement 		
<ul style="list-style-type: none"> ▪ Identify and explain gear teeth nomenclature, formula, pressure angle, gear form cutter set 		
<ul style="list-style-type: none"> ▪ Calculate RPM, cutting speed, feed depth of cut, gear formula as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance in conformance with the job requirement 		
<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of work piece and cutting tool 		

<ul style="list-style-type: none"> ▪ Perform rack and pinion gear cutting as per the job requirement 		
<ul style="list-style-type: none"> ▪ Check/measure job in conformance withdrawing/specification using appropriate techniques, measuring tools, and equipment 		
<ul style="list-style-type: none"> ▪ Clean workplace, tools, equipment and milling machine 		
<ul style="list-style-type: none"> ▪ Identify different types of grinding machine 		
<ul style="list-style-type: none"> ▪ Identify different parts of the grinding machine 		
<ul style="list-style-type: none"> ▪ Determine RPM, cutting speed, feed rate and depth of grind 		
<ul style="list-style-type: none"> ▪ Identify and set grinding machine accessories and attachment 		
<ul style="list-style-type: none"> ▪ Identify, select and balance different abrasive/grinding wheels according to the abrasive wheel specifications 		
<ul style="list-style-type: none"> ▪ Degrease, select, handle and operate machine according to the machine instruction manual 		
<ul style="list-style-type: none"> ▪ Identify machine electrical connection switches 		
<ul style="list-style-type: none"> ▪ Select and set cylindrical grinding machine according to the job requirement 		
<ul style="list-style-type: none"> ▪ Identify, select and balance grinding wheels according the requirement 		
<ul style="list-style-type: none"> ▪ Set cylindrical work piece between live and revolving center 		
<ul style="list-style-type: none"> ▪ Calculate rpm, cutting speed, feed rate and depth of cut as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance conforming to the job requirement 		
<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of work piece and cutting tool 		
<ul style="list-style-type: none"> ▪ Perform cylindrical grinding operation according to the work place requirement 		
<ul style="list-style-type: none"> ▪ Check/measure job for conformance to specification using appropriate techniques, measuring tools, and equipment 		
<ul style="list-style-type: none"> ▪ Select and set surface grinding machine according to the job requirement 		
<ul style="list-style-type: none"> ▪ Select, balance, and dress grinding wheels according the job requirement 		
<ul style="list-style-type: none"> ▪ Set on work piece the machine vice/magnetic vice 		
<ul style="list-style-type: none"> ▪ Calculate rpm, cutting speed, feed rate and depth of cut as per job requirement 		
<ul style="list-style-type: none"> ▪ Check machine performance conforming to the job requirement 		
<ul style="list-style-type: none"> ▪ Apply coolant to prevent over heating of the work piece and grinding wheel 		
<ul style="list-style-type: none"> ▪ Perform surface grinding operation according to the work place requirement 		

▪ Check/measure job for conformance to specification using appropriate techniques, measuring tools, and equipment		
▪ Select and set universal tools and cutter grinding machine according to the job requirement		
▪ Select, set balance, and dress grinding wheels according the job requirement		
▪ Set cutting tools and cutters on the machine vice/universal vice		
▪ Calculate RPM, cutting speed, feed rate and depth of cut as per job requirement		
▪ Check machine performance conforming to the job requirement		
▪ Apply coolant to prevent over heating of the work piece and grinding wheel		
▪ Perform universal tools and cutter grinding operation according to the work place requirement		
▪ Check/measure job for conformance to specification using appropriate techniques, measuring tools, and equipment		
▪ Clean tools, equipment and milling machine		
▪ Clean work place		
▪ Dispose waste materials in proper place		
▪ Store tools, equipment and finished job safely in appropriate location according to standard place and procedures		
▪ Define management functions		
▪ Demonstrate shop management planning, organizing, coordinating and directing functions.		
▪ Identify staff motivational needs		
▪ Identify and control shop management problems		
▪ Select production input and gathered		
▪ Demonstrate leadership skills of a supervisor		
▪ See leadership to encourage, enhance, motivate for team commitment		
▪ Demonstrate situational leadership skills model		
▪ Share participative leadership skills and techniques to the subordinates		
▪ Design tools and techniques for leadership to improve performance		
▪ Carry out effective face to face meeting with the staff		
▪ Demonstrate leadership skills of a supervisor		
▪ See leadership to encourage, enhance, motivate for team commitment		
▪ Demonstrate situational leadership skills model		

▪ Share participative leadership skills and techniques to the subordinates		
▪ Design tools and techniques for leadership to improve performance.		
▪ Carry out effective face to face meeting with the staff		
▪ Identify production inputs and outputs		
▪ Demonstrate short term and long production management decisions		
▪ Demonstrate the control cycle of PPC		
▪ Calculate products estimating and costing		
▪ Carry out quality dimensions and quality control of product		
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 – Master Craftsmanship

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 Master Craftsmanship, 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	OF COMPETENCY
Generic Competencies	
SEIP-LE-MAS-01-G	Use basic mathematical concepts
SEIP-LE-MAS-02-G	Carry out workplace interaction
SEIP-LE-MAS-03-G	Operate in a team environment
SEIP-LE-MAS-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-MAS-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-MAS-02-S	Read and interpret sketches and drawings
SEIP-LE-MAS-03-S	Use hand and power tools
SEIP-LE-MAS-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-MAS-01-O	Apply fundamentals of welding metallurgy
SEIP-LE-MAS-02-O	Perform welding
SEIP-LE-MAS-03-O	Perform lathe machine operation
SEIP-LE-MAS-04-O	Perform milling machine operation
SEIP-LE-MAS-05-O	Perform grinding machine operation
SEIP-LE-MAS-06-O	Perform supervisory function

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

Assessment Agreement	
Occupation:	Master Craftsmanship
Assessment Centre:	
Candidate Name:	
Assessor Name:	
Unit of Competency	
Generic Competencies	
SEIP-LE-MAS-01-G	Use basic mathematical concepts
SEIP-LE-MAS-02-G	Carry out workplace interaction
SEIP-LE-MAS-03-G	Operate in a team environment
SEIP-LE-MAS-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-MAS-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-MAS-02-S	Read and interpret sketches and drawings
SEIP-LE-MAS-03-S	Use hand and power tools
SEIP-LE-MAS-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-MAS-01-O	Apply fundamentals of welding metallurgy
SEIP-LE-MAS-02-O	Perform welding
SEIP-LE-MAS-03-O	Perform lathe machine operation
SEIP-LE-MAS-04-O	Perform milling machine operation
SEIP-LE-MAS-05-O	Perform grinding machine operation
SEIP-LE-MAS-06-O	Perform supervisory function
Resources Required for Assessment	
<p>Candidates must have access to the following:</p> <ul style="list-style-type: none"> ▪ 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	
<p>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.</p> <p>If candidates answer verbally, the assessor should record their answers in detail.</p>	

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 Master Craftsmanship, 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:
 - Set A:
 - Make single V groove welds on MS pipes by SMAW in 3G position
 - Make component using lathe and grinding machine
 - Make helical gear using **milling machine**
 - Set B:
 - Make single V groove welds on MS pipes by SMAW in 4G position
 - Make component using lathe and grinding machine
 - Make helical gear using **milling machine**
 - Set C:
 - Make single V groove welds on MS pipes by SMAW in 2G position
 - Make component using lathe and grinding machine
 - Make helical gear using **milling machine**
 - 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) (**6 hours**) – **performance evidence**

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

 - (i) Practical Demonstration 1 (2 hours)
 - (ii) Practical Demonstration 2 (**2 hours**)
 - (iii) Practical Demonstration 3 (**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:
- Set A – Practical Demonstration 1: page 52
 - Set A – Practical Demonstration 2: page 57
 - Set A – Practical Demonstration 3: page 62
 - Set B – Practical Demonstration 1: page 67
 - Set B – Practical Demonstration 2: page 72
 - Set B – Practical Demonstration 3: page 77
 - Set C – Practical Demonstration 1: page 82
 - Set C – Practical Demonstration 2: page 87
 - Set C – Practical Demonstration 3: page 92

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 Master Craftsmanship. Using the performance criteria as a benchmark, evidence will be gathered through:

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

o Set A:

- Make single V groove welds on MS pipes by SMAW in 3G position (2 hours)
- Make component using lathe and grinding machine (2 hours)
- Make helical gear using milling machine (2 hours)

o Set B:

- Make single V groove welds on MS pipes by SMAW in 4G position (2 hours)
- Make component using lathe and grinding machine (2 hours)
- Make helical gear using milling machine (2 hours)

o Set C:

- Make single V groove welds on MS pipes by SMAW in 2G position (2 hours)
- Make component using lathe and grinding machine (2 hours)
- Make helical gear using milling machine (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 Master Craftsmanship.
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 Master Craftsmanship
Unit of Competency	
Generic Competencies	
SEIP-LE-MAS-01-G	Use basic mathematical concepts
SEIP-LE-MAS-02-G	Carry out workplace interaction
SEIP-LE-MAS-03-G	Operate in a team environment
SEIP-LE-MAS-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-MAS-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-MAS -02-S	Read and interpret sketches and drawings
SEIP-LE-MAS -03-S	Use hand and power tools
SEIP-LE-MAS -04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-MAS-01-O	Apply fundamentals of welding metallurgy
SEIP-LE-MAS-02-O	Perform welding
SEIP-LE-MAS-03-O	Perform lathe machine operation
SEIP-LE-MAS-04-O	Perform milling machine operation
SEIP-LE-MAS-05-O	Perform grinding machine operation
SEIP-LE-MAS-06-O	Perform supervisory function
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this written examination is based on the performance criteria from all the units of competency in Master Craftsmanship ▪ 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** test. Choose the appropriate answer and circle the letter that corresponds with your answer.

1.	Which one of the following is not equilibrium heat treatment?	<ul style="list-style-type: none"> a. Austeneting b. Annealing c. Normalizing d. Precipitation
2.	Which of the following are used for controlling the porosity of the metal?	<ul style="list-style-type: none"> a. Solid solubility b. Liquid solubility c. Gas solubility d. Flame solubility
3.	Which of the following gas mixtures is not used in gas tungsten arc welding (TIG)?	<ul style="list-style-type: none"> a. Argon-helium b. Argon-nitrogen c. Argon-hydrogen d. Argon-carbon dioxide
4.	How many grams of raw materials do you have in 25,000 kilograms?	<ul style="list-style-type: none"> a. 250,000,000 b. 250,000 c. 2,500,000 d. 25,000,000
5.	What type of surface is produced by turning operation on a lathe machine?	<ul style="list-style-type: none"> a. Flat b. Cylindrical c. Taper d. None of the above
6.	Which of the following is known as conventional milling?	<ul style="list-style-type: none"> a. Up-milling b. Down-milling c. Both up-milling and down-milling d. None of the above
7.	Which of the following is not a type of dividing heads?	<ul style="list-style-type: none"> a. Plain dividing b. Universal dividing c. Optical dividing d. All of the above
8.	For helical gears, the angle between hob's spindle axis and workpieces spindle axis must be _____ as the helix angle of the helical gear.	<ul style="list-style-type: none"> a. Increased by the same amount b. Increased by the half amount c. Decreased by the same amount d. Decreased by the half amount
9.	Which of the following grinding machines will give a better result for finish machining operation?	<ul style="list-style-type: none"> a. Fine grain b. Medium grain c. Coarse grain d. None of the above

10.	Loss in the sharpness of a grinding wheel is due to the presence of chips in gaps of grains, which is termed as?	a. Loading b. Glazing c. Dressing d. Trueing
True or False Quiz		
Tick (√) the box corresponding to the correct answer.		
11.	Polite words should be used when conducting official communication through the email.	True <input type="checkbox"/> False <input type="checkbox"/>
12.	Rahim knows that she has a meeting at 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 <input type="checkbox"/> False <input type="checkbox"/>
13.	Wearing PPE helps protect against injury.	True <input type="checkbox"/> False <input type="checkbox"/>
Fill in the Missing Blanks		
Write the word or group of words needed to complete the following sentences.		
14.	Boring can be performed more effectively by _____ milling machine.	
15.	Distortion in welding occurs due to _____.	
Short Answer		
Write a short answer in the space provided (not to exceed more than approximately twenty-five (25) words).		
16.	Arc welding uses a coated electrode. What is the purpose of this coating?	
17.	What, in general, are the hazards associated with welding?	
18.	What are the various operations that can be performed on a lathe?	
19.	Name the principal parts of knee and column type milling machine.	
20.	State the purpose of grinding.	

Feedback to candidate:		
Assessment decision for this assessment activity:		
<input type="checkbox"/> Competent		<input type="checkbox"/> Not Yet Competent
Candidate Signature:		Date:
Assessor Signature:		Date:

Written Test - Answers

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

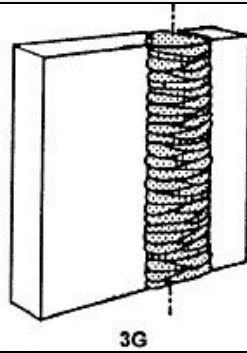
Multiple Choice		
1.	Which one of the following is not equilibrium heat treatment?	a. Austeneting b. Annealing c. Normalizing d. Precipitation
2.	Which of the following are used for controlling the porosity of the metal?	a. Solid solubility b. Liquid solubility c. Gas solubility d. Flame solubility
3.	Which of the following gas mixtures is not used in gas tungsten arc welding (TIG)?	a. Argon-helium b. Argon-nitrogen c. Argon-hydrogen d. Argon-carbon dioxide
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.	What type of surface is produced by turning operation on a lathe machine?	a. Flat b. Cylindrical c. Taper d. None of the above
6.	Which of the following is known as conventional milling?	a. Up-milling b. Down-milling c. Both up-milling and down-milling d. None of the above
7.	Which of the following is not a type of dividing heads?	a. plain dividing b. universal dividing c. optical dividing d. All of the above
8.	For helical gears, the angle between hob's spindle axis and workpieces spindle axis must be _____ as the helix angle of the helical gear.	a. Increased by the same amount b. Increased by the half amount c. Decreased by the same amount d. Decreased by the half amount
9.	Which of the following grinding machines will give a better result for finish machining operation?	a. Fine grain b. Medium grain c. Coarse grain d. None of the above
10.	Loss in the sharpness of a grinding wheel is due to the presence of chips in gaps of grains,	a. Loading b. Glazing

	which is termed as?	c. Dressing d. Trueing
True or False Quiz		
11.	Polite words should be used when conducting official communication through the email.	True ✓ False □
12.	Rahim knows that she has a meeting at 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 helps protect against injury .	True ✓ False □
Fill in the Missing Blanks		
14.	Boring can be performed more effectively by <u>vertical</u> milling machine.	
15.	Distortion in welding occurs due to <u>improper clamping methods</u> .	
Short Answer		
16.	Arc welding uses a coated electrode. What is the purpose of this coating?	<i>The electrode is coated in a metal mixture called flux, which gives off gases as it decomposes to prevent weld contamination, introduces deoxidizers to purify the weld, causes weld-protecting slag to form, improves the arc stability, and provides alloying elements to improve the weld quality.</i>
17.	What, in general, are the hazards associated with welding?	<i>Health hazards associated with welding, cutting, and brazing operations include exposures to metal fumes and to ultraviolet (UV) radiation. Safety hazards associated with these processes include burns, eye damage, electrical shock, cuts, and injury to toes and fingers. Many of these hazards can be controlled with engineering controls, work practices and personal protective equipment (PPE).</i>
18.	What are the various operations that can be performed on a lathe?	<i>The various operations can be performed on a lathe are as follows: turning, thread cutting, grooving, facing, drilling, forming, boring, knurling, chamfering, tapping</i>
19.	Name the principal parts of knee and column type milling machine.	<i>Base, column, knee, saddle, table, spindle, overarm, and arbor.</i>
20.	State the purpose of grinding.	<i>1. To remove small amount of metal from work pieces and finish them to close tolerances. 2. To obtain the better surface finish.</i>

Set A: Practical Demonstration 1

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make single V groove welds on MS pipes by SMAW in 3G position
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
Read and understand the directions carefully: <ul style="list-style-type: none">▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship▪ 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:	
<ul style="list-style-type: none">▪ 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:	
<ol style="list-style-type: none">1. Identify, read and interpret job specifications, drawings and other workplace documents.2. Identify and collect required tools, equipment and materials for the task.3. Inspect worksite for hazards and implement appropriate controls (if necessary).4. Identify and collect appropriate PPE.5. Inspect and check tools and equipment.6. Calculate quantity of materials required as per job specification.7. Inspect and check materials as per job specification.8. Identify and confirm quality requirements.9. Prepare, set and tack weld the plates as per drawing.10. Select size of SMAW electrode and welding current as per job requirement.11. Set-up and tack weld joints.12. Deposit root pass weld by SMAW in 3G position using correct welding technique.13. Deposit intermediate and cover pass welds by SMAW in 3G position using correct welding technique.14. Clamp pipes in 3G position and carry out root pass welds.15. Inspect root pass welds by visual inspection and correct defects (if required).16. Deposit intermediate and cover pass welds by SMAW in 3G position using correct welding technique.17. Clean, maintain and store tools and equipment.18. Clean workplace and dispose of waste materials.	

Drawing, Plan, Diagram or Sketch:



Resources Required:

Tools:	Wire brush Tongs
Equipment:	Welding unit Protecting gas
Machinery:	SMAW machine
Materials:	Mild steel pipe Consumable electrode
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set A: Practical Demonstration 1 – Observation Checklist

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make single V groove welds on MS pipes by SMAW in 3G position	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed	<input type="checkbox"/>	<input type="checkbox"/>
▪ PPE are selected and used when performing heat treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hand tools and equipment are maintained and cleaned as per instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Structure of metals and alloys are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mechanical properties of metals are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Steel micro-structure is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Chemical properties of steel are explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Types of carbon steel are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Application of the different types of carbon steels are described in relation to welding processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Chemical effects of elements to steel properties are described	<input type="checkbox"/>	<input type="checkbox"/>

▪ Affected elements in steel are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Iron carbon diagram is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Heat treatment tools and equipment are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Application of heat treatment is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Heat treatment processes are described	<input type="checkbox"/>	<input type="checkbox"/>
▪ Annealing of carbon steel is performed in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hardening of carbon steel is carried out in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tempering of carbon steel is performed in accordance with workplace procedure	<input type="checkbox"/>	<input type="checkbox"/>
▪ Annealing of carbon steel is performed in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hardening of carbon steel is carried out in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tempering of carbon steel is performed in accordance with workplace procedure	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different welding symbols are identified and interpreted according to drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Drawing symbols are demonstrated according to the welding diagram and drawings	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding symbol charts are interpreted	<input type="checkbox"/>	<input type="checkbox"/>
▪ Classifications of electrodes are demonstrated	<input type="checkbox"/>	<input type="checkbox"/>
▪ Electrodes are selected according to requirements of the job specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Electrodes are kept in electrode drying oven about 2-3 hours at 260 degree Celsius	<input type="checkbox"/>	<input type="checkbox"/>
▪ Routine maintenance is performed and SMAW welding machine is prepared in accordance with the requirement of the welding job	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mild steel pipe is marked, V-groove is cut and fixed in horizontal position	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding is performed in 3G position in accordance with job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mild steel pipe is marked, V-groove is cut and fixed in 45-degree position	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding area guards, work table/floor, dust collection devices are checked according to worksite requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welds are cleaned, checked for quality and defects are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Defects are rectified to meet the standards of job specifications	<input type="checkbox"/>	<input type="checkbox"/>

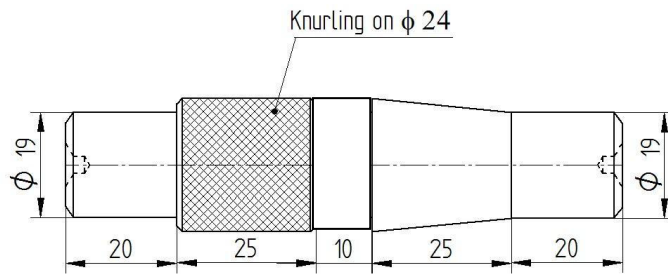
▪ Routine maintenance is performed and plasma cutting machine is prepared	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma cutting machine is selected according to the job requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma gas torch is set for cutting materials as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma gas cutting performance is checked to conform with the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma cutting is performed as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Rough edges after cutting are removed, cleaned, checked for quality and defects are identified and corrective action is taken in accordance with standard cutting procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and machines are cleaned and maintained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Workplace is cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in its designated/proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished products are stored safely in an appropriate location in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		
Assessment decision for this assessment activity:		
<input type="checkbox"/> Competent <input type="checkbox"/> Not Yet Competent		
Candidate Signature:		Date:
Assessor Signature:		Date:

Set A: Practical Demonstration 2

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make component using lathe and grinding machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship ▪ 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:	
<ul style="list-style-type: none"> ▪ 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:	
<ol style="list-style-type: none"> 1. Identify, read and interpret job specifications, drawings and other workplace documents. 2. Identify and collect required tools, equipment and materials for the task. 3. Inspect worksite for hazards and implement appropriate controls (if necessary). 4. Identify and collect appropriate PPE. 5. Inspect and check tools and equipment. 6. Calculate quantity of materials required as per job specification. 7. Inspect and check materials as per job specification. 8. Identify and confirm quality requirements. 9. Hold workpiece on 3 jaw chuck by keeping 60 to 95 mm outside and face the workpiece to clear the roughness. 10. Centre drill on face of the work. 11. Plain turn Ø24 to maximum length. 12. Step turn Ø19 to 20 mm length. 13. Taper turning. 14. Chamfer 0.5 all sharp corners. 15. Perform knurling operation. 16. Ream the hole. 17. Grind the face. 18. Repeat work on the reverse side. 	

19. Clean, maintain and store tools and equipment.
 20. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



(All dimensions in mm; tolerance ± 0.1 mm)

Resources Required:

Tools:	Single point cutting tool Knurling tool
Equipment:	N/A
Machinery:	Lathe machine Grinding machine
Materials:	Mild steel (AISI 1040 steel) HSS drill bit Centre drill bit
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set A: Practical Demonstration 2 – Observation Checklist

PRACTICAL DEMONSTRATION 2 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make component using lathe and grinding machine	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed	<input type="checkbox"/>	<input type="checkbox"/>
▪ PPE are selected and used when performing heat treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hand tools and equipment are maintained and cleaned as per instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Appropriate types of lathe machine, tools and equipment are selected for taper turning operations	<input type="checkbox"/>	<input type="checkbox"/>
▪ Taper turning attachment is installed with the compound slide of the lathe machine to set up the taper attachment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting speed and feed are selected according to the job specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Component drawing is interpreted and specifications identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job materials are selected and collected according to the job specifications	<input type="checkbox"/>	<input type="checkbox"/>

▪ Single point cutting tools are selected according to the requirements of the operation	<input type="checkbox"/>	<input type="checkbox"/>
▪ Taper turning operation is performed following the sequence of operation in producing the required specification of the product	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked in conformance with the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Coolant is applied to prevent over heating of work piece and cutting tool	<input type="checkbox"/>	<input type="checkbox"/>
▪ Acme and squire thread cutting tools are selected according to the requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Multi-start acme threads cutting is performed to cut threads to specifications is per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Multi-start square threads cutting are performed to cut threads to specifications as per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Worm thread cutting tools are selected according to the requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Single-start worm threads cutting is performed in accordance with specifications as per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work piece is checked/measured for conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked to conform to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different types of grinding machine are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different parts of the grinding machine are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding machine accessories and attachment are identified and set	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different abrasive/grinding wheels are identified, selected and balanced according to the abrasive wheel specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine is degreased, selected, handled and operated according to the machine instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine electrical connection switches are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cylindrical grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, balanced, and dressed according the requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cylindrical work piece is set between live and revolving center	<input type="checkbox"/>	<input type="checkbox"/>

▪ Cylindrical grinding operation is performed according to the work place requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Surface grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, balanced, and dressed according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work piece is set on the machine vice/magnetic vice	<input type="checkbox"/>	<input type="checkbox"/>
▪ Surface grinding operation is performed according to the work place requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Universal tools and cutter grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, set balanced, and dressed according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting tools and cutters are set on the machine vise/universal vise	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and machine are cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work place is clean	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished job are stored safely in appropriate location according to standard place and procedures	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		
Assessment decision for this assessment activity:		
<input type="checkbox"/> Competent		<input type="checkbox"/> Not Yet Competent
Candidate Signature:		Date:
Assessor Signature:		Date:

Set A: Practical Demonstration 3

PRACTICAL DEMONSTRATION 3	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make helical gear using milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship ▪ 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:	
<ul style="list-style-type: none"> ▪ 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:	
<ol style="list-style-type: none"> 1. Identify, read and interpret job specifications, drawings and other workplace documents. 2. Identify and collect required tools, equipment and materials for the task. 3. Inspect worksite for hazards and implement appropriate controls (if necessary). 4. Identify and collect appropriate PPE. 5. Inspect and check tools and equipment. 6. Calculate quantity of materials required as per job specification. 7. Inspect and check materials as per job specification. 8. Identify and confirm quality requirements. 9. Mount and align dividing head and tailstock on machine table. 10. Mount gear-milling cutter on the arbour and test for concentricity. 11. Hold workpiece on mandrel and adjust mandrel between centres. 12. Adjust workpiece to the centre of cutter. 13. Set revolutions and feed for milling (cutter should shave slightly on the workpiece initially). 14. Withdraw workpiece out of range of cutter and lift milling table by height of tooth depth. 15. Complete milling of first tooth space. 16. Withdraw workpiece from cut and turn indexing handle by tooth pitch and mill next tooth space. 17. Repeat procedure for next tooth. 18. Complete task as per job specifications. 	

19. Clean, maintain and store tools and equipment.
 20. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



Resources Required:

Tools:	N/A
Equipment:	Helical gear cutter (HSS)
Machinery:	Horizontal milling machine
Materials:	Aluminum
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set A: Practical Demonstration 3 – Observation Checklist

PRACTICAL DEMONSTRATION 3 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make helical gear using milling machine	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices are observed and personal protective equipment (PPE) is worn at work	<input type="checkbox"/>	<input type="checkbox"/>
▪ Operations for boring, external and internal key way, helical gear, bevel gear, rack and pinion are identified from working drawings and specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Sequence of operation is determined to produce the product according to specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Required material is selected according to job requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Milling accessories and attachment are used where appropriate to the requirements of the operation.	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting fluid is used in accordance with manufacturer's instruction	<input type="checkbox"/>	<input type="checkbox"/>
▪ Milling cutters are selected according to the requirements of the job and the operation	<input type="checkbox"/>	<input type="checkbox"/>
▪ Horizontal/vertical machine is set up with a vise on the table and boring attachment/boring head is installed	<input type="checkbox"/>	<input type="checkbox"/>

using horizontal/vertical arbor		
▪ Different parts boring head are identified and explained its functions	<input type="checkbox"/>	<input type="checkbox"/>
▪ RPM cutting speed, feed and depth of cut are calculated as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked conforming to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Coolant is applied to prevent over heating of work piece and cutting tool	<input type="checkbox"/>	<input type="checkbox"/>
▪ Boring operation is performed using boring attachment with conventional milling methods to produce a pre-determined drill hole	<input type="checkbox"/>	<input type="checkbox"/>
▪ Vertical milling machine is set up with a vise on the table and an end-milling cutter on the vertical arbor or adopter for cutting external key way	<input type="checkbox"/>	<input type="checkbox"/>
▪ External key way is performed to produce key on shaft	<input type="checkbox"/>	<input type="checkbox"/>
▪ Slot milling attachment is set up to cut internal key way using a key way fly cutter using a horizontal/ vertical milling machine	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Set up the horizontal/vertical machine with index head on the table and set gear cutter on the horizontal/vertical arbor as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Helical and bevel gear cutting is performed as per the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Rack and pinion gear cutting is performed as per the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance withdrawing/specification using appropriate techniques, measuring tools, and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Workplace, tools, equipment and milling machine are cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished products are stored safely in appropriate location in according with workplace policy	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		

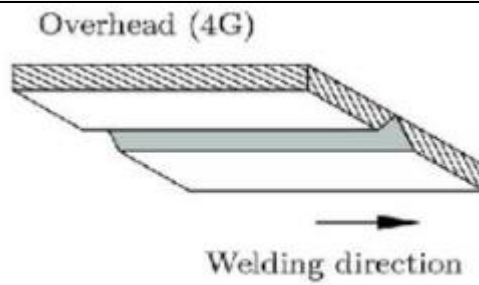
Assessment decision for this assessment activity:			
<input type="checkbox"/> Competent		<input type="checkbox"/> Not Yet Competent	
Candidate Signature:		Date:	
Assessor Signature:		Date:	

Set B: Practical Demonstration 1

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make single V groove welds on MS pipes by SMAW in 4G position
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
Read and understand the directions carefully: <ul style="list-style-type: none">▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship▪ 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:	
<ul style="list-style-type: none">▪ 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:	
<ol style="list-style-type: none">1. Identify, read and interpret job specifications, drawings and other workplace documents.2. Identify and collect required tools, equipment and materials for the task.3. Inspect worksite for hazards and implement appropriate controls (if necessary).4. Identify and collect appropriate PPE.5. Inspect and check tools and equipment.6. Calculate quantity of materials required as per job specification.7. Inspect and check materials as per job specification.8. Identify and confirm quality requirements.9. Prepare, set and tack weld the plates as per drawing.10. Select size of SMAW electrode and welding current as per job requirement.11. Set-up and tack weld joints.12. Deposit root pass weld by SMAW in 4G position using correct welding technique.13. Deposit intermediate and cover pass welds by SMAW in 4G position using correct welding technique.14. Clamp pipes in 4G position and carry out root pass welds.15. Inspect root pass welds by visual inspection and correct defects (if required).16. Deposit intermediate and cover pass welds by SMAW in 4G position using correct welding technique.	

- 17. Clean, maintain and store tools and equipment.
- 18. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



Resources Required:

Tools:	Wire brush Tongs
Equipment:	Welding unit Protecting gas
Machinery:	SMAW machine
Materials:	Mild steel pipe Consumable electrode
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set B: Practical Demonstration 1 – Observation Checklist

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make single V groove welds on MS pipes by SMAW in 4G position	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed	<input type="checkbox"/>	<input type="checkbox"/>
▪ PPE are selected and used when performing heat treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hand tools and equipment are maintained and cleaned as per instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Structure of metals and alloys are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mechanical properties of metals are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Steel micro-structure is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Chemical properties of steel are explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Types of carbon steel are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Application of the different types of carbon steels are described in relation to welding processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Chemical effects of elements to steel properties are described	<input type="checkbox"/>	<input type="checkbox"/>

▪ Affected elements in steel are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Iron carbon diagram is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Heat treatment tools and equipment are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Application of heat treatment is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Heat treatment processes are described	<input type="checkbox"/>	<input type="checkbox"/>
▪ Annealing of carbon steel is performed in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hardening of carbon steel is carried out in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tempering of carbon steel is performed in accordance with workplace procedure	<input type="checkbox"/>	<input type="checkbox"/>
▪ Annealing of carbon steel is performed in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hardening of carbon steel is carried out in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tempering of carbon steel is performed in accordance with workplace procedure	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different welding symbols are identified and interpreted according to drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Drawing symbols are demonstrated according to the welding diagram and drawings	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding symbol charts are interpreted	<input type="checkbox"/>	<input type="checkbox"/>
▪ Classifications of electrodes are demonstrated	<input type="checkbox"/>	<input type="checkbox"/>
▪ Electrodes are selected according to requirements of the job specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Electrodes are kept in electrode drying oven about 2-3 hours at 260 degree Celsius	<input type="checkbox"/>	<input type="checkbox"/>
▪ Routine maintenance is performed and SMAW welding machine is prepared in accordance with the requirement of the welding job	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mild steel pipe is marked, V-groove is cut and fixed in horizontal position	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding is performed in 4G position in accordance with job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mild steel pipe is marked, V-groove is cut and fixed in 45-degree position	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding area guards, work table/floor, dust collection devices are checked according to worksite requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welds are cleaned, checked for quality and defects are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Defects are rectified to meet the standards of job specifications	<input type="checkbox"/>	<input type="checkbox"/>

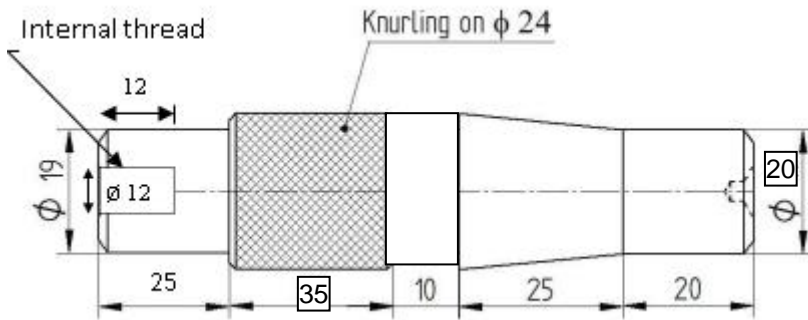
▪ Routine maintenance is performed and plasma cutting machine is prepared	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma cutting machine is selected according to the job requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma gas torch is set for cutting materials as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma gas cutting performance is checked to conform with the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma cutting is performed as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Rough edges after cutting are removed, cleaned, checked for quality and defects are identified and corrective action is taken in accordance with standard cutting procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and machines are cleaned and maintained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Workplace is cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in its designated/proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished products are stored safely in an appropriate location in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		
Assessment decision for this assessment activity:		
<input type="checkbox"/> Competent <input type="checkbox"/> Not Yet Competent		
Candidate Signature:		Date:
Assessor Signature:		Date:

Set B: Practical Demonstration 2

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make component using lathe and grinding machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship ▪ 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:	
<ul style="list-style-type: none"> ▪ 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:	
<ol style="list-style-type: none"> 1. Identify, read and interpret job specifications, drawings and other workplace documents. 2. Identify and collect required tools, equipment and materials for the task. 3. Inspect worksite for hazards and implement appropriate controls (if necessary). 4. Identify and collect appropriate PPE. 5. Inspect and check tools and equipment. 6. Calculate quantity of materials required as per job specification. 7. Inspect and check materials as per job specification. 8. Identify and confirm quality requirements. 9. Hold workpiece on 3 jaw chuck by keeping 60 to 70 mm outside and face the workpiece to clear the roughness. 10. Centre drill on face of the work. 11. Plain turn Ø24 to maximum length. 12. Step turn Ø19 to 20 mm length. 13. Undercut Ø19 to 10 mm width. 14. Taper turning. 15. Chamfer 0.5 all sharp corners. 16. Drill hole Ø10 to 10 mm length. 17. Ream the hole. 18. Grind the face. 	

19. Repeat work on the reverse side.
20. Clean, maintain and store tools and equipment.
21. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



(All dimensions in mm; tolerance ± 0.1 mm)

Resources Required:

Tools:	Single point cutting tool Knurling tool
Equipment:	N/A
Machinery:	Lathe machine Grinding machine
Materials:	Mild steel (AISI 1040 steel) HSS drill bit Centre drill bit
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set B: Practical Demonstration 2 – Observation Checklist

PRACTICAL DEMONSTRATION 2 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make component using lathe and grinding machine	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed	<input type="checkbox"/>	<input type="checkbox"/>
▪ PPE are selected and used when performing heat treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hand tools and equipment are maintained and cleaned as per instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Appropriate types of lathe machine, tools and equipment are selected for taper turning operations	<input type="checkbox"/>	<input type="checkbox"/>
▪ Taper turning attachment is installed with the compound slide of the lathe machine to set up the taper attachment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting speed and feed are selected according to the job specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Component drawing is interpreted and specifications identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job materials are selected and collected according to the job specifications	<input type="checkbox"/>	<input type="checkbox"/>

▪ Single point cutting tools are selected according to the requirements of the operation	<input type="checkbox"/>	<input type="checkbox"/>
▪ Taper turning operation is performed following the sequence of operation in producing the required specification of the product	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked in conformance with the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Coolant is applied to prevent over heating of work piece and cutting tool	<input type="checkbox"/>	<input type="checkbox"/>
▪ Acme and squire thread cutting tools are selected according to the requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Multi-start acme threads cutting is performed to cut threads to specifications is per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Multi-start square threads cutting are performed to cut threads to specifications as per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Worm thread cutting tools are selected according to the requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Single-start worm threads cutting is performed in accordance with specifications as per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work piece is checked/measured for conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked to conform to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different types of grinding machine are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different parts of the grinding machine are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding machine accessories and attachment are identified and set	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different abrasive/grinding wheels are identified, selected and balanced according to the abrasive wheel specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine is degreased, selected, handled and operated according to the machine instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine electrical connection switches are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cylindrical grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, balanced, and dressed according the requirement	<input type="checkbox"/>	<input type="checkbox"/>

▪ Cylindrical work piece is set between live and revolving centre	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cylindrical grinding operation is performed according to the work place requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Surface grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, balanced, and dressed according the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work piece is set on the machine vice/magnetic vice	<input type="checkbox"/>	<input type="checkbox"/>
▪ Surface grinding operation is performed according to the work place requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Universal tools and cutter grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, set balanced, and dressed according the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting tools and cutters are set on the machine vice/universal vice	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and machine are cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work place is clean	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished job are stored safely in appropriate location according to standard place and procedures	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		
Assessment decision for this assessment activity:		
<input type="checkbox"/> Competent <input type="checkbox"/> Not Yet Competent		
Candidate Signature:		Date:
Assessor Signature:		Date:

Set B: Practical Demonstration 3

PRACTICAL DEMONSTRATION 3	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make helical gear using milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship ▪ 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:	
<ul style="list-style-type: none"> ▪ 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:	
<ol style="list-style-type: none"> 1. Identify, read and interpret job specifications, drawings and other workplace documents. 2. Identify and collect required tools, equipment and materials for the task. 3. Inspect worksite for hazards and implement appropriate controls (if necessary). 4. Identify and collect appropriate PPE. 5. Inspect and check tools and equipment. 6. Calculate quantity of materials required as per job specification. 7. Inspect and check materials as per job specification. 8. Identify and confirm quality requirements. 9. Mount and align dividing head and tailstock on machine table. 10. Mount gear-milling cutter on the arbour and test for concentricity. 11. Hold workpiece on mandrel and adjust mandrel between centres. 12. Adjust workpiece to the centre of cutter. 13. Set revolutions and feed for milling (cutter should shave slightly on the workpiece initially). 14. Withdraw workpiece out of range of cutter and lift milling table by height of tooth depth. 15. Complete milling of first tooth space. 16. Withdraw workpiece from cut and turn indexing handle by tooth pitch and mill next tooth space. 17. Repeat procedure for next tooth. 18. Complete task as per job specifications. 	

- 19. Clean, maintain and store tools and equipment.
- 20. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



Resources Required:

Tools:	N/A
Equipment:	Helical gear cutter (HSS)
Machinery:	Horizontal milling machine
Materials:	Aluminum (75 mm diameter; 20 mm thickness)
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set B: Practical Demonstration 3 – Observation Checklist

PRACTICAL DEMONSTRATION 3 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make helical gear using milling machine	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices are observed and personal protective equipment (PPE) is worn at work	<input type="checkbox"/>	<input type="checkbox"/>
▪ Operations for boring, external and internal key way, helical gear, bevel gear, rack and pinion are identified from working drawings and specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Sequence of operation is determined to produce the product according to specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Required material is selected according to job requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Milling accessories and attachment are used where appropriate to the requirements of the operation.	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting fluid is used in accordance with manufacturer's instruction	<input type="checkbox"/>	<input type="checkbox"/>
▪ Milling cutters are selected according to the requirements of the job and the operation	<input type="checkbox"/>	<input type="checkbox"/>
▪ Horizontal/vertical machine is set up with a vice on the table and boring attachment/boring head is installed	<input type="checkbox"/>	<input type="checkbox"/>

using horizontal/vertical arbor		
▪ Different parts boring head are identified and explained its functions	<input type="checkbox"/>	<input type="checkbox"/>
▪ RPM cutting speed, feed and depth of cut are calculated as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked conforming to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Coolant is applied to prevent over heating of work piece and cutting tool	<input type="checkbox"/>	<input type="checkbox"/>
▪ Boring operation is performed using boring attachment with conventional milling methods to produce a pre-determined drill hole	<input type="checkbox"/>	<input type="checkbox"/>
▪ Vertical milling machine is set up with a vice on the table and an end-milling cutter on the vertical arbor or adopter for cutting external key way	<input type="checkbox"/>	<input type="checkbox"/>
▪ External key way is performed to produce key on shaft	<input type="checkbox"/>	<input type="checkbox"/>
▪ Slot milling attachment is set up to cut internal key way using a key way fly cutter using a horizontal/ vertical milling machine	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Set up the horizontal/vertical machine with index head on the table and set gear cutter on the horizontal/vertical arbor as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Helical and bevel gear cutting is performed as per the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Rack and pinion gear cutting is performed as per the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance withdrawing/specification using appropriate techniques, measuring tools, and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Workplace, tools, equipment and milling machine are cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished products are stored safely in appropriate location in according with workplace policy	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		

Assessment decision for this assessment activity:			
<input type="checkbox"/> Competent		<input type="checkbox"/> Not Yet Competent	
Candidate Signature:		Date:	
Assessor Signature:		Date:	

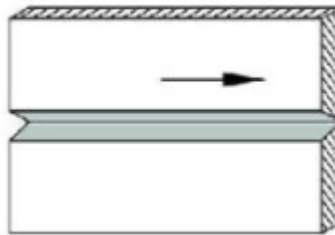
Set C: Practical Demonstration 1

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make single V groove welds on MS pipes by SMAW in 2G position
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
Read and understand the directions carefully: <ul style="list-style-type: none">▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship▪ 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:	
<ul style="list-style-type: none">▪ 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:	
<ol style="list-style-type: none">1. Identify, read and interpret job specifications, drawings and other workplace documents.2. Identify and collect required tools, equipment and materials for the task.3. Inspect worksite for hazards and implement appropriate controls (if necessary).4. Identify and collect appropriate PPE.5. Inspect and check tools and equipment.6. Calculate quantity of materials required as per job specification.7. Inspect and check materials as per job specification.8. Identify and confirm quality requirements.9. Prepare, set and tack weld the plates as per drawing.10. Select size of SMAW electrode and welding current as per job requirement.11. Set-up and tack weld joints.12. Deposit root pass weld by SMAW in 2G position using correct welding technique.13. Deposit intermediate and cover pass welds by SMAW in 2G position using correct welding technique.14. Clamp pipes in 2G position and carry out root pass welds.15. Inspect root pass welds by visual inspection and correct defects (if required).16. Deposit intermediate and cover pass welds by SMAW in 2G position using correct welding technique.17. Clean, maintain and store tools and equipment.	

18. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:

Horizontal (2G)



Resources Required:

Tools:	Wire brush Tongs
Equipment:	Welding unit Protecting gas
Machinery:	SMAW machine
Materials:	Mild steel pipe Consumable electrode
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set C: Practical Demonstration 1 – Observation Checklist

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make single V groove welds on MS pipes by SMAW in 2G position	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed	<input type="checkbox"/>	<input type="checkbox"/>
▪ PPE are selected and used when performing heat treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hand tools and equipment are maintained and cleaned as per instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Structure of metals and alloys are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mechanical properties of metals are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Steel micro-structure is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Chemical properties of steel are explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Types of carbon steel are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Application of the different types of carbon steels are described in relation to welding processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Chemical effects of elements to steel properties are described	<input type="checkbox"/>	<input type="checkbox"/>

▪ Affected elements in steel are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Iron carbon diagram is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Heat treatment tools and equipment are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Application of heat treatment is explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Heat treatment processes are described	<input type="checkbox"/>	<input type="checkbox"/>
▪ Annealing of carbon steel is performed in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hardening of carbon steel is carried out in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tempering of carbon steel is performed in accordance with workplace procedure	<input type="checkbox"/>	<input type="checkbox"/>
▪ Annealing of carbon steel is performed in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hardening of carbon steel is carried out in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tempering of carbon steel is performed in accordance with workplace procedure	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different welding symbols are identified and interpreted according to drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Drawing symbols are demonstrated according to the welding diagram and drawings	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding symbol charts are interpreted	<input type="checkbox"/>	<input type="checkbox"/>
▪ Classifications of electrodes are demonstrated	<input type="checkbox"/>	<input type="checkbox"/>
▪ Electrodes are selected according to requirements of the job specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Electrodes are kept in electrode drying oven about 2-3 hours at 260 degree Celsius	<input type="checkbox"/>	<input type="checkbox"/>
▪ Routine maintenance is performed and SMAW welding machine is prepared in accordance with the requirement of the welding job	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mild steel pipe is marked, V-groove is cut and fixed in horizontal position	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding is performed in 2G position in accordance with job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Mild steel pipe is marked, V-groove is cut and fixed in 45-degree position	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welding area guards, work table/floor, dust collection devices are checked according to worksite requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Welds are cleaned, checked for quality and defects are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Defects are rectified to meet the standards of job specifications	<input type="checkbox"/>	<input type="checkbox"/>

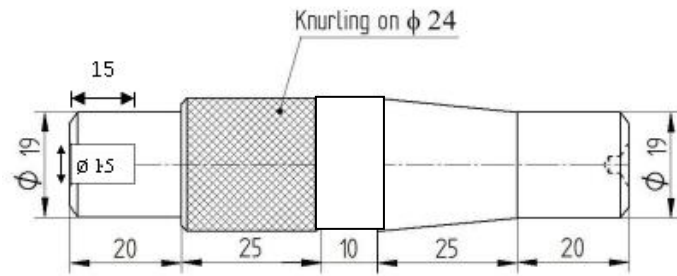
▪ Routine maintenance is performed and plasma cutting machine is prepared	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma cutting machine is selected according to the job requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma gas torch is set for cutting materials as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma gas cutting performance is checked to conform with the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Plasma cutting is performed as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Rough edges after cutting are removed, cleaned, checked for quality and defects are identified and corrective action is taken in accordance with standard cutting procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and machines are cleaned and maintained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Workplace is cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in its designated/proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished products are stored safely in an appropriate location in accordance with workplace procedures	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		
Assessment decision for this assessment activity: <input type="checkbox"/> Competent <input type="checkbox"/> Not Yet Competent		
Candidate Signature:		Date:
Assessor Signature:		Date:

Set C: Practical Demonstration 2

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make component using lathe and grinding machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship ▪ 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:	
<ul style="list-style-type: none"> ▪ 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:	
<ol style="list-style-type: none"> 1. Identify, read and interpret job specifications, drawings and other workplace documents. 2. Identify and collect required tools, equipment and materials for the task. 3. Inspect worksite for hazards and implement appropriate controls (if necessary). 4. Identify and collect appropriate PPE. 5. Inspect and check tools and equipment. 6. Calculate quantity of materials required as per job specification. 7. Inspect and check materials as per job specification. 8. Identify and confirm quality requirements. 9. Hold workpiece on 3 jaw chuck by keeping 60 to 70 mm outside and face the workpiece to clear the roughness. 10. Centre drill on face of the work. 11. Plain turn Ø24 to maximum length. 12. Step turn Ø19 to 20 mm length. 13. Undercut Ø19 to 10 mm width. 14. Taper turning. 15. Chamfer 0.5 all sharp corners. 16. Drill hole Ø10 to 10 mm length. 17. Ream the hole. 18. Repeat work on the reverse side. 	

19. Clean, maintain and store tools and equipment.
 20. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



(All dimensions in mm; tolerance ± 0.1 mm)

Resources Required:

Tools:	Single point cutting tool Knurling tool
Equipment:	N/A
Machinery:	Lathe machine Grinding machine
Materials:	Mild steel (AISI 1040 steel) HSS drill bit Centre drill bit
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set C: Practical Demonstration 2 – Observation Checklist

PRACTICAL DEMONSTRATION 2 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make component using lathe and grinding machine	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices observed and personal protective equipment (PPE) worn as required for the work performed	<input type="checkbox"/>	<input type="checkbox"/>
▪ PPE are selected and used when performing heat treatment processes	<input type="checkbox"/>	<input type="checkbox"/>
▪ Hand tools and equipment are maintained and cleaned as per instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Appropriate types of lathe machine, tools and equipment are selected for taper turning operations	<input type="checkbox"/>	<input type="checkbox"/>
▪ Taper turning attachment is installed with the compound slide of the lathe machine to set up the taper attachment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting speed and feed are selected according to the job specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Component drawing is interpreted and specifications identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job materials are selected and collected according to the job specifications	<input type="checkbox"/>	<input type="checkbox"/>

▪ Single point cutting tools are selected according to the requirements of the operation	<input type="checkbox"/>	<input type="checkbox"/>
▪ Taper turning operation is performed following the sequence of operation in producing the required specification of the product	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ RPM, cutting speed, feed rate and depth of cut are calculated as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked in conformance with the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Coolant is applied to prevent over heating of work piece and cutting tool	<input type="checkbox"/>	<input type="checkbox"/>
▪ Acme and squire thread cutting tools are selected according to the requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Multi-start acme threads cutting is performed to cut threads to specifications is per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Multi-start square threads cutting are performed to cut threads to specifications as per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Worm thread cutting tools are selected according to the requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Single-start worm threads cutting is performed in accordance with specifications as per drawing	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work piece is checked/measured for conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked to conform to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different types of grinding machine are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different parts of the grinding machine are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding machine accessories and attachment are identified and set	<input type="checkbox"/>	<input type="checkbox"/>
▪ Different abrasive/grinding wheels are identified, selected and balanced according to the abrasive wheel specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine is degreased, selected, handled and operated according to the machine instruction manual	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine electrical connection switches are identified	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cylindrical grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, balanced, and dressed according the requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cylindrical work piece is set between live and revolving centre	<input type="checkbox"/>	<input type="checkbox"/>

▪ Cylindrical grinding operation is performed according to the work place requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Surface grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, balanced, and dressed according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work piece is set on the machine vice/magnetic vice	<input type="checkbox"/>	<input type="checkbox"/>
▪ Surface grinding operation is performed according to the work place requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Universal tools and cutter grinding machine are selected and set according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Grinding wheels are selected, set balanced, and dressed according to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting tools and cutters are set on the machine vice/universal vice	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and machine are cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Work place is clean	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished job are stored safely in appropriate location according to standard place and procedures	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		
Assessment decision for this assessment activity:		
<input type="checkbox"/> Competent <input type="checkbox"/> Not Yet Competent		
Candidate Signature:		Date:
Assessor Signature:		Date:

Set C: Practical Demonstration 3

PRACTICAL DEMONSTRATION 3	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Task:	Make helical gear using milling machine
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ this practical demonstration is based on the performance criteria from all or some of the units of competency in Master Craftsmanship ▪ 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:	
<ul style="list-style-type: none"> ▪ 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:	
<ol style="list-style-type: none"> 1. Identify, read and interpret job specifications, drawings and other workplace documents. 2. Identify and collect required tools, equipment and materials for the task. 3. Inspect worksite for hazards and implement appropriate controls (if necessary). 4. Identify and collect appropriate PPE. 5. Inspect and check tools and equipment. 6. Calculate quantity of materials required as per job specification. 7. Inspect and check materials as per job specification. 8. Identify and confirm quality requirements. 9. Mount and align dividing head and tailstock on machine table. 10. Mount gear-milling cutter on the arbour and test for concentricity. 11. Hold workpiece on mandrel and adjust mandrel between centres. 12. Adjust workpiece to the centre of cutter. 13. Set revolutions and feed for milling (cutter should shave slightly on the workpiece initially). 14. Withdraw workpiece out of range of cutter and lift milling table by height of tooth depth. 15. Complete milling of first tooth space. 16. Withdraw workpiece from cut and turn indexing handle by tooth pitch and mill next tooth space. 17. Repeat procedure for next tooth. 18. Complete task as per job specifications. 	

- 19. Clean, maintain and store tools and equipment.
- 20. Clean workplace and dispose of waste materials.

Drawing, Plan, Diagram or Sketch:



Resources Required:

Tools:	N/A
Equipment:	Helical gear cutter (HSS)
Machinery:	Horizontal milling machine
Materials:	Aluminum (75 mm diameter; 20 mm thickness)
PPE:	Apron Mask Gloves Safety shoes Safety goggles

Set C: Practical Demonstration 3 – Observation Checklist

PRACTICAL DEMONSTRATION 3 – OBSERVATION CHECKLIST		
Candidate Name:		
Assessor Name:		
Qualification:	Certificate in Master Craftsmanship	
Task:	Make helical gear using milling machine	
Assessment Centre:		
Date of Assessment:		
Instructions:	<p>The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate.</p> <p>Performance can be observed in an actual workplace or in a simulated working environment.</p> <p>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.</p> <p>The assessment activity (practical demonstration) should:</p> <ul style="list-style-type: none"> ▪ 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
▪ Safe work practices are observed and personal protective equipment (PPE) is worn at work	<input type="checkbox"/>	<input type="checkbox"/>
▪ Operations for boring, external and internal key way, helical gear, bevel gear, rack and pinion are identified from working drawings and specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Sequence of operation is determined to produce the product according to specifications	<input type="checkbox"/>	<input type="checkbox"/>
▪ Required material is selected according to job requirements	<input type="checkbox"/>	<input type="checkbox"/>
▪ Milling accessories and attachment are used where appropriate to the requirements of the operation.	<input type="checkbox"/>	<input type="checkbox"/>
▪ Cutting fluid is used in accordance with manufacturer's instruction	<input type="checkbox"/>	<input type="checkbox"/>
▪ Milling cutters are selected according to the requirements of the job and the operation	<input type="checkbox"/>	<input type="checkbox"/>
▪ Horizontal/vertical machine is set up with a vice on the table and boring attachment/boring head is installed	<input type="checkbox"/>	<input type="checkbox"/>

using horizontal/vertical arbor		
▪ Different parts boring head are identified and explained its functions	<input type="checkbox"/>	<input type="checkbox"/>
▪ RPM cutting speed, feed and depth of cut are calculated as per job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Machine performance is checked conforming to the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Coolant is applied to prevent over heating of work piece and cutting tool	<input type="checkbox"/>	<input type="checkbox"/>
▪ Boring operation is performed using boring attachment with conventional milling methods to produce a pre-determined drill hole	<input type="checkbox"/>	<input type="checkbox"/>
▪ Vertical milling machine is set up with a vice on the table and an end-milling cutter on the vertical arbor or adopter for cutting external key way	<input type="checkbox"/>	<input type="checkbox"/>
▪ External key way is performed to produce key on shaft	<input type="checkbox"/>	<input type="checkbox"/>
▪ Slot milling attachment is set up to cut internal key way using a key way fly cutter using a horizontal/ vertical milling machine	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance to specification using appropriate techniques, measuring tools and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Set up the horizontal/vertical machine with index head on the table and set gear cutter on the horizontal/vertical arbor as per requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Helical and bevel gear cutting is performed as per the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Gear teeth nomenclature, formula, pressure angle, gear form cutter set are identified and explained	<input type="checkbox"/>	<input type="checkbox"/>
▪ Rack and pinion gear cutting is performed as per the job requirement	<input type="checkbox"/>	<input type="checkbox"/>
▪ Job is checked/measured in conformance withdrawing/specification using appropriate techniques, measuring tools, and equipment	<input type="checkbox"/>	<input type="checkbox"/>
▪ Workplace, tools, equipment and milling machine are cleaned	<input type="checkbox"/>	<input type="checkbox"/>
▪ Waste materials are disposed in proper place	<input type="checkbox"/>	<input type="checkbox"/>
▪ Tools, equipment and finished products are stored safely in appropriate location in according with workplace policy	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:		

Assessment decision for this assessment activity:			
<input type="checkbox"/> Competent		<input type="checkbox"/> Not Yet Competent	
Candidate Signature:		Date:	
Assessor Signature:		Date:	

Oral Questions (Optional)

ORAL QUESTIONS - INSTRUCTIONS	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Master Craftsmanship
Unit of Competency	
Generic Competencies	
SEIP-LE-MAS-01-G	Use basic mathematical concepts
SEIP-LE-MAS-02-G	Carry out workplace interaction
SEIP-LE-MAS-03-G	Operate in a team environment
SEIP-LE-MAS-04-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-LE-MAS-01-S	Apply occupational health and safety (OHS) practice in the workplace
SEIP-LE-MAS-02-S	Read and interpret sketches and drawings
SEIP-LE-MAS-03-S	Use hand and power tools
SEIP-LE-MAS-04-S	Apply quality system
Occupation-specific Competencies	
SEIP-LE-MAS-01-O	Apply fundamentals of welding metallurgy
SEIP-LE-MAS-02-O	Perform welding
SEIP-LE-MAS-03-O	Perform lathe machine operation
SEIP-LE-MAS-04-O	Perform milling machine operation
SEIP-LE-MAS-05-O	Perform grinding machine operation
SEIP-LE-MAS-06-O	Perform supervisory function
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
<p>Read and understand the directions carefully:</p> <ul style="list-style-type: none"> ▪ these oral questions are based on the performance criteria from all the units of competency in Master Craftsmanship ▪ 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 is the difference between metallurgy and welding metallurgy?	<input type="checkbox"/>	<input type="checkbox"/>
2.	Which power source is used for TIG welding?	<input type="checkbox"/>	<input type="checkbox"/>
3.	Which GMAW mode of metal transfer is best suited for all-position welding?	<input type="checkbox"/>	<input type="checkbox"/>
4.	In TIG welding, what does shielding gas prevent?	<input type="checkbox"/>	<input type="checkbox"/>
5.	Name the various parts mounted on the carriage of a lathe machine?	<input type="checkbox"/>	<input type="checkbox"/>
6.	What are the specifications of the milling machine?	<input type="checkbox"/>	<input type="checkbox"/>
7.	Name the various movements of a universal milling machine table?	<input type="checkbox"/>	<input type="checkbox"/>
8.	What are the purposes of grinding?	<input type="checkbox"/>	<input type="checkbox"/>
9.	What are the properties of cutting fluid?	<input type="checkbox"/>	<input type="checkbox"/>
10.	What are the roles of a machine shop foreman?	<input type="checkbox"/>	<input type="checkbox"/>
11.	Give an example of a people-oriented team role.	<input type="checkbox"/>	<input type="checkbox"/>
12.	Developing a project plan is a task of who?	<input type="checkbox"/>	<input type="checkbox"/>
13.	Name the tool that clearly shows the reporting relationships within an organisation.	<input type="checkbox"/>	<input type="checkbox"/>
14.	Why should a conflict be dealt with immediately?	<input type="checkbox"/>	<input type="checkbox"/>
15.	What is a file?	<input type="checkbox"/>	<input type="checkbox"/>
16.	Explain the use of the subject line in emails.	<input type="checkbox"/>	<input type="checkbox"/>
17.	What skills are required for conducting workplace interactions in a courteous manner?	<input type="checkbox"/>	<input type="checkbox"/>
18.	What does COC stands for?	<input type="checkbox"/>	<input type="checkbox"/>
19.	What is a user guide?	<input type="checkbox"/>	<input type="checkbox"/>
20.	What is the definition of workplace documents?	<input type="checkbox"/>	<input type="checkbox"/>
21.	What does the first line supervisor control in a self-directed team?	<input type="checkbox"/>	<input type="checkbox"/>
22.	What are some examples of modes of communication?	<input type="checkbox"/>	<input type="checkbox"/>
23.	How many ways you can present yourself?	<input type="checkbox"/>	<input type="checkbox"/>

24.	How many phases are there for interview preparedness?	<input type="checkbox"/>	<input type="checkbox"/>
25.	What will be your answer if you are asked if you have any questions of your own?	<input type="checkbox"/>	<input type="checkbox"/>
26.	Name four IT tools.	<input type="checkbox"/>	<input type="checkbox"/>
27.	What is a common application program's file extension?	<input type="checkbox"/>	<input type="checkbox"/>
28.	How do name a cell on spreadsheet?	<input type="checkbox"/>	<input type="checkbox"/>
29.	Name two browsers on the internet.	<input type="checkbox"/>	<input type="checkbox"/>
30.	What are the four phases of emergency management?	<input type="checkbox"/>	<input type="checkbox"/>
31.	Say whether true or false: A work ethic is a set of moral principles a person uses in their job.	<input type="checkbox"/>	<input type="checkbox"/>
Feedback to candidate:			
Assessment decision for this assessment activity:			
<input type="checkbox"/> Competent		<input type="checkbox"/> Not Yet Competent	
Candidate Signature:		Date:	
Assessor 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 is the difference between metallurgy and welding metallurgy?	<i>Metallurgy is the overall field of extracting and applying metals. Welding metallurgy is a subdivision concerning the behaviour of metals during welding, and the effects of welding on the metal's properties.</i>
2. Which power source is used for TIG welding?	<i>Gas metal arc welding (GMAW), sometimes referred to by its subtypes metal inert gas (MIG) welding or metal active gas (MAG) welding, is a welding process in which an electric arc forms between a consumable wire electrode and the workpiece metal(s), which heats the workpiece metal(s), causing them to melt and join.</i>
3. Which GMAW mode of metal transfer is best suited for all-position welding?	<i>In GMAW, the mechanism by which the molten metal at the end of the wire electrode is transferred to the workpiece has a significant effect on the weld characteristics. Three modes of metal transfer are possible with GMAW: short-circuiting transfer, globular transfer, and spray transfer.</i>
4. In TIG welding, what does shielding gas prevent?	<i>In TIG welding, an inert gas protects the molten weld pool and tungsten from surrounding atmospheric gases. These atmospheric gases can react with the weld pool, causing contamination.</i>
5. Name the various parts mounted on the carriage of a lathe machine?	<i>Saddle, compound rest, cross slide, tool post.</i>
6. What are the specifications of the milling machine?	<i>1. The table length and width. 2. Number of spindle speeds and feeds.</i>
7. Name the various movements of a universal milling machine table?	<i>1. Vertical movement-through the knee. 2. Cross wise movement through the saddle.</i>
8. What are the purposes of grinding?	<i>To remove small amount of metal from work pieces, finish them to close tolerances, and to obtain the better surface finish.</i>
9. What are the properties of cutting fluid?	<i>High heat absorbing capacities, high flash point, odorless, and should be noncorrosive to work and tool.</i>

10.	What are the roles of a machine shop foreman?	A shop foreman is a manager in a workshop, such as a commercial or academic automotive, machine, textile or artisan manufacturing or repair shop. He sometimes also manages workers in a nearby area, such as staff in an office attached to the shop. Although each industry has its rules and work processes, shop foremen across industries usually perform similar duties.
11.	Give an example of a people-oriented team role.	Coordinator
12.	Developing a project plan is a task of who?	Project Manager
13.	Name the tool that clearly shows the reporting relationships within an organisation.	Organizational chart
14.	Why should a conflict be dealt with immediately?	To avoid it escalating.
15.	What is a file?	A file is the common storage unit in a computer. All programs and data are contained in a file, and the computer reads and writes files.
16.	Explain the use of the subject line in emails.	<ul style="list-style-type: none"> ▪ The subject line provides an opportunity to inform the receiver of the purpose of the email. ▪ A subject line ideally should describe exactly what the email is about. ▪ An appropriate subject line will maximize the possibility of a message being read.
17.	What skills are required for conducting workplace interactions in a courteous manner?	<ul style="list-style-type: none"> ▪ Effective questioning ▪ Active listening ▪ Speaking skills ▪ Email writing skills
18.	What does COC stands for?	Code of conduct
19.	What is a user guide?	It is a technical communication document intended to give assistance to people using a particular system.
20.	What is the definition of workplace documents?	Workplace documents are a set of materials that inform employees of workplace policies, processes and procedures.
21.	What does the first line supervisor control in a self-directed team?	<ul style="list-style-type: none"> ▪ Critical management process of: <ul style="list-style-type: none"> ○ Planning ○ Organising ○ Directing ○ Staffing
22.	What are some examples of modes of communication?	<ul style="list-style-type: none"> ▪ Team meetings ▪ Email updates
23.	How many ways you can present yourself?	<ul style="list-style-type: none"> ▪ Curriculum Vitae

		<ul style="list-style-type: none"> ▪ Infographic ▪ Profile/portfolio
24.	How many phases are there for interview preparedness?	<ul style="list-style-type: none"> ▪ Phase One – before the interview ▪ Phase Two – the start ▪ Phase Three – the interview ▪ Phase Four – closing of interview
25.	What will be your answer if you are asked if you have any questions of your own?	Ask whether the offer will be confirmed in writing.
26.	Name four IT tools.	<ul style="list-style-type: none"> ▪ Computer ▪ Television ▪ Mobile phone ▪ Radio ▪ Internet
27.	What is a common application program's file extension?	A file extension, also called a filename extension, is the suffix at the end of a filename, which indicates what kind of file it is. For example, you can tell that the file "computer.docx" is an MS Word document file.
28.	How do name a cell on spreadsheet?	With its column and row position on the sheet (i.e. B9).
29.	Name two browsers on the internet.	<ul style="list-style-type: none"> ▪ Internet Explorer ▪ Google Chrome ▪ Firefox
30.	What are the four phases of emergency management?	<ul style="list-style-type: none"> ▪ Mitigation ▪ Preparedness ▪ Response ▪ Recovery
31.	Say whether true or false: A work ethic is a set of moral principles a person uses in their job.	True

Assessment Evidence Summary Sheet

EVIDENCE SUMMARY SHEET			
Candidate Name:			
Assessor Name:			
Qualification:	Certificate in Master Craftsmanship		
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	<input type="checkbox"/>	<input type="checkbox"/>
	Practical Demonstration 1 (Set)	<input type="checkbox"/>	<input type="checkbox"/>
	Practical Demonstration 2 (Set)	<input type="checkbox"/>	<input type="checkbox"/>
	Practical Demonstration 3 (Set)	<input type="checkbox"/>	<input type="checkbox"/>
	Oral Questioning (optional)	<input type="checkbox"/>	<input type="checkbox"/>
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			
<input type="checkbox"/> Issuance of Statement of Achievement (<i>indicate title of SOA, if full Certificate is not met</i>)	<input type="checkbox"/> Submission of additional documents Specify:	<input type="checkbox"/> Reassessment Specify:	
Did the candidate overall performance meet the required evidence/standard?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Overall Evaluation:	<input type="checkbox"/> Competent		<input type="checkbox"/> 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 Master Craftsmanship		
Name of Candidate:		Date:	
Name at Assessment Centre:		Date:	
Assessment Results:	<input type="checkbox"/> Competent <input type="checkbox"/> Not Yet Competent		
Recommendation:	<input type="checkbox"/> Issuance of SOA (<i>indicate title of SOA, if full certificate is not met</i>)		
	<input type="checkbox"/> Submission of additional documents – specify:		
	<input type="checkbox"/> 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-MAS-01-G – Use basic mathematical concepts		
Element		Assessment Method		
		Written	Practical	Oral
1. Identify calculation requirements in the workplace.		4	A1-3 B1-3 C1-3	2
2. Select appropriate mathematical methods/concepts for the calculation.		4, 18	A1-3 B1-3 C1-3	2
3. Use tools and instruments to perform calculations.		4	A1-3 B1-3 C1-3	
Unit of Competency:		SEIP-LE-MAS-02-G – Carry out workplace interaction		
Element		Assessment Method		
		Written	Practical	Oral
1. Interpret workplace communication and etiquette.			A1-3 B1-3 C1-3	12
2. Read and understand workplace documents.			A1-3 B1-3 C1-3	18, 20
3. Participate in workplace meetings and discussions.		12		24
4. Practice professional ethics at work.		12		
Unit of Competency:		SEIP-LE-MAS-03-G – Operate in a team environment		
Element		Assessment Method		
		Written	Practical	Oral

1. Identify team goals and work processes.		A1-3 B1-3 C1-3	11, 21
2. Identify own role and responsibilities within team.	8		13
3. Communicate and co-operate with team members.	11	A1-3 B1-3 C1-3	17, 22, 25
4. Practice problem solving within team.		A1-3 B1-3 C1-3	14
Unit of Competency:	SEIP-LE-MAS-04-G – Apply basic IT skills		
Element	Assessment Method		
	Written	Practical	Oral
1. Identify and use most commonly used IT tools.			26, 28
2. Understand use of computer.			15
3. Work with word processing application.			27
4. Access email and search the internet.			16, 29
Unit of Competency:	SEIP-LE-MAS-01-S – Apply occupational health and safety (OHS) practice in the workplace		
Element	Assessment Method		
	Written	Practical	Oral
1. Identify OHS Policies and procedures.		A1-3 B1-3 C1-3	
2. Apply personal health and safety practices.	13	A1-3 B1-3 C1-3	
3. Report hazards and risks.	17	A1-3 B1-3 C1-3	
4. Respond to emergencies.			30
Unit of Competency:	SEIP-LE-MAS-02-S – Read and interpret sketches and drawings		

Element		Assessment Method		
		Written	Practical	Oral
1. Interpret information and specifications.			A1-3 B1-3 C1-3	19
2. Read and interpret sketches and drawings.			A1-3 B1-3 C1-3	
Unit of Competency:	SEIP-LE-MAS-03-S – Use hand and power tools			
Element		Assessment Method		
		Written	Practical	Oral
1. Identify and inspect hand and power tools.			A1-3 B1-3 C1-3	
2. Use hand tools properly and safely.			A1-3 B1-3 C1-3	
3. Operate power tools properly and safely.			A1-3 B1-3 C1-3	
4. Clean and maintain hand and power tools.			A1-3 B1-3 C1-3	
Unit of Competency:	SEIP-LE-MAS-04-S – Apply quality system			
Element		Assessment Method		
		Written	Practical	Oral
1. Work within a quality system.			A1-3 B1-3 C1-3	
2. Apply and monitor a quality system.			A1-3 B1-3 C1-3	
3. Apply standard procedures for each job.			A1-3	

		B1-3 C1-3	
Unit of Competency:	SEIP-LE-MAS-01-O – Apply fundamentals of welding metallurgy		
Element	Assessment Method		
	Written	Practical	Oral
1. Identify the mechanical properties of metals.		A1, B1, C1	1
2. Explain the chemical properties of steel.	2	A1, B1, C1	
3. Describe the effects of heat to the chemical properties in steel.	2	A1, B1, C1	
4. Demonstrate application of heat treatment processes.	1	A1, B1, C1	
5. Clean and store the tools and equipment.		A1-3 B1-3 C1-3	
Unit of Competency:	SEIP-LE-MAS-02-O – Perform welding		
Element	Assessment Method		
	Written	Practical	Oral
1. Identify welding symbols and select electrodes.	16	A1, B1, C1	
2. Carry out SMAW in 5G and 6G position.		A1, B1, C1	3
3. Carry out MIG and TIG welding in 3G and 4G position.	3	A1, B1, C1	2
4. Perform plasma cutting.		A1, B1, C1	4
5. Clean, maintain and store tools, equipment, materials and finished products.		A1, B1, C1	
Unit of Competency:	SEIP-LE-MAS-03-O – Perform lathe machine operation		
Element	Assessment Method		
	Written	Practical	Oral
1. Perform taper turning using attachment.	5, 10, 18	A2, B2, C2	5
2. Cut multi start acme and squire thread.	10	A2, B2,	

		C2	
3. Cut single start worm.		A2, B2, C2	
4. Perform eccentric turning.		A2, B2, C2	
5. Clean and store tools and equipment.		A2, B2, C2	
Unit of Competency:	SEIP-LE-MAS-04-O – Perform milling machine operation		
Element	Assessment Method		
	Written	Practical	Oral
1. Determine job requirement.	6, 7, 19	A3, B3, C3	6, 7
2. Perform boring using boring attachment.	14, 15	A3, B3, C3	
3. Perform external and internal key way milling.		A3, B3, C3	
4. Cut helical and bevel gear.	8	A3, B3, C3	
5. Cut rack and pinion.		A3, B3, C3	
6. Clean and store the tools and equipment.		A3, B3, C3	
Unit of Competency:	SEIP-LE-MAS-05-O – Perform grinding machine operation		
Element	Assessment Method		
	Written	Practical	Oral
1. Operate grinding machine.	9, 10, 20	A2, B2, C2	8
2. Carry out cylindrical grinding machine.		A2, B2, C2	
3. Carry out surface grinding machine.		A2, B2, C2	
4. Perform universal tools and cutter grinding machine.		A2, B2, C2	9
5. Clean and store the tools and equipment.		A2, B2, C2	
Unit of Competency:	SEIP-LE-MAS-06-O – Perform supervisory function		

Element	Assessment Method		
	Written	Practical	Oral
1. Demonstrate management skills.		A1-3 B1-3 C1-3	10
2. Demonstrate leadership skills.		A1-3 B1-3 C1-3	10
3. Deal with conflict management with subordinates.		A1-3 B1-3 C1-3	
4. Apply Production Planning and Control (PPC) in the workplace.		A1-3 B1-3 C1-3	