

National Technical and Vocational Qualifications Framework

NTVQF

**Competency Standards
for
Electrical Installation and Maintenance
(Civil Construction)
NTVQF Level – I, II, III & IV.**



Bangladesh Technical Education Board (BTEB)
Agargaon, Sher-E-Bangla Nagar, Dhaka-1207

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Preface

The TVET system has a large role to play in economic growth and social development as workforce provider to the labor market and as provider of skills to those who are looking for employment. In the case of Bangladesh, the TVET sector needs major reforms to ensure that issues of quality and capacity, relevance, and access are properly addressed.

Construction Industry Skills Council (CISC) in collaboration with Skills and Employment Programme branded as Sudokkho and Bangladesh Technical Education Board (BTEB) developed competency standards following National Skills Development Policy 2011 for the occupations which are in demand for the construction sector.

The development of competency standards is regarded as the heart of a competency-based training regime. Each standard defines sets of knowledge, skills and attitudes (KSAs) that a Bangladeshi trainee should be able to demonstrate at a recognized level of competence. It provides a common framework of outcomes between the labor and education sectors, as well as among workers, trainers and trainees.

A series of workshops – development, review and finalization - were conducted to ensure a workable National Competency Standards for the occupation. In the process of development, Sudokkho jointly with CISC and BTEB facilitated the competency standards development workshops involving industry experts recommended by the CISC. Standards development Technical Sub-Committee formed by CSIC took lead to review, modify, and edit standards so that identified competencies and standards match with the skills level of workers working in the industry. Subsequently, developed competency standards was validated and endorsed by Curriculum Development and Training Support Standing Committee which is a wing of CISC for developing curriculums and standards for construction sector.

It is hoped that this document reflects the real needs of the industry thereby providing a concrete basis for the curriculum development and assessment. In such a way, the development of relevant and competent workforce is not farfetched.

Chairperson

Construction Industry Skills Council

Chairman

Bangladesh Technical Education Board (BTEB)

Introduction

These Competency Standards were developed by the Technical Sub Committee (TSC) that was established by **Construction Industry Skills Council**. The rules of Skill Development Policy are maintained to develop the standards. The competency standards are the foundation on which new competency-based curriculum will be developed that responds better to the needs of industry for skilled workers. The members of the TSC are primarily from industry and training institutes. The members were trained and guided by an International Expert and National Experts to develop the standard. Persons who will successfully complete the new TVET programs based on these competency standards will receive a qualification in the new National Technical and Vocational Qualification Framework (NTVQF).

Competency Standards are nationally agreed and industry-determined competencies required for effective work performance. These are presented in a consistent format following sequence such as:

- Unit Title
- Unit Code
- Unit Descriptor
- Nominal Hours
- Elements and Performance criteria
- Range of Variables
- Evidence Guide

The Competency Standards are the core element for training, assessment and certification of skilled workers. Candidates who are successful in the assessment will receive a qualification in the National Technical and Vocational Qualifications Framework (NTVQF).

This document contains Course Structures for each qualification. This structure contains the Unit Title, Unit Code and Nominal Hours for the competencies.

The Competency Standards for **Electrical Installation and Maintenance (CC)** were developed by the Technical Sub Committee (TSC) that was established under the Industry Skills Council for **Construction Sector**. The members are primarily from industry with representatives from the Bangladesh Technical Education Board (BTEB) and the Directorate of Technical Education (DTE), Workers Association, and Training Institutions involved in this occupation. The Standards and Curriculum Development Committee (SCDC) of BTEB reviewed this document.

The development of Competency Standards was assisted by Sudokkho (Former Skills and Employment Programmes in Bangladesh; SEP-B) funded by DFID and SDC. This project is being implemented by the Palladium Group in partnership with Swisscontact and the British Council. The executing agency for the project is Directorate of Technical Education (DTE) of the Government of Bangladesh.

Endorsed by

Industry Skills Council
Date:

Approved by

Bangladesh Technical Education Board (BTEB)
Date:

**National Competency Standards for National Skill Certificate – I, II, III & IV in
Electrical Installation and Maintenance in Construction Sector.**

Bangladesh NTVQF with Job Classifications

NTVQF LEVELS	EDUCATION SECTORS			Job Classification
	Pre-Vocation Education	Vocational Education	Technical Education	
NTVQF 6			Diploma in engineering or equivalent	Middle Level Manager / Sub Assistant Engr. etc.
NTVQF 5		National Skill Certificate 5 (NSC 5)		Highly Skilled Worker / Supervisor
NTVQF 4		National Skill Certificate 4 (NSC 4)		Skilled Worker
NTVQF 3		National Skill Certificate 3 (NSC 3)		Semi-Skilled Worker
NTVQF 2		National Skill Certificate 2 (NSC 2)		Basic Skilled Worker
NTVQF 1		National Skill Certificate 1 (NSC 1)		Basic Worker
Pre-Voc 2	National Pre-Vocation Certificate 2 (NPVC 2)			Pre-Vocation Trainee
Pre-Voc 1	National Pre-Vocation Certificate 1 (NPVC 1)			Pre-Vocation Trainee

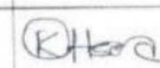
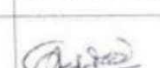
Annex 1: NTVQF Level Descriptors

NTVQF Level	Knowledge	Skill	Responsibility	Job Class.
6	Comprehensive actual and theoretical knowledge within a specific study area with an awareness of the limits of that knowledge	Specialised and restricted range of cognitive and practical skills required to provide leadership in the development of creative solutions to defined problems	- Manage a team or teams in workplace activities where there is unpredictable change - Identify and design learning programs to develop performance of team members	Supervisor / Middle Level Manager / Sub Assistant Engr. etc.
5	Very broad knowledge of the underlying, concepts, principles, and processes in a specific study area	Very broad range of cognitive and practical skills required to generate solutions to specific problems in one or more study areas.	- Take overall responsibility for completion of tasks in work or study - Apply past experiences in solving similar problems	Highly Skilled Worker / Supervisor
4	Broad knowledge of the underlying, concepts, principles, and processes in a specific study area	Range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying the full range of methods, tools, materials and information	- Take responsibility, within reason, for completion of tasks in work or study - Apply past experiences in solving similar problems	Skilled Worker
3	Moderately broad knowledge in a specific study area.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy	Semi-Skilled Worker
2	Basic underpinning knowledge in a specific study area.	Basic skills required to carry out simple tasks	Work or study under indirect supervision in a structured context	Basic Skilled Worker
1	Elementary understanding of the underpinning knowledge in a specific study area.	Limited range of skills required to carry out simple tasks	Work or study under direct supervision in a structured context	Basic Worker
Pre-Voc 2	Limited general knowledge	Very limited range of skills and use of tools required to carry out simple tasks	Work or study under direct supervision in a well-defined, structured context.	Pre-Vocation Trainee
Pre-Voc 1	Extremely limited general knowledge	Minimal range of skills required to carry out simple tasks	Simple work or study exercises, under direct supervision in a clear, well defined structured context	Pre-Vocation Trainee

List of Abbreviation

MoE	Ministry of Education
DG	Director General
DTE	Directorate of Technical Education
SDP	Skills Development Project
PD	Project Director
PIU	Project Implementation Unit
GOB	Government of Bangladesh
ADB	Asian Development Bank
SC	Swiss contact
ANTA	Australian National Training Authority
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BMET	Bureau of Manpower Employment and Training
NTVQ	National Technical Vocational Qualification
NTVQF	National Technical Vocational Qualification Framework
BTEB	Bangladesh Technical Education Board
CBT	Competency Based Training
CS	Competency Standard
HSC (Voc)	Higher Secondary Certificate (Vocational)
KSA	Knowledge, Skills, Attitude
MoLE	Ministry of Labor and Employment
NTVQF	National Technical Vocational Qualification Framework
NTVQ	National Technical Vocational Qualification
OHS	Occupational Health and Safety
PSC	Project Steering Committee
RMG	Ready Made Garments
RPL	Recognition of Prior Learning
SSC (Voc)	Secondary School Certificate (Vocational)

Bangladesh Technical Education Board (BTEB)
Standard and Curriculum Development Committee
National Competency Standards & Course Accreditation Document
for
Electrical Installation and Maintenance, Level – I, II, III & IV for
Construction Sector
Meeting held on 05.12.2017, 9.30 AM

SL No.	Name & Designation of Members	Address and Contact number	Designation of (SCDC)	Signature	Remarks
01.	Engr. Anisuzzaman Bhuiyan Rana, Chairperson	Curriculum Development & Training Support Standing Committee, Dhaka Cell: 01711522658	Chair Person		CS & CAD Approved
02.	Mr. Kawsar Hamid, Instructor,	BTTC, Dhaka Cell: 01622961882	Member		
03.	Mr. Asish Kumar, Instructor,	UCEP Bangladesh, Dhaka Cell: 01912760891	Member		
04.	Engr. Md. Rafiqul Islam, Managing Director	Star Power Solutions, Dhaka Cell: 01716093620	Member		
05.	Md. Fazlul Haque, Instructor (Electrical)	BKTTC, Dhaka. Mobile: 01715107077	Member		
06.	Mr. Md. Jahidul Haque, Instructor (Electrical)	Dhaka Polytechnic Institute, Dhaka, Mobile	Member	—	
07	Mr. Edoyat Hassan	Sector Head, Construction	Member		
08	Engr. Md. Mostafa	Industry Liaison Officer BTEB 01711-908529	Member		

The Qualification of the Competency Standards

1. Title of Qualification:	National Skill Certificate – I, II, III & IV in Electrical Installation & Maintenance in Construction Sector
2. Qualification Code:	CONEIM
3. Endorsement Date	05th Dec 2017
4. Purpose of the Qualification	The NSC - I in Electrical Installation & Maintenance Qualification consists of a set of electrical installation and maintenance works of competencies that a person must achieve in order to work competently in the Construction Sector as Electrician Assistant. In particular, he / she should be able to: 1. Apply Basic Mathematics for Measurement and Calculation 2. Practice Occupational Safety and Health (OSH) procedures 3. Work in a team environment 4. Work in the construction sector 5. Use tools for electrical works 6. Apply fundamental skills for electrical works 7. Perform wire and cable joints 8. Perform circuit connection 9. Perform installation of electrical circuits 10. Perform installation of electrical fittings 11. Perform channel wiring 12. Install fan The NSC - II in Electrical Installation & Maintenance Qualification consists of a set of electrical installation and maintenance works of competencies that a person must achieve in order to work competently in the Construction Sector as Junior Electrician. In particular, he / she should be able to: 1. Perform effective workplace interaction 2. Interpret construction sector related drawings 3. Install socket 4. Perform concealed work 5. Perform conduit work 6. Perform conduit wiring 7. Perform electrical home appliance repairing The NSC - III in Electrical Installation & Maintenance Qualification consists of a set of electrical installation and maintenance works of competencies that a person

	must achieve in order to work competently in the Construction Sector as Electrician. In particular, he / she should be able to: 1. Lead small team 2. Demonstrate work values in workplace 3. Practice negotiation skills 4. Perform circuit test 5. Perform installation of earthing system 6. Perform connection of change over and intermediate switch 7. Perform internal emergency service wiring 8. Maintain tools and equipment for electrical installation and maintenance works The NSC - IV in Electrical Installation & Maintenance Qualification consists of a set of electrical installation and maintenance works of competencies that a person must achieve in order to work competently in the Construction Sector as Senior Electrician. In particular, he / she should be able to: 1. Use ICT in workplace 2. Perform estimation and costing for electrical house wiring 3. Perform assembly & installation of ATS (Auto Transfer Switch) 4. Install auto water level control system with submersible pump 5. Perform 3 phase motor connection with VFD (Variable Frequency Drive)
5. Regulatory Arrangements	The holder of this qualification should have been assessed by a BTEB certified assessor and found to be competent in the units listed.
6. Accreditation Requirements	The qualifications shall be offered in compliance with the accreditation requirements set by BTEB.
7. Transition Arrangements	In the absence of certified assessors, the BTEB shall appoint trainers who have undergone assessment trainings.
8. Contact for Comments	Chairman Bangladesh Technical Education Board (BTEB) Agargaon, Sher-E-Bangla Nagar, Dhaka-1207.

**National Competency Standards for National Skill Certificate – I, II, III & IV in
Electrical Installation and Maintenance in Construction Sector**

Course Structure

SL	Unit Code & Title		UoC Level	Nominal Hours
The Generic Competencies (08 UoCs required)				200
1.	GN1001A2	Apply Basic Mathematics for Measurement and Calculation	1	40
2.	GN1002A2	Practice Occupational Safety and Health (OSH) Procedures	1	30
3.	GN1003A2	Work in a Team Environment	1	20
4.	GN2005A2	Perform Effective Workplace Interaction	2	20
5.	GN4007A2	Lead Small Team	4	20
6.	GN3008A1	Use ICT in Workplace	3	30
7.	GN3009A2	Demonstrate Work Values in Workplace	3	20
8.	GN3011A1	Practice Negotiation Skills	3	20
The Sector Specific Competencies (02 UoCs required)				60
1.	CONSS1001A2	Work in the Construction Sector	1	30
2.	CONSS2002A2	Interpret Construction Sector Related Drawings	2	30
The Occupation Specific Competencies (21 UoCs required)				910
1.	CONEIM1001A1	Use Tools for Electrical Works	1	50
2.	CONEIM1002A2	Apply Fundamental Skills for Electrical Works	1	30
3.	CONEIM1003A2	Perform Wire and Cable Joints	1	30
4.	CONEIM1004A2	Perform Circuit Connection	1	20
5.	CONEIM1005A2	Perform Installation of Electrical Circuits	1	20
6.	CONEIM1006A2	Perform Installation of Electrical Fittings	1	30

7.	CONEIM1007A2	Perform Channel Wiring	1	30
8.	CONEIM1008A2	Install Fan	1	30
9.	CONEIM2009A2	Install Socket	2	30
10.	CONEIM2010A2	Perform Concealed Work	2	50
11.	CONEIM2011A1	Perform Conduit Wiring	2	70
12.	CONEIM2012A2	Perform Electrical Home Appliance Repairing	2	70
13.	CONEIM3013A2	Perform Circuit Test	3	30
14.	CONEIM3014A2	Perform Installation of Earthing System	3	50
15.	CONEIM3015A2	Perform Connection of Change Over and Intermediate Switch	3	50
16.	CONEIM3016A2	Perform Internal Emergency Service Wiring	3	50
17.	CONEIM3017A2	Maintain Tools and Equipment of Electrical Installation and Maintenance Works	3	30
18.	CONEIM4018A2	Perform Estimation and Costing for Electrical House Wiring	4	50
19.	CONEIM4019A2	Perform Assembly & Installation of ATS (Auto Transfer Switch)	4	75
20.	CONEIM4020A2	Install Auto Water Level Control System with Submersible Pump	4	75
21.	CONEIM4021A2	Perform 3 Phase Motor Connection with VFD (Variable Frequency Drive)	4	40
Total Nominal Hours				1170

**National Competency Standards for National Skill Certificate – I, II, III & IV in
Electrical Installation and Maintenance in Construction Sector**

Course Structure – Level - I

SL	Unit Code & Title		UoC Level	Nominal Hours
The Generic Competencies (03 UoCs required)				90
1.	GN1001A2	Apply Basic Mathematics for Measurement and Calculation	1	40
2.	GN1002A2	Practice Occupational Safety and Health (OSH) Procedures	1	30
3.	GN1003A2	Work in a Team Environment	1	20
The Sector Specific Competency (01 UoC required)				30
1.	CONSS1001A2	Work in the Construction Sector	1	30
The Occupation Specific Competencies (08 UoCs required)				240
1.	CONEIM1001A1	Use Tools for Electrical Works	1	50
2.	CONEIM1002A2	Apply Fundamental Skills for Electrical Works	1	30
3.	CONEIM1003A2	Perform Wire and Cable Joints	1	30
4.	CONEIM1004A2	Perform Circuits Connection	1	20
5.	CONEIM1005A2	Perform Installation of Electrical Circuits	1	20
6.	CONEIM1006A2	Perform Installation of Electrical Fittings	1	30
7.	CONEIM1007A2	Perform Channel Wiring	1	30
8.	CONEIM1008A2	Install Fan	1	30
Total Nominal Hours				360
On the Job Training				160
Total Nominal Learning Hours				520

**National Competency Standards for National Skill Certificate – I, II, III & IV in
Electrical Installation and Maintenance in Construction Sector**

Course Structure – Level - II

SL	Unit Code & Title		UoC Level	Nominal Hours
The Generic Competency (01 UoC required)				20
1.	GN2005A2	Perform Effective Workplace Interaction	2	20
The Sector Specific Competency (01 UoC required)				30
1.	CONSS2002A2	Interpret Construction Sector Related Drawings	2	30
The Occupation Specific Competencies (04 UoCs required)				220
1.	CONEIM2009A2	Install Socket	2	30
2.	CONEIM2010A2	Perform Concealed Work	2	50
3.	CONEIM2011A1	Perform Conduit Wiring	2	70
4.	CONEIM2012A2	Perform Electrical Home Appliance Repairing	2	70
Total Nominal Hours				270
On the Job Training				216
Total Nominal Learning Hours				486

**National Competency Standards for National Skill Certificate – I, II, III & IV in
Electrical Installation and Maintenance in Construction Sector**

Course Structure – Level - III

SL	Unit Code & Title		UoC Level	Nominal Hours
The Generic Competencies (03 UoCs required)				60
1.	GN4007A2	Lead Small Team	4	20
2.	GN3009A2	Demonstrate Work Values in Workplace	3	20
3.	GN3011A1	Practice Negotiation Skills	3	20
The Occupation Specific Competencies (05 UoCs required)				210
1.	CONEIM3013A2	Perform Circuit Test	3	30
2.	CONEIM3014A2	Perform Installation of Earthing System	3	50
3.	CONEIM3015A2	Perform Connection of Change Over and Intermediate Switch	3	50
4.	CONEIM3016A2	Perform Internal Emergency Service Wiring	3	50
5.	CONEIM3017A2	Maintain Tools and Equipment of Electrical Installation and Maintenance Works	3	30
Total Nominal Hours				270
On the Job Training				216
Total Nominal Learning Hours				486

**National Competency Standards for National Skill Certificate – I, II, III & IV in
Electrical Installation and Maintenance in Construction Sector**

Course Structure – Level - IV

SL	Unit Code & Title		UoC Level	Nominal Hours
The Generic Competency (01 UoC required)				30
1.	GN3008A1	Use ICT in Workplace	3	30
The Occupation Specific Competencies (04 UoCs required)				240
1.	CONEIM4018A2	Perform Estimation and Costing for Electrical House Wiring	4	50
2.	CONEIM4019A2	Perform Assembly & Installation of ATS (Auto Transfer Switch)	4	75
3.	CONEIM4020A2	Install Auto Water Level Control System with Submersible Pump	4	75
4.	CONEIM4021A2	Perform 3 Phase Motor Connection with VFD (Variable Frequency Drive)	4	40
Total Nominal Hours				270
On the Job Training				216
Total Nominal Learning Hours				486

The Generic Competencies

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Apply Basic Mathematics for Measurement and Calculation
Unit Code	GN1001A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to apply basic mathematics for measurement and calculation. It includes identifying calculation requirements in the workplace, selecting appropriate mathematical methods for calculation; and performing basic workplace calculations.
Nominal Hours	40 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Identify calculation requirements in the workplace	1.1 <i>Calculation requirements</i> are identified from <i>workplace documents</i> . 1.2 <i>Relevant information</i> is interpreted from the workplace documents.
2. Select appropriate mathematical methods for calculation	2.1 Appropriate <i>Mathematical methods</i> are selected to carry out the calculation. 2.2 <i>System of units</i> and <i>parameters of measuring units</i> to be used are determined.
3. Perform basic workplace calculations	3.1 Appropriate <i>measuring instruments</i> are selected as per requirement. 3.2 Measurements of solid and liquid are taken using measuring instrument. 3.3 Calculations are completed using appropriate methods.
Range of Variables	
Variable	Range (may include but not limited to):
1. Calculation requirements	1.1 Area of simple shapes 1.1.1 Triangle 1.1.2 square 1.1.3 Rectangle 1.1.4 Circle 1.2 Volume 1.3 Diameter

	1.4 Radius 1.5 Unit conversion
2. Workplace documents	2.1 Technical drawing 2.2 Working drawing 2.3 Charts 2.4 Tables
3. Relevant information	3.1 Dimensions 3.1.1 Length 3.1.2 Width 3.1.3 Height 3.1.4 Depth 3.1.5 Angle 3.2 Unit of measurement 3.3 System of unit 3.4 Tolerances 3.5 Shapes of object
4. Mathematical methods	4.1 Addition 4.2 Subtraction 4.3 Division 4.4 Multiplication 4.5 Ratio on any types of real values (such as whole numbers, fractional numbers, percentages)
5. System of unit	5.1 SI (International System of Units) 5.2 MKS (Meter, Kilogram, Second) 5.3 FPS (Foot, Pound, Second) 5.4 CGS (Centimetre, Gram, Second)
6. Parameters of measuring units	6.1 Length / Breadth / Thickness 6.2 Area 6.3 Volume 6.4 Mass 6.5 Density 6.6 Time 6.7 Temperature 6.8 Speed 6.9 Angle
7. Measuring instruments	7.1 Measuring tape / Scale / Foot roller 7.2 Measuring cup 7.3 Balance 7.4 Protractor
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	

1. Critical aspects of competency	Assessment requires evidences that the candidate: 1.1 Identified calculation requirements from workplace documents 1.2 selected appropriate mathematical methods as per requirement 1.3 determined system of units and parameters of measuring units 1.4 selected appropriate measuring instrument for taking measurement of objects 1.5 performed measurement using measuring instrument.
2. Underpinning knowledge	2.1 List of workplace documents. 2.2 Calculation requirements in the workplace. 2.3 Unit of measurement. 2.4 System of units. 2.5 Unit conversion methods. 2.6 List of units of measurement. 2.7 Unit conversion chart. 2.8 Basic mathematical methods. 2.9 Generic measuring instruments and Equipment required for calculation. 2.10 Mathematical language, symbols and terminology. 2.11 Application of units. 2.12 Workplace documents / instructions. 2.13 Use arithmetic processes to find solutions of simple mathematical problems.
3. Underpinning skills	3.1 Identifying calculation requirements from workplace document / information. 3.2 Selecting and using appropriate mathematical methods. 3.3 Using mathematical symbols and terminology. 3.4 Applying appropriate units of measurement for calculating volume, weight, mass, density, length / breadth / thickness, time and temperature. 3.5 Interpreting workplace document for measurement and calculation. 3.6 Identifying calculation requirements from workplace document / information. 3.7 Using arithmetic processes to find solutions of simple mathematical problems.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn mathematics and calculation process.

	4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resource implication	The following resources must be provided: 5.1 workplace (actual or simulated). 5.2 tools, equipment and physical facilities appropriate to perform activities. 5.3 materials consumable to perform activities.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training centre or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Practice Occupational Safety and Health (OSH) Procedures
Unit Code	GN1002A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to practice occupational safety and health (OSH) procedures. It includes interpreting OSH policies and procedures, applying personal health and safety practices, identifying and reporting OSH hazards and risks, following emergency response procedures, and maintaining and improving safety and health hygiene in the workplace.
Nominal Hours	30 Hours
Elements of competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Interpret OSH policies and procedures	1.1 <i>Occupational Safety and Health (OSH) policies</i> are clarified. 1.2 <i>Safe operating procedures</i> are followed. 1.3 <i>Safety signs and symbols</i> are identified and followed 1.4 Workplace safety conditions are regularly reported to designated authority
2. Apply personal health and safety practices	2.1 Personal health and hygiene are interpreted. 2.2 Personal Health and hygiene are maintained according to health and hygiene procedures. 2.3 <i>Personal Protective Equipment (PPE)</i> are worn correctly and stored after use. 2.4 Clean and tidy workplace is maintained. 2.5 OSH equipment is maintained to keep them operational and compliant with OSH regulations.
3. Identify and report OSH hazards and risks	3.1 Immediate work area is routinely checked for OSH hazards prior to commencing and during work 3.2 <i>Hazards</i> and risks are identified. 3.3 Corrective actions are taken to mitigate hazards and risks within the level of responsibilities.

	3.4 OSH hazards and risk are reported to authorized personnel according to workplace procedures. 3.5 Incidents arising from hazards and risks are reported to designated authority. 3.6 Details of incidents are recorded accurately and clearly.
4. Follow emergency response procedures	4.1 Emergency situations are identified and reported according to workplace requirements. 4.2 Workplace emergency procedures are followed as appropriate to the nature of the emergency and according to workplace procedures. 4.3 Workplace procedures for dealing with accidents, fires and emergencies are followed. 4.4 Emergency response plans and procedures are implemented.
5. Maintain and improve safety hygiene in the workplace	5.1 Preventive measures are taken for OSH. 5.2 Corrective actions are taken to correct unsafe conditions in the workplace. 5.3 Appropriate control measures are implemented in the workplace. 5.4 Recommendations arising from risk assessments are implemented within level of responsibility. 5.5 Opportunities for improving Occupational Safety and Health hygiene performance are identified and reported to relevant personnel. 5.6 Safety records are maintained according to company policies. 5.7 "Fit to work" records are updated and maintained according to workplace requirements.
Range of Variables	
Variable	Range (may include but not limited to):
1. Occupational Safety and Health (OSH) Policies	1.1 Bangladesh standards for OSH 1.2 Building code 1.3 Fire safety rules and regulations 1.4 Code of practice 1.5 Industry guidelines 1.6 Organizational work policies

2. Safety signs and symbols	2.1 Direction signs (exit, emergency exit, etc.) 2.2 First aid signs 2.3 Danger Tags 2.4 Hazard signs 2.5 Safety tags 2.6 Warning signs
3. Safe operating procedures	3.1 Orientation on emergency exits, fire extinguishers, fire escape, etc. 3.2 Emergency procedures 3.3 First Aid procedures 3.4 Tagging procedures 3.5 Use of PPE 3.6 Safety procedures for hazardous substances
4. Personal Protective Equipment (PPE)	4.1 Gas / face mask 4.2 Hand / industrial gloves 4.3 Safety boots / shoes 4.4 Safety helmet / cap / mob cap / hair net 4.5 Overalls / aprons / overcoat 4.6 Goggles and safety glasses 4.7 Ear plugs 4.8 Sun block
5. Hazards	5.1 Chemical hazards such as acids, caustic, substances, etc. 5.2 Biological hazards such as bacteria, viruses, insects etc. 5.3 Physical hazards: 5.3.1 ergonomic 5.3.2 radiation 5.3.3 heat and cold stress 5.3.4 light 5.3.5 noise etc.
6. Emergency situations	6.1 Earth quake 6.2 Floods 6.3 Hurricanes 6.4 Tornadoes 6.5 Fires 6.6 Toxic gas releases 6.7 Chemical spills 6.8 Radiological accidents 6.9 Explosions

7. Workplace emergency procedures	7.1 Fire fighting 7.2 First aid 7.3 Emergency treatment 7.4 Evacuation
8. Workplace procedures	8.1 OSH system and related documentation including policies and procedures. 8.2 Standard Operating Procedures (SOPs). 8.3 Information on Hazards and work process, hazard alerts, safety signs and symbols. 8.4 Labels. 8.5 Material Safety Data Sheets (MSDSs) and manufacturers' advice.
9. "Fit to Work" records	9.1 Medical Certificate every year 9.2 Accident reports, if any
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 identified and followed safety signs and symbols 1.2 identified hazards and risks 1.3 identified and reported emergency situations 1.4 followed workplace emergency procedures 1.5 maintained safety records according to company policies.
2. Underpinning knowledge	2.1 Importance of Occupational Safety and Health (OSH). 2.2 OSH workplace policies and procedures. 2.3 Personal hygiene. 2.4 Types of incidents. 2.5 OSH policies, SOP, workplace emergency procedures. 2.6 Safety Sign and Symbols. 2.7 Types of hazards. 2.8 Types of Personal Protective Equipment (PPE) and uses. 2.9 Report and record procedure.
3. Underpinning skills	3.1 Identifying and using PPE as per job requirements. 3.2 Following OSH policies and procedures. 3.3 Identifying risks and hazards. 3.4 Reporting hazards and risks. 3.5 Responding to emergency procedures.

4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resource implication	The following resources must be provided: 5.1 workplace (actual or simulated). 5.2 equipment and outfits appropriate in applying safety measures. 5.3 tools, materials and documentation required. 5.4 relevant specifications or work instructions.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral Questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Work in a Team Environment
Unit Code	GN1003A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to work in a team environment. It includes interpreting team objectives and work processes, defining team role and scope, working as a team member, and communicating and cooperating with team members.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Interpret team objectives and work processes	1.1 Objectives of team are defined from available <i>sources of information</i> . 1.2 Work plan is interpreted. 1.3 Working processes are clearly interpreted.
2. Define team role and scope	2.1 Team structure and reporting relationship within the team are identified and interpreted. 2.2 <i>Role and responsibilities</i> of team members are defined according to job description. 2.3 Scopes of jobs for <i>team members</i> are identified and interpreted according to job requirements.
3. Work as a team member	3.1 Individual duties, responsibilities, authorities are clarified. 3.2 Tasks of team members are identified as per workplace standards. 3.3 Effective <i>forms of communication</i> are used to interact with team members. 3.4 Communication channels are maintained as per <i>workplace context</i> .
4. Communicate and cooperate with team members	4.1 Effective <i>interpersonal skills</i> are applied to interact with team members. 4.2 Views and opinions of other team members are respected and reflected accurately. 4.3 Appropriate <i>workplace terminology</i> is used for effective communication.

	4.4 Ideas related to team plans are contributed and recommendations for improving team work are move forward.
Range of Variables	
Variable	Range (may include but not limited to):
1. Sources of information	1.1 Standard Operating Procedures (SOP) 1.2 Job description 1.3 Operations Manuals 1.4 Organizational structures
2. Role and responsibilities	2.1 Contributing to overall team objectives 2.2 Completing individual deliverables 2.3 Providing expertise 2.4 Documenting the process 2.5 Mutual accountability
3. Team members	3.1 Employee / workers 3.2 Supervisor / manager 3.3 Peers / colleagues 3.4 Employee representative 3.5 Coach / mentors
4. Forms of communication	4.1 Verbal communication 4.2 Written communication 4.3 Nonverbal communication
5. Workplace context	5.1 National Laws and Statutes 5.2 Standard Operating Procedures 5.3 Workplace Rules and Regulations
6. Interpersonal skills	6.1 Listening skills 6.2 Negotiation 6.3 Problem-solving 6.4 Decision-making 6.5 Assertiveness 6.6 Work Ethic 6.7 Body Language 6.8 Collaboration 6.9 Positive Attitude 6.10 Workplace Etiquette
7. Workplace terminology	7.1 Sector 7.2 Occupation 7.3 Profession

	7.4 Career 7.5 Field 7.6 Job 7.7 Task 7.8 Position 7.9 Master Craft Person (MCP) 7.10 Administrator 7.11 Manager 7.12 Annual Confidential Report (ACR)
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 demonstrated knowledge in working in a team environment 1.2 interpreted work plan 1.3 maintained communication channels 1.4 viewed and respected other team members opinions.
2. Underpinning knowledge	2.1 Team objective, sources of information and work process. 2.2 Team structure, reporting relation, role and responsibilities, and scope of job. 2.3 Individual duties, responsibilities and authorities. 2.4 Tasks requirements, effective form of communication and workplace context. 2.5 Interpersonal skills, views and opinion of team members and workplace terminologies. 2.6 Idea related to team plan and recommendation.
3. Underpinning skills	3.1 Identifying role and responsibilities of team. 3.2 Identifying roles and responsibilities of individual members. 3.3 Participating in team discussion. 3.4 Working as a team member.

4. Required attitudes	4.1 Promptness in carrying out activities. 4.2 Sincere and honest to duties. 4.3 Eagerness to learn. 4.4 Positive attitude. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace. 4.9 Loyal to the senior colleagues
5. Resource implication	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 operations manual, job description manuals and organogram 5.3 sample case studies documents.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after Completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Perform Effective Workplace Interaction
Unit Code	GN2005A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform effective workplace interaction. It includes Interpreting workplace communication and etiquette, following verbal and written instruction, conveying instructions using verbal and written forms of communication, and participating in workplace meetings and discussions.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Interpret workplace communication and etiquette	1.1 Workplace code of conducts is interpreted as per organizational guidelines. 1.2 Appropriate lines of communication are maintained with supervisors and colleagues. 1.3 Workplace interactions are conducted in a <i>courteous manner</i> to gather and convey information. 1.4 Questions about routine <i>workplace procedures and matters</i> are asked and responded as required.
2. Follow verbal and written instruction	2.1 Verbal instructions are accessed and interpreted. 2.2 Questions are asked to clarify understanding or gain more information. <i>2.3 Written instructions</i> are interpreted correctly in accordance with <i>workplace guidelines</i>. 2.4 Work <i>signage</i>'s are properly responded to customer requirement. 2.5 Routine written instructions are followed in sequence. 2.6 Feedback is given to workplace supervisor based on workplace guidelines.

3. Convey instructions using verbal and written forms of communication	3.1 Media of communication are identified and used in accordance with legal requirement and workplace guidelines. 3.2 Channel of communication is identified. 3.3 Relevant communication methods are used to transmit instructions. 3.4 Communication tools and equipment are operated, and faults are identified and reported. 3.5 Information is conveyed using appropriate forms.
4. Participate in workplace meetings and discussions	4.1 Team meetings are attended on time and meeting procedures and etiquette are followed. 4.2 Own opinions are expressed and others opinions are listened without interruption. 4.3 Inputs are provided consistent with meeting purpose and meeting outcomes are implemented. 4.4 Moral issues are considered and practiced during interaction in meeting.
Range of Variables	
Variable	Range (may include but not limited to):
1. Courteous manner	1.1 Thank you 1.2 Greeting 1.3 Apologize 1.4 Respect 1.5 Active Listening 1.6 Honor to person with disabilities 1.7 Smile 1.8 Treat others the way you want to be treated
2. Workplace procedures and matters	2.1 Notes 2.2 Agenda 2.3 Simple reports 2.3.1 Progress report 2.3.2 Incident report 2.4 Job sheets 2.5 Operational manuals 2.6 Brochures and promotional material 2.7 Visual and graphic materials 2.8 Standards 2.9 OSH information 2.10 Signs

3. Written instructions	3.1 Supervisor's/manager's instructions 3.2 Memoranda 3.3 Rules and regulations 3.4 Signage 3.5 Approved work plan 3.6 External communications
4. Workplace guidelines	4.1 Labor policies and guidelines 4.2 HR policy 4.3 Job description 4.4 Operations manual 4.5 Organizational manuals 4.6 Quality assurance handbook
5. Signage's	5.1 On-site direction signs 5.2 Common site warnings 5.3 Location signs 5.4 Traffic signs
6. Media of communication	6.1 Face to face conversation 6.2 Print media 6.3 Electronic media 6.4 Social media
7. Channel of communication	7.1 Peers / Colleagues 7.2 Subordinates 7.3 Superiors
8. Communication methods	8.1 Non-verbal 8.2 Verbal instructions 8.3 Written instructions 8.4 Online communication
9. Communication tools and equipment	9.1 Telephone 9.2 Mobile Phone 9.3 Fax Machines 9.4 Two-way Radio 9.5 Computers 9.6 Forms 9.7 Memo
10. Forms	10.1 Memorandum 10.2 Requisitioning Form 10.3 Personnel Form 10.4 Safety Report Form
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	

1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 maintained lines of communication with supervisors and colleagues 1.2 responded work signages as per customer requirements 1.3 use media of communication and channel of communication 1.4 operated communication tools and equipment 1.5 considered moral issues and practiced during interaction in meeting.
2. Underpinning knowledge	2.1 Channel of communication. 2.2 Workplace etiquette. 2.3 Courteous manner. 2.4 Communication method 2.5 Workplace documents, signs and symbols. 2.6 Meeting procedure 2.7 Professional ethics. 2.8 Feedback procedures as per workplace guidelines
3. Underpinning skills	3.1 Interpreting workplace communication and etiquette. 3.2 Following workplace instructions and symbols. 3.3 Receiving instructions. 3.4 Interpreting verbal and written instructions. 3.5 Conveying workplace instructions. 3.6 Participating workplace meetings and discussions. 3.7 Following workplace meeting procedures. 3.8 Following communication method.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated). 5.2 materials relevant to the proposed activity. 5.3 all tools, equipment, material and documentation required. 5.4 relevant specifications or work instructions.

6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Lead Small Team
Unit Code	GN4007A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to lead small team. It includes providing team leadership, assigning responsibilities, setting performance expectations for team members, supervising team performance and practicing problem solving within the team.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Provide team leadership	1.1 <i>Work requirements</i> are identified and presented to team members. 1.2 Reasons for instructions and requirements are communicated with team members. 1.3 <i>Team members' queries and concerns</i> are recognized, discussed and dealt with team members.
2. Assign responsibilities	2.1 Duties, and responsibilities are allocated properly considering the assigned task. 2.2 Duties are allocated regarding individual preference, domestic and personal considerations whenever possible.
3. Set performance expectations for team members	3.1 Performance expectations are set based on individual team member duties and area of responsibilities. 3.2 Performance expectations are discussed and directed to implement at workplace. 3.3 Performance expectations are established based on client needs and according to assignment requirements.
4. Supervise team performance	4.1 <i>Monitoring of performance</i> are taken place against defined performance criteria 4.2 Assignment instructions and corrective action are taken if required.

	4.3 Team members are provided feedback, positive support and advice on strategies to overcome the deficiencies. 4.4 Performance issues which cannot be rectified or addressed within the team are referenced to designated person. 4.5 Team members are kept informed of any changes in the priority allocated to assignments or tasks Team operations are monitored to ensure that employer / client needs and requirements are met. 4.6 Follow-up communication is provided on all issues affecting the team.
5. Practice problem solving within the team	5.1 Problems faced at the individual and team level are identified and shown the root causes of the problems. 5.2 Range of solutions and courses of action are identified together with benefits, costs, and risks associated with each. 5.3 Good ideas of others to help develop solutions are recognized and advice sought from those who have solved similar problems. 5.4 Recommendations for improving team work are put forward. 5.5 Current and potential problems faced by team are identified. 5.6 Procedures for avoiding and managing problems are identified. 5.7 Problems solving activities are applied effectively and, in a manner, which supports the team.
Range of Variables	
Variable	Range (may include but are not limited to):
1. Work requirements	1.1 Client Profile 1.2 Assignment instructions
2. Team member's queries and concerns	2.1 Roster 2.2 Shift details
3. Monitoring of performance	3.1 Formal process 3.2 Informal process

4. Feedback	4.1 Formal process 4.2 Informal process 4.3 Sandwich process
5. Performance issues	5.1 Work output 5.2 Work quality 5.3 Team participation 5.4 Compliance with workplace protocols 5.5 Safety 5.6 Customer service
6. Problems solving activities	6.1 Identifying the problem 6.2 Consider solutions 6.3 Action 6.4 Follow-up
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 identified and presented work requirements 1.2 allocated duties and responsibilities considering task requirements 1.3 established performance expectations as per assignment requirements 1.4 monitored performance, provided feedback and positive support 1.5 applied problem-solving activities.
2. Underpinning knowledge	2.1 Company policies and procedures. 2.2 Relevant legal requirements. 2.3 How performance expectations are set. 2.4 Methods of monitoring performance. 2.5 Client expectations. 2.6 Team members' duties and responsibilities. 2.7 Understanding the root causes of problem and problem-solving strategies.
3. Underpinning skills	3.1 Counseling informal performance skills. 3.2 Building team skills. 3.3 Negotiating skills. 3.4 Problem analysis. 3.5 Applying problem solving activities. 3.6 Providing feedback and positive support.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities.

	4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Communicate with peers and seniors in workplace. 4.8 Respect for rights of peers and seniors in workplace.
5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 relevant standards and reference manual 5.3 sample case study documents.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Use ICT in Workplace
Unit Code	GN3008A1
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use ICT in workplace. It includes interpreting the use of ICT tools and applications, preparing for work, working with desktop items and file / folders, working with word processing software, using spreadsheet packages to create worksheets, preparing presentation, printing documents and using internet and access e-mail.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Interpret the use of ICT tools and applications	1.1 Importance of ICT uses in workplace are interpreted. 1.2 <i>ICT tools and applications</i> are identified. 1.3 Functions of basic ICT tools and applications are described.
2. Prepare for the work	2.1 Health and safety requirements are identified and followed as per workplace requirements and set guidelines. 2.2 Tasks are identified and prioritized as per workplace requirements. 2.3 Required ICT tools and applications are prepared and organized for the job. 2.4 <i>Peripherals</i> and power connections are checked / connected with computer as per standard procedure. 2.5 Computer is switched on gently as per standard procedure.
3. Work with desktop items and file / folders	3.1 <i>Desktop / GUI settings</i> are customized as per requirement. 3.2 Files and folders are created, opened, copied, renamed, deleted and sorted as per requirement. 3.3 Properties of files and folders are viewed and searched.

4. Work with word processing software	4.1 Systematic typing in word processor are demonstrated. 4.2 Documents are created and prepared as per personal / office requirement. 4.3 Toolbar items are entered as per documents requirement. 4.4 Document is formatted using font, paragraph and styles. 4.5 page settings for printing are completed. 4.6 Saving and retrieving technique of document are demonstrated.
5. Use spreadsheet packages to create worksheets	5.1 Spreadsheet packages are selected and opened. 5.2 Worksheets are created as per requirement in Personal use and office environment. 5.3 Data are entered. 5.4 Functions are used for calculating and editing logical operation. 5.5 Worksheets are formatted as per requirement. 5.6 Charts are created. 5.7 Charts / Sheets are previewed.
6. Prepare presentation	6.1 Presentation software packages are selected and installed. 6.2 Presentation is created as per requirement in personal use and office environment 6.3 Image, Illustrations, text, table, symbols and media are entered as per requirements. 6.4 Presentations are formatted and animated. 6.5 Presentations are previewed.
7. Print documents	7.1 Printer is connected with computer and power outlet as pre standard. 7.2 Power is switched on at both the power outlet and printer. 7.3 Printer is installed and added. 7.4 Correct printer settings are selected and document is printed.
8. Use internet and access e-mail	8.1 Search engines are used to access information and resources. 8.2 Video / Information are Shared /downloaded / uploaded from / to web site / social media using internet browsers. 8.3 E-mail address is created and accessed.

	8.4 Document is prepared, attached and sent to recipients including Cc and Bcc. 8.5 E-mail is read, forwarded, replied, customized and deleted as per requirement. 8.6 E-mail messages are printed.
Range of Variables	
Variable	Range (may include but not limited to):
1. ICT tools and applications	1.1 Phone 1.2 Cell Phone 1.3 TABs 1.4 Computers 1.5 Laptops 1.6 Notebooks 1.7 Internet 1.8 Software
2. Peripherals	2.1 Monitor 2.2 Keyboard 2.3 Mouse 2.4 Modem 2.5 Scanner 2.6 Printer
3. Desktop / GUI settings	3.1 Icons 3.2 Taskbar 3.3 View 3.4 Resolutions
4. Documents	4.1 Word documents 4.2 Standard CV / Bio-Data with different text & fonts, image and table 4.3 Application / Official letter with proper paragraph and indenting, spacing, styles, illustrations, tables, header & footers and symbols 4.4 Standard report / newspaper items with column, footnote and endnote, drop cap, indexing and page numbering
5. Toolbar items	5.1 Table 5.2 Illustrations and styles 5.3 Text 5.4 Header & Footer 5.5 Symbols
6. Formatted	6.1 Bold 6.2 Italic 6.3 Underline

	6.4 Font size, colour, 6.5 Change case 6.6 Alignment and intend
7. Functions	7.1 Mathematics 7.2 Logical 7.3 Simple Statistical
8. Internet Browsers	8.1 Internet Explorer 8.2 Firefox 8.3 Google Chrome 8.4 Opera 8.5 Safari 8.6 Omni Web
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 followed OSH standard and safe work procedures 1.2 completed application software installations properly 1.3 performed simple trouble shooting with computer 1.4 configured appropriate printer settings and printed the document 1.5 demonstrated ability to create e-mail accounts.
2. Underpinning knowledge	2.1 Basic components of PC. 2.2 IT and IT Tools. 2.3 Type of software and application packages. 2.4 Use of word processor, spreadsheet and presentation software. 2.5 Type of math and logical functions. 2.6 Computer troubleshooting. 2.7 Techniques to access internet.
3. Underpinning skills	3.1 Identifying and using IT Tools. 3.2 Demonstrating simple troubleshooting with computer. 3.3 Demonstrating typing on word processing software. 3.4 Creating, opening, copying, renaming, deleting and sorting files and folders as per requirement. 3.5 Saving and retrieving documents on word processing software. 3.6 Demonstrating ability to create e-mail accounts. 3.7 Opening an e-mail account and use it for different purpose.

	3.8 Configuring appropriate printer settings and print documents. 3.9 Using functions for calculating and editing logical operation in spreadsheet.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 IT Tools 5.3 computers with word processing application 5.4 internet connection 5.5 learning manuals.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training centre or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Demonstrate Work Values in Workplace
Unit Code	GN3009A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to demonstrate work values. It includes defining the purpose of work, applying work values / ethics, dealing with ethical problems and maintaining integrity of conduct in the workplace.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the range of variables
1. Define the purpose of work	1.1 One's unique sense of purpose for working and the why's of work are identified, reflected. 1.2 Clearly defined for one's development as a person and as a member of society. 1.3 Personal mission is defined and harmonized with company's objectives.
2. Apply work values / ethics	2.1 <i>Work values / ethics / concepts</i> are classified and reaffirmed in accordance with the transparent ethical standards, policies and guidelines. 2.2 <i>Work practices</i> are undertaken in compliance with industry work ethical standards, organizational policy and guidelines. 2.3 Personal behavior and relationships with co-workers are maintained as per standards, policy and guidelines. 2.4 <i>Company resources</i> are used in accordance with transparent company ethical standard, policies and guidelines.
3. Deal with ethical problems	3.1 Prevention and reporting of unethical conduct are accessed. 3.2 Actions are taken accordance with transparent ethical standard, policies and guidelines.

	3.3 Work incidents / situations are reported and/or resolved in accordance with company protocol / guidelines. 3.4 Resolution and / or referral of identified ethical problems are used as learning opportunities.
4. Maintain integrity of conduct in the workplace	4.1 Personal work practices and values are demonstrated consistently with acceptable ethical conduct and company's core values. 4.2 Instructions to co-workers are provided based on ethical, lawful and reasonable directives. 4.3 Company values / practices are shares with co-workers using appropriate behavior and language.
Range of Variables	
Variable	Range (may include but not limited to):
1. Work values / ethics / concepts	1.1 Commitment / Dedication 1.2 Sense of urgency 1.3 Sense of purpose 1.4 Love for work 1.5 High motivation 1.6 Orderliness 1.7 Reliability 1.8 Competence 1.9 Dependability 1.10 Goal-oriented 1.11 Sense of responsibility 1.12 Being knowledgeable 1.13 Loyalty to work / company 1.14 Sensitivity to others 1.15 Compassion / Caring attitude 1.16 Balancing between family and work 1.17 Benjamin spirit / teamwork 1.18 Sense of nationalism 1.19 Gender awareness
2. Work practices	2.1 Quality of work 2.2 Punctuality 2.3 Efficiency 2.4 Effectiveness 2.5 Productivity 2.6 Resourcefulness 2.7 Innovativeness / Creativity 2.8 Cost consciousness 2.9 5S

	2.10 Attention to details
3. Company resources	3.1 Consumable materials 3.2 Equipment / Machineries 3.3 Human 3.4 Time 3.5 Financial resources
4. Incidents / situations	4.1 Violent / intense dispute or argument 4.2 Gambling 4.3 Use of prohibited substances 4.4 Pilferages 4.5 Damage to person or property 4.6 Vandalism 4.7 Falsification 4.8 Bribery 4.9 Sexual Harassment 4.10 Blackmail
5. Instructions	5.1 Verbal 5.2 Written
Evidence Guide Evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 defined one's unique sense of purpose for working 1.2 clarified and affirmed work values / ethics / concepts consistently in the workplace 1.3 demonstrated work practices satisfactorily and consistently in compliance with industry work ethical standards, organizational policy and guidelines 1.4 demonstrated personal behavior and relationships with co-workers and / or clients consistent with ethical standards policy and guidelines 1.5 used company resources in accordance with company ethical standard, policies and guidelines 1.6 followed company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct / behavior 1.7 demonstrated sufficient knowledge of the factors influencing negotiation to achieve agreed outcome 1.8 participated in negotiation with at least one person to achieve an agreed outcome.

2. Underpinning knowledge	2.1 Occupational safety and health. 2.2 Work values and ethics. 2.3 Company performance and ethical standards. 2.4 Company policies and guidelines. 2.5 Fundamental rights at work including gender sensitivity. 2.6 Work responsibilities / job functions. 2.7 Corporate social responsibilities. 2.8 Company code of conduct / values. 2.9 Balancing work and family responsibilities. 2.10 Codes of practice and guidelines for the organization. 2.11 Organization policy and procedures for negotiations. 2.12 Decision making and conflict resolution strategies procedures. 2.13 Problem solving strategies on how to deal with unexpected questions and attitudes during negotiation.
3. Underpinning skills	3.1 Developing interpersonal skills to strengthen rapport with other parties. 3.2 Communicating with others (verbal and listening). 3.3 Self-awareness, understanding and acceptance. 3.4 Applying good manners and right conduct. 3.5 Observation skills. 3.6 Negotiation skills.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect to rights for peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resources implication	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 case studies / scenarios 5.3 room with facilities necessary for the negotiation process 5.4 human resources (negotiators).

6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training centre or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified Assessor.
Accreditation Requirements Training providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Practice Negotiation Skills
Unit Code	GN3011A1
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to practice negotiation skills. It includes planning negotiations and participating in negotiations.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Plan negotiations	1.1 Information on <i>preparing for negotiation</i> is identified and included in the plan. 1.2 Information on creating <i>non-verbal environments</i> for positive negotiating is identified and included in the plan. 1.3 Information on <i>active listening</i> is identified and included in the plan. 1.4 Information on different <i>questioning techniques</i> is identified and included in the plan. 1.5 Information is checked to ensure it is correct and up-to-date.
2. Participate in negotiations	2.1 Criteria for successful outcome are agreed upon by all parties. 2.2 Desired outcome of all parties is considered. 2.3 Appropriate language is used throughout the negotiation. 2.4 A variety of questioning techniques are used. 2.5 The issues and processes are documented and agreed upon by all parties. 2.6 Possible solutions are discussed and their viability assessed. 2.7 Areas for agreement are confirmed and recorded. 2.8 Follow-up action is agreed upon by all parties.
Range of Variables	

Variable	Range (may include but not limited to):
1. Preparing for negotiation	1.1 Background information on other parties to the negotiation 1.2 Good understanding of topic to be negotiated 1.3 Clear understanding of desired outcome/s 1.4 Personal attributes ▪ Self esteem ▪ Self esteem ▪ Objectivity ▪ Empathy ▪ Respect for others 1.5 Interpersonal skills ▪ Listening / reflecting ▪ Non-verbal communication ▪ Assertiveness ▪ Behavior labeling ▪ Testing understanding ▪ Seeking information ▪ Self-disclosure 1.6 Analytic skills ▪ Observing differences between content and process ▪ Identifying bargaining information ▪ Applying strategies to manage process ▪ Applying steps in negotiating process ▪ Strategies to manage conflict ▪ Steps in negotiating process ▪ Options within organization and externally for resolving conflict
2. Non-verbal environments	2.1 Friendly reception 2.2 Warm and welcoming room 2.3 Refreshments offered 2.4 Lead in conversation before negotiation begins
3. Active listening	3.1 Attentive 3.2 Don't interrupt 3.3 Good posture 3.4 Maintain eye contact 3.5 Reflective listening
4. Questioning techniques	4.1 Direct 4.2 Indirect 4.3 Human Open-ended

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 demonstrated sufficient knowledge of the factors influencing negotiation to achieve agreed outcome 1.2 participated in negotiation with at least one person to achieve an agreed outcome.
2. Underpinning knowledge	2.1 Codes of practice and guidelines for the organization. 2.2 Organization policy and procedures for negotiations. 2.3 Decision making and conflict resolution strategies procedures. 2.4 Problem solving strategies on how to deal with unexpected questions and attitudes during negotiation. 2.5 Flexibility. 2.6 Empathy.
3. Underpinning skills	3.1 Interpersonal skills to develop rapport with other parties. 3.2 Communication skills (verbal and listening). 3.3 Observation skills. 3.4 Negotiation skills.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Environmental concerns. 4.5 Eagerness to learn. 4.6 Tidiness and timeliness. 4.7 Respect to rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 human resources (negotiators).
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.

7. Context of assessment	7.1 Competency assessment must be done in a training centre or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
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The Sector Specific Competencies

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Work in the Construction Sector
Unit Code	CONSS1001A2
Unit Descriptor	This unit covers the knowledge, skills and attitude required to work in the construction sector. It includes identifying organizational structure within the sector, identifying processes and procedures, identifying workplace requirement and organizing own workload.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Identify organizational structure within the sector	1.1 Profile of the construction sector of Bangladesh is explained. 1.2 Scope, nature and <i>major fields</i> of the construction sector are identified. 1.3 <i>Occupations</i> or trade names of the construction sector are identified. 1.4 Changes in the trends and technologies relevant to the sector are explained. 1.5 <i>Employment conditions</i> are identified in line with the construction sector of Bangladesh. 1.6 Relevant policies and guidelines are identified and interpreted.
2. Identify processes and procedures	2.1 <i>Instructions</i> as to procedures in achieving quality are obtained, understood, and clarified. 2.2 Construction processes are identified, described and explained. 2.3 Work activities are correctly identified.
3. Identify workplace requirements	3.1 <i>Workplace requirements</i> are identified and clarified. 3.2 Role, responsibilities and duties are identified and related to jobs and career paths. 3.3 Workplace's practices are identified. 3.4 <i>Problem-solving strategies</i> are used to address bottlenecks, inconsistencies and other concerns.

4. Organize own workload	4.1 Own work activities are planned and progress of work is communicated to relevant staff. 4.2 Work activities are completed. 4.3 Difficulties and bottlenecks are identified, and solutions are put forwarded. 4.4 Own work is monitored against workplace standards and areas for improvement identified and acted upon.
Range of Variables	
Variable	Range (may include but not limited to):
1. Major Fields	1.1 Residential Building Construction 1.2 Industrial Building Construction 1.3 Roads & Highway construction 1.4 Bridge & Calvert Construction 1.5 Railway Construction 1.6 Foundation Works (Anchoring & Piling) 1.7 Pipelaying 1.8 Tunnel / Marine Construction
2. Occupations	2.1 Masonry 2.2 Finishing carpentry 2.3 Shuttering 2.4 Painting 2.5 Residential Electrical Wiring and Cabling 2.6 Dogging 2.7 Rigging 2.8 Scaffolding 2.9 Rod Binding 2.10 Plumbing 2.11 Tile and Marble Setting
3. Employment conditions	3.1 Code of Practice 3.2 Salary / Wage System 3.3 Labor Practices 3.4 Anti-Discrimination Policy 3.5 Gender Issues 3.6 Collective Bargaining and Other Practices 3.7 Awards 3.8 Procedures for Handling Disputes 3.9 Innovations in the Sector
4. Instructions	4.1 Specifications and requirements 4.2 Standard operating procedures 4.3 Manuals of Instruction 4.4 Environmental Guidelines 4.5 Gender and Develop Guidelines

5. Workplace requirements	5.1 Goals and objectives 5.2 Strategic and Operational Plans 5.3 Systems and Processes 5.4 Monitoring and Evaluation 5.5 Reports and Documentation
6. Problem-solving strategies	6.1 Asking questions 6.2 Feedback and feed forward system 6.3 Reference to Standard Operating Procedures 6.4 Accessing Information 6.5 Reviews 6.6 Brainstorming
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 identified the major fields of the construction sector 1.2 explained trends of technologies to the sector 1.3 identified, described and explained construction processes 1.4 demonstrated knowledge in working in the construction sector 1.5 identified the job roles and job descriptions of each personnel working in the construction sector.
2. Underpinning knowledge	2.1 Scope and major fields of the construction sector of Bangladesh. 2.2 Relevant policies and guidelines for the construction sector. 2.3 Manuals used in the construction sector. 2.4 Relevant terminologies and acronyms 2.5 Workplace practices and requirements.
3. Underpinning skills	3.1 Describing construction sector of Bangladesh. 3.2 Describing organization structure within the sector. 3.3 Identifying construction processes and procedures 3.4 Identifying workplace practices and requirements 3.5 Organizing own workload
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Environmental concerns. 4.5 Eagerness to learn.

	4.6 Tidiness and timeliness. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 pens 5.3 telephone 5.4 computer 5.5 writing materials 5.6 online communication.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after Completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Interpret Construction Sector Related Drawing
Unit Code	CONSS2002A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to interpret construction sector related drawing. It includes identifying types of drawings and their functions, interpreting drawings and specifications and storing drawings.
Nominal Hours	30 Hours
Elements of competency	Performance criteria <i>Bold & italicized</i> words are detailed in the Range of Variables
1. Identify types of drawings and their functions	1.1 Types of <i>drawings</i> used in the construction sector are identified. 1.2 Drawings are checked and validated with the assistance of senior workers. 1.3 Drawing version is checked and validated. 1.4 <i>Key features</i> of each type of drawing are identified.
2. Interpret drawings and specifications	2.1 <i>Specifications</i> are correctly interpreted. 2.2 Common construction <i>Terms and abbreviations</i> are interpreted. 2.3 Common construction <i>Signs and symbols</i> are interpreted. 2.4 Schedules, dimensions and specifications contained in the drawings are interpreted.
3. Store drawings	3.1 Drawings are folded and packed. 3.2 Drawings are stored to prevent damage, and ready access and updating of information when required.
Range of Variables	
Variable	Range (may include but not limited to):
1. Drawings	1.1 Technical drawings 1.2 Working drawing 1.3 Free hand sketch
2. Key features	2.1 Characteristics 2.2 Construction

	2.3 Location of projects 2.4 Dimension unit 2.5 Quantities 2.6 Sizes 2.7 Type of product or service
3. Specifications	3.1 Product specifications 3.1.1. Material types 3.1.2. Standards of work 3.1.3. Tolerances 3.1.4. Treatments and finishes
4. Instructions	4.1 Orders 4.2 Special Orders
5. Terms and abbreviations	5.1 Refers to common terms and abbreviations associated with the construction sector
6. Signs and symbols	6.1 Refers to common signs and symbols associated with the construction sector
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment requires evidences that the candidate: 1.1 identified types of drawings 1.2 validated drawing version 1.3 interpreted the specifications correctly 1.4 identified dimension according to job requirement 1.5 interpreted clearances and tolerances according to the fit requirement 1.6 interpreted drawing symbols 1.7 interpreting terms and abbreviations.
2. Underpinning knowledge	2.1 Identification of signs and symbols. 2.2 Identification of Units of Measurement. 2.3 Identification of Units of Conversion. 2.4 Drawings and Specifications. 2.5 Terms and Abbreviations.
3. Underpinning skills	3.1 Identifying appropriate drawings. 3.2 Validating relevant drawings. 3.3 Interpreting specifications. 3.4 Interpreting terms and abbreviations. 3.5 Storing manuals.

4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Environmental concerns. 4.3 Eagerness to learn. 4.4 Promptness in carrying out activities. 4.5 Tidiness and timeliness. 4.6 Sincere and honest to duties. 4.7 Communication with peers and seniors at workplace. 4.8 Respect for rights of peers and seniors at workplace.
5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 tools, equipment and physical facilities appropriate to perform activities 5.3 materials relevant to the proposed activity.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written Test 6.2 demonstration 6.3 oral Questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
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The Occupation Specific Competencies

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Use Tools for Electrical Works
Unit Code	CONEIM1001A1
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use tools for electrical works. It includes identifying tools, using hand tools and power tools, performing basic preventive maintenance and maintaining workplace and storing tools and equipment.
Nominal Hours	50 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Identify tools	1.1 <i>Hand tools</i> , their functions are identified and selected. 1.2 <i>Power tools</i> , their functions are identified and selected. 1.3 <i>Applications</i> of tools are defined.
2. Use hand tools	2.1 <i>Personal Protective Equipment (PPE)</i> is used. 2.2 Hand tools are prepared for works according to workplace procedures. 2.3 Proper hand-eye coordination is applied when using hand tools. 2.4 Safety requirements are complied with before, during and after use. 2.5 Unsafe or faulty tools are identified and marked for repair according to workplace procedures.
3. Use power tools	3.1 <i>Power sources</i> are recognized. 3.2 Power tools are prepared according to workplace procedures. 3.3 Route for power supply established in accordance with work safety requirements. 3.4 Power tools are used as per job requirement following Standard Operating Procedure (SOP).
4. Perform basic preventive maintenance	4.1 Tools are inspected and reported to supervisor as per work place procedure.

	4.2 Tools and equipment are cleaned according to workplace instructions. 4.3 Appropriate lubricants are identified. 4.4 Tools and equipment are lubricated as per manufacturer's instruction.
5. Maintain workplace and store tools and equipment	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Hand tools	1.1 Hammer 1.2 Cutting pliers 1.3 Nose pliers 1.4 Combination pliers 1.5 Adjustable wrench 1.6 Wire striper 1.7 Neon tester 1.8 Screw driver (flat, star and connecting) 1.9 Grip pliers 1.10 Electrician knife 1.11 Chisel (cold and hot) 1.12 Open and end spanner 1.13 Poker 1.14 Try square 1.15 Twisters 1.16 Scriber 1.17 File (round, half round, flat, triangle) 1.18 Spirit level 1.19 Ammeter 1.20 Volt meter 1.21 Watt meter 1.22 Energy meter 1.23 Multi meter 1.24 Meager

	1.25 Insulation tester 1.26 Earth tester 1.27 Standard wire gauge 1.28 Micrometer 1.29 Measuring tape
2. Power tools	2.1 Power drills 2.2 Angle grinder 2.3 Bench grinder
3. Applications	3.1 Adjusting 3.2 Aligning 3.3 Assembling 3.4 Boring 3.5 Clamping 3.6 Cleaning 3.7 Cutting 3.8 Dismantling 3.9 Finishing 3.10 Hand sharpening 3.11 Lubricating 3.12 Scraping 3.13 Simple tool repairs 3.14 Threading 3.15 Tightening 3.16 Testing
4. Personal Protective Equipment (PPE)	4.1 Dust mask 4.2 Safety glasses / goggles 4.3 Gloves 4.4 Safety shoes / boots 4.5 Aprons 4.6 Face masks 4.7 Overalls 4.8 Helmet
5. Power sources	5.1 Electric 5.2 Pneumatic 5.3 Hydraulic
6. Lubricants	6.1 Grease 6.2 Mobil 6.3 Machine oil
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	

1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 followed OSH as per job requirement 1.2 identified appropriate tools 1.3 used hand tools with appropriate method 1.4 used power tools with appropriate SOP 1.5 performed preventive maintenance.
2. Underpinning knowledge	2.1 Definition of tools. 2.2 Types of tools. 2.3 Different types of power sources. 2.4 Procedure of the use of hand tools and power tools. 2.5 Application of hand tools and power tools. 2.6 Basic preventive maintenance of tools.
3. Underpinning skills	3.1 Identifying appropriate tools. 3.2 Using hand tools with appropriate method. 3.3 Using power tools with appropriate SOP. 3.4 Performing preventive maintenance.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communication with peers and seniors at workplace.
5. Resources implication	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 construction materials 5.3 tools appropriate to the construction process 5.4 information and documentation 5.5 product specifications 5.6 manual, codes, standards and reference materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.

7. Context for assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Apply Fundamental Skills for Electrical Works
Unit Code	CONEIM1002A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to apply fundamental skills for electrical works. It includes identifying materials and fittings used in electrical works, interpreting electrical sign, symbols and specifications from drawing plan, measuring current, measuring voltage and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Identify materials and fittings used in electrical works	1.1 <i>Materials</i> and <i>fittings</i> are collected and kept on table separately. 1.2 Materials and fittings are identified and tagged with the name. 1.3 Function and properties of materials and fittings are described.
2. Interpret electrical sign, symbols and specifications from drawing plan	2.1 Relevant <i>drawings</i> are correctly identified as per requirement. 2.2 All <i>specifications</i> are interpreted from the relevant drawing. 2.3 All terms and abbreviations are interpreted from the relevant drawing. 2.4 <i>Sign and symbols</i> are identified as per drawing.
3. Measure current	3.1 Insulation of cable terminal is removed using knife or wire stripper as required. 3.2 Range of ammeter is set as per job requirement. 3.3 The ampere meter is connected in series with load as per circuit diagram. 3.4 Power supply switch is kept on as maintaining Occupational Safety and Health (OSH).

	3.5 Deflection of the ampere meter pointer is observed and taken reading as required. 3.6 Selector knob is adjusted of clip-on meter as required. 3.7 Phase cable is inserted into the ring of the clip-on meter. 3.8 Deflection of the clip-on meter pointer is observed and recorded as per workplace standard. 3.9 Clip-on meter is disconnected from the phase line as required.
4. Measure voltage	4.1 Insulation of cable terminal is removed using knife or wire stripper as required. 4.2 Range of voltmeter is set as per job requirement 4.3 Voltmeter is connected in parallel with the load as per circuit diagram. 4.4 Power supply is switched ON as required. 4.5 Deflection of the voltmeter pointer is observed and recorded as per workplace standard. 4.6 AVO-meter pointer / scale is adjusted in zero position as required. 4.7 Selector switch of AVO-meter is kept in AC voltage range as required. 4.8 AVO-meter is connected to proof / test cord with supply line (phase to phase or phase to neutral) as per circuit diagram. 4.9 Deflection of the AVO meter pointer is observed and recorded as per workplace standard. 4.10 Power supply is disconnected as required.
5. Maintain workplace, tools, equipment and materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):

1. Materials	1.1 Cable 1.2 Bracket 1.3 GI Wire 1.4 Elbow 1.5 Bend 1.6 PVC circular box 1.7 Rowel plug 1.8 Saddle 1.9 Screw 1.10 Tube light 1.11 Cable lugs 1.12 Cable tie 1.13 VIR 1.14 Insulating clip 1.15 Flexible conduit 1.16 Electric soldering lead 1.17 Copper plate 1.18 Copper sheet 1.19 Bare copper conductor 1.20 Plastic tape
2. Fittings	2.1 Switch 2.2 Switch box 2.3 Fuse 2.4 Regulator 2.5 Socket 2.6 Holder 2.7 Ceiling rose 2.8 Junction box 2.9 Channel 2.10 PVC pipe 2.11 PVC elbow 2.12 PVC band 2.13 Join socket 2.14 Circular box
3. Drawings	3.1 Technical drawings 3.2 Sketch
4. Specifications	4.1 Product specifications 4.2 Material types 4.3 Standards of work 4.4 Tolerances 4.5 Treatments and finishes
5. Sign and symbols	5.1 Fuse 5.2 Lamp

	5.3 Earth 5.4 Indicator 5.5 Fan 5.6 Tube light 5.7 Calling bell 5.8 One-way switch 5.9 Two-way switch 5.10 Switch board 5.11 Two-pin-socket 5.12 Three-pin-socket 5.13 Regulator 5.14 Indicator lamp 5.15 SDB 5.16 MDB 5.17 Phase wire 5.18 Neutral wire 5.19 Earth wire 5.20 MCB / MCCB 5.21 Main switch 5.22 Capacitor 5.23 Coil / Blast 5.24 Starter
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 followed occupational safety and health procedure in the workplace 1.2 identified and collected tools, equipment, symbols and fittings 1.3 demonstrated skills in using tools, equipment, symbols and fittings.
2. Underpinning knowledge	2.1 Function of different type of tools, equipment and fittings. 2.2 Specification of tools, equipment and fittings. 2.3 Identification and use of symbols. 2.4 Occupational safety and health procedures as per workplace standard. 2.5 Definition of preventive maintenance, methods and techniques, quality procedures. 2.6 Storing procedures.

3. Underpinning skills	3.1 Using Personal Protective Equipment (PPE). 3.2 Using tools, equipment and materials. 3.3 Selecting appropriate tools, equipment and fittings. 3.4 Selecting appropriate tools, equipment, symbol and fittings. 3.5 Checking specifications 3.6 Locating points 3.7 Installing fittings.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools, equipment, fittings and symbol chart appropriate to joint and connection process 5.3 materials consumable to perform activities.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
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National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Wire and Cable Joints
Unit Code	CONEIM1003A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform wire and cable joints. It includes preparing for works, identifying different sizes and capacity of wires and cables, making pigtail joint, western union joint, T-joint, married joint and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> , equipment and materials are selected and collected as per job requirement.
2. Identify different sizes and capacity of wires and cables	2.1 <i>Wire and cable</i> are placed separately in the working table in sequence. 2.2 Wires and cables are listed & tagged as per different sizes. 2.3 Size of the cable is compared with the cable specification as per specific load. 2.4 Proper diameter/gauge of conductor is measured using SWG/micro meter. 2.5 <i>Cable sizes</i> are compared with capacity of wire and cables.
3. Make pigtail joint	3.1 Insulation of cable is removed as required from cable terminal using knife or wire stripper. 3.2 Conductor surface is scraped by using emery paper/electrician knife. 3.3 Two insulated cables are wrapped according to the requirement of pigtail joint. 3.4 Wrapped wire is bent and tapped as per drawing.

4. Make western union joint	4.1 Insulation of cable is removed two or three inches from cable terminal using knife or wire stripper. 4.2 Conductor surface is scraped by using emery paper / electrician knife. 4.3 Two insulated cables are wrapped according to the requirement of western union joint. 4.4 Wrapped wire is bent and tapped as per drawing
5. Make T-Joint	5.1 Insulation of cable is removed as required from cable terminal using knife or wire stripper. 5.2 Conductor surface is scraped by using emery paper / electrician knife 5.3 Two insulated cables are wrapped according to the requirement of T-joint. 5.4 Wrapped wire is bent and tapped as per drawing
6. Make married joint	6.1 The insulation of cable is removed two or three inches from cable terminal using knife or wire stripper. 6.2 The conductor is scraped by using emery paper to smooth conducting. 6.3 The two insulated cables are wrapped according to the requirement of married joint. 6.4 Wrapped wire is bent & tapped as required.
7. Maintain workplace, tools, equipment and materials	7.1 Work area is cleaned in accordance with workplace procedures. 7.2 Unused materials are stored for re-use or disposed following workplace procedures. 7.3 Waste and scrap materials are disposed with following workplace procedures. 7.4 Inventory of tools equipment are conducted and recorded as per checklist. 7.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variables	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Helmet 1.2 Safety goggles 1.3 Mask 1.4 Apron 1.5 Hand gloves 1.6 Safety shoes

2. Tools	2.1 Hammer 2.2 Cutting pliers 2.3 Combination pliers 2.4 Wire stripper 2.5 Neon tester 2.6 Screw driver (fat, star and connecting) 2.7 Electrician knife 2.8 Soldering iron 2.9 Nose pliers
3. Wire and cables	3.1 PVC cable
4. Cable sizes	4.1 According to the chart
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 selected proper cables size with proper specification 1.2 wrapped cables of pigtail, T-joint, western union, straight wire and marred joint with proper procedure 1.3 removed wire insulation as per proper procedure and measurement 1.4 installed fuses and circuit breaker as per followed Occupational Safety and Health (OSH).
2. Underpinning knowledge	2.1 Different type of sizes and capacity of the cables. 2.2 Function, procedure and uses of the pigtail, T-joint, western union, straight wire and marred joint for making. 2.3 Definition of different types of tools equipment and machinery used for making joint. 2.4 Procedure of the making joint as per smooth conduction.
3. Underpinning skills	3.1 Using cable and making joint related to the selecting appropriate circuit. 3.2 Removing insulation 1.5 inch from tip point of wire. 3.3 Wrapping two conductors to smooth conduction. 3.4 Tapping wrapped cable without lose fittings. 3.5 Jointing the circuit as per diagram.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Sincere and honest to duties. 4.3 Promptness in carrying out activities.

	4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint 5.3 accessibility to the workplace 5.4 quality materials availability.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Circuit Connection
Unit Code	CONEIM1004A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform circuit connection. It includes preparing for works, practicing series circuit connection, practicing parallel circuit connection, practicing series and parallel (mixed) circuit connection and maintaining workplace, tools, equipment and materials.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools, materials</i> and drawing are collected as per job requirement.
2. Practice series circuit connection	2.1 Circuit materials are placed on the board. 2.2 Circuit accessories are fitted and connected using flexible wire as per drawing. 2.3 Circuit connection is checked according to the drawing. 2.4 Electrical circuit connection is checked using series lamp. 2.5 Series circuit is tested with connected power supply.
3. Practice parallel circuit connection	3.1 Circuit materials are placed on the board. 3.2 Circuit accessories are fitted and connected using flexible wire as per drawing. 3.3 Circuit connection is checked according to the drawing. 3.4 Electrical circuit connection is checked using series lamp. 3.5 Parallel circuit is tested with connected power supply.

4. Practice series and parallel (mixed) circuit connection	4.1 Circuit materials are placed on the board. 4.2 Circuit accessories are fitted and connected using flexible wire as per drawing. 4.3 Circuit connection is checked according to the drawing. 4.4 Electrical circuit connection is checked using series lamp. 4.5 Mixed circuit is tested with connected power supply.
5. Maintain workplace, tools, equipment and materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variables	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Helmet 1.2 Safety goggles 1.3 Mask 1.4 Apron 1.5 Hand gloves 1.6 Safety shoe
2. Tools	2.1 Hammer 2.2 Cutting pliers 2.3 Combination pliers 2.4 Wire striper 2.5 Neon tester 2.6 Screw driver (flat, star and connecting) 2.7 Electrician knife 2.8 Hack saw blade 2.9 Tri-Square 2.10 Multi meter 2.11 Series lamp

3. Accessories / materials	3.1 Bulb / load 3.2 Fuse 3.3 Switch 3.4 Wire 3.5 Cables
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 identified circuit diagram and materials 1.2 set and installed fuse and circuit breaker as per followed OSH. 1.3 performed wiring of each series circuit connection, testing series lamp connection, make series and parallel (mixed) circuit connection as standard 1.4 operated each circuit for checking and testing 1.5 performed series and parallel circuit operation individually 1.6 operated combined circuit operation as standard.
2. Underpinning knowledge	2.1 Definition, types and properties of circuit. 2.2 Quality of materials and circuit diagram. 2.3 Definition, types and properties of series, parallel and combined circuit as specified. 2.4 State the earth led and earth continuity conductor connection. 2.5 State the making procedure of the circuit.
3. Underpinning skills	3.1 Drawing the series and parallel circuit separately. 3.2 Drawing the combined circuit separately. 3.3 Channel is placing on the board. 3.4 Installing bulb, fuse and switches. 3.5 Testing the circuit. 3.6 Observing the circuit as per work requirement.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Sincere and honest to duties. 4.3 Promptness in carrying out activities. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect to peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.

5. Resource implication	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint 5.3 accessibility to the work place 5.4 quality materials availability.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context for assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Perform Installation of Electrical Circuit
Unit Code	CONEIM1005A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform installation of electrical circuit. It includes preparing for works, performing one lamp control by one-way switch, one lamp control by two-way switch, one calling bell control from two point, operation of fluorescent lamp circuit (tube light), connection of single-phase energy meter and maintaining workplace, tools and materials.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> , and <i>materials</i> are selected and collected as per job requirement.
2. Perform one lamp control by one-way switch	2.1 Circuit layout is drawn as per drawing. 2.2 Circuit materials are placed on the board as per drawing. 2.3 <i>Fittings</i> are connected and fitted in to circuit as per drawing. 2.4 Circuit connection is checked according to the drawing. 2.5 Circuit is tested while connected power supply by following OSH.
3. Perform one lamp control by two-way switch	3.1 Circuit layout is drawn as per drawing. 3.2 Circuit materials are placed on the board as per drawing. 3.3 Fittings are connected and fitted in to circuit as per drawing. 3.4 Circuit connection is checked according to the drawing.

	3.5 Circuit is tested while connected power supply by following OSH.
4. Perform one calling bell control from two point	4.1 Circuit layout is drawn as per drawing. 4.2 Circuit materials are placed on the board as per drawing. 4.3 Fittings are connected and fitted in to circuit as per drawing. 4.4 Circuit connection is checked according to the drawing. 4.5 Circuit is tested while connected power supply by following OSH.
5. Perform operation of fluorescent lamp circuit (tube light)	5.1 Circuit layout is drawn as per drawing. 5.2 Circuit materials are placed on the board as per drawing. 5.3 Fittings are connected and fitted in to circuit as per drawing. 5.4 Circuit connection is checked according to the drawing. 5.5 Circuit is tested while connected power supply by following OSH.
6. Perform connection of single-phase energy meter	6.1 Circuit layout is drawn as per drawing. 6.2 Circuit materials are placed on the board as per drawing. 6.3 Fittings are connected and fitted in to circuit as per drawing. 6.4 Circuit connection is checked according to the drawing. 6.5 Circuit is tested while connected power supply by following OSH.
7. Maintain workplace, tools and materials	7.1 Work area is cleaned in accordance with workplace procedures. 7.2 Unused materials are stored for re-use or disposed following workplace procedures. 7.3 Waste and scrap materials are disposed with following workplace procedures. 7.4 Inventory of tools equipment are conducted and recorded as per checklist. 7.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	

Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Helmet 1.2 Safety goggles 1.3 Mask 1.4 Apron 1.5 Hand gloves 1.6 Safety shoe
2. Tools	2.1 Hammer 2.2 Cutting pliers 2.3 Combination pliers 2.4 Wire stripper 2.5 Neon tester 2.6 Screw driver (flat, star and connecting) 2.7 Electrician knife 2.8 Watt meter 2.9 Energy meter 2.10 Multi meter
3. Materials	3.1 Cable 3.1.1 PVC single occupation specific 3.1.2 PVC twine occupation specific 3.1.3 Flexible 3.2 Bracket 3.3 GI wire 3.4 Elbow 3.5 Bend 3.6 Boards 3.7 PVC circular box 3.8 Rowel plug 3.9 Saddle 3.10 Screw 3.11 Tube light 3.12 Cable lugs 3.13 Cable tie 3.14 VIR 3.15 Insulating clip 3.16 Flexible conduit 3.17 Electric soldering lead 3.18 Copper plate 3.19 Copper sheet 3.20 Bare copper conductor 3.21 Plastic tape
4. Fittings	4.1 Switches 4.2 Sockets

	4.3 Fuses 4.4 MCB 4.5 Fan regulator 4.6 Bracket 4.7 Soccer 4.8 Ballast (chock coil) 4.9 Starter 4.10 Tube light holder 4.11 Batten holder 4.12 Ceiling rose
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 identified circuit diagram and materials 1.2 set and installed fuse and circuit breaker 1.3 performed wiring of one-way circuit, calling bell control circuit from two points, wall mounting lamp and fluorescent lamp circuit 1.4 operated each circuit for checking and testing 1.5 performed calling bell and fluorescent lamp circuit operation 1.6 operated ceiling fan circuit operation.
2. Underpinning knowledge	2.1 Definition of one-way circuit, calling bell control circuit from two points, wall mounting lamp and fluorescent lamp circuit. 2.2 State the circuit diagram of one-way circuit, calling bell control circuit from two points, wall mounting lamp and fluorescent lamp circuit. 2.3 Different types of circuit diagram and materials. 2.4 Quality materials and diagrams.
3. Underpinning skills	3.1 Analyzing circuit. 3.2 Connecting circuits. 3.3 Connecting loads and power. 3.4 Checking circuit. 3.5 Checking and testing circuit. 3.6 Operation circuit.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn.

	4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint 5.3 accessibility to the work place 5.4 quality materials availability.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
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National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Installation of Electrical Fittings
Unit Code	CONEIM1006A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform installation of electrical fittings. It includes preparing for works, fixing-up cut-outs / fuses / indicator with switch board, performing fixing of batten holder, performing fixing of batten holder, fixing of ceiling rose and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools, equipment</i> and <i>circuit materials</i> are selected and collected as per job requirement.
2. Fix-up Cut-outs/ Fuses/ Indicator with switch board	2.1 Base part of fuse and cut out is fixed with the switch board / SDB using screw. 2.2 Cable terminal insulation is removed by using wire stripper. 2.3 One part of the cable is connected with the terminal of base of the fuse / cut out and other part of the cable is connected with the power supply as per circuit diagram. 2.4 Other part of the cable is connected with the power supply as per circuit diagram. 2.5 Fusing wire is connected with the fusing bridge as per circuit diagram. 2.6 Fusing bridge / cut out is fitted with base. 2.7 Indicator is fixed on the switch board as per diagram 2.8 Operation is checked of the fuse and cut out with load.

3. Perform fixing of batten holder	3.1 Holder setting point is marked on board. 3.2 Cable is connected with bottom parts. 3.3 Bottom part of holder is fitted on the board. 3.4 Upper part is fitted on the bottom part.
4. Perform fixing of ceiling rose	4.1 Ceiling rose point is marked on board. 4.2 Cable is connected with bottom parts. 4.3 Bottom part of ceiling rose is fitted on the board. 4.4 Upper part is fitted on the bottom part.
5. Maintain workplace, tools, equipment and materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Helmet 1.2 Safety goggles 1.3 Mask 1.4 Apron 1.5 Hand gloves 1.6 Safety shoe 1.7 Safety belt
2. Tools	2.1 Hammer 2.2 Cutting pliers 2.3 Combination pliers 2.4 Wire stripper 2.5 Neon tester 2.6 Screw driver (flat, star and connecting) 2.7 Electrician knife
3. Equipment	3.1 Ladder 3.2 Working bench
4. Circuit materials	4.1 Cable 4.2 Bracket 4.3 Rowel plug 4.4 Screw

	4.5 Insulation tape 4.6 Fuses 4.7 Ceiling rose 4.8 Holder 4.9 Cut-out 4.10 Indicator
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 identified various types of board, switch, socket, holder, ceiling rose, fuse, MCB, fan regulator. 1.2 set and installed various types of board, switch, socket, holder, ceiling rose, fuse, MCB, fan regulator 1.3 performed installed of fuse and regulator followed by appropriate OSH. 1.4 operated each circuit for checking and testing 1.5 performed setting various types of board, switch, socket, holder, ceiling rose, fuse, MCB, fan regulator calling bell circuit operation.
2. Underpinning knowledge	2.1 Function and types of board, switch, socket, holder, ceiling rose, fuse, MCB and fan regulator. 2.2 Connection and connecting point with the load. 2.3 Specification and limit of load of board, switch, socket, holder, ceiling rose, fuse, MCB and fan regulator.
3. Underpinning skills	3.1 Installing fuses with switch board. 3.2 Setting holder and ceiling rose. 3.3 Connecting loads and power. 3.4 Checking circuit. 3.5 Checking and testing circuit. 3.6 Setting board, switch, socket, holder, ceiling rose, fuse, MCB, fan regulator.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.

5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint 5.3 accessibility to the work place 5.4 quality materials availability.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Channel Wiring
Unit Code	CONEIM1007A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform channel wiring. It includes preparing for works, performing channel wiring and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> , and <i>materials</i> are selected and collected as per job requirement.
2. Perform channel wiring	2.1 <i>Drawing</i> is interpreted with the help of supervisor. 2.2 Channel size is identified and selected as per the number and size of cables to be embedded inside. 2.3 Wall is drilled as per marked point according to layout diagram. 2.4 Rawal plug is fixed into the hole as required by using soft hammer. 2.5 Lower part of channel is holed using poker. 2.6 Lower part of channel is fixed into the wall using screw with washer. 2.7 PVC cable is laid into the channel as per the diagram. 2.8 Upper part of the channel is fixed with the lower part. 2.9 Load point is connected with the switch board. 2.10 SDB is connected with the MDB as per diagram. 2.11 Connection is checked using meter. 2.12 Circuit is operated by power supply.

3. Maintain workplace, tools, equipment and materials	3.1 Work area is cleaned in accordance with workplace procedures. 3.2 Unused materials are stored for re-use or disposed following workplace procedures. 3.3 Waste and scrap materials are disposed with following workplace procedures. 3.4 Inventory of tools equipment are conducted and recorded as per checklist. 3.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Goggles 1.4 Safety shoes
2. Tools	2.1 Meggar 2.2 Calculator 2.3 Multi Meter/AVO Meter 2.4 Earth tester 2.5 Wire stripper 2.6 Mallet 2.7 Chisels: (a) wooden, (b) cold 2.8 Drill bits 2.9 Files: (a) flat, (b) round, (c) half round 2.10 Hacksaw 2.11 Hammers: (a) ball peen, (b) claw 2.12 Measuring tapes 2.13 Pliers: (a) combination pliers, (b) cutting pliers, (c) diagonal cutting pliers, (d) long nose pliers, 2.14 Screwdrivers: (a) star, (b) flat, (c) connecting 2.15 Try square 2.16 Neon tester 2.17 S.W.G. 2.18 Set squares 2.19 Electrician knife 2.20 Ladder 2.21 Poker 2.22 Hand drill machine 2.23 Electric drill machine

3. Materials	3.1 Channel (1/2", 3/4", 1", 1.25", 1.5" PVC) 3.2 PVC circular box 3.3 Rowel plug 3.4 Saddle 3.5 Screw 3.6 Cable lugs 3.7 Cable tie 3.8 Thread ball 3.9 Insulation tape 3.10 Cable (PVC, VIR)
4. Drawings	4.1 Freehand sketch 4.2 Schematic diagram 4.3 Electrical drawings
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 identified and collected drawings, signs, symbols and cables as per specification 1.2 located points for rowel plug 1.3 installed rowel plugs and channels 1.4 laid cables.
2. Underpinning knowledge	2.1 Function and types of board, switch, socket, holder, ceiling rose, fuse, MCB and fan regulator. 2.2 Connection and connecting point with the load. 2.3 Specification and limit of load of board, switch, socket, holder, ceiling rose, fuse, MCB and fan regulator.
3. Underpinning skills	3.1 Using Personal Protective Equipment (PPE). 3.2 Using tools, equipment and materials. 3.3 Selecting appropriate tools and equipment. 3.4 Selecting appropriate materials. 3.5 Checking specifications. 3.6 Locating points. 3.7 Laying cables. 3.8 Installing channel.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness.

	4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools, equipment and materials to joint and connection process.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
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National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Install Fan
Unit Code	CONEIM1008A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to install fan. It includes preparing for works, installing exhaust fan, wall mountain fan, ceiling fan and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 Personal Protective Equipment (PPE) is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected and collected as per job requirement.
2. Install exhaust fan	2.1 Screw point is marked as per drawing. 2.2 Screw points are drilled as per drawing 2.3 Rawal plug is installed into the hole using soft hammer. 2.4 Exhaust fan is fixed in the ventilator using screw. 2.5 Supply cord of fan is connected with power supply line. 2.6 Connection is checked as per diagram. 2.7 Performance of fan is checked by switch ON/OFF the power supply.
3. Install wall mountain fan	3.1 Screw point is marked as per drawing. 3.2 Screw points are drilled as per drawing 3.3 Rawal plug is installed into the hole using soft hammer. 3.4 Wall mounted fan is fixed into the wall using screw. 3.5 Supply cord of fan is connected with power supply line. 3.6 Connection is checked as per diagram. 3.7 Performance of fan is checked by switch ON/OFF the power supply.

4. Install ceiling fan	4.1 Down rod, top and down canopy, fan blade and canopy pin are assembled. 4.2 Ceiling fan body is hanged with ceiling hook using rubber bush and nut & bolt. 4.3 Fan is connected with power supply cable followed by OSH. 4.4 Connection is rechecked as per diagram. 4.5 Performance of fan is checked by switch ON / OFF the power supply.
5. Maintain workplace, tools, equipment and materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Tools	1.1 Adjustable wrench 1.2 Wire stripper 1.3 Hammer 1.4 Combination pliers 1.5 Screwdrivers 1.6 Neon tester 1.7 Multimeter
2. Materials	2.1 Wire 2.2 Connector 2.3 Cables 2.4 Screw 2.5 Plug 2.6 Insulation tape 2.7 Rubber bush 2.8 Nut bolt 2.9 Hook
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	

1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 identified exhaust fan, wall mountain fan and ceiling fan 1.2 set and installed exhaust fan, wall mountain fan and ceiling fan 1.3 performed installed of fuse and regulator followed by appropriate OSH 1.4 operated each circuit for checking and testing 1.5 performed setting various types of board, switch, socket, holder, ceiling rose, fuse, MCB, fan regulator for installed exhaust fan, wall mountain fan and ceiling fan.
2. Underpinning knowledge	2.1 State the procedure of installing fuses with switch board. 2.2 Explain the function and procedure of setting exhaust fan, wall mountain fan and ceiling fan. 2.3 State the procedure of connecting loads and power. 2.4 State the re-checking procedure of circuit.
3. Underpinning skills	3.1 Handling AVO-meter / Multi-meter. 3.2 Identifying fault. 3.3 Repairing fault. 3.4 Checking and testing polarity and continuity. 3.5 Checking and testing circuit. 3.6 Installing exhaust fan, wall mountain fan and ceiling fan.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint and connection process 5.3 availability of materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.

7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
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National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Install Socket
Unit Code	CONEIM2009A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to install socket. It includes preparing for works, installing two-pin socket, three pin power sockets, dimmer switch / fan regulator and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected and collected as per job requirement.
2. Install two-pin socket	2.1 Insulation of cable terminal is removed using wire stripper according to job requirement. 2.2 Upper part of the switch board from the base plate is separated. 2.3 Two pin power socket and switch are fixed in the upper part of switch board firmly. 2.4 Phase cable is connected into the switch terminal of two pin power socket firmly as per circuit diagram. 2.5 Neutral cable is connected with the neutral terminal of two pin power socket as per circuit diagram. 2.6 Power connection is checked as per diagram. 2.7 Electrical load must be switched OFF/ON while it is operated. 2.8 Electrical load must be kept within 5 Amp as required.

3. Install three pin power sockets	3.1 Insulation of cable terminal is removed using wire stripper according to job requirement. 3.2 Upper part of the switch board from the base plate is separated. 3.3 Three pin power socket and switch are fixed firmly in the upper part of switch board. 3.4 Phase cable is connected into the switch terminal of three pin power socket firmly as per circuit diagram. 3.5 Neutral cable is connected with the neutral terminal of three pin power socket as per circuit diagram. 3.6 Earth cable is connected with the earth terminal of three pin power socket as per circuit diagram. 3.7 Power connection is checked as per diagram. 3.8 Minimum 2.5 mm cable size must be used for making connection of three pin power socket. 3.9 Three pin sockets max 13 amps (flat type) and for round type max 15 amp. 3.10 Electrical load must be switched OFF/ON while it is operated.
4. Install dimmer switch / fan regulator	4.1 Regulator upper part is separated from base plate as required. 4.2 Regulator is installed into the switch board to tight the screw as required. 4.3 One terminal cable is connected into the switch terminal by phase cable. 4.4 Another terminal of regulator is connected into the fan phase terminal. 4.5 Power connection is checked as per diagram. 4.6 Rotation / speed of fan must be controlled by fan regulator as required.
5. Maintain workplace, tools, equipment and materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	

Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Helmet 1.2 Safety goggles 1.3 Mask 1.4 Apron 1.5 Hand gloves 1.6 Safety shoe
2. Tools	2.1 Multi Meter / AVO meter 2.2 Pliers set 2.3 Screwdriver set 2.4 Electrician knives 2.5 Neon tester 2.6 Hammer 2.7 Wire stripper 2.8 Drill machine
3. Materials	3.1 Two pin sockets 3.2 Three pin power sockets 3.3 Insulation tape 3.4 Wire / Cable 3.5 Measuring tape 3.6 Switch board 3.7 Switch 3.8 Screw 3.9 Rowel plug
4. Regulator	4.1 Piano type socket 4.2 MK type socket
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 interpreted correctly work instructions 1.2 selected appropriate tools & materials for Installing socket, switch and regulator 1.3 connected cable with terminal through appropriate polarity 1.4 demonstrated correct procedures for Installing socket, switch and regulator.
2. Underpinning knowledge	2.1 Types of socket, switch and regulator as per job requirement. 2.2 Function of different types of socket, switch and regulator as per job requirement. 2.3 Differences and uses of two and three pin sockets.

	2.4 Loading capacity of socket, switch and regulator as per job requirement.
3. Underpinning skills	3.1 Selecting and collecting appropriate socket, switch and regulator as per job requirement. 3.2 Separating upper and lower part smoothly. 3.3 Connecting each terminal firmly. 3.4 Testing the circuit.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and materials relevant to the proposed activity or task workplace. 5.3 drawings and specifications relevant to the task.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Perform Concealed Work
Unit Code	CONEIM2010A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform concealed work. It includes preparing for works, performing switch box installation, installing junction box, performing pipe fitting in the roof, performing grove cutting and maintaining workplace, tools, equipment and materials.
Nominal Hours	50 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected and collected as per job requirement.
2. Perform switch box installation	2.1 Wall is marked as per layout diagram. 2.2 Grove is cut using grinding machine and chisel-hammer. 2.3 Switch box is fitted into grove using nail.
3. Install junction box	3.1 Wall is marked as per layout diagram. 3.2 Grove is cut using grinding machine and chisel-hammer. 3.3 Junction box is fitted into grove using nail.
4. Perform pipe fitting in the roof	4.1 Fitting points are marked as per drawing. 4.2 Pipes are laid on the roof as per drawing. 4.3 Pipes are connected with fittings. 4.4 Pipes are tighten using GI wire. 4.5 Terminal points of pipe are covered using paper to protect from cement / sand.
5. Perform grove cutting	5.1 Wall is marked as per layout diagram. 5.2 Grove is cut using grinding machine and chisel-hammer.

6. Maintain workplace, tools, equipment and materials	6.1 Work area is cleaned in accordance with workplace procedures. 6.2 Unused materials are stored for re-use or disposed following workplace procedures. 6.3 Waste and scrap materials are disposed with following workplace procedures. 6.4 Inventory of tools equipment are conducted and recorded as per checklist. 6.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Goggles 1.4 Safety shoes / Gumboot 1.5 Safety belt 1.6 Apron 1.7 Mask 1.8 Safety harness
2. Tools	2.1 Hammer 2.2 Combination pliers 2.3 Screwdrivers 2.4 Chisel 2.5 Grinding machine
3. Materials	3.1 GI Wire 3.2 Grinding disc 3.3 Pipe 3.4 Circular box 3.5 Elbow 3.6 Joint socket 3.7 Nail 3.8 Bend 3.9 Paper
Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 used quality tools and instruments 1.2 handled multi meter 1.3 installed junction box

	1.4 checked and tested polarity and continuity 1.5 connected pipes with fittings 1.6 identified the fault accordingly 1.7 repaired the fault as per identification fault.
2. Underpinning knowledge	2.1 Type of tools and instruments. 2.2 Using Multimeter / AVO meter. 2.3 Understanding the faults. 2.4 Types of tests. 2.5 Functions of ceiling fan, exhaust fan and rice cooker.
3. Underpinning skills	3.1 Handling AVO meter / multimeter. 3.2 Identifying fault. 3.3 Repairing fault. 3.4 Checking and testing polarity and continuity.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment to joint and connection process 5.3 availability of materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.

Accreditation Requirements

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**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Perform Conduit Wiring
Unit Code	CONEIM2011A1
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform conduit wiring. It includes preparing for works, performing concealed conduit wiring, performing surface conduit wiring and maintaining workplace, tools, equipment and materials.
Nominal Hours	70 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected and collected as per job requirement.
2. Perform concealed conduit wiring	2.1 Conduit is installed as per lay-out diagram on the roof. 2.2 Wall is marked as per layout diagram and cut the groove on the wall using grinding machine, chisel and hammer. 2.3 Conduit is installed inside the groove using saddle clamp. 2.4 Switch box and junction box is installed inside in the groove using clipping nail. 2.5 Cable is laid into the conduit from <i>switch</i> board to load point with the help of fish / GI wire as required. 2.6 Electrical fittings are installed on the wall as per diagram. 2.7 Cable is connected with fittings. 2.8 Cable is laid from SDB to MDB. 2.9 Connection is checked using meter. 2.10 Circuit is operated by power supply
3. Perform surface conduit wiring	3.1 Wall is marked as per layout diagram and drilled the marked point into the wall using drill machine.

	3.2 Rowel plug is installed inside the hole by using ball pin hammer. 3.3 Conduit is installed on the wall using saddle clamp. 3.4 Switch box and Junction box is installed on the wall screw firmly. 3.5 Cable is laid into the conduit from switch board to load point with the help of fish / GI wire. 3.6 Electrical fittings are installed on the wall as per diagram. 3.7 Connected the cable with fittings and cable is laid from SDB to MDB. 3.8 Connection is checked using meter. 3.9 Circuit is operated by power supply.
4. Maintain workplace, tools, equipment and materials	4.1 Work area is cleaned in accordance with workplace procedures. 4.2 Unused materials are stored for re-use or disposed following workplace procedures. 4.3 Waste and scrap materials are disposed with following workplace procedures. 4.4 Inventory of tools equipment are conducted and recorded as per checklist. 4.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Goggles 1.4 Safety shoes 1.5 Safety belt 1.6 Apron 1.7 Safety harness
2. Tools	2.1 Wire stripper 2.2 Mallet 2.3 Chisels: (a) wood, (b) cold 2.4 Hacksaw 2.5 Hammers: (a) ball peen, (b) claw 2.6 Hand drill machine 2.7 Measuring tape 2.8 Electrician knife

	2.9 Pliers: (a) combination pliers, (b) side cutting pliers, (c) diagonal cutting pliers, (d) long nose pliers 2.10 Plumb bob 2.11 Screw drivers:(a) star, (b) flat, (c) connecting 2.12 Try square 2.13 Neon tester 2.14 Ladder 2.15 Sprit level 2.16 Megger 2.17 Multimeter / AVO Meter 2.18 Insulation tester 2.19 Electric drill machine 2.20 Electric grinding machine
3. Materials	3.1 1 RM cable 3.2 2 RM cable 3.3 2.5, 3, 4 RM cable
4. Switch	4.1 Tumbler switch 4.2 Piano type switch 4.3 Push switch 4.4 Bed switch 4.5 Gang switch
5. Load point	5.1 Lighting load point 5.2 Power load point
6. Fittings	6.1 Screws 6.2 Switches 6.3 Sockets 6.4 Fuses 6.5 MCB 6.6 Tube light holder 6.7 Holder 6.8 Ceiling rose 6.9 Drill bit 6.10 PVC conduit 6.11 Switch box 6.12 Circular box 6.13 Insulation tape 6.14 Plastic board 6.15 Ebonite board 6.16 Wooden board 6.17 Rawal plug

Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 identified and selected fittings and fixtures with proper specification 1.2 marked and cut the wall as per lay-out diagram 1.3 installed fittings and fixtures as per drawing 1.4 connected the cable with the load as per polarity 1.5 installed electrical fittings on the wall 1.6 used protective device as per requirement.
2. Underpinning knowledge	2.1 Different types of fittings. 2.2 Quality of fittings use for installing. 2.3 Types and function of switches, sockets, ceiling rose and fittings. 2.4 Specification checking. 2.5 Fittings and fixture installation. 2.6 Understanding lay-out diagram and cable size.
3. Underpinning skills	3.1 Using tools and fittings related to the installing fittings and fixtures. 3.2 Selecting appropriate tools, materials and fittings related to the installing fittings. 3.3 Marking and cutting the groove on the wall and into the wall. 3.4 Checking specifications. 3.5 Installing fittings and fixture as per drawing. 3.6 Connecting cable with load point and switch board as per diagram.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint and connection process 5.3 availability of materials and fittings.

6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Electrical Home Appliance Repairing
Unit Code	CONEIM2012A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform electrical home appliance repairing. It includes preparing for works, repairing exhaust fan, electric iron, ceiling fan, wall mounted fan, electric rice cooker, electric oven, water pump and maintaining workplace, tools, equipment and materials.
Nominal Hours	70 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected and collected as per job requirement.
2. Repair exhaust fan	2.1 Continuity is checked from power supply to switch using test lamp / AVO-meter. 2.2 Continuity of starting coil and running coil is checked using series lamp / AVO-meter. 2.3 Capacitor is checked using series lamp. 2.4 Abnormal sound and high temperature of the fan is checked. 2.5 Faults of the fan are identified as per checked result. 2.6 Faults of the fan are listed and repaired the all faults of fan. 2.7 Performance of the exhaust fan is checked through switched ON / OFF.
3. Repair electric iron	3.1 Continuity is checked from power supply to switch using test lamp/AVO-meter. 3.2 Auto thermostat contact is checked using Avo-meter. 3.3 Heating coil (element) is checked using series lamp / Avo-meter.

	3.4 Faults of the iron are identified as per checked result. 3.5 Faults of the iron are listed and repaired the all faults of iron. 3.6 Performance of electric iron is checked through switched ON / OFF.
4. Repair ceiling fan	4.1 Continuity is checked from power supply to switch using test lamp / AVO-meter. 4.2 Continuity of starting coil and running coil is checked using series lamp / AVO-meter. 4.3 Capacitor is checked using series lamp. 4.4 Abnormal sound and high temperature of the fan is checked. 4.5 Faults of fan are identified as per checked result. 4.6 Faults of fan are listed and repaired all faults of fan. 4.7 Performance of the ceiling fan is checked through switched ON / OFF.
5. Repair wall mounted fan	5.1 Continuity is checked from power supply to switch using test lamp / AVO-meter. 5.2 Continuity of starting coil and running coil is checked using series lamp / AVO-meter. 5.3 Capacitor is checked using series lamp. 5.4 Abnormal sound and high temperature of the fan is checked. 5.5 Faults of the fan are identified as per checked result. 5.6 Faults of fan are listed and repaired all faults of fan. 5.7 Performance of the wall mounted fan is checked through switched ON / OFF.
6. Repair electric rice cooker	6.1 Continuity is checked from power supply to switch using test lamp / AVO-meter. 6.2 Auto thermostat contact is checked using Avo-meter. 6.3 Heating coil (element) is checked using series lamp / Avo-meter. 6.4 Faults of the electric rice cooker are identified as per checked result. 6.5 Faults of the electric rice cooker are listed and repaired the all faults of iron. 6.6 Performance of electric rice cooker is checked through switched ON / OFF.
7. Repair electric oven	7.1 Continuity is checked from power supply to switch using test lamp / AVO-meter. 7.2 Auto thermostat contact is checked using Avo-meter.

	7.3 Heating coil (element) is checked using series lamp/ Avo-meter. 7.4 Ignitor and transformer are checked using Avo-meter. 7.5 Faults of the electric woven are identified as per checked result. 7.6 Faults of the electric woven are listed and repaired the all faults of iron. 7.7 Performance of electric woven is checked through switched ON / OFF.
8. Repair water pump	8.1 Continuity is checked from power supply to switch using test lamp / AVO-meter. 8.2 Auto thermostat contact is checked using Avo-meter. 8.3 Starting coil, running coil and capacitor are checked using Avo-meter / testing lamp. 8.4 Abnormal sound and high temperature of the fan is checked. 8.5 Faults of the water pump are identified as per checked result. 8.6 Faults of the water pump are listed and repaired the all faults of iron. 8.7 Performance of water pump is checked through switched ON / OFF.
9. Maintain workplace, tools, equipment and materials	9.1 Work area is cleaned in accordance with workplace procedures. 9.2 Unused materials are stored for re-use or disposed following workplace procedures. 9.3 Waste and scrap materials are disposed with following workplace procedures. 9.4 Inventory of tools equipment are conducted and recorded as per checklist. 9.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Goggles 1.4 Safety shoes 1.5 Safety belt 1.6 Apron 1.7 Safety harness

2. Tools	2.1 Adjustable wrench 2.2 Wire stripper 2.3 Hammer 2.4 Combination pliers 2.5 Screwdrivers 2.6 Neon tester 2.7 Avo meter 2.8 Series lamp
3. Materials	3.1 Wire 3.2 Connector 3.3 Cables 3.4 Screw 3.5 Plug
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 used quality tools and instruments as required standard 1.2 handled multi meter as where required 1.3 checked and tested polarity and continuity 1.4 identified the fault accordingly as standard 1.5 repaired the faults as per identification fault as standard.
2. Underpinning knowledge	2.1 Function and type of tools and instruments. 2.2 State the procedure of using multimeter / AVO meter. 2.3 Definition and types and causes of the faults. 2.4 Definition and types of tests. 2.5 Functions of ceiling fan, exhaust fan and rice cooker.
3. Underpinning skills	3.1 Handling AVO meter / multimeter. 3.2 Identifying fault. 3.3 Repairing fault. 3.4 Checking and testing polarity and continuity.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.

5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint and connection process 5.3 availability of materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Circuit Test
Unit Code	CONEIM3013A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform circuit test. It includes preparing for works, performing continuity test using megger, measuring earth resistance using earth tester, executing insulation resistance test and maintaining workplace, tools, equipment and materials.
Nominal Hours	30 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> are collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> , equipment and <i>materials</i> are selected & collected as per job requirement.
2. Perform continuity test using megger	2.1 Two terminals of megger are connected with wire terminal of load and moved ½ rounds to the continuity test as required standard. 2.2 Standard RPM of megger is checked and set to 120 rpm for analog megger to get actual result of voltage & resistance. 2.3 Listed value is re-checked and disconnected the terminal followed by Occupational Safety and Health (OSH).
3. Measure earth resistance using earth tester	3.1 Earth electrode is connected to measure earth resistance with earth tester followed by OSH. 3.2 Current electrode is set into the ground following maximum distance 20m from earth electrode. 3.3 Earth electrode is set at the middle place between the potential electrode and current electrode followed by the OSH.

	3.4 Maximum distance between current and potential electrode is kept 40m. 3.5 Standard earth resistance is kept maximum 5 ohm for plane land and 8 ohms in the mountain area. 3.6 Listed value is re-checked and disconnected the electrode followed by OSH.
4. Execute insulation resistance test	4.1 Power supply is disconnected and the wire connection is separated from MCB / MCCB properly maintain the OSH. 4.2 Earth wire and testing wire are connected with insulation resistance tester and another terminal of testing wire is opened. 4.3 Meter reading of insulation resistance is taken following 10 seconds' interval to maximum 1 minute. 4.4 Meter reading is ensured to minimum 20 MΩ & maximum 4000 MΩ to ensure standard condition.
5. Maintain workplace, tools and equipment & materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Safety shoe 1.4 Goggles 1.5 Apron 1.6 Mask
2. Tools	2.1 Electrician knife 2.2 Measuring tape 2.3 Pliers: (a) combination pliers, (b) cutting pliers, (c) diagonal cutting pliers, (d) long nose pliers, 2.4 screwdrivers: (a) star, (b) flat, (c) connecting. 2.5 AVO meter

	2.6 Multi meter 2.7 Megger 2.8 Earth tester 2.9 Insulation tester
3. Materials	3.1 Wire 3.2 PVC tap 3.3 Earth electrode 3.4 Current electrode 3.5 Potential electrode
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 connected earth electrode to measure earth resistance with earth tester followed by OSH 1.2 checked and tested polarity and continuity of the service line 1.3 measured and tested earth and insulation resistance as required 1.4 kept Maximum distance between current and potential electrode in 40m 1.5 selected proper knob followed by the megger value range 1.6 earth wire and testing wire connected with insulation resistance tester.
2. Underpinning knowledge	2.1 Function and properties of earth and insulation & earth test. 2.2 Specification and measuring procedure of megger. 2.3 State proper measuring distance. 2.4 State procedure of taking meter reading (when show '0' then to get 100% accuracy) for short circuit test. 2.5 State the procedure of taking meter reading (when show infinity once the two terminals are open) for open circuit test.
3. Underpinning skills	3.1 Using Personal Protective Equipment (PPE). 3.2 Collecting materials. 3.3 Preparing materials. 3.4 Measuring distance. 3.5 Connecting cables. 3.6 Installing electrodes. 3.7 Using tools and equipment.

	3.8 Measuring the earth resistance and insulation resistance test.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools and equipment appropriate to joint and connection process 5.3 availability of materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
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National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Installation of Earthing System
Unit Code	CONEIM3014A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform installation of earthing system test. It includes preparing for works, installing earthing (boring) system, Earth Leakage Circuit Breaker (ELCB), lightning / surge arrester and maintaining workplace, tools, equipment and materials.
Nominal Hours	50 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> are collected and worn as per job requirement. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected & collected as per job requirement.
2. Install earthing (boring) system	2.1 Hole is excavated of the dimension into the ground as per requirement. 2.2 Earth continuity wire terminal is fixed (copper conductor) with the lower part (pull through inner side) of GI pipe as required. 2.3 GI pipe is installed with earth continuity wire (copper conductor) into the ground as per diagram. 2.4 Charcoal and salt are mixed and refilled the hole with layers of sand / soil & compact the soil using rammer as required. 2.5 Reducing socket is fixed at the upper end of the GI pipe & the GI pipe is connected and through reducer socket as standard. 2.6 Cable lugs are punched with earth continuity wire & the earth continuity is connected (copper conductor) wire with earthing bus-bar of MDB as per diagram. 2.7 Connections are re-checked as per circuit diagram & the earth resistance is measured using earth tester.

3. Install Earth Leakage Circuit Breaker (ELCB)	3.1 ELCB is fixed with the circuit breaker channel of the SDB. 3.2 Insulation is removed of cable terminal using wire stripper followed by OSH. 3.3 Cable terminal is connected (phase and earth) with the input and output of ELCB to sub-circuit bus-bar as per diagram. 3.4 Connection is rechecked as per diagram. 3.5 Performance is checked with power supply.
4. Install lightning / surge arrester	4.1 Hole points are marked into the roof of top floor and the hole is made to the mark point using drill machine. 4.2 Rowel bolt is put into the hole & the surge is fixed arrestors set with rowel bolt. 4.3 Copper conductor is connected with the base point of surge arrester. 4.4 PVC pipe is installed into the wall from roof to ground point using saddle & the copper conductor is pulled in the PVC pipe. 4.5 Copper conductor is connected with earthing pipe / plate. 4.6 Continuity is rechecked of lightning arrester using megger as required standard.
5. Maintain workplace, tools, equipment and materials	5.1 Work area is cleaned in accordance with workplace procedures. 5.2 Unused materials are stored for re-use or disposed following workplace procedures. 5.3 Waste and scrap materials are disposed with following workplace procedures. 5.4 Inventory of tools equipment are conducted and recorded as per checklist. 5.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Safety shoe 1.4 Goggles 1.5 Apron

	1.6 Mask
2. Tools	2.1 Pliers 2.2 Screw drivers 2.3 Manual / Electrical pipe threader/ Reamer 2.4 Testing Instruments: 2.4.1 Earth leakage circuit breaker 2.4.2 Earth tester 2.4.3 Megger tester
3. Materials	3.1 Earth electrode 3.2 Potential electrode 3.3 Current electrode 3.4 Reducing socket 3.5 copper conductor 3.6 charcoal 3.7 salt 3.8 GI pipe (1", 1.5", 2", etc.) 3.9 Bus-bar 3.10 Cable 3.11 GI Plate 3.12 GI Sheet 3.13 Rod
4. Circuit breaker	4.1 SP 4.2 DP 4.3 TPN 4.4 Measurement of circuit breaker: 4.4.1 6Amp 4.4.2 10Amp 4.4.3 16Amp 4.4.4 20Amp 4.4.5 25Amp
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 demonstrated understanding / interpretation on diagrams and work instructions 1.2 kept the range of earth resistance within 1 to 5 Ohm 1.3 joined (copper wire) earth continuity wire with the end part of 1st installed GI pipe as required 1.4 the copper wire is kept insulation free & reducing socket used in each joint of GI pipe as standard

	1.5 prepared and selected materials tools and equipment consistent with specification 1.6 selected type of earthing 1.7 dug earth as required 1.8 fitted earthing and filled earth as required 1.9 connected earth lead and earth continuity conductor.
2. Underpinning knowledge	2.1 Properties of quality of earthing materials. 2.2 Function and types of earthing. 2.3 Types of tools equipment. 2.4 State the quantities of material. 2.5 State the procedure of earth digging. 2.6 State the installation of earthing plate or pipe or sheet. 2.7 Identified types of earthing. 2.8 State the earth lead and earth continuity conductor connection.
3. Underpinning skills	3.1 Digging earth. 3.2 Installing earthing plate or pipe or sheet. 3.3 Earthing. 3.4 Earth filling. 3.5 Earthing connection. 3.6 Installing earthing. 3.7 Filling earth.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 materials and equipment relevant to the proposed activity or task workplace 5.3 tools and equipment appropriate to joint and connection process 5.4 drawings and specifications relevant to the task.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.

7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Perform Connection of Change Over and Intermediate Switch
Unit Code	CONEIM3015A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform connection of change over and intermediate switch. It includes preparing for works, installing change over switch, intermediate switch connection and maintaining workplace, tools, equipment and materials.
Nominal Hours	50 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected and collected as per job requirement.
2. Install change over switch	2.1 Installation areas are marked as per drawing and layout. 2.2 Switch is installed between generators and supplied power as per drawing. 2.3 LT Panel is connected with generator and Sub-Station as per drawing. 2.4 Switch performance is rechecked by operating change over switch.
3. Install intermediate switch connection	3.1 Installation areas are marked as per drawing and layout. 3.2 Intermediate switch is installed as per drawing. 3.3 Contact point of Intermediate Switch is connected with supply line. 3.4 Intermediate switch performance is rechecked.
4. Maintain workplace, tools, equipment and materials	4.1 Work area is cleaned in accordance with workplace procedures. 4.2 Unused materials are stored for re-use or disposed following workplace procedures.

	4.3 Waste and scrap materials are disposed with following workplace procedures. 4.4 Inventory of tools equipment are conducted and recorded as per checklist. 4.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Safety shoe 1.4 Goggles 1.5 Apron 1.6 Mask
2. Tools	2.1 Pliers set 2.2 Screwdrivers set 2.3 Electrician knives 2.4 Drill machine 2.5 Neon tester 2.6 File set 2.7 Multimeter
3. Materials	3.1 Wire 3.2 PVC tap 3.3 Switch 3.4 Switch board 3.5 Screw 3.6 Rowel plug 3.7 Change over switch 3.8 Intermediate switch 3.9 Cable tie
Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 installed switch without any loose connection as required 1.2 identified and selected switch capacity as per load 1.3 connected LT panel with generator & sub-station as required 1.4 Installed the intermediate switch as standard

	1.5 collected manuals and documents as required 1.6 clarified controlling devices 1.7 classified and set controlling devices 1.8 used controlling devices.
2. Underpinning knowledge	2.1 State the load calculation of switches. 2.2 State the switch board height to the floor. 2.3 Function and uses of tools and materials as per specific job. 2.4 Function and types of different type of switch. 2.5 State the controlling devices, drawings, and manuals collections. 2.6 State clarification of controlling devices. 2.7 State the controlling devices sorting as required.
3. Underpinning skills	3.1 Installing switch board. 3.2 Connecting the cable with maintain proper polarity. 3.3 Using proper cable lug with cable terminal. 3.4 Clarifying and classifying drawings, manuals, documents and controlling devices. 3.5 Setting control devices. 3.6 Using controlling devices.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 materials and equipment relevant to the proposed activity or task 5.3 tools and equipment appropriate to joint and connection process 5.4 drawings and specifications relevant to the task.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.

7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Perform Internal Emergency Service Wiring
Unit Code	CONEIM3016A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform internal emergency service wiring. It includes preparing for works, installing change over switch, CC TV and camera line, generator line connection, solar home system, Instant Power Supply (IPS) line and maintaining workplace, tools, equipment and materials.
Nominal Hours	50 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> are selected & collected as per job requirement.
2. Install CC TV and camera line	2.1 Connection point is selected for CC camera connection as per drawing. 2.2 Cable is laid as per diagram. 2.3 Cable is connected with the CC TV camera as standard operation requirement. 2.4 DVR is connected with CC camera. 2.5 DVR is connected with computer. 2.6 Performance is checked.
3. Install generator line connection	3.1 Installation area is marked on the wall surface according to the drawing and layout. 3.2 Insulation of wire is removed by 2 to 3 inches. 3.3 Cable lug is punched with cable terminal 3.4 Cable is laid according to the drawing 3.5 Generator is connected with the changeover switch. 3.6 All connections are checked according to the drawing. 3.7 Performance of the generator is checked through switch OFF / ON.

4. Install solar home system	4.1 Solar panel installation area is marked according to the drawing and layout. 4.2 Panel is installed following 45-degree angle in south face. 4.3 One end of power cable is connected with solar home system and another end is connected with charge controller. 4.4 Charge controller and battery are connected as per drawing. 4.5 Battery and inverter are connected as per drawing. 4.6 Load and inverter are connected as per drawing. 4.7 All connections are checked according to the drawing. 4.8 Performance of the solar home system is checked.
5. Install Instant Power Supply (IPS) line	5.1 The cable is laid as per diagram. 5.2 The cable is connected with the IPS system. 5.3 Performance of the install instant power supply (IPS). is checked through switch OFF / ON.
6. Maintain workplace, tools, equipment and materials	6.1 Work area is cleaned in accordance with workplace procedures. 6.2 Unused materials are stored for re-use or disposed following workplace procedures. 6.3 Waste and scrap materials are disposed with following workplace procedures. 6.4 Inventory of tools equipment are conducted and recorded as per checklist. 6.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Hand gloves 1.2 Helmet 1.3 Safety shoes 1.4 Goggles 1.5 Apron 1.6 Mask
2. Tools	2.1 Multimeter/AVO meter 2.2 Earth tester 2.3 Megger 2.4 Pliers set

	2.5 Screwdrivers set 2.6 Adjustable wrenches 2.7 Wire splicers 2.8 Knives 2.9 Neon tester 2.10 Hammer 2.11 Mallet
3. Materials	3.1 Wire 3.2 Socket 3.3 Switch 3.4 PVC tap 3.5 Cable 3.6 Solar home system
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 installed dish, CC TV, instant power supply system, solar home system without any loose connection as required 1.2 identified and selected connection points as per load 1.3 connected the cable with the load as per power required 1.4 collected manuals and documents as required.
2. Underpinning knowledge	2.1 Function and uses of dish, CC tv, instant power supply system, solar home system. 2.2 State the cable connection point properties. 2.3 Function and uses of tools and materials as per specific job. 2.4 Function and types of different type of cable.
3. Underpinning skills	3.1 Interpreting plans and details. 3.2 Preparing materials. 3.3 Using hand tools. 3.4 Splicing. 3.5 Dressing of wires. 3.6 Terminating wires. 3.7 Interpreting products technical brochure. 3.8 Laid the cable.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties.

	4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 materials and equipment relevant to the proposed activity or task in the workplace 5.3 tools and equipment appropriate to joint and connection process. 5.4 drawings and specifications relevant to the task.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

**National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency**

Unit Title	Maintain Tools and Equipment of Electrical Installation and Maintenance Works
Unit Code	CONEIM3017A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to maintain tools and equipment of electrical installation and maintenance works. It includes preparing for works, segregating tools and equipment, performing preventive maintenance and performing corrective maintenance.
Nominal Hours	30 Hours
Elements of competency	Performance criteria <i>Bold & italicized</i> words are detailed in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 <i>Cleaning materials</i> are collected according to classification and job requirements.
2. Segregate tools and equipment	2.1 <i>Tools</i> and <i>equipment</i> are inspected for faults as per workplace procedure. 2.2 Non-functional tools and equipment are segregated and labeled. 2.3 Cuttings tools are checked for bluntness and marked for sharpening. 2.4 Safe manual handling techniques are followed in accordance with manufacturer's instructions while moving tools and equipment.
3. Perform preventive maintenance	3.1 Appropriate <i>lubricants</i> are identified as per job requirement. 3.2 Tools and equipment are cleaned and lubricated as per job requirement. 3.3 Sharpening of <i>accessories</i> of cutting and boring tools are performed as per manufacturer's instruction.
4. Perform corrective maintenance	4.1 <i>Parts</i> of tools and equipment's are checked and replaced as per manufacturer's instruction. 4.2 Defective parts of tools and equipment's are inspected and repaired as per manufacturer's instruction.

	4.3 Measuring instruments are checked and calibrated as per manufacturer's instruction.
5. Store tools and equipment	5.1 Inventory of tools equipment are conducted and recorded as per checklist. 5.2 Tools and equipment are stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Goggles 1.2 Gloves 1.3 Safety shoes 1.4 Aprons / Coveralls
2. Cleaning materials	2.1 Waste cotton 2.2 Hand wash 2.3 Liquid soap 2.4 Machine oil
3. Tools	3.1 Hand tools 3.1.1 Hammer 3.1.2 Cutting pliers 3.1.3 Nose pliers 3.1.4 Combination pliers 3.1.5 Adjustable wrench 3.1.6 Wire stripper 3.1.7 Neon tester 3.1.8 Screw driver (Flat, star and connecting) 3.1.9 Grip pliers 3.1.10 Electrician knife 3.1.11 Chisel (cold and hot) 3.1.12 Open and end spanner 3.1.13 Poker 3.1.14 Ladder 3.1.15 Try square 3.1.16 Twisters 3.1.17 Scriber 3.1.18 File (round, half round, flat, triangle) 3.1.19 Spirit level 3.1.20 Ammeter 3.1.21 Volt meter 3.1.22 Watt meter 3.1.23 Energy meter 3.1.24 Multi meter

	3.1.25 Meager 3.1.26 Insulation tester 3.1.27 Earth tester 3.1.28 Standard wire gauge 3.1.29 Micrometer 3.1.30 Measuring tape 3.2 Power tools 3.2.1 Power drills 3.2.2 Angle grinder 3.2.3 Bench grinder
4. Equipment	4.1 Panel board 4.2 3-Phase motor
5. Lubricants	5.1 Mineral lubricants 5.1.1 Mineral oils 5.1.2 Greases 5.1.3 Graphite 5.1.4 Molybdenum disulfide 5.2 Synthetic lubricants 5.2.1 Polyalphaolefins (PAO) 5.2.2 Polyglycols (PAG) 5.2.3 Ester oils 5.2.4 Silicones 5.3 Vegetable lubricants 5.3.1 Soybean oil 5.3.2 Corn oil 5.3.3 Castor oil 5.3.4 Canola oil 5.3.5 Cotton seed oil 5.4 Animal fat lubricants
6. Accessories	6.1 Blades 6.2 Cutters 6.3 Drill bits 6.4 Cutting discs
7. Parts	7.1 Machine cable / cord 7.2 Blades 7.3 Cutters 7.4 Handle 7.5 Bearings 7.6 Fan 7.7 Magnetic contacts 7.8 Motor rewinding

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 selected cleaning materials according to the job requirement 1.2 identified functional and non-functional tools and equipment 1.3 followed safe manual handling techniques for moving tools and equipment 1.4 cleaned and lubricated tools and equipment as per job requirement 1.5 sharpened accessories of cutting and boring tools 1.6 repaired defective parts of tools and equipment 1.7 calibrated measuring instruments as per manufacturing instructions.
2. Underpinning knowledge	2.1 Use of Personal Protective Equipment (PPE). 2.2 Safe handling of tools and equipment at workplace. 2.3 Classification and uses of lubricants. 2.4 Definition of maintenance and its methods and techniques. 2.5 Sharpening techniques of cutting and boring tool's accessories. 2.6 Common defects of tools and equipment.
3. Underpinning skills	3.1 Wearing PPE as per nature of job. 3.2 Inspecting tools and equipment to identify faults. 3.3 Handling of tools and equipment safely. 3.4 Applying lubricants as per job requirement. 3.5 Identifying faulty parts of tools and equipment. 3.6 Repaired and replaced faulty parts of tools and equipment. 3.7 Calibrated measuring instruments as per manufacturer's instruction.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Environmental concerns. 4.3 Eagerness to learn. 4.4 Promptness in carrying out activities. 4.5 Tidiness and timeliness. 4.6 Sincere and honest to duties. 4.7 Communication with peers and seniors at workplace. 4.8 Respect for rights of peers and seniors at workplace.

5. Resource implications	The following resources must be provided: 5.1 workplace (actual or simulated) 5.2 tools, equipment and physical facilities appropriate to perform activities 5.3 materials relevant to the proposed activity.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated workplace after completion of the training module. 7.2 Assessment should be done by a BTEB certified assessor.
Accreditation Requirements Training providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Estimation and Costing for Electrical House Wiring
Unit Code	CONEIM4018A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform estimation and costing for electrical house wiring. It includes preparing for works, drawing freehand sketches for electrical circuit, identifying side / place for electrical house wiring, estimating required materials for electrical house wiring works, human resources, labor cost and maintaining workplace, tools, equipment and materials.
Nominal Hours	50 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> , equipment and <i>materials</i> are selected and collected as per job requirement.
2. Draw freehand sketches for electrical circuit	2.1 <i>Drawing</i> sheet / tracing paper papers are set on the job table as per drawing requirement. 2.2 Freehand sketches are drawn through followed by customer requirement. 2.3 Symbols are mentioned in the drawing papers as per requirement of the work. 2.4 Details of <i>sign & symbol</i> are mentioned on index.
3. Identify side / place for electrical house wiring	3.1 House wiring place is identified and selected as per drawing. 3.2 Selected side and identified point are shared to with the subordinate.
4. Estimate required materials for electrical house wiring works	4.1 Required area is measured and calculated as per drawing plan. 4.2 <i>Specification</i> and volume of work is calculated by followed required specification.

	4.3 Appropriate formulas for calculating quantities of materials are applied. 4.4 Material, fitting and fixture quantities are calculated as per drawing plan.
5. Estimate human recourses	5.1 Level of workers is identified according to work volume. 5.2 Formulas for calculating require human are identified and calculated cost as per working days. 5.3 Total work time is calculated as per working days.
6. Estimate labor cost	6.1 Work capacity of a man is calculated. 6.2 Appropriate formulas for calculating require labor cost are identified and estimated as per working hour / days.
7. Maintain tools equipment, materials and workplace	7.1 Work area is cleaned in accordance with workplace procedures. 7.2 Unused materials are stored for re-use or disposed following workplace procedures. 7.3 Waste and scrap materials are disposed with following workplace procedures. 7.4 Inventory of tools equipment are conducted and recorded as per checklist. 7.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Apron 1.2 Safety shoes
2. Tools	2.1 Measuring tape 2.2 "T square" 2.3 Set square 2.4 Drawing manual
3. Materials	3.1 Drawing paper 3.2 Calculator 3.3 Pen 3.4 Pencil 3.5 Eraser 3.6 Paper
4. Drawings	4.1 Technical drawing 4.2 Sketch

	4.3 Blue print 4.4 Connection diagram
5. Sign and symbols	5.1 Drawing symbols 5.2 Connection symbol 5.3 Load symbol 5.4 Switch, socket, cut-out, SP, DP, MCB, MCCB, METER, Bus-Bar, earthing (grounding), changeover symbol. 5.5 Main switch symbol 5.6 Supply symbol 5.7 Danger symbol 5.8 Switch board symbol 5.9 Conduit symbol 5.10 Starter symbols 5.11 Protective device symbol 5.12 Motor symbol
6. Specifications	6.1 Product specifications 6.2 Performance specifications 6.3 Method specifications 6.4 Specification manuals
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 collected all necessary accessories and materials 1.2 drawn layouts as per customer requirement 1.3 measured and sketched accurately as per working drawing 1.4 selected side as per drawing and wiring place is marked as per drawing 1.5 freehand sketches are drawn as per drawings.
2. Underpinning knowledge	2.1 State / explained details function and selection procedure of materials. 2.2 Explained details function and use of the sign and symbol. 2.3 Explained details / state the selection criteria of house wiring place 2.4 Explained details / state the way of considering electrical drawing terms and condition for electrical drawing. 2.5 Interpreted electrical drawing.

3. Underpinning skills	3.1 Collecting materials. 3.2 Preparing materials. 3.3 Measuring distance. 3.4 Preparing estimate & costing. 3.5 Drawing freehand sketch.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools appropriate to measure the select side 5.3 equipment appropriate to prepare the estimate 5.4 availability of materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform Assembly and Installation of ATS (Auto Transfer Switch)
Unit Code	CONEIM4019A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform assembly and installation of ATS (Auto Transfer Switch). It includes preparing for works, installing Molded Case Circuit Breaker (MCCB), busbar, controlling devices and circuit, earthing connection, ELCB and maintaining workplace, tools, equipment and materials.
Nominal Hours	75 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools</i> and <i>materials</i> with <i>drawings</i> and <i>symbols</i> are selected and collected as per job requirement.
2. Install Molded Case Circuit Breaker (MCCB)	2.1 MCCB is fixed & assembled into the din rail of the ATS box as standard. 2.2 Cable lugs are connected with cable terminal using punch machine followed by OSH. 2.3 Three phase cables are connected with MCCBs to PDB / REB and generator power distribution busbar 2.4 Three phase cables reconnected with the MCCB to bus bar as per circuit <i>manuals</i> . 2.5 Connection is checked and reviewed as per circuit diagram. 2.6 Performance is checked through switch ON/OFF the power supply.
3. Install busbar	3.1 Collect required size busbar as per load. 3.2 Install busbar mounting kit in panel box. 3.3 Perform insulation on busbar. 3.4 Install busbar as standard.

4. Install controlling devices and circuit	4.1 Controlling circuit devices (magnetic contactor, relay, timer etc.) tools & materials are collected and identified. 4.2 Controlling devices are assembled on din rail as standard. 4.3 Perform controlling circuit as per wiring diagram. 4.4 Connection is checked and reviewed as per circuit diagram.
5. Perform earthing connection	5.1 Earthing terminals are identified in the ATS panel board. 5.2 Perform earthing as per circuit diagram. 5.3 Connection is checked and reviewed as per circuit diagram.
6. Install ELCB	6.1 Earth Leakage Circuit Breaker (ELCB), tools & materials are collected and identified. 6.2 Perform mount the ELCB in ATS panel box as per layout diagram. 6.3 Perform ELCB connection as circuit diagram. 6.4 Connection is checked and reviewed as per circuit diagram.
7. Maintain workplace, tools equipment and materials	7.1 Work area is cleaned in accordance with workplace procedures. 7.2 Unused materials are stored for re-use or disposed following workplace procedures. 7.3 Waste and scrap materials are disposed with following workplace procedures. 7.4 Inventory of tools equipment are conducted and recorded as per checklist. 7.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Apron 1.2 Safety shoes 1.3 Safety gloves 1.4 Safety hamlet
2. Tools	2.1 Wire stripper 2.2 C-clamp

	2.3 Hacksaw 2.4 Hammers: (a) Ball pin, (b) Claw 2.5 Measuring tapes 2.6 Paint brushes / Rollers 2.7 Pliers: (a) Combination pliers, (b) Side cutting pliers, (c) Diagonal cutting pliers, (d) Long nose pliers 2.8 Screwdrivers:(a) Star, (b) Flat, (c) Connecting 2.9 Neon tester 2.10 Wire cutters 2.11 Electric drill machine 2.12 Electric grinder 2.13 Insulation tester (Meggar) 2.14 Earth tester
3. Materials	3.1 ELCB (Earth Leakage Circuit Breaker) 3.2 Molded Case Circuit Breaker (MCCB) 3.3 Magnetic contactor 3.4 Timer 3.5 Relay 3.6 Busbar
4. Drawings	4.1 Technical drawings 4.2 Sketch 4.3 Blue print 4.4 Circuit diagrams 4.5 Connection diagrams 4.6 Positions drawing
5. Symbols	5.1 Drawing symbols 5.2 Connection symbols 5.3 Load symbols 5.4 Size of wire symbol 5.5 Numbers symbols 5.6 Supply symbols 5.7 Danger symbols 5.8 Conduit symbols 5.9 Circuit breaker symbols 5.10 Protective devices symbols
6. Manuals	6.1 Manufacturer's specification manual 6.2 Repair manual 6.3 Maintenance procedure manual 6.4 Periodic maintenance manual 6.5 Quality manual 6.6 Manual of instruction

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.

1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 collected manuals and documents as controlling and protective devices 1.2 analyzed symbols and drawings of controlling and protective devices. 1.3 clarified controlling and protective devices 1.4 classified and assembled the controlling and protective devices. 1.5 used controlling and protective by the requirement of OSH 1.6 installed Molded Case Circuit Breaker (MCCB), controlling devices, magnetic contactor, busbar, controlling circuit and Earth Leakage Circuit Breaker (ELCB) as required standard.
2. Underpinning knowledge	2.1 Function and types of MCCB, timer, relay and magnetic contactor. 2.2 Function and properties of controlling & protective Devices, drawings, and manuals collections. 2.3 The circuit diagram and controlling & protective devices clarification is to use properly. 2.4 The procedure of installation of MCCB, timer, relay, magnetic contactor and busbar as required.
3. Underpinning skills	3.1 Collecting MCCB, timer, relay, magnetic contactor and busbar. 3.2 Clarifying and classifying of MCCB, timer, relay, magnetic contactor and busbar 3.3 Setting controlling & protective devices 3.4 Installing MCCB, timer, relay and magnetic contactor and busbar.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.

5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated). 5.2 materials and equipment relevant to the proposed activity or task workplace 5.3 tools and equipment appropriate to joint and connection process.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Install Auto Water Level Control System with Submersible Pump
Unit Code	CONEIM4020A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to install auto water level control system with submersible pump. It includes preparing for works, installing auto water level controller, performing submersible pump controller circuit, installation of magnetic contactor, installing three phase energy meters, service cable connection for three phase energy meters and maintaining workplace, tools, equipment and materials.
Nominal Hours	75 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for works	1.1 <i>Personal Protective Equipment (PPE)</i> is used. 1.2 Workplace is prepared as per job requirement. 1.3 <i>Tools, equipment</i> and <i>materials</i> are selected & collected as per job requirement.
2. Install auto water level controller	2.1 Controlling devices and <i>symbols</i> are specified and clarified. 2.2 Water level controller is installed with water tank as required. 2.3 PVC wire is connected and fixed from water level indicator to control the device of water pump. 2.4 Switch is installed with controlling device followed by Occupational Safety and Health (OSH) requirement.
3. Perform submersible pump controller circuit	3.1 Controlling devices are identified, specified and clarified. 3.2 Controller circuit is installed into the wall as per circuit diagram. 3.3 PVC wire is connected from controller circuit to submersible pump as required. 3.4 PVC wire is connected from controller circuit to SDB as required followed by OSH.

4. Perform installation of magnetic contactor	4.1 Controlling devices are identified, specified and clarified as required. 4.2 Magnetic contactor is installed into the wall / job board as per circuit diagram. 4.3 Magnetic contactor circuit is prepared and set as per circuit diagram. 4.4 Push switch (NC & NO) circuit is prepared and connected from magnetic contactor to push switch for controlling the magnetic contactor & load. 4.5 Load is connected to the magnetic contactor for testing as required.
5. Install three phase energy meter	5.1 Installation area of the wall is marked and holed as per layout as required. 5.2 Rawal plug is inserted into the hole and board is fix using screw as required. 5.3 Source (input) and load (output) terminal of three phase energy meter is found out using test lamp / multi-meter. 5.4 Three phase energy meter is fixing into the board as standard. 5.5 3 Phase (brown, black, and grey) cable of main switch is connected with load terminal of single-phase energy meter as per diagram. 5.6 Neutral (blue) cable of energy meter is connected with bus-bar of MDB as per diagram. 5.7 Connection is rechecked and ensured the performance through switch ON / OFF the power supply.
6. Install service cable connection for three phase energy meter	6.1 Installation area of the wall is marked and holed as per layout as required. 6.2 Rawal plug is inserted into the hole and board is fix using screw as required. 6.3 Source (input) and load (output) terminal of three phase energy meter is found out using test lamp / multi-meter. 6.4 Three phase energy meter is fixed into the board. 6.5 Insulation of cable terminal is removed using electrician knife. 6.6 Cable terminal is connected and punched with cable lugs as required.

	6.7 3 Phase (brown, black, and grey) cable of main switch (MCCB) with load terminal of three phase energy meter is connected as per diagram. 6.8 Neutral (blue) cable of three phase energy meter is connected with bus-bar of MDB as per diagram. 6.9 Three phase and neutral cable source terminal of three phase energy is connected with electric pole as per diagram. 6.10 Connection is rechecked and ensured performance through switch ON / OFF the power supply.
7. Maintain workplace, tools, equipment and materials	7.1 Work area is cleaned in accordance with workplace procedures. 7.2 Unused materials are stored for re-use or disposed following workplace procedures. 7.3 Waste and scrap materials are disposed with following workplace procedures. 7.4 Inventory of tools equipment are conducted and recorded as per checklist. 7.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Personal Protective Equipment (PPE)	1.1 Safety helmet 1.2 Safety goggles 1.3 Mask 1.4 Apron 1.5 Hand gloves 1.6 Safety shoe
2. Tools	2.1 Hammer 2.2 Cutting pliers 2.3 Combination pliers 2.4 Wire striper 2.5 Neon tester 2.6 Screw driver (flat, star and connecting) 2.7 Electrician knife
3. Equipment	3.1 Ammeter 3.2 Volt meter 3.3 Watt meter 3.4 Energy meter, Single Phase and Three Phase (Analog & Disital) 3.5 Multi meter

	3.6 Calculator 3.7 Multi meter / AVO meter
4. Materials	4.1 Water pump 4.2 Submersible pump
5. Symbols	5.1 Drawing symbols 5.2 Connection symbols 5.3 Socket symbols 5.4 Switches symbol 5.5 Size of wire symbol 5.6 Numbers symbols 5.7 Supply symbols 5.8 Danger symbols 5.9 Switch board symbol 5.10 Main switch symbol
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 collected manuals and documents as required 1.2 analyzed symbols and drawings to installing controlling circuit 1.3 clarified controlling devices to install properly followed by OSH 1.4 identified, classified and set controlling devices 1.5 used controlling devices for protective device 1.6 used single & three phase energy meter 1.7 installed auto water level controller with water pump as standard, three phase energy meter, service cable and sub meter 1.8 make submersible pump controller circuit.
2. Underpinning knowledge	2.1 Function and types of documents, drawings, manuals and symbols identification. 2.2 Function of auto water level controller with water pump, submersible pump controller circuit, magnetic contractor setting, sub meter, three phase energy meter. 2.3 State the procedure of controlling devices, drawings, and manuals collections. 2.4 State the controlling devices clarification and device sorting. 2.5 Function and connection of energy meter.

3. Underpinning skills	3.1 Collecting drawings, manuals, documents and controlling devices. 3.2 Clarifying and classifying drawings, manuals, documents and controlling devices. 3.3 Setting controlling devices. 3.4 Using controlling devices. 3.5 Installing auto water level controller with water pump, sub meter, three phase energy meter. 3.6 Making submersible pump controller circuit and magnetic contractor setting.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.
5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 materials and equipment relevant to the proposed activity or task 5.3 tools and equipment appropriate to joint and connection process.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

National Technical and Vocational Qualifications Framework for Bangladesh
Unit of Competency

Unit Title	Perform 3 Phase Motor Connection with VFD (Variable Frequency Drive)
Unit Code	CONEIM4021A2
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to perform 3 phase motor connection with VFD (Variable Frequency Drive). It includes preparing for works, preparing for electrical installation, installing VFD (Variable Frequency Drive), 3 phase motor, performing tests, commission and handover job to relevant authority.
Nominal Hours	40 Hours
Elements of Competency	Performance Criteria <i>Bold & italicized</i> terms are elaborated in the Range of Variables
1. Prepare for electrical installation	1.1 Electrical installation identified and studied as per customer requests or organizational requirement. 1.2 Work plans and installation drawings interpreted appropriately. 1.3 Required <i>documents / resources</i> , tools and materials listed as per requirement and drawings. 1.4 Listed resources, <i>tools, equipment and materials</i> acquired, following specified procedure. 1.5 Relevant other parties communicated with to ensure safety requirement and smooth functioning of installation work. 1.6 All safety measures considered and ensured as per prevailing safety regulations.
2. Install VFD (Variable Frequency Drive)	2.1 Variable Frequency Drive (VFD), user manual, tools & materials are collected and identified. 2.2 Install VFD in appropriate location as per layout diagram. 2.3 Perform supply connection to VFD with distribution busbar using rated cable as per standard.
3. Install 3 phase motor	3.1 3 phase motor, circuit diagram, tools & materials are collected and identified. 3.2 Install motor on motor base as per standard.

	3.3 Perform motor connection with VFD as per wiring diagram. 3.4 Connection is checked and reviewed as per circuit diagram. 3.5 Prepare & perform setting VFD to run the motor as per requirement maintaining procedure of user manual.
4. Maintain workplace, tools, equipment and materials	4.1 Work area is cleaned in accordance with workplace procedures. 4.2 Unused materials are stored for re-use or disposed following workplace procedures. 4.3 Waste and scrap materials are disposed with following workplace procedures. 4.4 Inventory of tools equipment are conducted and recorded as per checklist. 4.5 Tools and equipment are cleaned and stored as per manufacturer's recommendation in appropriate location.
Range of Variables	
Variable	Range (may include but not limited to):
1. Documents / resources	1.1 Wiring regulations 1.2 Safety regulations 1.3 Manufacturer's specification for materials related to installation 1.4 Factories ordinance 1.5 Circuit diagram
2. Tools, equipment and materials	2.1 General electrician's tools 2.2 3 Phase motor 2.3 Variable Frequency Drive (VFD) 2.4 Relevant tools, equipment and material as per the nature of the installation 2.5 Personal protective and safety equipment 2.6 Testing equipment such as insulation tester, earth resistance tester, phase sequence indicator 2.7 Multi meter and clip-on meter 2.8 Electronic calculator
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	

1. Critical aspect of competency	Assessment required evidences that the candidate: 1.1 considered and ensured all safety measures as per prevailing safety regulations 1.2 issued material, tools and equipment to workers as per the stipulated procedure 1.3 checked work progress regularly as per drawings and work plan 1.4 checked and verified control & power circuit inspected and verified 1.5 required protective devices are installed as per standard.
2. Underpinning knowledge	2.1 Performing control & power circuit. 2.2 Troubleshooting. 2.3 Electrical symbols and drawings. 2.4 Codes of practice in electrical technology. 2.5 Measuring instruments. 2.6 Basic electrical calculations. 2.7 Purpose and extent of maintaining work activity records in an organization. 2.8 Safety rules and procedures. 2.9 Safety gear. 2.10 Working standards. 2.11 Organization's rules and regulations.
3. Underpinning skills	3.1 Communication. 3.2 Report writing. 3.3 Decision making. 3.4 Interpreting manufacturer's /designers. 3.5 instructions and drawings. 3.6 Selection of personal protective equipment. 3.7 Electrical installation. 3.8 Electrical installation testing.
4. Required attitudes	4.1 Commitment to occupational safety and health. 4.2 Promptness in carrying out activities. 4.3 Sincere and honest to duties. 4.4 Eagerness to learn. 4.5 Tidiness and timeliness. 4.6 Environmental concerns. 4.7 Respect for rights of peers and seniors at workplace. 4.8 Communicate with peers and seniors at workplace.

5. Resource implication	The following resources must be available: 5.1 workplace (actual or simulated) 5.2 tools, equipment and physical facilities appropriate to perform activities. 5.3 materials consumable to perform activities.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio.
7. Context of assessment	7.1 Competency assessment must be done in a training center or in an actual or simulated work place after completion of the training module. 7.2 Assessment should be done by BTEB certified assessor.
Accreditation Requirements Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.	

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