Skills for Employment Investment Program (SEIP)

ASSESSMENT TOOL

FOR

ELECTRICAL AND NAVIGATIONAL EQUIPMENT INSTALLATION

(SHIPBUILDING SECTOR)

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

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PART A – THE ASSESSOR

Instructions to Assessor

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

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

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

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

- written examination
- oral questioning
- practical demonstration

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

Conducting Assessment

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

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

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

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

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

Assessing Competence

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

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

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

Competent (C)

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

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

Not Yet Competent (NYC)

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

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

The candidate may be required to:

(a) undertake further training or instruction

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

Recording Assessment Information

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

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

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

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

Assessment Evidence Guide

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

To attain the certificate of **Electrical and Navigational Equipment Installation**, 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-SBD-ENI-01-G	Use basic mathematical concepts
SEIP-SBD-ENI-02-G	Apply occupational health and safety (OHS) practice in the workplace
SEIP-SBD-ENI-03-G	Carry out workplace interaction
SEIP-SBD-ENI-04-G	Operate in a team environment
SEIP-SBD-ENI-05-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-SBD-ENI-01-S	Explore the history of Shipbuilding Sector
SEIP-SBD-ENI-02-S	Use hand and power tools
Occupation-specific Competencies	
SEIP-SBD-ENI-01-O	Understand basic electrical works
SEIP-SBD-ENI-02-O	Apply knowledge of electrical and navigational equipment installation
SEIP-SBD-ENI-03-O	Carry out cable laying for electrical equipment
SEIP-SBD-ENI-04-O	Carry out cable laying for navigational equipment

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

Occupation:	Electrical and Navigational Equipment Installation					
Unit Name:	Apply occupational health and safety (OHS) practice in the workplace					
Unit Code:	SEIP-SBD-ENI-02-G					
Assessment Method:	**P**	**O**	**W**			
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*			
Element	**Performance Criteria**			**P**	**O**	**W**
1. 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.			√
2. Apply personal health practices	**2.1.** OHS policies and procedures are applied in the workplace including personal protective equipment	√		√
	2.2. Common health issues are recognised.	√		
	2.3. Common safety issues are identified.	√		
3. Report hazards and risks	**3.1.** Hazards and risks are identified.	√	√	
	3.2. Hazards and risks assessment and controls are interpreted.		√	
4. Respond to emergencies	**4.1.** Respond to alarms and warning devices.			√
	4.2. Emergency response plans and procedures are responded to.		√	
	4.3. First aid procedures during emergency situations are identified.		√	

Occupation:	Electrical and Navigational Equipment Installation				
Unit Name:	Carryout workplace interaction				
Unit Code:	SEIP-SBD-ENI-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. Interpret workplace communication and etiquette	**1.1.** Workplace code of conducts are interpreted as per organizational guidelines					√
	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.			√		
	3.1. Team meetings are attended on time.			√		

3. Participate in workplace meetings and discussions	**3.2.** Meeting procedures and etiquette are followed.		√	
	3.3. Active participation is ensured, opinion are expresses 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:	Electrical and Navigational Equipment Installation				
Unit Name:	Operate in a team environment				
Unit Code:	SEIP-SBD-ENI-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 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 opinion of other team members are interpreted and respected.			√	√	
4. Practice problem solving within 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:	Electrical and Navigational Equipment Installation		
Unit Name:	Apply basic IT skills		
Unit Code:	SEIP-SBD-ENI-05-G		
Assessment Method:	**P**	**O**	**W**
	Performance *(including demonstration and observation)*	Oral questioning	Written examination *(including short-answer, multiple choice, and true or false questions)*

Element	**Performance Criteria**	**P**	**O**	**W**
1. Identify and use most commonly used IT tools	**1.1.** History of information technology (IT) is identified and summarised			√
	1.2. Commonly used IT tools are identified and described.			√
2. Understand use of computer	**2.1.** Basic parts of a computer are identified.			√
	2.2. Turning on and off technique of a computer is performed.			√
	2.3. Working environment, functions and features of operating system is interpreted		√	
	2.4. Simple trouble-shooting techniques are applied.		√	
3. Work with word processing application	**3.1.** Word processing application appropriate to perform activity is operated		√	
	3.2. Basic typing technique to document is applied.		√	
	3.3. Word processing techniques to document are employed.			√
	3.4. Personal CV writing using suitable word processing techniques is practiced.		√	
	3.5. Saving and retrieving technique of a document is used.		√	
4. Work with spreadsheets	**4.1.** Spreadsheets working environment, functions and features are identified and interpreted.			√
	4.2. Data entry on spreadsheet appropriate to perform activity is performed.		√	
	4.3. Data manipulation techniques to spreadsheet document are applied.			√
	4.4. Spreadsheet document is created and saved.			√

5. Access email and search the internet	**5.1.** Use of email account in online environment is explained.		√	
	5.2. Writing and sending of workplace emails is completed.		√	
	5.3. Different browsers are identified to work online.			√
	5.4. Browsing different web portals and apply proper search techniques.			√

Occupation:	Electrical and Navigational Equipment Installation					
Unit Name:	Explore history of Shipbuilding Sector					
Unit Code:	SEIP-SBD-ENI-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. Examine the background of shipbuilding sector	**1.1.** Historical background of shipbuilding sector is examined and described.					√
	1.2. Drawings and plans of ships layout are interpreted.			√	√	
	1.3. Key parts of ship are clearly identified.			√		√
	1.4. Standard maritime guidelines, codes, conventions and classifications are identified and interpreted.			√		√
2. Identify and locate main machines on a ship	**2.1.** Main machines installed on a ship are identified and located.			√		
	2.2. Function of main machines are briefly described.			√		

Occupation:	Electrical and Navigational Equipment Installation					
Unit Name:	Use hand and power tools					
Unit Code:	SEIP-SBD-ENI-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**
	1.1. Appropriate hand and power tools are identified.					√
	1.2. Application of hand and power tools is recognised.				√	

1. Identify and inspect hand and power tools	**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:	Electrical and Navigational Equipment Installation		
Unit Name:	Understand basic electrical works		
Unit Code:	SEIP-SBD-ENI-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 roles and responsibilities	**1.1.** Roles and responsibilities of electrician are identified.			√
	1.2. Occupational hierarchy in the workplace is explained.		√	
2. Identify basic principles of electricity	**2.1.** Fundamental principles of electricity are identified and defined.			√
	2.2. Technical terms are identified and interpreted.			√
	2.3. Occupational health and safety measures specific to working with electricity are identified and demonstrated.		√	
3. Set-up electrical circuits	**3.1.** Wiring and electrical circuit are identified and defined.	√		
	3.2. Cable joints, soldering and tapping are identified.	√		
	3.3. Tools, equipment and materials required for circuit construction identified.	√		
	3.4. Electrical circuits are set-up as per job requirement and in accordance with OHS practice.	√		

Occupation:	Electrical and Navigational Equipment Installation		
Unit Name:	Apply knowledge of electrical and navigational equipment installation		
Unit Code:	SEIP-SBD-ENI-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. Explain electrical and navigational equipment installation	**1.1.** Electrical and navigational equipment installation process is explained.		√	
	1.2. Electrical diagrams for installation of equipment are identified.	√		
2. Identify electrical equipment	**2.1.** Electrical equipment is identified and located.	√		
	2.2. Key functions of electrical equipment are described.			√
3. Identify navigational equipment	**3.1.** Navigational equipment are identified and located.	√		
	3.2. Key functions of navigational equipment are described.			√

Occupation:	Electrical and Navigational Equipment Installation		
Unit Name:	Carry out cable laying for electrical equipment		
Unit Code:	SEIP-SBD-ENI-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. Identify cables and joints	**1.1.** Types of cables and joints are identified.	√		
	1.2. Soldering points are identified.	√		
	1.3. Soldering and tapping is carried out.	√		
2. Set and lay cables on cable tray	**2.1.** Diagram for cable tray is read and interpreted.	√		
	2.2. Signs, symbols and data for electrical work are identified.			√
	2.3. Tools and equipment are identified and selected as per job requirement.		√	
	2.4. Location of cable tray is identified.	√		
	2.5. Laying of cable is carried out in accordance with OHS practice.	√		
3. Perform panel board connection	**3.1.** Panel board diagram is read and interpreted.	√		
	3.2. Main switch board elements are identified.	√		
	3.3. Switch board is set following directions of switch board drawing.	√		
4. Perform accommodation wiring	**4.1.** Electrical diagram for accommodation wiring is read and interpreted.	√		
	4.2. Estimation of materials is carried out as per job requirements.	√		
	4.3. Single and 3 Phase connections are carried out.	√		
	4.4. Pipe and plate earthings are carried out and tested.	√		
	4.5. Wiring tests are carried out to establish possible faults.	√		
5. Perform final connections	**5.1.** Connection wiring for electrical equipment is prepared as per job requirement.	√		
	5.2. Control of 3 Phase induction motor DOL starter is carried out.	√		
	5.3. Control of 3 Phase motor by forward reverse control is carried out.	√		
	5.4. Control by star-delta is carried out.	√		

	5.5. Set down and step up transformers are identified.	√		

Occupation:	Electrical and Navigational Equipment Installation					
Unit Name:	Carry out cable laying for navigational equipment					
Unit Code:	SEIP-SBD-ENI-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)*			
1. Perform cable laying	**1.1.** Types of cables used for navigational equipment are identified.					√
	1.2. Location of navigational equipment is identified.			√		
	1.3. Wiring of navigational equipment is carried out as per job requirement.			√		
2. Perform final connections	**2.1.** Cable connections for navigational equipment are identified.			√		
	2.2. Cable connections are 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 these units of competency that comprise of the Certificate in Electrical and Navigational Equipment Installation. Assessment of competency requires you to consistently demonstrate skill, knowledge and aptitude (through a variety of assessment tools such as multiple choice, short-answer questions, oral questioning, workplace observation, and practical demonstration) that enables confident completion of workplace tasks in a variety of situations.

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

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

Furthermore, the assessment process must:

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

There are two types of assessment:

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

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

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

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

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

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

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

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

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

Self-Assessment Guide

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

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

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

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

Qualification:	**Electrical and Navigational Equipment Installation**
Units of competency:	**Generic units:** Use basic mathematical concepts Apply occupational health and safety (OHS) practice in the workplace Carryout Workplace Interaction Operate in a team environment Apply basic IT skills **Sector-specific units:** Explore history of Shipbuilding sector Use hand and power tools **Occupation-specific units:** Understand basic electrical works Apply knowledge of electrical and navigational equipment installation Carry out cable laying for electrical equipment Carry out cable laying for navigational equipment

Instructions:

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

Can I?	YES	NO
▪ Identify calculation requirements from workplace information		
▪ Construct mathematical problems from workplace information		
▪ Select appropriate method to carry out calculation requirements		
▪ Solve constructed mathematical problems with appropriate method		
▪ Identify tools and instruments required for computation		
▪ Perform calculation using appropriate tools and instruments accurately		

▪ Interpret OSH policies and safe operating procedures		
▪ Identify and follow safety signs and symbols		
▪ Interpret response, evacuation procedures and other contingency measures correctly		
▪ Apply OHS policies and procedures in the workplace including personal protective equipment (PPE)		
▪ Recognise common health issues		
▪ Identify common safety issues		
▪ Identify hazards and risks		
▪ Interpret hazards and risks assessment and controls		
▪ Respond to alarms and warning devices		
▪ Respond to emergency response plans and procedures		
▪ Identify first aid procedures during emergency situations		
▪ 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 workplace documents correctly		
▪ Understand and follow visual information/symbols/signage correctly		
▪ Access specific and relevant information from appropriate sources		
▪ Use appropriate medium to transfer information and ideas		
▪ Attend team meetings on time		
▪ Follow meeting procedures and etiquette		
▪ Ensure active participation, express and hear opinion		
▪ Provide and interpret inputs in line with meeting purpose		
▪ Perform responsibilities as a team member		
▪ Perform tasks in accordance with workplace procedures		
▪ Maintain confidentiality		
▪ Avoid inappropriate and conflicting situations		
▪ Identify and interpret roles and objectives of the team		
▪ Identify and interpret roles and responsibilities of team members		
▪ Identify personal role and responsibilities within the team environment		
▪ Interpret reporting relationships within team and external to team		

▪ Identify other teammates' tasks and provide support when requested		
▪ Encourage the team through sharing information or expertise, working together to solve problems and putting team success first		
▪ Interpret and respect views and opinions of other team members		
▪ Identify problems faced at the individual and team level and show insight into the root-causes of the problems		
▪ Identify a range of solutions and courses of action together with benefits, costs and risks associated with each		
▪ Recognise the good ideas of others to help develop solutions and seek advice from those who have solved similar problems		
▪ Look beyond the obvious and not stop at the first answers		
▪ Identify and summarize history of information technology (IT)		
▪ Identify and describe commonly used IT tools		
▪ Identify basic parts of a computer		
▪ Perform turning on and off technique of a computer		
▪ Interpret working environment, functions and features of operating system		
▪ Apply simple trouble shooting techniques		
▪ Operate word processing application appropriate to perform activity		
▪ Apply basic typing techniques to document		
▪ Employ word processing technique to document		
▪ Practiced personal CV writing using suitable word processing techniques		
▪ Use saving and retrieving technique of a document		
▪ Identify and interpret spreadsheet working environment, functions and features		
▪ Perform data entry on spreadsheet appropriate to perform activity		
▪ Apply data manipulation techniques to spreadsheet		
▪ Create and save spreadsheet document		
▪ Explain use of email account in online environment		
▪ Complete writing and sending of workplace emails		

▪ Identify and select different browsers to work online		
▪ Browse different web portals and apply proper search techniques		
▪ Examine and describe historical background of shipbuilding sector		
▪ Interpret drawings and plans of ships layout		
▪ Identify key parts of ship		
▪ Identify and interpret standard maritime guidelines, codes, conventions and classifications		
▪ Identify and locate main machines installed on a ship		
▪ Describe function of machines briefly		
▪ Identify appropriate hand and power tools		
▪ Recognise application of hand and power tools		
▪ Check and verify usability of hand and power tools		
▪ Ensure safety precautions before using hand tools		
▪ Identify unsafe or faulty hand tools and mark for repair		
▪ Check and calibrate measuring tools for use		
▪ Use hand tools properly and safely to perform work activity		
▪ Inspect power supply outlet and electrical cord and confirm safe for use in accordance with established workplace safety requirements		
▪ Ensure safety precautions before using power tools in accordance with manufacturer's operating specification		
▪ Apply proper sequence of operation for using power tools		
▪ Operate power tools properly and safely to perform work activity		
▪ Remove dust and foreign matter from hand and power tools in accordance to workplace standards		
▪ Check condition of hand and power tools and report after use		
▪ Apply appropriate lubricant after use and prior to storage		
▪ Identify roles and responsibilities of electrician		
▪ Explain occupational hierarchy in the workplace		

▪ Identify and define fundamental principles of electricity		
▪ Identify and interpret technical terms		
▪ Identify and demonstrate occupational health and safety measures specific to working with electricity		
▪ Identify and define wiring and electrical circuit		
▪ Identify cable joints, soldering and tapping		
▪ Set-up electrical circuits as per job requirement and in accordance to OHS practice		
▪ Explain electrical and navigational equipment installation		
▪ Identify and interpret electrical diagrams for installation of equipment		
▪ Identify and locate electrical equipment		
▪ Describe key functions of electrical equipment		
▪ Identify and locate navigational equipment		
▪ Describe key functions of navigational equipment		
▪ Identify types of cable joints		
▪ Identify soldering points		
▪ Carry out soldering and tapping		
▪ Read and interpret diagram for cable tray		
▪ Identify signs, symbols and data for electrical work		
▪ Identify and select tools and equipment as per job requirement		
▪ Identify location of cable tray		
▪ Carry out laying of cable in accordance with OHS practice		
▪ Read and interpret panel board diagram		
▪ Identify main switch board element		
▪ Set switch board following directions of switch board drawing		
▪ Read and interpret electrical diagram for accommodation wiring		

▪ Carry out estimation of materials as per job requirements		
▪ Carry out single and 3 Phase connections		
▪ Carry out and test pipe and plate earthings		
▪ Carry out wiring tests to establish possible faults		
▪ Prepare connection wiring for electrical equipment as per job requirement		
▪ Carry out control of 3 Phase induction motor by DOL starter		
▪ Carry out control by star-delta starter		
▪ Identify step down and step up transformers		
▪ Identify types of cable used for navigational equipment		
▪ Identify location of navigational equipment		
▪ Carry out wiring of navigational equipment as per job requirement		
▪ Identify cable connections for navigational equipment		
▪ Carry out cable connections		
I agree to undertake assessment in the knowledge that information gathered will only be used for 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 – Electrical and Navigational Equipment Installation

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 Electrical and Navigational Equipment Installation, you must demonstrate competence in the following units, as established in the assessment agreement:

CODE	UNIT OF COMPETENCY
Generic Competencies	
SEIP-SBD-ENI-01-G	Use basic Mathematical concepts
SEIP-SBD-ENI-02-G	Apply occupational health and safety (OHS) practice in the workplace
SEIP-SBD-ENI-03-G	Carryout workplace interaction
SEIP-SBD-ENI-04-G	Operate in a team environment
SEIP-SBD-ENI-05-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-SBD-ENI-01-S	Explore history of Shipbuilding Sector
SEIP-SBD-ENI-02-G	Use hand and power tools
Occupation-specific Competencies	
SEIP-SBD-ENI-01-O	Understand basic electrical works
SEIP-SBD-ENI-02-O	Apply knowledge of electrical and navigational equipment installation
SEIP-SBD-ENI-03-O	Carry out cable laying for electrical equipment
SEIP-SBD-ENI-04-O	Carry out cable laying for navigational equipment

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

Assessment Agreement	
Occupation:	Electrical and Navigational Equipment Installation
Assessment Centre:	
Candidate Name:	
Assessor Name:	
Unit of Competency	
Generic Competencies	
SEIP-SBD-ENI-01-G	Use basic Mathematical concepts
SEIP-SBD-ENI-02-G	Apply occupational health and safety (OSH) practices in the workplace
SEIP-SBD-ENI-03-G	Carryout workplace interaction
SEIP-SBD-ENI-04-G	Operate in a team environment
SEIP-SBD-ENI-05-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-SBD-ENI-01-S	Explore history of Shipbuilding sector
SEIP-SBD-ENI-02-S	Use hand and power tools
Occupation-specific Competencies	
SEIP-SBD-ENI-01-O	Understand basic electrical works
SEIP-SBD-ENI-02-O	Apply knowledge of electrical and navigational equipment installation
SEIP-SBD-ENI-03-O	Carry out cable laying for electrical equipment
SEIP-SBD-ENI-04-O	Carry out cable laying for navigational equipment

Resources Required for Assessment

Candidates must have access to the following:

- copies of activities, questions, projects nominated by the assessor
- relevant organisational policies, protocols and procedural documents (if required)
- devices or tools to record answers
- appropriate actual or simulated workplace
- all necessary tools and equipment used in performance of the work-based task
- any other resources normally used in the workplace

Assessment Instructions

Candidates should respond to the formative and summative assessments either verbally or in writing as agreed with the assessor. Written responses can be recorded in the spaces provided (if more space is required attach additional pages) or submitted in a word-processed document.

If candidates answer verbally, the assessor should record their answers in detail.

Candidates should also undertake observable tasks that provide evidence of performance. The assessor must provide instruction to candidates on what is expected during observation and arrange a suitable time and location for demonstration of these skills.

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

Performance Standards

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

Completion of all tasks for a unit of competency, to a satisfactory level, will contribute to an assessment of competence for that specific individual unit (or units if holistic assessment approach is taken). Successful completion of all units of competency that comprise of the qualification Electrical and Navigational Equipment Installation, will result in the candidate will be 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 Name:		**Date:**	
Assessor Name:		**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 assessment activities:
        - Set A:
            - installation of halogen tube light in the cabin
            - perform direct on line motor starter connection for a rudder
        - Set B:
            - perform forward reverse 3-phase motor control panel
            - perform cable laying on cable tray for an echo sounder
        - Set C:
            - demonstrate star delta connection
            - perform cable laying on a cable tray for a radar system
    - 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 (4 hours) – **performance evidence**

    The practical demonstration activities will be divided into two (2) tasks:

    (i) Practical Demonstration 1 (2 hours)

    (ii) Practical Demonstration 2 (2 hours)
3. Final assessment is your responsibility as the accredit/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 39
   - Set A – Practical Demonstration 2: page 44
   - Set B – Practical Demonstration 1: pages 48-49
   - Set B – Practical Demonstration 2: pages 54-55
   - Set C – Practical Demonstration 1: pages 59
   - Set C – Practical Demonstration 2: pages 64-65

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 Electrical and Navigational Equipment Installation. Using the performance criteria as a benchmark, evidence will be gathered through:

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

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

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

   - Set A:
     - installation of halogen tube light in the cabin (2 hours)
     - perform direct on line motor starter connection for a rudder (2 hours)
   - Set B:
     - perform forward reverse 3-phase motor control panel (2 hours)
     - perform cable laying on cable tray for an echo sounder (2 hours)
   - Set C:
     - demonstrate star delta connection (2 hours)
     - perform cable laying on a cable tray for a radar system (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 Electrical and Navigational Equipment Installation.

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 Electrical and Navigational Equipment Installation
Unit of Competency	
Generic Competencies	
SEIP-SBD-ENI-01-G	Use basic Mathematical concepts
SEIP-SBD-ENI-02-G	Apply occupational health and safety (OHS) practice in the workplace
SEIP-SBD-ENI-03-G	Carryout Workplace Interaction
SEIP-SBD-ENI-04-G	Operate in a team environment
SEIP-SBD-ENI-05-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-SBD-ENI-01-S	Explore history of Shipbuilding sector
SEIP-SBD-ENI-02-S	Clean and maintain hand and power tools
Occupation-specific Competencies	
SEIP-SBD-ENI-01-O	Understand basic electrical works
SEIP-SBD-ENI-02-O	Apply knowledge of electrical and navigational equipment
SEIP-SBD-ENI-03-O	Carry out cable laying for electrical equipment
SEIP-SBD-ENI-04-O	Carry out cable laying for navigational equipment
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	
Read and understand the directions carefully: ▪ this written examination is based on the performance criteria from all the units of competency in Electrical and Navigational Equipment Installation ▪ this assessment activity will be used to measure your underpinning knowledge ▪ write your answers on the paper provided ▪ answer all the questions as best as possible ▪ you have 1 (one) hour to complete this test	

WRITTEN TEST		
Multiple Choice		
This is a **multiple-choice** of test. Choose the appropriate answer and circle the letter that corresponds with your answer.		
1.	What percentage of 500 is 50?	a. 10% b. 20% c. 25% d. 50%
2.	A ship has 10 cabins, in each cabin there are 2 fluorescent tubes light with 40 watts' power. What will be the total consume of power in watts?	a. 200W b. 400 W c. 600W d. 800W
3.	You were working as electrician in a ship, how will you perform as a team member of the fleet?	a. I will work on my own, anyway, it is acceptable as long as i follow rules and regulations stated in my contract b. I will join the team members of the ship in any activity even if the activities are prohibited in the ship, I will prove the group that I am a good team member. c. I will ensure that i am following company rules and procedures and will join in activities allowed by the shipping company. d. I will follow rules and regulations, but i will not ask other team members especially about my technical work
4.	Which one is the main circuit board of a computer?	a. Mother board b. Processor (CPU) c. Memory card d. Hard drive
5.	Main steel body of a ship is known as?	a. Superstructure b. Hull c. Forecastle d. Bridge
6.	Which sector represents construction of marine structure?	a. Dry Dock b. RMG Sector c. Shipyard d. Shipbuilding Sector

7.	One of most important power generation unit in a ship is?	a. Marine diesel engine b. Generator c. Transformer d. Motor
8.	Which one is power tool?	a. Hand grinder b. Chisel c. Scriber d. Drill bits
9.	Impact resulting from being struck by or against objects may cause what type of serious accidents?	a. Chemical b. Physical c. Biological d. Ergonomic
10.	Ways to build relationships within a team include?	a. Discuss team member work styles b. Define “team personality” c. Discuss individual goals, hopes, concerns d. All of the above
True of False Quiz		
Tick (√) the box corresponding to the correct answer.		
11.	The word “Very respectfully yours” indicates respect when communicating through email.	True ☐ False ☐
12.	An electrical cable used in the ship is exactly similar to cables used in the house for wiring.	True ☐ False ☐
13.	Cables use to connect navigational equipment are the same with the cables use to connect electrical equipment in ship.	True ☐ False ☐
Fill in the Missing Blanks		
Write the word or group of words needed to complete the following sentences.		
14.	_____ is used to protect eyes from flying particles and other debris which may cause personal injury to a worker.	
15.	Creation of electrical energy due to flow of electron through conductor is known as _____.	
Short Answer		
Write a short answer in the space provided (not to exceed more than approximately twenty-five (25) words).		

16.	What does it mean by installation of electrical and navigational equipment in the ship?	
17.	Define voltage, current and resistance.	
18.	What is star delta motor starter?	
19.	List 5 important pieces of navigation equipment for electrical connection.	
20.	What does it mean by ships electrical layout?	

Feedback to candidate:

Assessment decision for this assessment activity:

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

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

Written Test - Answers

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

Multiple Choice		
1.	What percentage of 500 is 50?	***a. 10%*** b. 20% c. 25% d. 50%
2.	A ship has 10 cabins, in each cabin there are 2 fluorescent tubes light with 40 watts' power. What will be the total consume of power in watts?	a. 200W b. 400 W c. 600W ***d. 800W***
3.	You were working as electrician in a ship, how will you perform as a team member of the fleet?	a. I will work on my own, anyway, it is acceptable as long as i follow rules and regulations stated in my contract b. I will join the team members of the ship in any activity even if the activities are prohibited in the ship, I should prove the group that I am a good team member. ***c. I will ensure that i am following company rules and procedures and will join in activities allowed by the shipping company.*** d. I will follow rules and regulations, but i will not ask other team members especially about my technical work
4.	Which one is the main circuit board of a computer?	***a. Mother board*** b. Processor (CPU) c. Memory card d. Hard drive
5.	Main steel body of a ship is known as?	a. Superstructure, ***b. Hull*** c. Forecastle d. Bridge
6.	Which sector represents construction of marine structure?	a. Dry Dock b. RMG sector c. Shipyard ***d. Shipbuilding Sector***

7.	One of most important power generation unit in a ship is?	a. Marine diesel engine ***b. Generator*** c. Transformer d. Motor
8.	Which one is power tool?	***a. Hand grinder*** b. Chisel c. Scriber d. Drill bits
9.	Impact resulting from being struck by or against objects may cause what type of serious accidents?	a. Chemical hazards ***b. Physical hazards*** c. Biological hazards d. Ergonomics hazards
10.	Ways to build relationships within a team include?	*a. Discuss team member work styles* *b. Define "team personality"* *c. Discuss individual goals, hopes, concerns* ***d. All of the above***
True of False Quiz		
11.	The word "Very respectfully yours" indicates respect when communicating through email.	***True*** √ False ☐
12.	An electrical cable used in the ship is exactly similar to cables used in the house for wiring.	True ☐ ***False*** √
13.	Cables use to connect navigational equipment are the same with the cables use to connect electrical equipment.	True ☐ ***False*** √
Fill in the Missing Blanks		
14.	***Safety glasses or goggles (both are suitable answers)*** is used to protect eyes from flying particles and other debris which may cause personal injury to a worker.	
15.	Creation of electrical energy due to flow of electron through conductor is known as ***electricity.***	
Short Answer		
16.	What does it mean by installation of electrical and navigational equipment in the ship?	***In general, electrical installation is concern with connection/set up/ erection of any appliance, wire, fitting, cable, conduit, meter, insulator, apparatus, material or other electrical equipment intended for use to supply electricity.*** ***Installation of electrical and navigational equipment in the ship ensure the supply of electricity in the ship that concerns fitting/wiring of electrical machineries (e.g.***

		generator, motor, transformer etc.) and Navigational Equipment (e.g. radar, gyro-compass, navigation lights etc.). This ensures the supply of electricity in the ship by means of main and auxiliary switchboard.
17.	Define voltage, current and resistance.	***<u>Voltage</u> is the difference in electrical charge between two points in a circuit expressed in volts. Voltage is expressed in watts (W) or kilowatts (Kw). It is also defined as the rate at which energy is drawn from a source that produces a flow of electricity in a circuit.*** ***<u>Current</u> is the flow of electricity through a conductor. The unit of current is amperes.*** ***<u>Resistance</u> resist/opposed flow of current passing through the conductor/circuit component/substance/medium denoted by R. It is the magnitude of the real part of the impedance and is measured in ohms.***
18.	What is star delta motor starter?	***The Star Delta Starter is a very common type of starter and is used extensively as compared to the other type of starting methods of the induction motor. A star delta is used for a cage motor designed to run normally on the delta connected stator winding.***
19.	List 5 important pieces of navigation equipment for electrical connection?	***Radar, Echo sounder, Gyro-compass, Magnetic Compass, Auto Pilot.***
20.	What does it mean by ships electrical layout?	***Simplified line drawing of cable pull to connect different electrical machineries used in the ship and ensure power supply.***

Set A: Practical Demonstration 1

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Install halogen tube light in the cabin
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

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

Procedure:

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

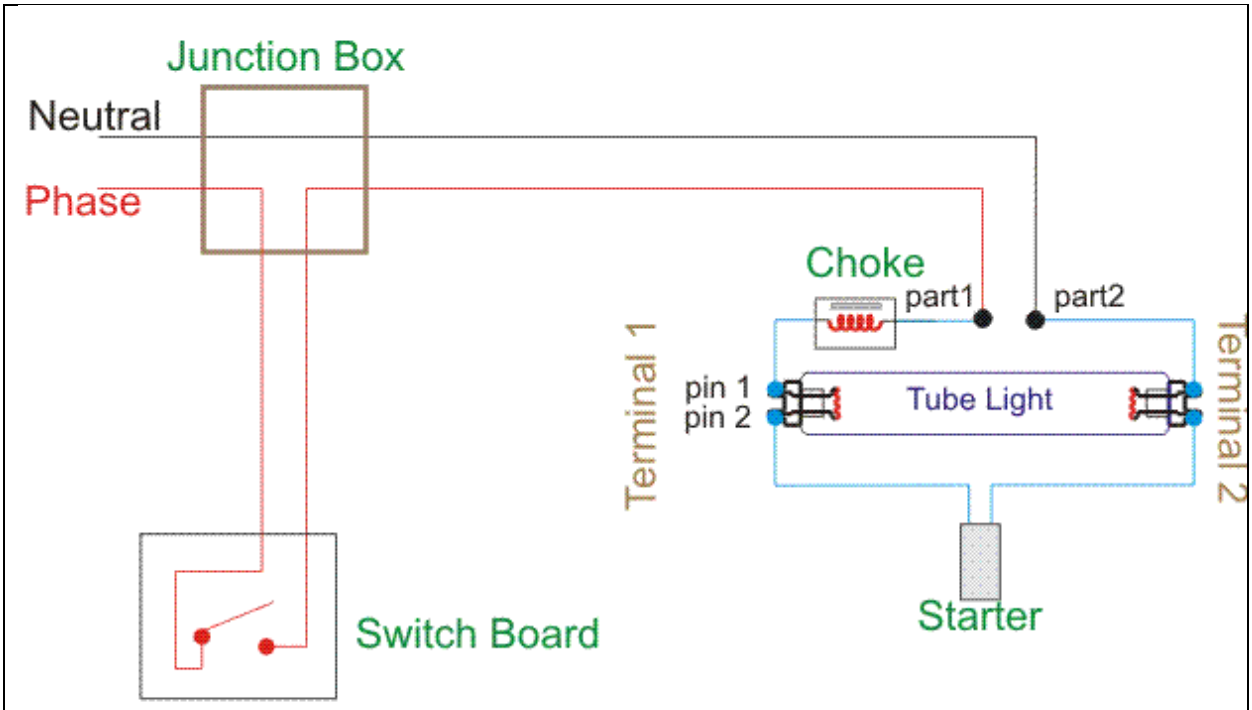
Job Specification Information:

1. Collect required supplies, materials, tools and equipment to perform installation of single electromagnetic/halogen tube light with Ballast (Choke).
2. Calculate the needed cables and wires for the installation of electromagnetic single tube light.
3. Show positive and negative pole in the circuit diagrams.
4. Ensure that conventional direction of flow of current is established.
5. Demonstrate actual direction of flow of current in the diagram.
6. Check Lose connection.
7. Check earthing /grounding.
8. Clean the tools, equipment and work area.
9. Dispose waste materials and excess materials.

Drawing, Plan, Diagram or Sketch:

The illustration below is the blueprint/diagram of the project/task to be performed. During demonstration of series and parallel connection you are to ensure:

- Accuracy of connections/avoid loose connection
- Precautions regarding electrical shocks
- Use proper cable/ insulated wire
- Measure flow of current with proper instrument(s)



Resources Required:	
Tools:	Screwdrivers star, negative, positive) Files (flat, round, half round) Hammers (ball peen, claw/ crow bar) Electrician knife Wire stripper Tri-square Pocket tape Adjustable wrench Chisels (wooden, cold) Drill bits Hacksaw Pliers (cutting pliers, combination pliers, long nose pliers, diagonal cutting pliers) Ampere meter Volt Meter
Equipment:	N/A
Machinery:	N/A
Materials:	Cables and wires (as needed), tube light, choke, starter, junction box, switch board
PPE:	Apron Mask Safety helmet Gloves (long) Safety shoes

Set A: Practical Demonstration 1 – Observation Checklist

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

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Solved constructed mathematical problems with appropriate method.	☐	☐
Performed calculation using appropriate tools and instruments accurately.	☐	☐
Identified and followed safety signs and symbols.	☐	☐
Recognised common health issues.	☐	☐
Identified common safety issues.	☐	☐
Conducted workplace interactions in a courteous manner to gather and convey information.	☐	☐
Attended team meetings on time.	☐	☐
Performed tasks in accordance with workplace procedures.	☐	☐
Identified and located main machines installed on a ship.	☐	☐
Described briefly function of main machines.	☐	☐
Selected appropriate hand tools.	☐	☐

Identified and marked unsafe or faulty hand tools.	☐	☐
Checked and calibrated measuring tools before use.	☐	☐
Used hand tools properly and safely to perform work activity.	☐	☐
Selected appropriate power tools.	☐	☐
Applied proper sequence of operation for using power tools.	☐	☐
Identified and marked unsafe or faulty power tools and marked for repair.	☐	☐
Operated power tools properly and safely to perform work activity.	☐	☐
Removed dust and foreign matter from hand and power tools in accordance to workplace standards.	☐	☐
Applied appropriate lubricant after use and prior to storage.	☐	☐
Checked and calibrated measuring tools after use.	☐	☐
Identified and defined wiring and electrical circuit.	☐	☐
Identified cable joints, soldering and tapping.	☐	☐
Identified tools, equipment and materials required for circuit construction.	☐	☐
Set-up electrical circuits as per job requirement and in accordance with OHS practice.	☐	☐
Identified electrical diagrams for installation of equipment.	☐	☐
Identified and located electrical equipment.	☐	☐
Identified and located navigational equipment.	☐	☐
Identified types of cables and joints.	☐	☐
Identified soldering points.	☐	☐
Carried out soldering and tapping out.	☐	☐
Read and interpreted diagram for cable tray.	☐	☐
Identified location of cable tray.	☐	☐
Carried out laying of cable in accordance with OHS practice.	☐	☐
Read and interpreted panel board diagram.	☐	☐
Identified main switch board element.	☐	☐
Set switch board following directions of switch board drawing.	☐	☐
Read and interpreted electrical diagram for accommodation.	☐	☐
Carried out estimation of materials as per job requirements.	☐	☐
Carried out single and 3 Phase connections.	☐	☐
Carried out and tested pipe and plate earthings.	☐	☐
Carried out wiring tests to establish possible faults.	☐	☐
Prepared connection wiring for electrical equipment as per job requirement.	☐	☐
Carried out control of 3 Phase induction motor DOL starter.	☐	☐
Set down and step up transformers.	☐	☐
Cleaned work area.	☐	☐

Disposed of waste materials in proper place.	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

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

Set A: Practical Demonstration 2

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Perform direct on line motor starter connection for a rudder
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

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

Procedure:

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

Job Specification Information:

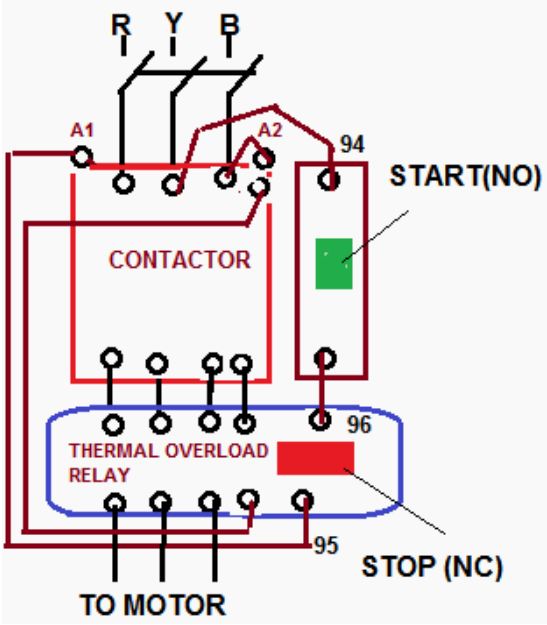
1. Collect required supplies, materials, tools and equipment to perform DOL single Phase motor and 3-phase motor connections.
2. Remove all the foreign materials at work place.
3. Clean the work place by using wire brush.
4. Arrange proper sequence for DOL connection.
5. Fix connections with magnetic contactor, overload, circuit breaker, DB box.
6. Ensure connections are done properly and check loose connection.
7. Perform single phase Connection with motor.
8. Perform 3-phase connection with motor.
9. Draw circuit diagram for single phase connection.
10. Draw circuit diagram for 3-phase connection.
11. Show conventional direction of flow of current in the circuits.
12. Clean the tools, equipment and work area.
13. Dispose waste materials and excess materials.

Drawing, Plan, Diagram or Sketch:

Observe:

- Use of proper size of wire/cable as required
- Select proper cable colour for connections
- Do proper connection, avoid lose connection
- Perform earthing/grounding connection

Always observe safety practices.



Resources Required:	
Tools:	Screwdrivers (star, negative, positive) Files (flat, round, half round) Hammer Electrician knife Wire stripper Tri-square Pocket tape Adjustable wrench Chisels (wooden, cold) Drill bits Hacksaw Pliers (cutting pliers, combination pliers, long nose pliers, diagonal cutting pliers) Ampere meter Volt Meter
Equipment:	N/A
Machinery:	N/A
Materials:	On push (2), Off push (1) Electrical wire/cables (as required) (red, yellow, blue/black) Magnetic contactor as required Power source, overload, fuses (as required), circuit breaker DB box

Set A: Practical Demonstration 2 – Observation Checklist

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

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Solved constructed mathematical problems with appropriate method.	☐	☐
Performed calculation using appropriate tools and instruments accurately.	☐	☐
Identified and followed safety signs and symbols.	☐	☐
Recognised common health issues.	☐	☐
Identified common safety issues.	☐	☐
Conducted workplace interactions in a courteous manner to gather and convey information.	☐	☐
Attended team meetings on time.	☐	☐
Performed tasks in accordance with workplace procedures.	☐	☐
Identified and located main machines installed on a ship.	☐	☐
Described briefly function of main machines.	☐	☐
Selected appropriate hand tools.	☐	☐

Identified and marked unsafe or faulty hand tools.	☐	☐
Checked and calibrated measuring tools before use.	☐	☐
Used hand tools properly and safely to perform work activity.	☐	☐
Selected appropriate power tools.	☐	☐
Applied proper sequence of operation for using power tools.	☐	☐
Identified and marked unsafe or faulty power tools and marked for repair.	☐	☐
Operated power tools properly and safely to perform work activity.	☐	☐
Removed dust and foreign matter from hand and power tools in accordance to workplace standards.	☐	☐
Applied appropriate lubricant after use and prior to storage.	☐	☐
Checked and calibrated measuring tools after use.	☐	☐
Identified and defined wiring and electrical circuit.	☐	☐
Identified cable joints, soldering and tapping.	☐	☐
Identified tools, equipment and materials required for circuit construction.	☐	☐
Set-up electrical circuits as per job requirement and in accordance with OHS practice.	☐	☐
Identified electrical diagrams for installation of equipment.	☐	☐
Identified and located electrical equipment.	☐	☐
Identified and located navigational equipment.	☐	☐
Identified types of cables used for navigational equipment.	☐	☐
Carried out wiring of navigational equipment as per job requirement.	☐	☐
Identified cable connections for navigational equipment.	☐	☐
Cable connections are carried out.	☐	☐
Cleaned work area.	☐	☐
Disposed of waste materials in proper place.	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

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

Set B: Practical Demonstration 1

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Perform forward-reverse 3 phase motor control panel
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

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

Procedure:

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

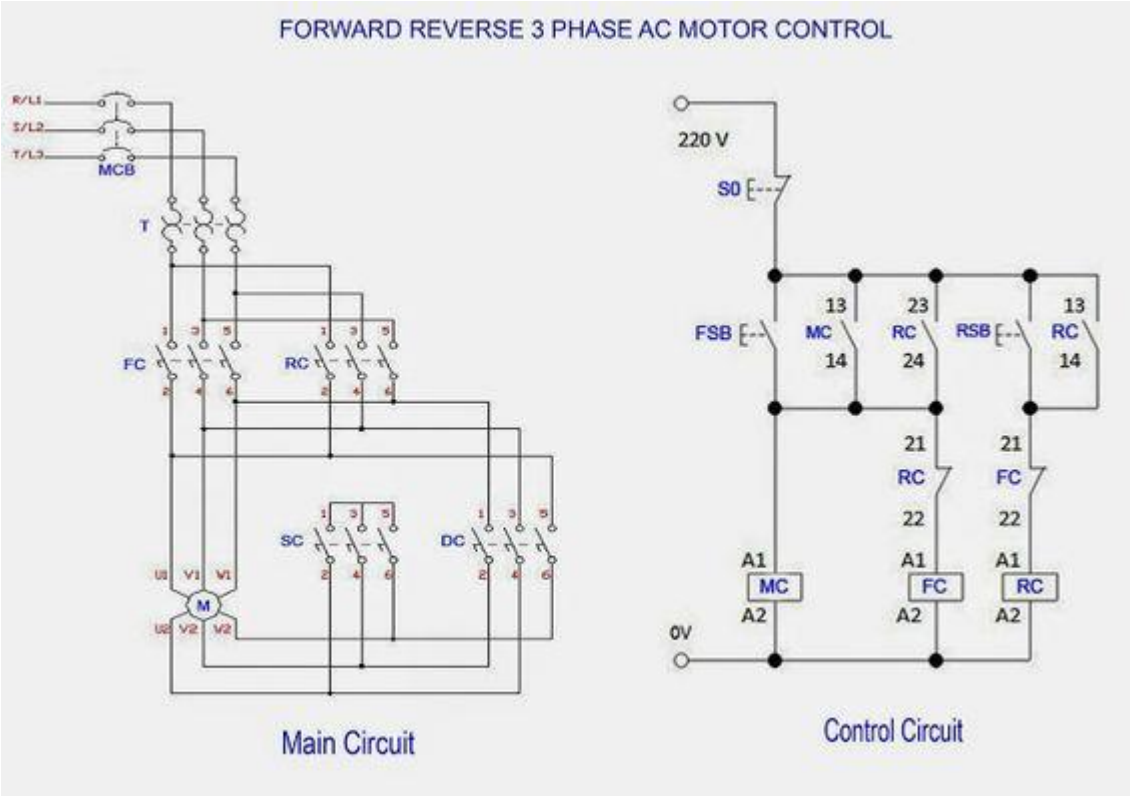
Job Specification Information:

1. Collect tools, materials and equipment for the task.
2. Read and understand the required output as per the given diagram.
3. Arrange the materials and tools for proper sequence of forward-reverse connection.
4. Fix Connections with push button, magnetic control, overload, fuse, circuit breaker and DB box.
5. Ensure Connections are done properly, check loose connection.
6. Show positive and negative pole in the circuit diagrams
7. Show actual direction of flow of current in each diagram.
8. Check Lose connection.
9. Check earthing /grounding.
10. Clean the tools, equipment and work area.
11. Dispose waste materials and excess materials.

Drawing, Plan, Diagram or Sketch:

The illustration below is the blueprint/diagram of the project /task to be performed. During demonstration of forward-reverse connection you are to ensure:

- Accuracy of connections/avoid loose connection
- Precautions regarding electrical shocks
- Use proper cable/ insulated wire
- Measure flow of current with proper instrument(s)
- Clear understanding of the basic laws of electricity
- Clearly understands conductor, semiconductor, and insulator
- Necessity of earthing/ grounding is given importance



Resources Required:	
Tools:	Screwdrivers (star, negative, positive) Files (flat, round, half round) Hammers (ball peen, claw, crow bar Electrician knife Wire stripper Tri-square Pocket tape Adjustable wrench Chisels (wooden, cold) Drill bits Hacksaw Pliers (cutting pliers, combination pliers, long nose, pliers, diagonal cutting pliers) Ampere meter Volt Meter

Equipment:	N/A
Machinery:	N/A
Materials:	Magnetic control On push (2), Off push Electrical cables (red, yellow, blue/black) (as required) Overload Fuses Power source DB box Circuit breaker
PPE:	Safety helmet Dust mask Goggles Apron Hand gloves Safety shoes

Set B: Practical Demonstration 1 – Observation Checklist

PRACTICAL DEMONSTRATION 1 – OBSERVATION CHECKLIST	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Perform forward-reverse 3 phase motor control panel
Assessment Centre:	
Date of Assessment:	
Instructions:	The tasks listed on the observation checklist of the practical demonstration will provide performance evidence of the candidate. Performance can be observed in an actual workplace or in a simulated working environment. If performance of particular tasks cannot be observed, you may ask the candidate to explain a procedure or enter into a discussion on the subject. The assessment activity (practical demonstration) should: ▪ fit industry requirements in which the assessment will be conducted ▪ adhere, where possible, to reasonable adjustment practices ▪ ensure that suitable performance benchmarks are applied and explained to the candidate

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Solved constructed mathematical problems with appropriate method.	☐	☐
Performed calculation using appropriate tools and instruments accurately.	☐	☐
Identified and followed safety signs and symbols.	☐	☐
Recognised common health issues.	☐	☐
Identified common safety issues.	☐	☐
Conducted workplace interactions in a courteous manner to gather and convey information.	☐	☐
Attended team meetings on time.	☐	☐
Performed tasks in accordance with workplace procedures.	☐	☐
Identified and located main machines installed on a ship.	☐	☐
Described briefly function of main machines.	☐	☐
Selected appropriate hand tools.	☐	☐

Identified and marked unsafe or faulty hand tools.	☐	☐
Checked and calibrated measuring tools before use.	☐	☐
Used hand tools properly and safely to perform work activity.	☐	☐
Selected appropriate power tools.	☐	☐
Applied proper sequence of operation for using power tools.	☐	☐
Identified and marked unsafe or faulty power tools and marked for repair.	☐	☐
Operated power tools properly and safely to perform work activity.	☐	☐
Removed dust and foreign matter from hand and power tools in accordance to workplace standards.	☐	☐
Applied appropriate lubricant after use and prior to storage.	☐	☐
Checked and calibrated measuring tools after use.	☐	☐
Identified and defined wiring and electrical circuit.	☐	☐
Identified cable joints, soldering and tapping.	☐	☐
Identified tools, equipment and materials required for circuit construction.	☐	☐
Set-up electrical circuits as per job requirement and in accordance with OHS practice.	☐	☐
Identified electrical diagrams for installation of equipment.	☐	☐
Identified and located electrical equipment.	☐	☐
Identified and located navigational equipment.	☐	☐
Identified types of cables and joints.	☐	☐
Identified soldering points.	☐	☐
Carried out soldering and tapping out.	☐	☐
Read and interpreted diagram for cable tray.	☐	☐
Identified location of cable tray.	☐	☐
Carried out laying of cable in accordance with OHS practice.	☐	☐
Read and interpreted panel board diagram.	☐	☐
Identified main switch board element.	☐	☐
Set switch board following directions of switch board drawing.	☐	☐
Read and interpreted electrical diagram for accommodation.	☐	☐
Carried out estimation of materials as per job requirements.	☐	☐
Carried out single and 3 Phase connections.	☐	☐
Carried out and tested pipe and plate earthings.	☐	☐
Carried out wiring tests to establish possible faults.	☐	☐
Prepared connection wiring for electrical equipment as per job requirement.	☐	☐
Carried out control of 3 Phase motor by forward reverse control.	☐	☐
Set down and step up transformers.	☐	☐

Cleaned work area.	☐	☐
Disposed of waste materials in proper place.	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

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

Set B: Practical Demonstration 2

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Perform cable laying on cable tray for an echo sounder
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

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

Procedure:

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

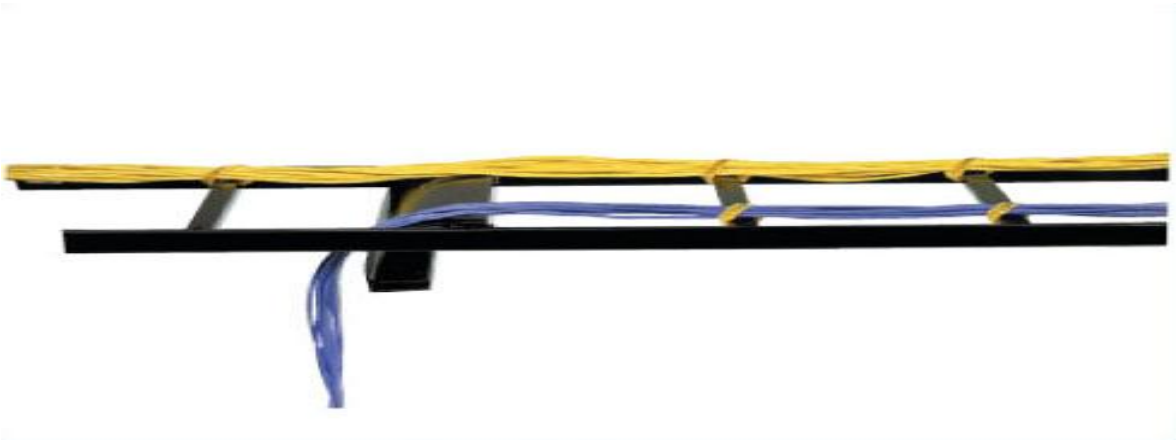
Job Specification Information:

1. Collect required supplies, materials, tools and equipment to perform the task.
2. Arrange tools and materials to perform cable tray set up and cable laying for an echo sounder.
3. Set up cleats and ties for cable laying on cable tray as shown in the figures.
4. Use elbow/T-joint or other accessories as necessary.
5. Pull cable through hollow pipes/bulkhead (wall).
6. After cable laying, fix connections with push button, switch with proper marine cables.
7. Ensure connections are done properly, check loose connection.
8. Show positive and negative pole in the circuit diagrams.
9. Show actual direction of flow of current in each diagram.
10. Check earthing/grounding.
11. Clean the tools, equipment and work area.
12. Dispose waste materials and excess materials.

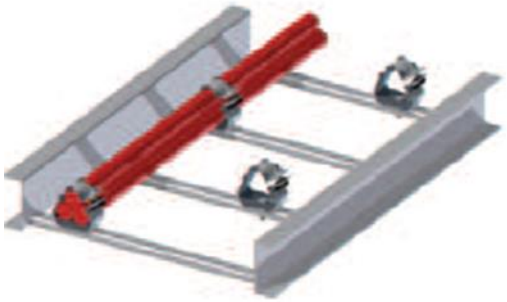
Drawing, Plan, Diagram or Sketch:

The illustration below is the blueprint/diagram(s) of the project /task to be performed. During demonstration of forward-reverse connection you are to ensure:

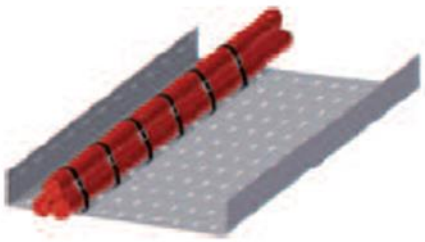
- Accuracy of connections/avoid loose connection
- Precautions regarding electrical shocks
- Use proper cable/ insulated wire
- Measure flow of current with proper instrument(s)
- Clearly understood basic laws of electricity
- Clearly understood conductor, semiconductor, and insulator
- Necessity of earthing/ grounding



Cable laying on simple ladder type cable tray (flat/horizontal/vertical and joint with reducer/elbow/T-junction):



Cable attached to ladder using cable cleats



Cable attached to tray using cable ties

Cable fastening devices

Resources Required:	
Tools:	Screwdrivers (star, negative, positive) Files (flat, round, half round) Hammers (ball peen, claw/crow bar) Electrician knife Cable pulling sock Cable pulling eye Wire stripper Tri-square Pocket tape

	Adjustable wrench Chisels (wooden, cold) Drill bits Hacksaw Pliers (cutting pliers, combination pliers, long nose pliers, diagonal cutting pliers) Ampere meter Volt Meter
Equipment:	N/A
Machinery:	N/A
Materials:	Cable tray (flat/elbow/T-joint or required shape) Electrical wire/cables Cable ties Wiring duct Floor cord & cable covers Desk & grommets Spiral Wrap Tapes & adhesive Hanger/hook Reducer Electric control switch Switch boards Battery/power source
PPE:	Safety helmet Dust mask Goggles Apron Hand gloves Safety shoes

Set B: Practical Demonstration 2 – Observation Checklist

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

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Solved constructed mathematical problems with appropriate method.	☐	☐
Performed calculation using appropriate tools and instruments accurately.	☐	☐
Identified and followed safety signs and symbols.	☐	☐
Recognised common health issues.	☐	☐
Identified common safety issues.	☐	☐
Conducted workplace interactions in a courteous manner to gather and convey information.	☐	☐
Attended team meetings on time.	☐	☐
Performed tasks in accordance with workplace procedures.	☐	☐
Identified and located main machines installed on a ship.	☐	☐
Described briefly function of main machines.	☐	☐
Selected appropriate hand tools.	☐	☐

Identified and marked unsafe or faulty hand tools.	☐	☐
Checked and calibrated measuring tools before use.	☐	☐
Used hand tools properly and safely to perform work activity.	☐	☐
Selected appropriate power tools.	☐	☐
Applied proper sequence of operation for using power tools.	☐	☐
Identified and marked unsafe or faulty power tools and marked for repair.	☐	☐
Operated power tools properly and safely to perform work activity.	☐	☐
Removed dust and foreign matter from hand and power tools in accordance to workplace standards.	☐	☐
Applied appropriate lubricant after use and prior to storage.	☐	☐
Checked and calibrated measuring tools after use.	☐	☐
Identified and defined wiring and electrical circuit.	☐	☐
Identified cable joints, soldering and tapping.	☐	☐
Identified tools, equipment and materials required for circuit construction.	☐	☐
Set-up electrical circuits as per job requirement and in accordance with OHS practice.	☐	☐
Identified electrical diagrams for installation of equipment.	☐	☐
Identified and located electrical equipment.	☐	☐
Identified and located navigational equipment.	☐	☐
Identified types of cables used for navigational equipment.	☐	☐
Carried out wiring of navigational equipment as per job requirement.	☐	☐
Identified cable connections for navigational equipment.	☐	☐
Cable connections are carried out.	☐	☐
Cleaned work area.	☐	☐
Disposed of waste materials in proper place.	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

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

Set C: Practical Demonstration 1

PRACTICAL DEMONSTRATION 1	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Demonstrate star delta connection
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

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

Procedure:

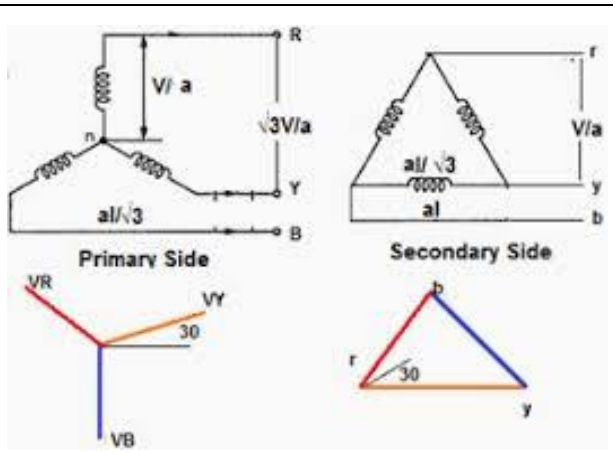
- observe and wear personal protective equipment (PPE) as required for the task to be performed
- read the specification information provided
- collect all materials needed to complete the task
- perform the task within the given time
- observe and follow all health and safety (OHS) requirements at all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

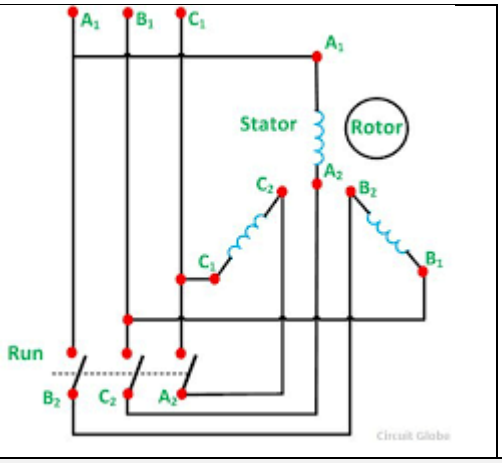
Job Specification Information:

1. Collect required tools and equipment required for the job (refer to the list provided to you by your competency assessor).
2. Read and interpret the given diagram.
3. Calculate the needed materials based from the given diagram.
4. Collect the required materials (avoid wastage by correct calculation).
5. Arrange the set up for star delta connection.
6. Fix connections with bulb, switch board with proper marine cables.
7. Checked for loose connections.
8. Make single phase connection with induction motor.
9. Draw circuit diagram for single phase connection.
10. Show conventional direction of flow of current in the circuits.
11. Clean the workplace after the installation of star delta connection.

Drawing, Plan, Diagram or Sketch:

Always observe safety practices.





Resources Required:	
Tools:	Screwdrivers (star, negative, positive) Files (flat, round, half round) Hammers (ball peen, claw/crow bar) Electrician knife Cable pulling sock Cable pulling eye Wire stripper Tri-square Pocket tape Adjustable wrench Chisels (wooden, cold) Drill bits Hacksaw Pliers (cutting pliers, combination pliers, long nose pliers, diagonal cutting pliers) Ampere meter Volt Meter
Equipment:	N/A
Machinery:	N/A
Materials:	Magnetic contactor Off-on switch Timer Overload DB box
PPE:	Safety helmet Dust mask Goggles Apron Hand gloves Safety shoes

Set C: Practical Demonstration 1 – Observation Checklist

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

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Solved constructed mathematical problems with appropriate method.	☐	☐
Performed calculation using appropriate tools and instruments accurately.	☐	☐
Identified and followed safety signs and symbols.	☐	☐
Recognised common health issues.	☐	☐
Identified common safety issues.	☐	☐
Conducted workplace interactions in a courteous manner to gather and convey information.	☐	☐
Attended team meetings on time.	☐	☐
Performed tasks in accordance with workplace procedures.	☐	☐
Identified and located main machines installed on a ship.	☐	☐
Described briefly function of main machines.	☐	☐
Selected appropriate hand tools.	☐	☐

Identified and marked unsafe or faulty hand tools.	☐	☐
Checked and calibrated measuring tools before use.	☐	☐
Used hand tools properly and safely to perform work activity.	☐	☐
Selected appropriate power tools.	☐	☐
Applied proper sequence of operation for using power tools.	☐	☐
Identified and marked unsafe or faulty power tools and marked for repair.	☐	☐
Operated power tools properly and safely to perform work activity.	☐	☐
Removed dust and foreign matter from hand and power tools in accordance to workplace standards.	☐	☐
Applied appropriate lubricant after use and prior to storage.	☐	☐
Checked and calibrated measuring tools after use.	☐	☐
Identified and defined wiring and electrical circuit.	☐	☐
Identified cable joints, soldering and tapping.	☐	☐
Identified tools, equipment and materials required for circuit construction.	☐	☐
Set-up electrical circuits as per job requirement and in accordance with OHS practice.	☐	☐
Identified electrical diagrams for installation of equipment.	☐	☐
Identified and located electrical equipment.	☐	☐
Identified and located navigational equipment.	☐	☐
Identified types of cables and joints.	☐	☐
Identified soldering points.	☐	☐
Carried out soldering and tapping out.	☐	☐
Read and interpreted diagram for cable tray.	☐	☐
Identified location of cable tray.	☐	☐
Carried out laying of cable in accordance with OHS practice.	☐	☐
Read and interpreted panel board diagram.	☐	☐
Identified main switch board element.	☐	☐
Set switch board following directions of switch board drawing.	☐	☐
Read and interpreted electrical diagram for accommodation.	☐	☐
Carried out estimation of materials as per job requirements.	☐	☐
Carried out single and 3 Phase connections.	☐	☐
Carried out and tested pipe and plate earthings.	☐	☐
Carried out wiring tests to establish possible faults.	☐	☐
Prepared connection wiring for electrical equipment as per job requirement.	☐	☐
Carried out control by star delta.	☐	☐
Set down and step up transformers.	☐	☐
Cleaned work area.	☐	☐

Disposed of waste materials in proper place.	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

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

Set C: Practical Demonstration 2

PRACTICAL DEMONSTRATION 2	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Task:	Perform cable laying on cable tray for a radar system
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	

Instructions:

Read and understand the directions carefully:

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

Procedure:

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

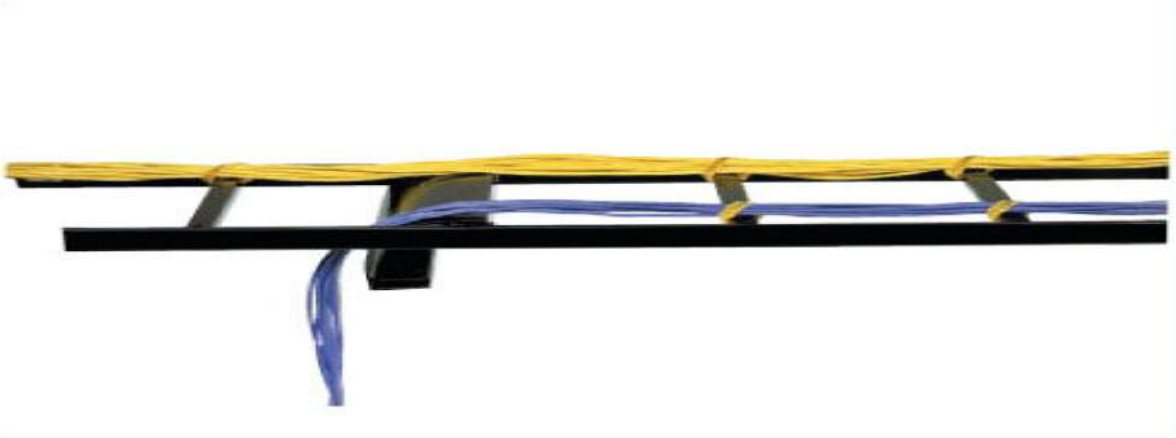
Job Specification Information:

1. Collect required supplies, materials, tools and equipment to perform the task.
2. Arrange tools and materials to perform cable tray set up and cable laying for a radar system. Check for the requirements for materials based on a radar systems requirement.
3. Set up cleats and ties for cable laying on cable tray as shown in the figures.
4. Use elbow/T-joint or other accessories as necessary.
5. Pull cable through hollow pipes/bulkhead (wall).
6. After cable laying, fix connections with push button, switch with proper marine cables.
7. Ensure connections are done properly, check loose connection.
8. Show positive and negative pole in the circuit diagrams.
9. Show actual direction of flow of current in each diagram.
10. Check earthing/grounding.
11. Clean the tools, equipment and work area.
12. Dispose waste materials and excess materials.

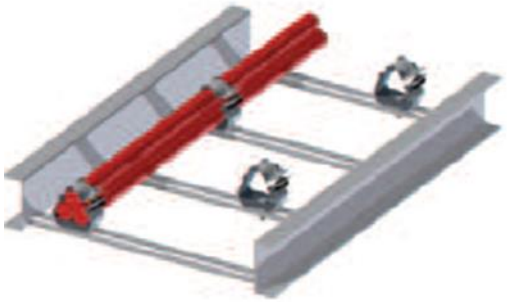
Drawing, Plan, Diagram or Sketch:

The illustration below is the blueprint/diagram of the project/task to be performed. During demonstration of forward-reverse connection you are to ensure:

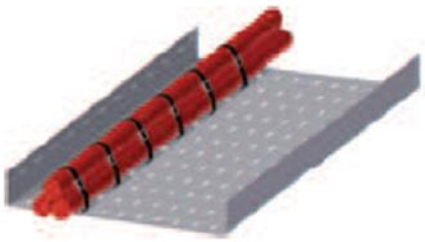
- Accuracy of connections/avoid loose connection
- Precautions regarding electrical shocks
- Use proper cable/ insulated wire
- Measure flow of current with proper instrument(s)
- Clearly understood basic laws of electricity
- Clearly understood conductor, semiconductor, and insulator
- Necessity of earthing/ grounding



Cable laying on simple ladder type cable tray (flat/horizontal/vertical and joint with reducer/elbow/T-junction):



Cable attached to ladder using cable cleats



Cable attached to tray using cable ties

Cable fastening devices

Resources Required:	
Tools:	Screwdrivers (star, negative, positive) Files (flat, round, half round) Hammers (ball peen, claw/crow bar) Electrician knife Cable pulling sock Cable pulling eye Wire stripper Tri-square Pocket tape

	Adjustable wrench Chisels (wooden, cold) Drill bits Hacksaw Pliers (cutting pliers, combination pliers, long nose pliers, diagonal cutting pliers) Ampere meter Volt Meter
Equipment:	N/A
Machinery:	N/A
Materials:	Cable tray (flat/elbow/T-joint or required shape) Electrical wire/cables Cable ties Wiring duct Floor cord & cable covers Desk & grommets Spiral Wrap Tapes & adhesive Hanger/hook Reducer Electric control switch Switch boards Battery/power source
PPE:	Safety helmet Dust mask Goggles Apron Hand gloves Safety shoes

Set C: Practical Demonstration 2 – Observation Checklist

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

OBSERVATION RECORD		
Performance Criteria	Place a ✓ to show if evidence has been demonstrated competently	
	Yes	**No**
Solved constructed mathematical problems with appropriate method.	☐	☐
Performed calculation using appropriate tools and instruments accurately.	☐	☐
Identified and followed safety signs and symbols.	☐	☐
Recognised common health issues.	☐	☐
Identified common safety issues.	☐	☐
Conducted workplace interactions in a courteous manner to gather and convey information.	☐	☐
Attended team meetings on time.	☐	☐
Performed tasks in accordance with workplace procedures.	☐	☐
Identified and located main machines installed on a ship.	☐	☐
Described briefly function of main machines.	☐	☐
Selected appropriate hand tools.	☐	☐

Identified and marked unsafe or faulty hand tools.	☐	☐
Checked and calibrated measuring tools before use.	☐	☐
Used hand tools properly and safely to perform work activity.	☐	☐
Selected appropriate power tools.	☐	☐
Applied proper sequence of operation for using power tools.	☐	☐
Identified and marked unsafe or faulty power tools and marked for repair.	☐	☐
Operated power tools properly and safely to perform work activity.	☐	☐
Removed dust and foreign matter from hand and power tools in accordance to workplace standards.	☐	☐
Applied appropriate lubricant after use and prior to storage.	☐	☐
Checked and calibrated measuring tools after use.	☐	☐
Identified and defined wiring and electrical circuit.	☐	☐
Identified cable joints, soldering and tapping.	☐	☐
Identified tools, equipment and materials required for circuit construction.	☐	☐
Set-up electrical circuits as per job requirement and in accordance with OHS practice.	☐	☐
Identified electrical diagrams for installation of equipment.	☐	☐
Identified and located electrical equipment.	☐	☐
Identified and located navigational equipment.	☐	☐
Identified types of cables used for navigational equipment.	☐	☐
Carried out wiring of navigational equipment as per job requirement.	☐	☐
Identified cable connections for navigational equipment.	☐	☐
Cable connections are carried out.	☐	☐
Cleaned work area.	☐	☐
Disposed of waste materials in proper place.	☐	☐
Feedback to candidate:		
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**		

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

Oral Questions (Optional)

ORAL QUESTIONS - INSTRUCTIONS	
Candidate Name:	
Assessor Name:	
Qualification:	Certificate in Electrical and Navigational Equipment Installation
Unit of Competency	
Generic Competencies	
SEIP-SBD-ENI-01-G	Use basic mathematical concepts
SEIP-SBD-ENI-02-G	Apply occupational health and safety (OHS) practice in the workplace
SEIP-SBD-ENI-03-G	Carry out workplace interaction
SEIP-SBD-ENI-04-G	Operate in a team environment
SEIP-SBD-ENI-05-G	Apply basic IT skills
Sector-specific Competencies	
SEIP-SBD-ENI-01-S	Explore the history of Shipbuilding Sector
SEIP-SBD-ENI-02-S	Use hand and power tools
Occupation-specific Competencies	
SEIP-TRA-ENI -3001-A1	Understand basic electrical works
SEIP-TRA-ENI -3002-A1	Apply knowledge of electrical and navigational equipment installation
SEIP-TRA-ENI -3003-A1	Carry out cable laying for electrical equipment
SEIP-TRA-ENI -4004-A1	Carry out cable laying for navigational equipment
Assessment Centre:	
Date of Assessment:	
Time of Assessment:	
Instructions:	

Read and understand the directions carefully:

- these oral questions are based on the performance criteria from all the units of competency in Electrical and Navigational Equipment Installation
- 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 kind of work does an electrician do?	☐	☐
2.	What is a semi-conductor?	☐	☐
3.	What are the safety measures you must take during electrical works?	☐	☐
4.	What is insulator?	☐	☐
5.	What is meant by General Arrangement (GA) Plan?	☐	☐
6.	What is the difference between wire and cable?	☐	☐
7.	What is hull? State names of important parts of a hull.	☐	☐
8.	What is SI system of measurement?	☐	☐
9.	State Ohm's law. Show relation between current, voltage and resistance: I=V/R	☐	☐
10.	What is circuit? State the name of circuit components.	☐	☐
11.	What are the benefits of teamwork?	☐	☐
12.	What is meant by Super Structure?	☐	☐
13.	What is classification Society? State important classification society's name.	☐	☐
14.	What are the tools, equipment and materials required for electrical works?	☐	☐
15.	What do you mean by ship power supply system?	☐	☐
16.	What is cable tray? State its types and uses.	☐	☐
17.	State the names of 5 power generation and distribution machineries in the ship.	☐	☐
18.	What is meant by DOL starter?	☐	☐
19.	What do you Mean by forward reverse control circuit?	☐	☐
20.	What is meant by star delta connection?	☐	☐
21.	State the unit of current, voltage and resistance.	☐	☐
22.	What do you mean by low voltage and high voltage?	☐	☐
Feedback to candidate:			
Assessment decision for this assessment activity: ☐ **Competent** ☐ **Not Yet Competent**			

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

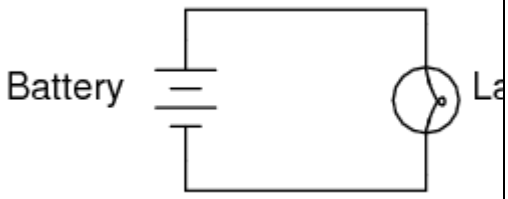
Oral Questioning Guideline

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

Oral Questions (Optional) - Answers

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

ORAL QUESTIONS		
Question		**Answer**
1.	What kind of work an electrician do?	***Electrician does electrical wiring in houses, industries and ships to ensure electric supply.***
2.	What is a semi-conductor?	***A semiconductor is a substance, usually a solid chemical element or compound that can conduct electricity under some conditions but not others, making it a good medium for the control of electrical current. Elemental semiconductors include antimony, arsenic, boron, carbon, germanium, selenium, silicon, sulphur, and tellurium. Silicon is the best-known of these.***
3.	What are the safety measures you must take during electrical works?	***Self-protection from electrical shocks, and hazards etc. Follow proper PPE during work with electricity.***
4.	What is an insulator?	***Materials that represent high resistance and restrict the flow of electrons/current. Examples: Rubber, paper, glass, wood and plastic. It is a poor conductor.***
5.	What is meant by General Arrangement (GA) Plan?	***GA plan consists of 3 drawings: 1. Side view (profile), Top view (Plan view) and 3. Cross sectional view showing all arrangement of cargo holds, Tanks and many other locations (accommodation, bridge, Forecastle etc,)***
6.	What is the difference between wire and cable?	***A wire is a single conductor while able is a group of two or more conductors. Wire is usually visible, whereas a cable is most usually insulated***.
7.	What is hull? State names of important parts of a hull.	***Hull-The main body of a ship or other vessel, including the bottom, side shell, and deck but not the masts or superstructure.*** ***Watertight steel body of the ship is known as hull. Structure above the main hull is the superstructure and/or deckhouse, where present.*** ***Hull is bounded by outer bottom, side shell and upper deck. Hull of a ship is divided by bulkheads to form cargo holds, engine room and and 'twin decks, fore peak and after peak, DB tank and deep tanks.***
8.	What is SI system of measurement?	***International System of Units (SI), French System International unit, international decimal system of weights and measures derived from***

		and extending the metric system of units. Adopted by the 11th General Conference on Weights and Measures in 1960, it is abbreviated SI in all languages.
9.	State Ohm's law. Show relation between current, voltage and resistance.	***Ohm's law states that the electrical current (I) flowing in an circuit is proportional to the voltage (V) and inversely proportional to the resistance (R). Mathematically,*** **I=V/R.**
10.	What is circuit? State the name of circuit components.	***A circuit can be thought of as a closed path in which current flows through the components that make up the circuit.*** ***A circuit has 3 components:*** ***1. A voltage source (battery and / or generator system)*** ***2. Conductors (wire /cable etc., through which the current can flow)*** ***3. Loads (that will consume electricity to do some work, e.g., lamp, fan, iron, motor etc.)*** 
11.	What are the benefits of teamwork?	***Benefit of team work sprit up work environment and inspire the team to complete work timely with job satisfaction.***
12.	What is meant by Super Structure?	***The parts of a ship's structure above t he main deck. Most of the ship super structure is erected above the engine room and consists of accommodation, galley, Nav. Bridge etc.***
13.	What is classification Society? State important classification society's name.	***A classification society is a non-governmental organization that establishes and maintains technical standards for the construction and operation of ships and offshore structures. Names.*** ***Classification societies validate and report that construction of a vessel is in accordance with relevant standards and carry out regular surveys in service to ensure continuing compliance with the standards. Example: 1. LR- Lloyds Register of Shipping(U.K)*** ***1. GL- Germinesher Lioyods (Germany)***

		2. BV- Bureau of Veritus (France) ***3. ABS- American Bureau of Shipping (USA)*** ***4. DNV – DET NORSKI VERITAS*** ***5. RS-Russian Register of Shipping***
14.	What are the tools, equipment and materials required for electrical works?	***Screw driver, Pliers, Tester, drill machine, insulation tape, wire and cable.***
15.	What do you mean by shipping power supply system?	***A ship is like a floating city with all the privileges enjoyed by any normal land city. Just like a conventional city, the ship also requires all the basic amenities to sustain life on board; the chief among them is power or electricity.*** ***Shipboard power is generated using a prime mover and an alternator working together. For this an alternating current generator is used on board.***
16.	What is cable tray? State its types and uses.	***In the electrical wiring of buildings, industries and even ships, a cable tray system is used to support insulated electrical cables used for power distribution, control, and communication. Cable trays are used as an alternative to open wiring or electrical conduit systems, and are commonly used for cable management in commercial and industrial construction. They are especially useful in situations where changes to a wiring system are anticipated, since new cables can be installed by laying them in the tray, instead of pulling them through a pipe.***
17.	State the names of 5 power generation and distribution machineries in the ship.	***1. Generator, 2. Motor, 3. Trans former, 4. Rectifier, 5. Bus bars, 6. Circuit breaker***
18.	What is meant by DOL starter?	***The simplest form of motor starter for the induction motor is the Direct On Line (DOL) starter. The Direct On Line Motor Starter (DOL) consist a MCCB or Circuit Breaker, Contactor and an overload relay for protection.*** ***DOL starting have a maximum start current and maximum start torque.***
19.	What do you mean by forward-reverse control circuit?	***It is 3 -phase motor control system to run the ship Forward direction or reverse direction.*** ***The forward and reverse module automatically reverses the direction of the motor when the appropriate control circuit is energized with a pulse from a control switch.***

20.	What is meant by star delta connection?	***It is one way to connect transformers, motor equipment in three phase systems.*** ***In star connection, there is four wire, three wires are phase wire and fourth is neutral which is taken from the star point.*** ***In DELTA connection, the opposite ends of three coils are connected together.***
21.	State the unit of current, voltage and resistance.	***Unit of current is ampere (amps); unit of voltage is Volt (V); Unit of Resistance is Ohms (Ω).***
22.	What do you mean by low voltage and high voltage?	***Low Voltage (LV) is a voltage range that carries a low risk of injury. In ship it is commonly under 1000V. For example, if you were to touch a wire carrying a low voltage current with dry hands it is unlikely you would be electrocuted.*** ***High Voltage (HV) on the other hand is defined as anything above 1000V that can potentially cause harm. (Typical marine HV system operate 3.3 KV to 6.6 KV)*** ***However, is assumed that*** • ***Low Voltage (LV) is 120V and under.*** • ***Medium Voltage (MV) is 240V to 360V.*** ***High Voltage (HV) is anything*** **above 600V.**

Assessment Evidence Summary Sheet

EVIDENCE SUMMARY SHEET			
Candidate Name:			
Assessor Name:			
Qualification:	Certificate in Electrical and Navigational Equipment Installation		
Assessment Centre:			
Date(s) of Assessment:			
The performance of the candidate in the following unit or units of competency and the methods engaged to assess performance are as follows:			
Unit of Competency	**Assessment Method**	**Competent**	**Not Yet Competent**
All units of competency comprising of the qualification	Written Test	☐	☐
	Practical Demonstration 1 (Set ...)	☐	☐
	Practical Demonstration 2 (Set ...)	☐	☐
	Oral Questioning (optional)	☐	☐
Note: Issuance of a certificate will only be given to a candidate who has successfully been assessed as competent for **ALL** units of competency.			
Recommendation			
❑ Issuance of Statement of Achievement *(indicate title of SOA, if full Certificate is not met)*	❑ Submission of additional documents Specify:	❑ Reassessment Specify:	
Did the candidate overall performance meet the required evidence/standard?		☐ Yes ☐ No	
Overall Evaluation:	❑ **Competent** ❑ **Not Yet Competent**		
General Comments:			
Candidate Signature:		Date:	
Assessor Signature:		Date:	
Institution Manager Signature:		Date:	

CANDIDATES COPY
(Please presents this form when you claim your Certificate)

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

Assessment Validation Map

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

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

Unit of Competency:	SEIP-SBD-ENI-01-G – Use basic mathematical concepts		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Identify calculation requirements in the workplace.	1, 2	A1-2, B1-2, C1-2	8
2. Select appropriate mathematical methods/concepts for the calculation.	1, 2	A1-2, B1-2, C1-2	
3. Use tools and instruments to perform calculations.	1, 2	A1-2, B1-2, C1-2	
Unit of Competency:	SEIP-SBD-ENI-02-G – Apply occupational health and safety (OHS) practice in the workplace		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Identify OSH policies and procedures.	9	A1-2, B1-2, C1-2	3
2. Apply personal health and safety practices.	14	A1-2, B1-2, C1-2	
3. Report hazards and risks.		A1-2, B1-2, C1-2	
4. Respond to emergencies.		A1-2, B1-2, C1-2	3

Unit of Competency:	SEIP-SBD-ENI-03-G – Carry out workplace interaction		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Interpret workplace communication and etiquette.	3, 10		
2. Read and understand workplace documents.	3	A1-2, B1-2, C1-2	
3. Participate in workplace meetings and discussions.	10		
4. Practice professional ethics at work.	3	A1-2, B1-2, C1-2	
Unit of Competency:	SEIP-SBD-ENI-04-G – Operate in a team environment		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Identify team goals and work processes.	3, 10		11
2. Identify own role and responsibilities within team.	3, 10	A1-2, B1-2, C1-2	
3. Communicate and co-operate with team members.	3, 10		
4. Practice problem solving within the team.	3	A1-2, B1-2, C1-2	
Unit of Competency:	SEIP-SBD-ENI-05-G – Apply basic IT skills		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Identify and use most commonly used IT tools.	4		
2. Understand use of computer.	4		
3. Work with word processing application.	11		
4. Work with spreadsheets.	4		
5. Access email and search the internet.	11		
Unit of Competency:	SEIP-SBD-ENI-01-S – Explore history of Shipbuilding Sector		

Element	Assessment Evidence Method		
	Written	Practical	Oral
1. Examine the background of shipbuilding sector.	5, 6		5, 7, 12, 13
2. Identify and locate main machines on a ship.		A1-2, B1-2, C1-2	5, 17

Unit of Competency:	SEIP-SBD-ENI-02-S – Use hand and power tools

Element	Assessment Evidence Method		
	Written	Practical	Oral
1. Identify and inspect hand and power tools.	8	A1-2, B1-2, C1-2	14
2. Use hand tools properly and safely.	8	A1-2, B1-2, C1-2	
3. Operate power tools properly and safely.		A1-2, B1-2, C1-2	
4. Clean and maintain power tools.		A1-2, B1-2, C1-2	

Unit of Competency:	SEIP-SBD-ENI-01-O – Understand basic electrical works

Element	Assessment Evidence Method		
	Written	Practical	Oral
1. Identify roles and responsibilities.			1
2. Identify basic principles of electricity.	7, 15, 17	A1-2, B1-2, C1-2	2, 4, 9, 21, 22
3. Set-up electrical circuits.	12	A1-2, B1-2, C1-2	6, 10

Unit of Competency:	SEIP-SBD-ENI-02-O – Apply knowledge of electrical and navigational equipment installation		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Explain electrical and navigational equipment installation.	16	A1-2, B1-2, C1-2	15
2. Identify electrical equipment.	7, 20	A1-2, B1-2, C1-2	
3. Identify navigational equipment.	16, 19	A1-2, B1-2, C1-2	

Unit of Competency:	SEIP-SBD-ENI-03-O – Carry out cable laying for electrical equipment		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Identify cables and joints.	12	A1, B1, C1	16
2. Set and lay cables on cable tray.		A1, B1, C1	16
3. Perform panel board connection.		A1, B1, C1	
4. Perform accommodation wiring.	18	A1, B1, C1	18, 19, 20
5. Perform final connections.	18	A1, B1, C1	18, 19, 20

Unit of Competency:	SEIP-SBD-ENI-04-O – Carry out cable laying for navigational equipment		
Element	**Assessment Evidence Method**		
	Written	**Practical**	**Oral**
1. Perform cable laying.	13	A2, B2, C2	
2. Perform final connections.	18	A2, B2, C2	18, 19, 20