

# ELECTRO MECHANICAL TECHNOLOGY

## Assessment Package

National Vocational  
Certificate Level 2

Version 1 - December 2014

**Published by**

National Vocational and Technical Training Commission  
Government of Pakistan

**Headquarter**

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan  
www.navttc.org

**Responsible**

Director General Skills Standard and Curricula, National Vocational and Technical Training Commission  
National Deputy Head, TVET Reform Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

**Layout & design**

SAP Communications

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This document has been produced with the technical assistance of the TVET Reform Support Programme, which is funded by the European Union, the Embassy of the Kingdom of the Netherlands, the Federal Republic of Germany and the Royal Norwegian Embassy and has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs), Punjab Vocational Training Council (PVTC), Qualification Awarding Bodies (QABs) and private sector organizations.

**Document Version**

December, 2014  
Islamabad, Pakistan

# **ELECTRO MECHANICAL TECHNOLOGY**

**Assessment Package**

National Vocational  
Certificate Level 2

Version 1 - December 2014



**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical  
Technology  
**CS Code:**  
**Level: 2**  
**Credit: 17**  
**Version: 1**

**PERFORM PREVENTATIVE MAINTENANCE AS PART OF ELECTRICAL OPERATIONS**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

**ASSESSMENT RESULTS SUMMARY FORM**

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTCC**

**NAVTTCC OFFICE ONLY**

1. DATE FORM RECEIVED: 

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DD MM YYYY

2. DATE ENTERED INTO DATABASE: 

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DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: PERFORM PREVENTATIVE MAINTENANCE AS PART OF ELECTRICAL OPERATIONS		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Carry out preventative maintenance of electrical operations.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

# CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

## GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **two hours** timeframe:

- Carry out testing, diagnose and remove faults of 0.6 Kilowatts DC carbon brush motor

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard :

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of performing preventive maintenance as part of electrical operations under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out testing, diagnose and remove faults of 0.6 Kilowatts DC carbon brush motor               <ul style="list-style-type: none"> <li>✓ Conduct manual inspection of DC carbon brush motor in OFF state</li> <li>✓ Rotate the shaft of DC carbon brush motor manually to check the movement of shaft</li> <li>✓ Interpret circuit diagram of DC carbon brush motor (Annexure-1)</li> <li>✓ Measure the winding resistance of DC carbon brush motor using Multi meter</li> <li>✓ Measure the insulation resistance of the windings of DC carbon brush motor with Meggar</li> <li>✓ Perform cleaning of commutator of DC carbon brush motor to remove deposited carbon.</li> <li>✓ Check and re-grease/replace the faulty bearings of DC carbon brush motor</li> <li>✓ Conduct operational test of DC carbon brush motor after preventative maintenance</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
2. Other requirements	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
3. Answer any questions your assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of performing preventive maintenance as part of electrical operations under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out testing, diagnose and remove faults of 0.6 Kilowatts DC carbon brush motor	Conducted manual inspection of DC carbon brush motor in OFF state			
	Rotated the shaft of DC carbon brush motor manually to check the movement of shaft			
	Interpreted circuit diagram of DC carbon brush motor (Annexure-1)			
	Measured the winding resistance of DC carbon brush motor using Multi meter			
	Measured the insulation resistance of the windings of DC carbon brush motor with Meggar			
	Performed cleaning of commutator of DC carbon brush motor to remove deposited carbon.			
	Checked and re-greased/replaced the faulty bearings of DC carbon brush motor			
	Conducted operational test of DC carbon brush motor after preventative maintenance			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.



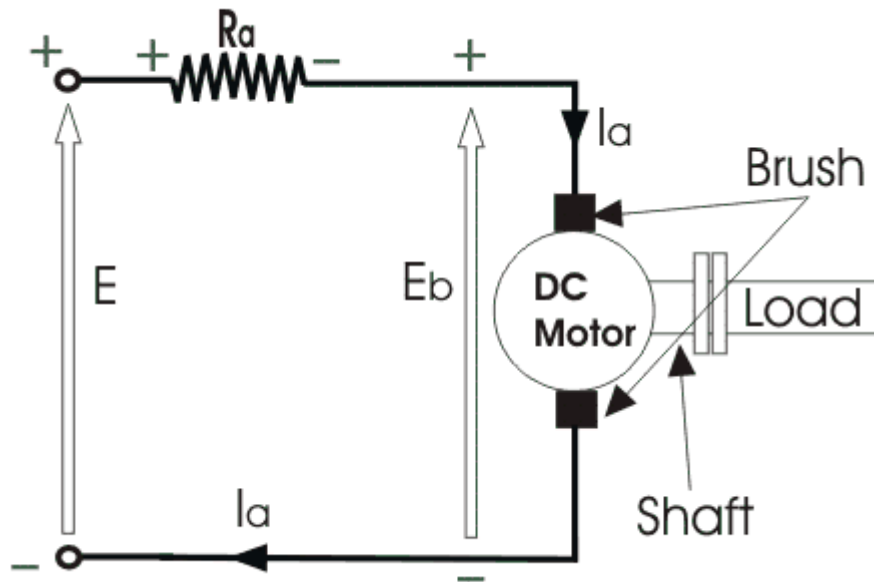
# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Personal Protective Equipment	5
2	Electrician tool kit (Complete)	5
3	Megger	5
4	Hand Tools	5
5	Multi Meter	5
6	Hand Dust Blower	5
7	Wire Brush	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Emery Paper	As Per Requirement
2	Grease	As Per Requirement
3	Carbon Brushes	5 Pairs





**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical  
Technology  
**CS Code:**  
**Level: 2**  
**Credit: 17**  
**Version: 1**

**PERFORM CORRECTIVE MAINTENANCE AS PART OF ELECTRICAL OPERATIONS**

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**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name ..... Assessor's Code .....

Assessor's Signature ..... Date 

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DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name .....  
First Name Last Name

Father's Name .....

Institute Name and District .....

CNIC/BFORM # 

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Registration Number issued by Assessment Body .....

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature .....

**ASSESSMENT RESULTS SUMMARY FORM**

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DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: PERFORM CORRECTIVE MAINTENANCE AS PART OF ELECTRICAL OPERATIONS		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Carry out corrective maintenance of electrical machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

# CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

## GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one and half hour** timeframe:

- Carry out testing, diagnose and remove faults of washing machine

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard :

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of performing corrective maintenance as part of electrical operations under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out testing, diagnose and remove faults of washing machine               <ul style="list-style-type: none"> <li>✓ Connect the washing machine to main power supply for testing, diagnose and remove faults of washing machine</li> <li>✓ Rotate the agitator shaft of washing machine manually to check the movement of shaft</li> <li>✓ Power Off the washing machine and take the resistance reading of washing machine windings with Multimeter</li> <li>✓ Measure the timer output voltage of washing machine using voltmeter</li> <li>✓ Measure the insulation resistance of the windings of washing machine using Meggar</li> <li>✓ Check and re-grease/replace the faulty bearings of washing machine</li> <li>✓ Check and replace the faulty rubber seal of the agitator of washing machine</li> <li>✓ Check and align the pulleys of washing machine using chord</li> <li>✓ Check and adjust the tension of V- belt of washing machine using spanner set</li> <li>✓ Conduct operational test of washing machine after removing faults</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<p><b>3. Answer any questions your assessor may have during the practical assessment</b></p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of performing corrective maintenance as part of electrical operations under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out testing, diagnose and remove faults of washing machine	Connected the washing machine to main power supply for testing, diagnose and remove faults of washing machine			
	Rotated the agitator shaft of washing machine manually to check the movement of shaft			
	Powered Off the washing machine and took the resistance reading of washing machine windings with Multimeter			
	Measured the timer output voltage of washing machine using voltmeter			
	Measured the insulation resistance of the windings of washing machine using Meggar			
	Checked and re-greased/replaced the faulty bearings of washing machine			
	Checked and replaced the faulty rubber seal of the agitator of washing machine			
	Checked and aligned the pulleys of washing machine using chord			
	Checked and adjusted the tension of V- belt of washing machine using spanner set			
	Conducted operational test of washing machine after removing faults			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Personal Protective Equipment	5
2	Electrician tool kit (Complete)	5
3	Megger	5
4	Hand Tools	5
5	Multi Meter	5
6	Spanner Set	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Emery Paper	5
2	Grease	500 g
3	Timer Switch	5
4	Rubber Seal	5
5	Cotton Waste	1 Kg





**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical  
Technology  
**CS Code:**  
**Level: 2**  
**Credit: 17**  
**Version: 1**

**TEST ELECTRICAL AND ELECTRONIC PARAMETERS**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

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DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: TEST ELECTRICAL AND ELECTRONIC PARAMETERS		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Test electrical and electronic parameters of electrical machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Test electrical and electronic parameters of domestic Single Phase Electric Motor for water pump

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard :

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of testing electrical and electronic parameters under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Test electrical and electronic parameters of domestic single phase electric motor for water pump               <ul style="list-style-type: none"> <li>✓ Conduct manual inspection for damage identification in terms of cracks, disorder, broken parts and structure of domestic electric motor of water pump.</li> <li>✓ Check and repair/ replace power cable and switch of domestic single phase electric motor of water pump.</li> <li>✓ Interpret the circuit diagram of the domestic single phase electric motor of water pump and check the actual motor connections against circuit diagram</li> <li>✓ Perform continuity test by checking the resistance of domestic single phase electric motor of water pump in "OFF" condition using Ohm Meter.</li> <li>✓ Measure the capacitance of capacitor of domestic single phase electric motor of water pump using Capacitance Meter and replace the capacitor (if necessary)</li> <li>✓ Measure the voltage of the terminals of domestic single phase electric motor of water pump using Multimeter and compare it with specification plate voltage of the single phase domestic electric motor</li> <li>✓ Measure the credibility of the earthed wire of domestic single phase electric motor for water pump using earth resistance tester</li> <li>✓ Check the insulation resistance of the windings of domestic single phase electric motor for water pump with Meggar.</li> <li>✓ Carry out the operational testing of domestic single phase electric motor for water pump after testing electrical and electronic parameters</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<p><b>3. Answer any questions your assessor may have during the practical assessment</b></p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of testing electrical and electronic parameters under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Test electrical and electronic parameters of domestic single phase electric motor for water pump	Conducted manual inspection for damage identification in terms of cracks, disorder, broken parts and structure of domestic electric motor of water pump.			
	Checked and repaired/replaced power cable and switch of domestic single phase electric motor of water pump.			
	Interpreted the circuit diagram of the domestic single phase electric motor of water pump and checked the actual motor connections against circuit diagram			
	Performed continuity test by checking the resistance of domestic single phase electric motor of water pump in "OFF" condition using Ohm Meter.			
	Measured the capacitance of capacitor of domestic single phase electric motor of water pump using Capacitance Meter and replaced the capacitor (if necessary)			
	Measured the voltage of the terminals of domestic single phase electric motor of water pump using Multimeter and compared it with specification plate voltage of the single phase domestic electric motor			
	Measured the credibility of the earthed wire of domestic single phase electric motor for water pump using earth resistance tester			
	Checked the insulation resistance of the windings of domestic single phase electric motor for water pump with Meggar.			
	Carried out the operational testing of domestic single phase electric motor for water pump after testing electrical and electronic parameters			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Earth Resistance Tester	5
2	Capacitance Meter	5
3	Multi-Meter	5
4	Electric Tester	5
5	Standard Tool Kit	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Wire 3/0.029"	As per requirement
2	Screws (Different sizes)	As per requirement
3	Capacitor (Different values)	As per requirement
4	Cables	As per requirement



**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**

Electro Mechanical Technology

**CS Code:**

**Level: 2**

**Credit: 17**

**Version: 1**

**ASSEMBLE ELECTRICAL MACHINES**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date \_\_\_\_\_

DD		MM		YYYY					

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM #

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender

Male  Female  Transgender

Candidate's Consent

I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

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 DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: ASSEMBLE ELECTRICAL MACHINES		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Perform assembling of electrical machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		



# 2

# CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

## GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Carry out assembling of electrical juicer machine

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard :

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of assembling electrical machines under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out assembling of electrical juicer machine               <ul style="list-style-type: none"> <li>✓ Interpret circuit diagram/layout of electric juicer machine for assembling</li> <li>✓ Assemble electric motor with armature, field poles, side covers, brass bush and carbon brushes for the assembling of electrical juicer machine</li> <li>✓ Perform continuity and current leakage test with ohm meter/test lamp for the assembling of electrical juicer machine</li> <li>✓ Fit the electric motor in the body for the assembling of electrical juicer machine</li> <li>✓ Fit the rubber coupling on the top of armature shaft for the assembling of electrical juicer machine</li> <li>✓ Fit the control penal inside the body for the assembling of electrical juicer machine</li> <li>✓ Connect the power cable and motor assembly with control penal as per circuit diagram for the assembling of electrical juicer machine</li> <li>✓ Fit the bottom cover with body for the assembling of electrical juicer machine</li> <li>✓ Perform test run of juicer machine after the assembling</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<p><b>3. Answer any questions your assessor may have during the practical assessment</b></p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of assembling electrical machines under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out assembling of electrical juicer machine	Interpreted circuit diagram/layout of electric juicer machine for assembling			
	Assembled electric motor with armature, field poles, side covers, brass bush and carbon brushes for the assembling of electrical juicer machine			
	Performed continuity and current leakage test with ohm meter/test lamp for the assembling of electrical juicer machine			
	Fit the electric motor in the body for the assembling of electrical juicer machine			
	Fit the rubber coupling on the top of armature shaft for the assembling of electrical juicer machine			
	Fit the control penal inside the body for the assembling of electrical juicer machine			
	Connected the power cable and motor assembly with control penal as per circuit diagram for the assembling of electrical juicer machine			
	Fit the bottom cover with body for the assembling of electrical juicer machine			
	Performed test run of juicer machine after the assembling			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Electrician tool kit (Complete)	5
2	Electric Juicer Motor (Complete)	5
3	Juicer Body	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	ON/OFF switch	5
2	Power Cable	As per requirement
3	Coupling rubber	5



<b>ASSESSMENT MATERIAL</b>  <b>EVIDENCE GUIDE</b>	<h1>USE AND MAINTAIN ELECTRICAL TOOLS AND EQUIPMENT</h1>
<b>Qualification</b> Electro Mechanical Technology <b>CS Code:</b> <b>Level: 2</b> <b>Credit: 17</b> <b>Version: 1</b>	

<b>CONTENTS</b>	1. Assessment Summary and Record 2. Candidate Assessment 3. Assessor Judgment Guide 4. List of required tools/equipment, material and context of assessment
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<b>ASSESSMENT AND ASSESSOR DETAILS</b>	<b>Competent</b> <input type="checkbox"/> <span style="margin-left: 200px;"><b>Not Yet Competent</b></span> <input type="checkbox"/>																			
	<b>Assessment</b> <input type="checkbox"/> <span style="margin-left: 200px;"><b>Re-Assessment</b></span> <input type="checkbox"/>																			
	Assessor's Name ..... Assessor's Code ..... Assessor's Signature ..... Date ..... <table border="1" style="float: right; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td align="center" colspan="2">DD</td> <td align="center" colspan="2">MM</td> <td align="center" colspan="6">YYYY</td> </tr> </table>											DD		MM		YYYY				
DD		MM		YYYY																

<b>CANDIDATE DETAILS</b>	Candidate's Name ..... <small style="display: flex; justify-content: space-between; width: 100%;"> <span>First Name</span> <span>Last Name</span> </small>
	Father's Name .....
	Institute Name and District .....
	CNIC/BFORM # <table border="1" style="display: inline-table; width: 150px; height: 20px; vertical-align: middle;"></table>
	Registration Number issued by Assessment Body .....
	Gender Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender <input type="checkbox"/>
	Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal. Candidate's Signature .....

<b>ASSESSMENT RESULTS SUMMARY FORM</b>	You can use this coversheet as an <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to <b>NAVTTCC</b>
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<b>NAVTTCC OFFICE ONLY</b>	1. DATE FORM RECEIVED: <table border="1" style="display: inline-table; width: 100px; height: 20px;"></table> DD MM YYYY	2. DATE ENTERED INTO DATABASE: <table border="1" style="display: inline-table; width: 100px; height: 20px;"></table> DD MM YYYY
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# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: USE AND MAINTAIN ELECTRICAL TOOLS AND EQUIPMENT		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Use and maintain electrical tools and equipment.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Carry out maintenance of flooded lead acid battery.

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<b>1. Complete practical task of using and maintaining electrical tools and equipment under observation by an assessor</b>	During a practical assessment, under observation by an assessor, I will correctly : <ul style="list-style-type: none"> <li>• Carry out maintenance of flooded lead acid battery               <ul style="list-style-type: none"> <li>✓ Disconnect the terminals of flooded lead acid battery for maintenance</li> <li>✓ Clean the terminals of flooded lead acid battery with emery paper for maintenance</li> <li>✓ Check and maintain the level of water in flooded lead acid battery</li> <li>✓ Check and maintain the gravity of electrolyte in flooded lead acid battery using hydro meter</li> <li>✓ Connect the positive and negative brass clamps on flooded lead acid battery terminals after maintenance</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<b>2. Other requirements</b>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>3. Answer any questions your assessor may have during the practical assessment</b>	My answers to questions are correct and demonstrate my understanding of the topics and their application.

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of using and maintaining electrical tools and equipment under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out maintenance of flooded lead acid battery	Disconnected the terminals of flooded lead acid battery for maintenance			
	Cleaned the terminals of flooded lead acid battery with emery paper for maintenance			
	Checked and maintained the level of water in flooded lead acid battery			
	Checked and maintained the gravity of electrolyte in flooded lead acid battery using hydro meter			
	Connected the positive and negative brass clamps on flooded lead acid battery terminals after maintenance			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			



**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Electrician tool kit (Complete)	5
2	Multi-meter	5
3	Clamp meter	5
4	Dip stick (for water level of battery)	5
5	Flooded lead acid Battery	5
6	Hydro meter	5
7	Insulating Gloves	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Emery Paper	As per requirement
2	Distilled water	5



**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical  
Technology  
**CS Code:**  
**Level: 2**  
**Credit: 17**  
**Version: 1**

**TEST ELECTRICAL MACHINES**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

**ASSESSMENT RESULTS SUMMARY FORM**

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTCC**

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DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: TEST ELECTRICAL MACHINES		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Carry out testing and diagnose faults of electrical machines.</li> <li>Remove the faults of electrical machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **three hours** timeframe:

- Carry out testing and diagnose faults of single phase induction motor (Annexure-1)  
Remove faults of single phase induction motor

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of testing electrical machines under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out testing and diagnose faults of single phase induction motor (Annexure-1)               <ul style="list-style-type: none"> <li>✓ Conduct visual inspection of single phase induction motor</li> <li>✓ Rotate the shaft of single phase induction motor manually to check the movement of shaft</li> <li>✓ Interpret circuit diagram of single phase induction motor</li> <li>✓ Power Off the single phase induction motor and take the resistance reading of single phase induction motor windings with Multi meter</li> <li>✓ Measure the voltage at single phase induction motor terminals and compare it with name plate voltage of the single phase induction motor</li> <li>✓ Check the centrifugal switch of single phase induction motor with Multi meter for connecting/disconnecting windings operation</li> <li>✓ Check the capacitance of the single phase induction motor's capacitor with capacitance meter</li> <li>✓ Test the starting and running electric windings of single phase induction motor with Ohm meter</li> <li>✓ Check the insulation resistance of the windings of single phase induction motor with Meggar</li> </ul> </li> <li>• Remove faults of single phase induction motor               <ul style="list-style-type: none"> <li>✓ Check and re-grease/replace the faulty bearings of single phase induction motor</li> <li>✓ Check and replace the faulty capacitor of single phase induction motor</li> <li>✓ Check and replace the faulty centrifugal switch of single phase induction motor</li> <li>✓ Check and replace the starting and running electric windings of single phase induction motor</li> <li>✓ Conduct operational test of single phase induction motor after removing faults</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

<b>3. Answer any questions your assessor may have during the practical assessment</b>	My answers to questions are correct and demonstrate my understanding of the topics and their application.
---	---

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of testing electrical machines under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out testing and diagnose faults of single phase induction motor (Annexure-1)	Conducted visual inspection of single phase induction motor			
	Rotated the shaft of single phase induction motor manually to check the movement of shaft			
	Interpreted circuit diagram of single phase induction motor			
	Powered Off the single phase induction motor and took the resistance reading of single phase induction motor windings with Multi meter			
	Measured the voltage at single phase induction motor terminals and compared it with name plate voltage of the single phase induction motor			
	Checked the centrifugal switch of single phase induction motor with Multi meter for connecting/disconnecting windings operation			
	Checked the capacitance of the single phase induction motor's capacitor with capacitance meter			
	Tested the starting and running electric windings of single phase induction motor with Ohm meter			
	Checked the insulation resistance of the windings of single phase induction motor with Meggar			
Remove faults of single phase induction motor	Checked and re-greased/replaced the faulty bearings of single phase induction motor			
	Checked and replaced the faulty capacitor of single phase induction motor			
	Checked and replaced the faulty centrifugal switch of single phase induction motor			
	Checked and replaced the starting and running electric windings of single phase induction motor			
	Conducted operational test of single phase induction motor after removing faults			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.



# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Personal Protective Equipment	5
2	Electrician tool kit (Complete)	5
3	Clamp on Meter	5
4	Hand Tools	5
5	Motor test bench	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Waste Cotton	1 Kg

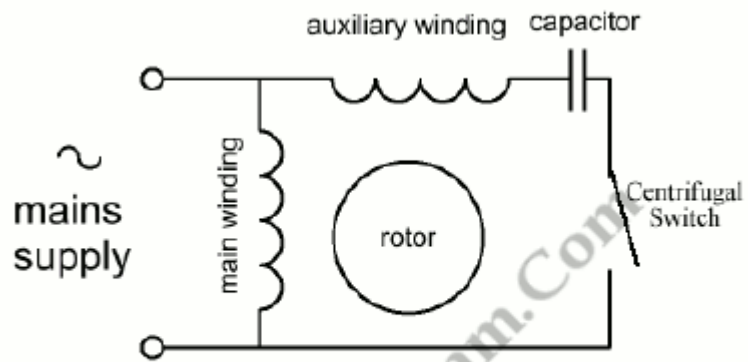


Figure 1. Capacitor Start AC Induction Motor



**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical  
Technology  
**CS Code:**  
**Level: 2**  
**Credit: 17**  
**Version: 1**

**REWIND ELECTRICAL MACHINES**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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 DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

**ASSESSMENT RESULTS SUMMARY FORM**

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**NAVTTTC OFFICE ONLY**

1. DATE FORM RECEIVED: 

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2. DATE ENTERED INTO DATABASE: 

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 DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: REWIND ELECTRICAL MACHINES		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Rewind electrical machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

# CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

## GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **two hours** timeframe:

- Carry out and test the rewinding of single phase induction motor

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of rewinding electrical machines under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out and test the rewinding of single phase induction motor               <ul style="list-style-type: none"> <li>✓ Remove motor housing to reveal stator windings of single phase induction motor</li> <li>✓ Remove the damaged/burnt winding coils from stator of single phase induction motor</li> <li>✓ Clean all slots of the stator of single phase induction motor for rewinding</li> <li>✓ Place insulation paper in all slots of stator core of single phase induction motor for rewinding</li> <li>✓ Insert winding coils in slots of single phase induction motor for rewinding</li> <li>✓ Recreate the winding pattern and number of coils around each winding of single phase induction motor for rewinding</li> <li>✓ Make connections of the coils of single phase induction motor for rewinding</li> <li>✓ Make connection leads and connect them to terminal box after rewinding</li> <li>✓ Perform insulation test of winding of single phase induction motor using Meggar after rewinding</li> <li>✓ Apply insulating varnish to secure the rewinding of single phase induction motor</li> <li>✓ Place rewind stator of single phase induction motor in oven to dry the rewind stator</li> <li>✓ Reassemble the single phase induction motor after rewinding</li> <li>✓ Conduct the operational test of single phase induction motor after rewinding</li> <li>✓ Measure the voltage and current of single phase induction motor using Multi meter after rewinding</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<p><b>3. Answer any questions your assessor may have during the practical assessment</b></p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of rewinding electrical machines under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out and test the rewinding of single phase induction motor	Removed motor housing to reveal stator windings of single phase induction motor			
	Removed the damaged/burnt winding coils from stator of single phase induction motor			
	Cleaned all slots of the stator of single phase induction motor for rewinding			
	Placed insulation paper in all slots of stator core of single phase induction motor for rewinding			
	Inserted winding coils in slots of single phase induction motor for rewinding			
	Recreated the winding pattern and number of coils around each winding of single phase induction motor for rewinding			
	Made connections of the coils of single phase induction motor for rewinding			
	Made connection leads and connected them to terminal box after rewinding			
	Performed insulation test of winding of single phase induction motor using Meggar after rewinding			
	Applied insulating varnish to secure the rewinding of single phase induction motor			
	Placed rewound stator of single phase induction motor in oven to dry the rewound stator			
	Reassembled the single phase induction motor after rewinding			
	Conducted the operational test of single phase induction motor after rewinding			
	Measured the voltage and current of single phase induction motor using Multi meter after rewinding			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Personal Protective Equipment	5
2	Electrician tool kit (Complete)	5
3	Motor Test Bench	5
4	Bench Vice	5
5	Wire Brush	5
6	Fibre Brush	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Motor Winding coil	5
2	Leatherite Paper	5
3	Cotton Waste	5 Pairs
4	Insulating Varnish	As per requirement
5	Insulating sleeves	As per requirement
6	Emery Paper	As per requirement





<b>ASSESSMENT MATERIAL</b>  <b>EVIDENCE GUIDE</b>	<h1>INSTALL ELECTRICAL MACHINES</h1>
<b>Qualification</b> Electro Mechanical Technology <b>CS Code:</b> <b>Level: 2</b> <b>Credit: 8</b> <b>Version: 1</b>	

<b>CONTENTS</b>	1. Assessment Summary and Record 2. Candidate Assessment 3. Assessor Judgment Guide 4. List of required tools/equipment, material and context of assessment
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<b>ASSESSMENT AND ASSESSOR DETAILS</b>	<b>Competent</b> <input type="checkbox"/> <span style="margin-left: 200px;"><b>Not Yet Competent</b></span> <input type="checkbox"/>																			
	<b>Assessment</b> <input type="checkbox"/> <span style="margin-left: 200px;"><b>Re-Assessment</b></span> <input type="checkbox"/>																			
	Assessor's Name _____ Assessor's Code _____ Assessor's Signature _____ Date _____ <table border="1" style="float: right; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td align="center" colspan="2">DD</td> <td align="center" colspan="2">MM</td> <td align="center" colspan="6">YYYY</td> </tr> </table>											DD		MM		YYYY				
DD		MM		YYYY																

<b>CANDIDATE DETAILS</b>	Candidate's Name _____ <small style="display: flex; justify-content: space-between; width: 100%;"> <span>First Name</span> <span>Last Name</span> </small>
	Father's Name _____
	Institute Name and District _____
	CNIC/BFORM # <table border="1" style="display: inline-table; width: 150px; height: 20px; vertical-align: middle;"></table>
	Registration Number issued by Assessment Body _____
	Gender Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender <input type="checkbox"/>
	Candidate's Consent <span style="float: right;">I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.</span>
	Candidate's Signature _____

<b>ASSESSMENT RESULTS SUMMARY FORM</b>	You can use this coversheet as an <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to <b>NAVTTCC</b>
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<b>NAVTTCC OFFICE ONLY</b>	1. DATE FORM RECEIVED: <table border="1" style="display: inline-table; width: 100px; height: 20px;"></table> DD MM YYYY	2. DATE ENTERED INTO DATABASE: <table border="1" style="display: inline-table; width: 100px; height: 20px;"></table> DD MM YYYY
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# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: INSTALL ELECTRICAL MACHINES		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Carry out installation of electric machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Carry out installation of single phase electric motor for domestic water pump
- Carry out operational testing of single phase electric motor for domestic water pump

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of installing electrical machines under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out installation of single phase electric motor for domestic water pump               <ul style="list-style-type: none"> <li>✓ Select the site for the installation of single phase electric motor for domestic water pump</li> <li>✓ Install the switch board electric supply for the installation of single phase electric motor for domestic water pump</li> <li>✓ Lay down the PVC pipe /duct for the wiring of single phase electric motor for domestic water pump</li> <li>✓ Place electric cables in PVC pipe /duct to give power supply to single phase electric motor for domestic water pump</li> <li>✓ Align and fix the single phase electric motor at the selected place/base for domestic water pump</li> <li>✓ Connect electric supply from switch board to single phase electric motor for domestic water pump</li> <li>✓ Install the earthing connection for single phase electric motor for domestic water pump</li> </ul> </li> <li>• Carry out operational testing of single phase electric motor for domestic water pump               <ul style="list-style-type: none"> <li>✓ Check the switch board electric supply and connections of single phase electric motor of domestic water pump with electric Tester</li> <li>✓ Turn on the single phase electric motor of domestic water pump and measure the voltage and current using Multimeter</li> <li>✓ Measure the operating temperature of single phase electric motor of domestic water pump using digital thermometer/IR temperature gun</li> <li>✓ Check the working of single phase electric motor of domestic water pump</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

<b>3. Answer any questions your assessor may have during the practical assessment</b>	My answers to questions are correct and demonstrate my understanding of the topics and their application.
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# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of installing electrical machines under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out installation of single phase electric motor for domestic water pump	Selected the site for the installation of single phase electric motor for domestic water pump			
	Installed the switch board electric supply for the installation of single phase electric motor for domestic water pump			
	Laid down the PVC pipe /duct for the wiring of single phase electric motor for domestic water pump			
	Placed electric cables in PVC pipe /duct to give power supply to single phase electric motor for domestic water pump			
	Aligned and fixed the single phase electric motor at the selected place/base for domestic water pump			
	Connected electric supply from switch board to single phase electric motor for domestic water pump			
	Installed the earthing connection for single phase electric motor for domestic water pump			
Carry out operational testing of single phase electric motor for domestic water pump	Checked the switch board electric supply and connections of single phase electric motor of domestic water pump with electric Tester			
	Turned on the single phase electric motor of domestic water pump and measured the voltage and current using Multimeter			
	Measured the operating temperature of single phase electric motor of domestic water pump using digital thermometer/IR temperature gun			
	Checked the working of single phase electric motor of domestic water pump			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Personal Protective Equipment	5
2	Electrician tool kit (Complete)	5
3	Earth Resistance Tester	5
4	Multi meter	5
5	IR temperature gun	5
6	Bubble Level	5
7	Single Phase Electric Motor for domestic water pump	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Cables for Connection	5
2	Earthing Leads	5
3	Earth Plate/Rod	5
4	Wooden PVC Board etc.	5
5	PVC Pipe	As per required
6	Distribution Boards for Power supply of single phase Electric Motor	5



**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical Technology  
**CS Code:**  
**Level: 2**  
**Credit: 8**  
**Version: 1**

**PERFORM INSTALLATION OF ELECTRICAL MACHINES**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

**ASSESSMENT RESULTS SUMMARY FORM**

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTCC**

**NAVTTCC OFFICE ONLY**

1. DATE FORM RECEIVED: 

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DD MM YYYY

2. DATE ENTERED INTO DATABASE: 

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DD MM YYYY



# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: PERFORM INSTALLATION OF ELECTRICAL MACHINES		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Carry out installation of electric machines.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		

# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Carry out installation of single phase electric motor for domestic water pump
- Carry out operational testing of single phase electric motor for domestic water pump

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of performing installation of electrical machines under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Carry out installation of single phase electric motor for domestic water pump               <ul style="list-style-type: none"> <li>✓ Select the site for the installation of single phase electric motor for domestic water pump</li> <li>✓ Install the switch board electric supply for the installation of single phase electric motor for domestic water pump</li> <li>✓ Lay down the PVC pipe /duct for the wiring of single phase electric motor for domestic water pump</li> <li>✓ Place electric cables in PVC pipe /duct to give power supply to single phase electric motor for domestic water pump</li> <li>✓ Align and fix the single phase electric motor at the selected place/base for domestic water pump</li> <li>✓ Connect electric supply from switch board to single phase electric motor for domestic water pump</li> <li>✓ Install the earthing connection for single phase electric motor for domestic water pump</li> </ul> </li> <li>• Carry out operational testing of single phase electric motor for domestic water pump               <ul style="list-style-type: none"> <li>✓ Check the switch board electric supply and connections of single phase electric motor of domestic water pump with electric Tester</li> <li>✓ Turn on the single phase electric motor of domestic water pump and measure the voltage and current using Multimeter</li> <li>✓ Measure the operating temperature of single phase electric motor of domestic water pump using digital thermometer/IR temperature gun</li> <li>✓ Check the working of single phase electric motor of domestic water pump</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

<b>3. Answer any questions your assessor may have during the practical assessment</b>	My answers to questions are correct and demonstrate my understanding of the topics and their application.
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# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of performing installation of electrical machines under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Carry out installation of single phase electric motor for domestic water pump	Selected the site for the installation of single phase electric motor for domestic water pump			
	Installed the switch board electric supply for the installation of single phase electric motor for domestic water pump			
	Laid down the PVC pipe /duct for the wiring of single phase electric motor for domestic water pump			
	Placed electric cables in PVC pipe /duct to give power supply to single phase electric motor for domestic water pump			
	Aligned and fixed the single phase electric motor at the selected place/base for domestic water pump			
	Connected electric supply from switch board to single phase electric motor for domestic water pump			
	Installed the earthing connection for single phase electric motor for domestic water pump			
Carry out operational testing of single phase electric motor for domestic water pump	Checked the switch board electric supply and connections of single phase electric motor of domestic water pump with electric Tester			
	Turned on the single phase electric motor of domestic water pump and measured the voltage and current using Multimeter			
	Measured the operating temperature of single phase electric motor of domestic water pump using digital thermometer/IR temperature gun			
	Checked the working of single phase electric motor of domestic water pump			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Personal Protective Equipment	5
2	Electrician tool kit (Complete)	5
3	Earth Resistance Tester	5
4	Multi meter	5
5	IR temperature gun	5
6	Bubble Level	5
7	Single Phase Electric Motor for domestic water pump	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Cables for Connection	5
2	Earthing Leads	5
3	Earth Plate/Rod	5
4	Wooden PVC Board etc.	5
5	PVC Pipe	As per required
6	Distribution Boards for Power supply of single phase Electric Motor	5



**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**

Electro Mechanical Technology

**CS Code:**

**Level: 2**

**Credit: 17**

**Version: 1**

**INSTALL DOMESTIC WIRING**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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 DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

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2. DATE ENTERED INTO DATABASE: 

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 DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: INSTALL DOMESTIC WIRING		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Install domestic electric wiring.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		



# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

**ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.**

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **two hours** timeframe:

- Perform installation of main domestic electrical distribution board and individual electrical switch boards
- Perform installation of electrical ceiling fan

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of installing domestic wiring under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Perform installation of domestic main electrical distribution board               <ul style="list-style-type: none"> <li>✓ Interpret the circuit diagram for the installation of domestic main electrical distribution board (Annexure 1)</li> <li>✓ Connect electrical cables from energy meter to the main electrical distribution board using PVC conduit</li> <li>✓ Connect electrical change over switch with double pole breaker according to circuit diagram for the installation of main electrical distribution board</li> <li>✓ Connect double pole breaker with single pole breakers according to the circuit diagram for the installation of main electrical distribution board.</li> <li>✓ Install Voltmeter, Ampere Meter and indicator light in the main electrical distribution board</li> <li>✓ Perform test run of each outgoing point of single pole breakers at main electrical distribution board with the help of test lamp.</li> <li>✓ Perform continuity test of the wiring of main electrical distribution board with the help of Multimeter</li> <li>✓ Perform insulation test of the wiring of main electrical distribution board with the help of Meggar</li> </ul> </li> <li>• Perform Installation of ceiling fan               <ul style="list-style-type: none"> <li>✓ Give connections from main electrical distribution board to individual electrical switch boards</li> <li>✓ Install and align the electrical ceiling fan for connection with domestic electrical wiring</li> <li>✓ Connect ceiling fan with the regulator on switch board.</li> <li>✓ Switch on the ceiling fan, test its functioning using regulator and confirm installation</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

<b>3. Answer any questions your assessor may have during the practical assessment</b>	My answers to questions are correct and demonstrate my understanding of the topics and their application.
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# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of installing domestic wiring under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Perform installation of domestic main electrical distribution board	Interpreted the circuit diagram for the installation of domestic main electrical distribution board (Annexure 1)			
	Connected electrical cables from energy meter to the main electrical distribution board using PVC conduit			
	Connected electrical change over switch with double pole breaker according to circuit diagram for the installation of main electrical distribution board			
	Connected double pole breaker with single pole breakers according to the circuit diagram for the installation of main electrical distribution board.			
	Installed Voltmeter, Ampere Meter and indicator light in the main electrical distribution board			
	Performed test run of each outgoing point of single pole breakers at main electrical distribution board with the help of test lamp.			
	Performed continuity test of the wiring of main electrical distribution board with the help of Multimeter			
	Performed insulation test of the wiring of main electrical distribution board with the help of Meggar			
Perform Installation of ceiling fan	Gave connections from main electrical distribution board to individual electrical switch boards			
	Installed and align the electrical ceiling fan for connection with domestic electrical wiring			
	Connected ceiling fan with the regulator on switch board.			
	Switched on the ceiling fan, test its functioning using regulator and confirm installation			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

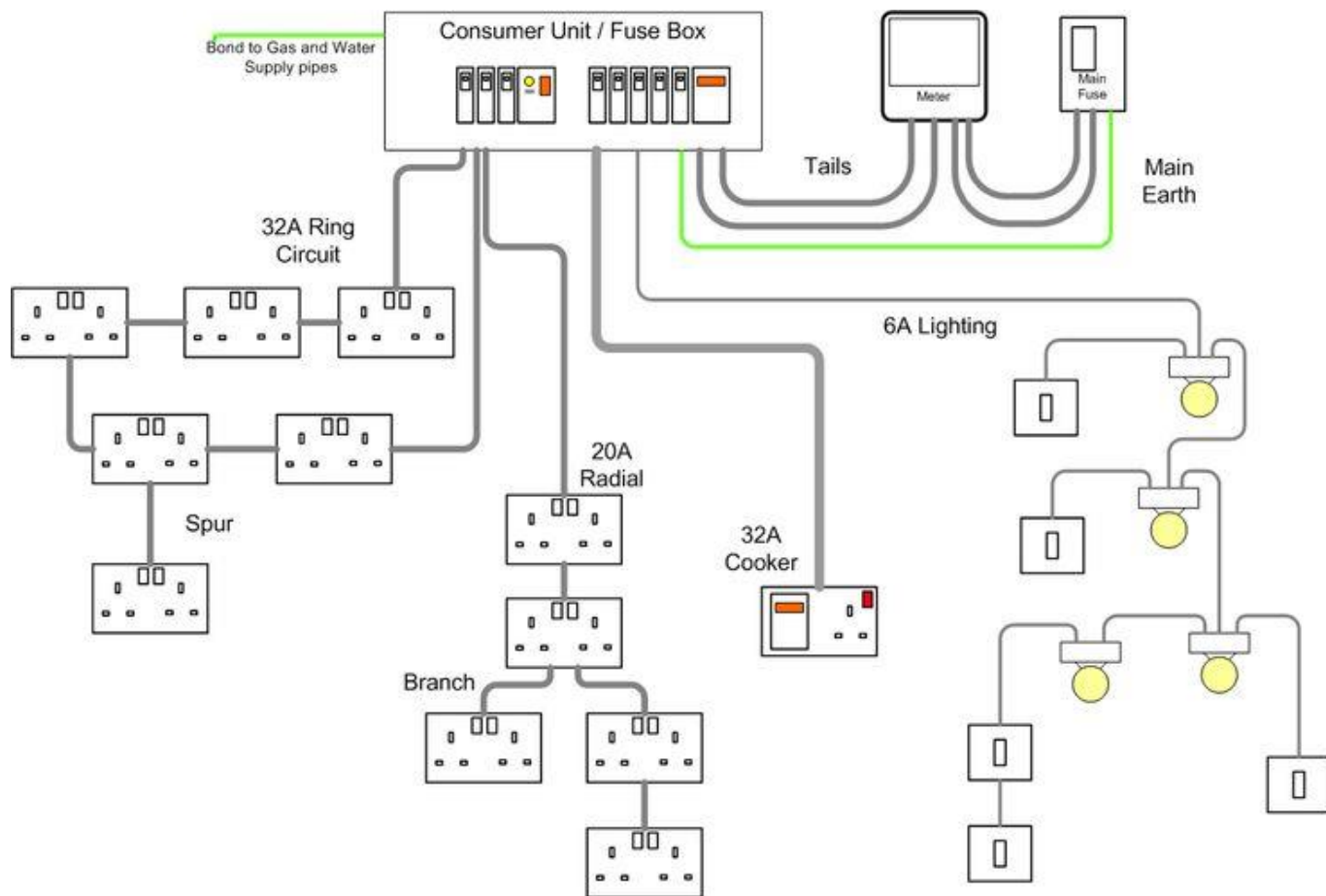
# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Multi Meter	5
2	Megger	5
3	Standard Tool Kit	5
4	Tester	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Double Pole Breakers	5
2	Change Over Switch	5
3	Single Pole Breakers	As per requirement
4	Wire 3/0.029"	As per requirement
5	Wire 7/0.029"	As per requirement
6	Screws (Different types)	As per requirement
7	Tie Clamp	As per requirement
8	PVC, IG Conduit	As per requirement
9	Lamp Indicator	5
10	Digital/Analogue Voltmeter	5
11	Digital/Analogue Ampere Meter	5
12	Single & Two Way Switches	As per requirement
13	Sockets	As per requirement





**ASSESSMENT MATERIAL**

**EVIDENCE GUIDE**

**Qualification**  
Electro Mechanical  
Technology  
**CS Code:**  
**Level: 2**  
**Credit: 17**  
**Version: 1**

**PERFORM DISTRIBUTION OF ELECTRICAL SUPPLY**

**CONTENTS**

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND ASSESSOR DETAILS**

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

**Assessment**  **Re-Assessment**

Assessor's Name \_\_\_\_\_ Assessor's Code \_\_\_\_\_

Assessor's Signature \_\_\_\_\_ Date 

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DD MM YYYY

**CANDIDATE DETAILS**

Candidate's Name \_\_\_\_\_  
First Name Last Name

Father's Name \_\_\_\_\_

Institute Name and District \_\_\_\_\_

CNIC/BFORM # 

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Registration Number issued by Assessment Body \_\_\_\_\_

Gender Male  Female  Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature \_\_\_\_\_

**ASSESSMENT RESULTS SUMMARY FORM**

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTCC**

**NAVTTCC OFFICE ONLY**

1. DATE FORM RECEIVED: 

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DD MM YYYY

2. DATE ENTERED INTO DATABASE: 

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DD MM YYYY

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: PERFORM DISTRIBUTION OF ELECTRICAL SUPPLY		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Perform distribution of electrical supply.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>N/A</li> </ul>		



# 2

## CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

### GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **two and half hours** timeframe:

- Perform distribution of electrical supply in the institute/house/factory (Annexure-1)

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of performing distribution of electrical supply under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Perform distribution of electrical supply in the institute/house/factory (Annexure-1)               <ul style="list-style-type: none"> <li>✓ Interpret the layout diagram for distribution of electrical supply in the institute/house/factory</li> <li>✓ Calculate the electrical load for each section of the institute/house/factory by identifying the individual rated electrical loads of each electrical appliance/machine/equipment.</li> <li>✓ Prepare electrical load schedule of each section of institute/house/factory for distribution of electrical supply</li> <li>✓ Connect and switch on electrical power supply to each section of institute/house/factory for the distribution of electrical power supply.</li> <li>✓ Measure the input and output voltages of the distribution of electrical supply for each section of institute/house/factory using Multimeter</li> <li>✓ Calculate the voltage drop of electrical supply for each section of institute/house/factory using formulae for the distribution of electrical supply</li> <li>✓ Distribute electrical supply to each section of institute/house/factory after incorporating the voltage drop and tag out each section.</li> <li>✓ Monitor input and output voltages, current and electrical power of distribution of electrical supply for each section of institute/house/factory</li> </ul> </li> <li>• General Performance Criteria               <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
2. Other requirements	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
3. Answer any questions your assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of performing distribution of electrical supply under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Perform distribution of electrical supply in the institute/house/factory (Annexure-1)	Interpreted the layout diagram for distribution of electrical supply in the institute/house/factory			
	Calculated the electrical load for each section of the institute/house/factory by identifying the individual rated electrical loads of each electrical appliance/machine/equipment.			
	Prepared electrical load schedule of each section of institute/house/factory for distribution of electrical supply			
	Connected and switch on electrical power supply to each section of institute/house/factory for the distribution of electrical power supply.			
	Measured the input and output voltages of the distribution of electrical supply for each section of institute/house/factory using Multimeter			
	Calculated the voltage drop of electrical supply for each section of institute/house/factory using formulae for the distribution of electrical supply			
	Distributed electrical supply to each section of institute/house/factory after incorporating the voltage drop and tag out each section.			
	Monitored input and output voltages, current and electrical power of distribution of electrical supply for each section of institute/house/factory			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	N/A			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Standard Tool Kit	5
2	Clamp on meters	5
3	Multi-Meters	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Wires of 3/0.029"	As per requirement
2	Wires of 7/0.029"	As per requirement
3	Switches and boards	As per requirement

SI System or Metric (Decimal) system			English System (British)		
Current Carrying Capacity (in Amp)	Number of wires and Thickness of each wire	Area (in mm <sup>2</sup> )	Current Carrying Capacity (in Amp)	Number of wires and Thickness of each wire	Area (in Inch <sup>2</sup> )
11	1/1.13	1	11	1/.044	0.0015
13	1/1.38	1.5	13	3/.029	0.002
18	1/1.78	2.5	16	3/.036	0.003
24	7/0.85	4	21	7/.029	0.0045
31	7/1.04	6	28	7/.036	0.007
42	7/1.35	10	34	7/.044	0.01
56	7/1.70	16	43	7/.052	0.0145
73	7/2.14	25	56	7/.064	0.0225
90	19/1.53	35	66	19/.044	0.03
145	19/1.78	50	77	19/.052	0.04
185	19/2.14	70	105	19/.064	0.06
230	19/2.52	95	180	19/0.83	0.1

Table (1) current rating of Copper cables at 86°F or 30°C



<b>ASSESSMENT MATERIAL</b>  <b>EVIDENCE GUIDE</b>	<h1>ELECTRO MECHANICAL TECHNOLOGY</h1>
<b>Qualification</b> Electro Mechanical Technology <b>CS Code:</b> <b>Level: 2</b> <b>Credit: 160</b> <b>Version: 1</b>	

<b>CONTENTS</b>	1. Assessment Summary and Record 2. Candidate Assessment 3. Assessor Judgment Guide 4. List of required tools/equipment, material and context of assessment
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<b>ASSESSMENT AND ASSESSOR DETAILS</b>	<b>Competent</b> <input type="checkbox"/> <span style="margin-left: 200px;"><b>Not Yet Competent</b></span> <input type="checkbox"/>																			
	<b>Assessment</b> <input type="checkbox"/> <span style="margin-left: 200px;"><b>Re-Assessment</b></span> <input type="checkbox"/>																			
	Assessor's Name ..... Assessor's Code ..... Assessor's Signature ..... Date ..... <table border="1" style="float: right; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2" style="text-align: center;">DD MM</td> <td colspan="8" style="text-align: center;">YYYY</td> </tr> </table>											DD MM		YYYY						
DD MM		YYYY																		

<b>CANDIDATE DETAILS</b>	Candidate's Name ..... <small style="margin-left: 100px;">First Name</small> <small style="margin-left: 200px;">Last Name</small>																				
	Father's Name .....																				
	Institute Name and District .....																				
	CNIC/BFORM # ..... <table border="1" style="float: right; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>																				
	Registration Number issued by Assessment Body ..... Gender Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender <input type="checkbox"/>																				
Candidate's Consent ..... Candidate's Signature ..... <p style="margin-left: 200px; font-size: small;">I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.</p>																					

<b>ASSESSMENT RESULTS SUMMARY FORM</b>	You can use this coversheet as an <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to <b>NAVTTCC</b>
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<b>NAVTTCC OFFICE ONLY</b>	1. DATE FORM RECEIVED: <table border="1" style="display: inline-table; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2" style="text-align: center;">DD MM</td> <td colspan="6" style="text-align: center;">YYYY</td> </tr> </table>									DD MM		YYYY						2. DATE ENTERED INTO DATABASE: <table border="1" style="display: inline-table; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2" style="text-align: center;">DD</td> <td colspan="2" style="text-align: center;">MM</td> <td colspan="4" style="text-align: center;">YYYY</td> </tr> </table>									DD		MM		YYYY			
DD MM		YYYY																																
DD		MM		YYYY																														

# 1

## ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF QUALIFICATION: ELECTRO MECHANICAL TECHNOLOGY		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> <li>Perform as Electro Mechanical Technician.</li> </ul>		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> <li>Answer all questions your Assessor may have during the practical assessment.</li> </ul>		
Other Requirements			✓		<ul style="list-style-type: none"> <li>Provide verified evidence of the competency of Carry out testing, diagnose and remove faults of 0.6 Kilowatts DC carbon brush motor</li> <li>Provide verified evidence of the competency Carry out testing, diagnose and remove faults of washing machine</li> <li>Provide verified evidence of the competency Test electrical and electronic parameters of domestic single phase electric motor for water pump</li> <li>Provide verified evidence of the competency Carry out assembling of electrical Juicer Machine</li> <li>Provide verified evidence of the competency Carry out maintenance of flooded lead acid battery</li> <li>Provide verified evidence of competency Carry out and test the rewinding of single phase induction motor</li> <li>Provide verified evidence of competency Perform distribution of electrical supply in the institute/house/factory</li> </ul>		

# 2

# CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name .....

**ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.**

## GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **five hours** timeframe:

- Perform installation of domestic main electrical distribution board (Annexure-1)
- Perform Installation of ceiling fan
- Carry out installation of single phase electric motor for domestic water pump
- Carry out testing and diagnose faults of single phase induction motor (Annexure-2)
- Remove faults of single phase induction motor

**Important Note:** The following general performance criteria will be followed and performed in all the tasks ( where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p><b>1. Complete practical task of electro mechanical technology under observation by an assessor</b></p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> <li>• Perform installation of domestic main electrical distribution board (Annexure-1)               <ul style="list-style-type: none"> <li>✓ Interpret the circuit diagram for the installation of domestic main electrical distribution board</li> <li>✓ Connect electrical cables from energy meter to the main electrical distribution board using PVC conduit</li> <li>✓ Connect electrical change over switch with double pole breaker according to circuit diagram for the installation of main electrical distribution board</li> <li>✓ Connect double pole breaker with single pole breakers according to the circuit diagram for the installation of main electrical distribution board.</li> <li>✓ Install Voltmeter, Ampere Meter and indicator light in the main electrical distribution board</li> <li>✓ Perform test run of each outgoing point of single pole breakers at main electrical distribution board with the help of test lamp.</li> <li>✓ Perform continuity test of the wiring of main electrical distribution board with the help of Multimeter</li> <li>✓ Perform insulation test of the wiring of main electrical distribution board with the help of Meggar</li> </ul> </li> <li>• Perform Installation of ceiling fan               <ul style="list-style-type: none"> <li>✓ Give connections from main electrical distribution board to individual electrical switch boards</li> <li>✓ Install and align the electrical ceiling fan for connection with domestic electrical wiring</li> <li>✓ Connect ceiling fan with the regulator on switch board.</li> <li>✓ Switch on the ceiling fan, test its functioning using regulator and confirm installation</li> </ul> </li> <li>• Carry out installation of single phase electric motor for domestic water pump               <ul style="list-style-type: none"> <li>✓ Select the site for the installation of single phase electric motor for domestic water pump</li> <li>✓ Install the switch board electric supply for the installation of single phase electric motor for domestic water pump</li> <li>✓ Lay down the PVC pipe /duct for the wiring of single phase electric motor for domestic water pump</li> <li>✓ Place electric cables in PVC pipe /duct to give power supply to single phase electric motor for domestic water pump</li> <li>✓ Align and fix the single phase electric motor at the selected place/base for domestic water</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>✓ pump</li> <li>✓ Connect electric supply from switch board to single phase electric motor for domestic water pump</li> <li>✓ Install the earthing connection for single phase electric motor for domestic water pump</li> </ul> </li> <li>• Carry out testing and diagnose faults of single phase induction motor (Annexure-2) <ul style="list-style-type: none"> <li>✓ Conduct visual inspection of single phase induction motor</li> <li>✓ Rotate the shaft of single phase induction motor manually to check the movement of shaft</li> <li>✓ Interpret circuit diagram of single phase induction motor</li> <li>✓ Power Off the single phase induction motor and take the resistance reading of single phase induction motor windings with Multi meter</li> <li>✓ Measure the voltage at single phase induction motor terminals and compare it with name plate voltage of the single phase induction motor</li> <li>✓ Check the centrifugal switch of single phase induction motor with Multi meter for connecting/disconnecting windings operation</li> <li>✓ Check the capacitance of the single phase induction motor's capacitor with capacitance meter</li> <li>✓ Test the starting and running electric windings of single phase induction motor with Ohm meter</li> <li>✓ Check the insulation resistance of the windings of single phase induction motor with Meggar</li> </ul> </li> <li>• Remove faults of single phase induction motor <ul style="list-style-type: none"> <li>✓ Check and re-grease/replace the faulty bearings of single phase induction motor</li> <li>✓ Check and replace the faulty capacitor of single phase induction motor</li> <li>✓ Check and replace the faulty centrifugal switch of single phase induction motor</li> <li>✓ Check and replace the starting and running electric windings of single phase induction motor</li> <li>✓ Conduct operational test of single phase induction motor after removing faults</li> </ul> </li> <li>• General Performance Criteria <ul style="list-style-type: none"> <li>✓ Follow precautionary procedures as per requirements of the given tasks</li> <li>✓ Select, use and maintain equipment/ tools as per requirement of the task</li> <li>✓ Report to supervisor in case of any emergency after taking necessary actions</li> <li>✓ Complete the work by following sequence of the operations</li> <li>✓ Perform task(s) within standard timeframe</li> </ul> </li> </ul>
<p><b>2. Other requirements</b></p>	<ul style="list-style-type: none"> <li>• Provide verified evidence of the competency of Carry out testing, diagnose and remove faults of 0.6 Kilowatts DC carbon brush motor</li> <li>• Provide verified evidence of the competency Carry out testing, diagnose and remove faults of washing machine</li> <li>• Provide verified evidence of the competency Test electrical and electronic parameters of domestic single phase electric motor for water pump</li> <li>• Provide verified evidence of the competency Carry out assembling of electrical Juicer Machine</li> <li>• Provide verified evidence of the competency Carry out maintenance of flooded lead acid battery</li> <li>• Provide verified evidence of competency Carry out and test the rewinding of single phase induction motor</li> <li>• Provide verified evidence of competency Perform distribution of electrical supply in the institute/house/factory</li> </ul>
<p><b>3. Answer any questions your assessor may have during the practical assessment</b></p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

# 3

## ASSESSOR JUDGEMENT GUIDE

Candidate's Name ..... Father's Name.....

### INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
<b>1. Complete practical task of electro mechanical technology under observation by an assessor</b>	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Perform installation of domestic main electrical distribution board (Annexure-1)	Interpreted the circuit diagram for the installation of domestic main electrical distribution board			
	Connected electrical cables from energy meter to the main electrical distribution board using PVC conduit			
	Connected electrical change over switch with double pole breaker according to circuit diagram for the installation of main electrical distribution board			
	Connected double pole breaker with single pole breakers according to the circuit diagram for the installation of main electrical distribution board.			
	Installed Voltmeter, Ampere Meter and indicator light in the main electrical distribution board			
	Performed test run of each outgoing point of single pole breakers at main electrical distribution board with the help of test lamp.			
	Performed continuity test of the wiring of main electrical distribution board with the help of Multimeter			
	Performed insulation test of the wiring of main electrical distribution board with the help of Meggar			
Perform Installation of ceiling fan	Gave connections from main electrical distribution board to individual electrical switch boards			
	Installed and aligned the electrical ceiling fan for connection with domestic electrical wiring			
	Connected ceiling fan with the regulator on switch board.			
	Switched on the ceiling fan, test its functioning using regulator and confirm installation			
Carry out installation of single phase electric motor for domestic water pump	Selected the site for the installation of single phase electric motor for domestic water pump			
	Installed the switch board electric supply for the installation of single phase electric motor for domestic water pump			
	Laid down the PVC pipe /duct for the wiring of single phase electric motor for domestic water pump			
	Placed electric cables in PVC pipe /duct to give power supply to single phase electric motor for domestic water pump			
	Aligned and fixed the single phase electric motor at the selected place/base for domestic water pump			
	Connected electric supply from switch board to single phase electric motor for domestic water pump			
	Installed the earthing connection for single phase electric motor for domestic water pump			
Carry out testing and	Conducted visual inspection of single phase induction motor			

diagnose faults of single phase induction motor (Annexure-2)	Rotated the shaft of single phase induction motor manually to check the movement of shaft			
	Interpreted circuit diagram of single phase induction motor			
	Powered Off the single phase induction motor and took the resistance reading of single phase induction motor windings with Multi meter			
	Measured the voltage at single phase induction motor terminals and compared it with name plate voltage of the single phase induction motor			
	Checked the centrifugal switch of single phase induction motor with Multi meter for connecting/disconnecting windings operation			
	Checked the capacitance of the single phase induction motor's capacitor with capacitance meter			
	Tested the starting and running electric windings of single phase induction motor with Ohm meter			
Checked the insulation resistance of the windings of single phase induction motor with Meggar				
Remove faults of single phase induction motor	Checked and re-greased/replaced the faulty bearings of single phase induction motor			
	Checked and replaced the faulty capacitor of single phase induction motor			
	Checked and replaced the faulty centrifugal switch of single phase induction motor			
	Checked and replaced the starting and running electric windings of single phase induction motor			
	Conducted operational test of single phase induction motor after removing faults			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
<b>2. Other requirements</b>	Provided verified evidence of the competency Carry out testing, diagnose and remove faults of 0.6 Kilowatts DC carbon brush motor			
	Provided verified evidence of the competency Carry out testing, diagnose and remove faults of washing machine			
	Provided verified evidence of the competency Test electrical and electronic parameters of domestic single phase electric motor for water pump			
	Provided verified evidence of the competency Carry out assembling of electrical Juicer Machine			
	Provided verified evidence of the competency Carry out maintenance of flooded lead acid battery			
	Provided verified evidence of competency Carry out and test the rewinding of single phase induction motor			
	Provided verified evidence of competency Perform distribution of electrical supply in the institute/house/factory			

**3. Answer any questions the assessor may have during the practical assessment**

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

# 4

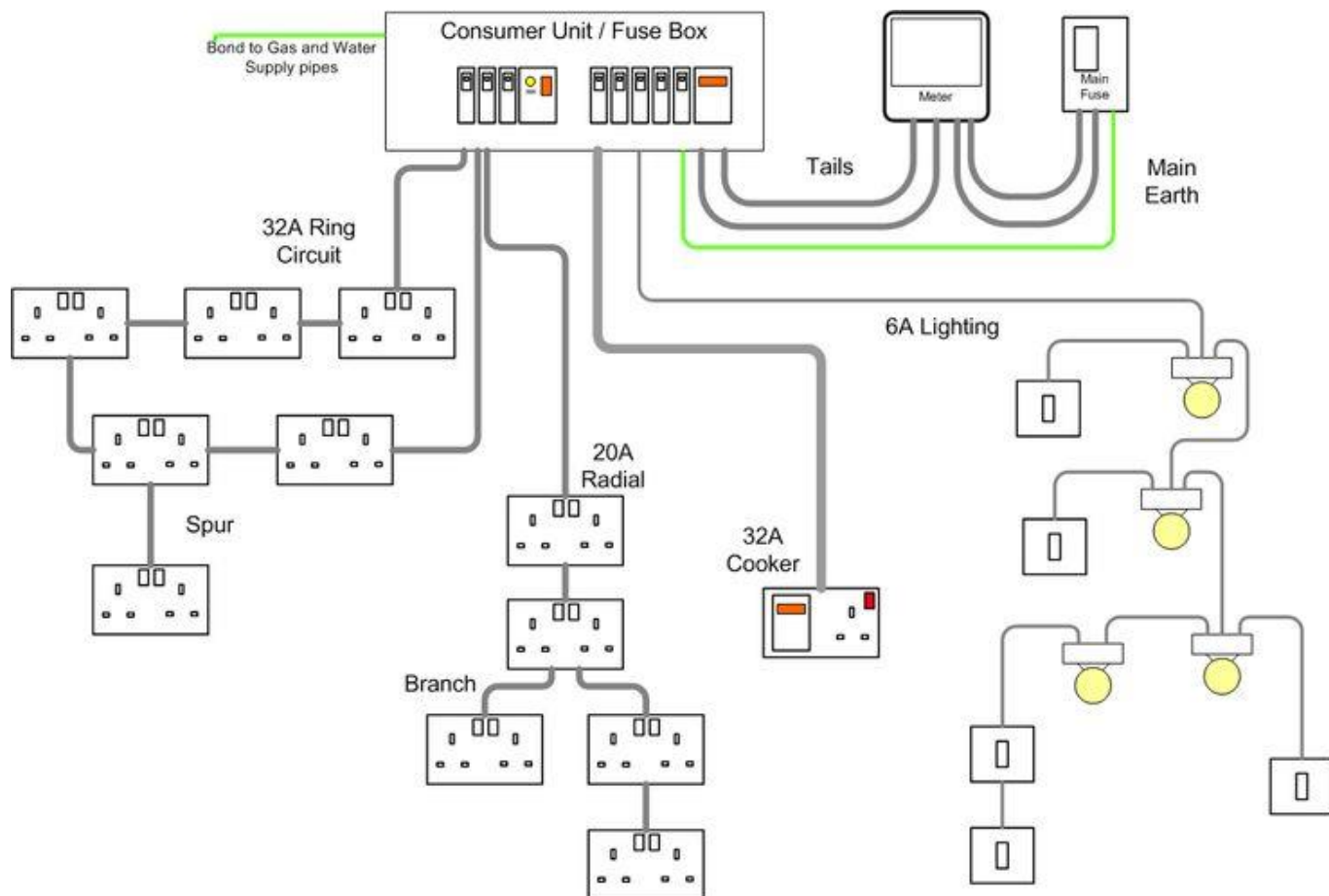
## LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

<b>INSTRUCTIONS</b>	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> <li>Context of the assessment</li> <li>List of required tools and equipment.</li> <li>List of consumable items required during the service</li> </ul>
<b>1. Context of Assessment</b>	This task will be performed in <b>real time</b> environment.

<b>2. List of tools and equipment required (for five candidates)</b>		
S. No	Items	Quantity
1	Multi Meter	5
2	Megger	5
3	Standard Tool Kit	5
4	Phase Tester	5
5	Personal Protective Equipment	5
6	Earth Resistance Tester	5
7	Bubble level	5
8	IR Temperature Gun	5
9	Earthing Leads	5
10	Earth Plate/Rod	5
11	Wooden PVC Board etc.	5
12	Single Phase Electric Motor for domestic water pump	5
13	Ceiling Fan	5
14	Clamp on meter	5
15	Motor Test Bench	5

<b>3. List of consumable items required (for five candidates)</b>		
S. No	Items	Quantity
1	Double Pole Breakers	5
2	Change Over Switch	5
3	Single Pole Breakers	As per requirement
4	Wire 3/0.029"	As per requirement
5	Wire 7/0.029"	As per requirement
6	Screws (Different types)	As per requirement
7	Tie Clamp	As per requirement
8	PVC, IG Conduit	As per requirement
9	Lamp Indicator	5
10	Digital/Analogue Voltmeter	5
11	Digital/Analogue Ampere Meter	5
12	Single & Two Way Switches	As per requirement
13	Sockets	As per requirement
14	Waste Cotton	1 Kg

Annexure-1



Annexure-2

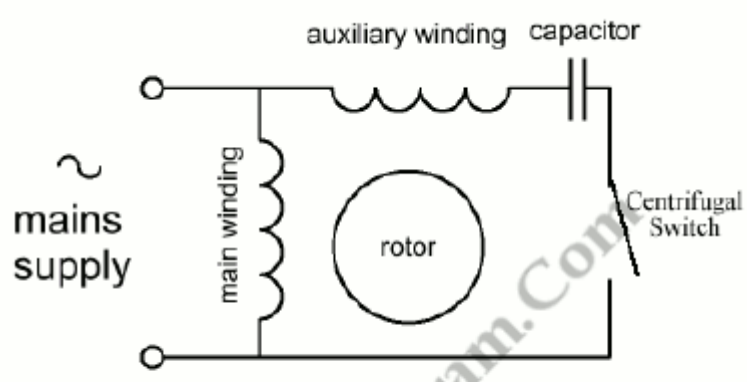




Figure 1. Capacitor Start AC Induction Motor


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