INSTITUTIONAL ASSESSMENT

Trainee's Name:	
Trainer's Name:	
Date:	
RESULT:	
Qualification:	**ELECTRICAL INSTALLATION & MAINTENANCE NC II**

NOTE: *Critical aspects of competency

COMPETENCY STANDARD	**ELECTRICAL INSTALLATION & MAINTENANCE NC II**
UNIT OF COMPETENCY	• **Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems** • **Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system** • **Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets**

Ways in which evidence will be collected: *[tick the column]* **The evidence must show that the trainees …**	Written Exam	Oral Questioning	Demonstration
• Plans and prepare works are communicate and confirm to ensure clear understanding			
• Checks *tools, equipment and PPE* needs to install electrical wiring are identifies, to ensure they work correctly as intends and are safe to use in accordance with establish procedures			
• Checks materials needed for work are obtained in accordance with established procedures			
• Follows *safety procedures* in installing electrical protective devices in line with the job requirements			
• Performs the correct procedure in *installing of electrical protective devices* should be in line with job requirements and PEC			
• Follows schedule of work in installing of electrical protective devices to ensure to be complete in an agreed time and to a quality standard and with a minimum waste			
• Follows schedule of work to ensure work is completed in an agreed time, to a quality standard and with a minimum waste			
• Seeks further instructions from a supervisor if unplanned events or conditions occur			
• Undertakes on-going checks of quality of work in installing of electrical protective devices are done in accordance with instruction and requirements			
• Follows safety procedure in installing lighting fixture and auxiliary outlet in line with the job requirements			
• Performs the correct procedure in installing lighting fixture and auxiliary outlet should be in line with job requirements and PEC			

• Follows schedule of work in *installing lighting fixture and auxiliary outlet* to ensure to be complete in an agreed time and to a quality standard and with a minimum waste			
• Seeks further instructions from a supervisor if unplanned events or conditions occur			
• Undertakes on-going checks of quality of work in installing lighting fixture and auxiliary outlet are done in accordance with instruction and requirements			
• Ensures final checks made to work conforms with instructions and requirements			
• Notifies supervisor upon completion of work			
• Cleans, checks and returns of tools, equipment and any surplus resources and materials to the storage in the accordance with establishes procedures			
• Cleans and makes work area safe			
• Interprets correctly work instructions*			
• Selects appropriate tools, equipment and materials for installation of electrical protective system*			
• Selects and use correct PPE*			
• Demonstrates correct procedure for installation of electrical protective devices*			
• Demonstrates correct procedure on installation of lighting fixture and auxiliary outlet*			
• Follows safety procedures*			
• Cleans worksite, tools and equipment*			
• Stores surplus materials*			
• Cleans and makes work area safe			

ELECTRICAL INSTALLATION AND MAINTENANCE NC II

WRITTEN TEST

Direction: MULTIPLE CHOICE:
Choices the best answer and write letters only on your answer sheet.

1. Why do electric service metering is normally installed outside the building or at the property line wall or post?
   A. it is the regulations of the company supplying electricity
   B. it is under the National Electrical Code
   C. for ready access of a meter reader
   D. all of the above
2. A common type of service wire installed by electric power supply companies for industrial, commercial, and residential houses?
   A. service meter
   B. service entrance
   C. overhead service
   D. underground
3. A pocket sized tool used to test the line wire or circuit if there is current in it?
   A. test light
   B. pull-push rule
   C. wire gauge
   D. fish tape
4. What part of an electric meter were kilowatt hour meter is attached or inserted?
   A. base
   B. panel board
   C. switch
   D. safety box
5. Which of the following is not a part of an overhead service entrance?
   A. service meter
   B. service drop
   C. service cap/head
   D. service center
6. What part of service entrance is use to protect the wire and the electric meter from entering rain water to conduit pipe?
   A. service meter
   B. service conduit
   C. service cap/head
   D. service loop
7. Which of the following is included as a material use in the installation of service meter?
   A. grounding rod
   B. rigid metallic tubing
   C. electrical metallic tubing
   D. all of the above
8. Why grounding is very important in any installation of electrical system?
   A. to fix permanently to a zero voltages
   B. to protect against short circuit
   C. to prevent single grounds from being unnoticed
   D. all of the above
9. What is the common type of service entrance employed by the power companies supplying electricity in the Philippines?
   A. overhead service entrance
   B. underground service entrance
   C. three phase service entrance
   D. single phase service entrance
10. It is a type of service entrance consist of a raceway (conduit) extending from the building to the property line where it is tap to main?
   A. overhead service entrance
   B. underground service entrance
   C. three phase service entrance
   D. single phase service entrance

11 Which of this size of wire is use as a service entrance conductor for a single family dwelling bungalow house?
   A. no. 8 awg
   B. no. 10 awg
   C. no. 12 awg
   D. no.14 awg
12. You are able to install single bulb controlled by single pole switch what would you able to use if you had a screws that has cross head?
   A. allen screw
   C. stubby screw driver

B. flat screw driver D. philip screw driver

13. A pocket sized tool used to test the line wire or circuit if there is current in it?
    A. test light C. wire gauge
    B. pull-push rule D. fish tape
14. The National Electrical Code provides that the ampacity of the connected load shall not exceed of how many percent of the amperage capacity of conductor and the fuse?
    A. 60% C. 20 %
    B. 50% D. 80%
15. How many no. 14 wires that can inserted to 13 mm diameter of conduit pipe?
    A. 4 C. 2
    B. 3 D. 5
16. There are several factors involved in electrical wiring installation but the foremost consideration is?
    A. cost C. safety
    B. labor D. function
17. How many no. 10 wires that can inserted to 25 mm or one-inch diameter of conduit pipe?
    A. 9 C. 11
    B. 10 D. 12
18. What is the standard rating ampere for fuses and circuit breaker, if the non-continuous type of load is consumed of 12 amperes?
    A. 10 amperes C. 20 amperes
    B. 15 amperes D. 30 amperes
19. In a electrical plan, if you intend to make a line diagram what is the symbol of buzzer?
    .
    A.  C. 
    B.  D. 

20. In a electrical plan, how would you represent the symbol of a bell using a single line diagram?
    A.  C. 
    B.  D. 

SPECIFIC INSTRUCTION FOR THE CANDIDATE	
Qualification	**ELECTRICAL INSTALLATION & MAINTENANCE NC II**

Unit of Competency	• **Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems** • **Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system** • **Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets**

General Instruction:

- **Given the necessary materials, tools and equipment, you are required to perform *Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems*** ; ***Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system AND Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets*** in accordance with the STANDARDS OF YOUR QUALIFICATION within 8 HOURS.

Specific Instruction:

You should perform the following activities…

1. Prepare all the necessary tools and materials.
2. Draw the schematic diagram: Panel board with main circuit and four branches circuit (Lights, CO, FDAS and CCTV)
3. Do measurement on a ply board.
4. Mount all the materials and equipment base on the industry standard.
5. Perform wire termination in distribution, power, lighting, auxiliary, and grounding system.
6. Make a test for functionality of each branch circuit using of VOM or Continuity Lamp Tester.

Tools/Equipment/Materials:

- Pliers, Screwdrivers, Wire Stripper, Utility Knife, Pull push rule
- Multi-tester (VOM)

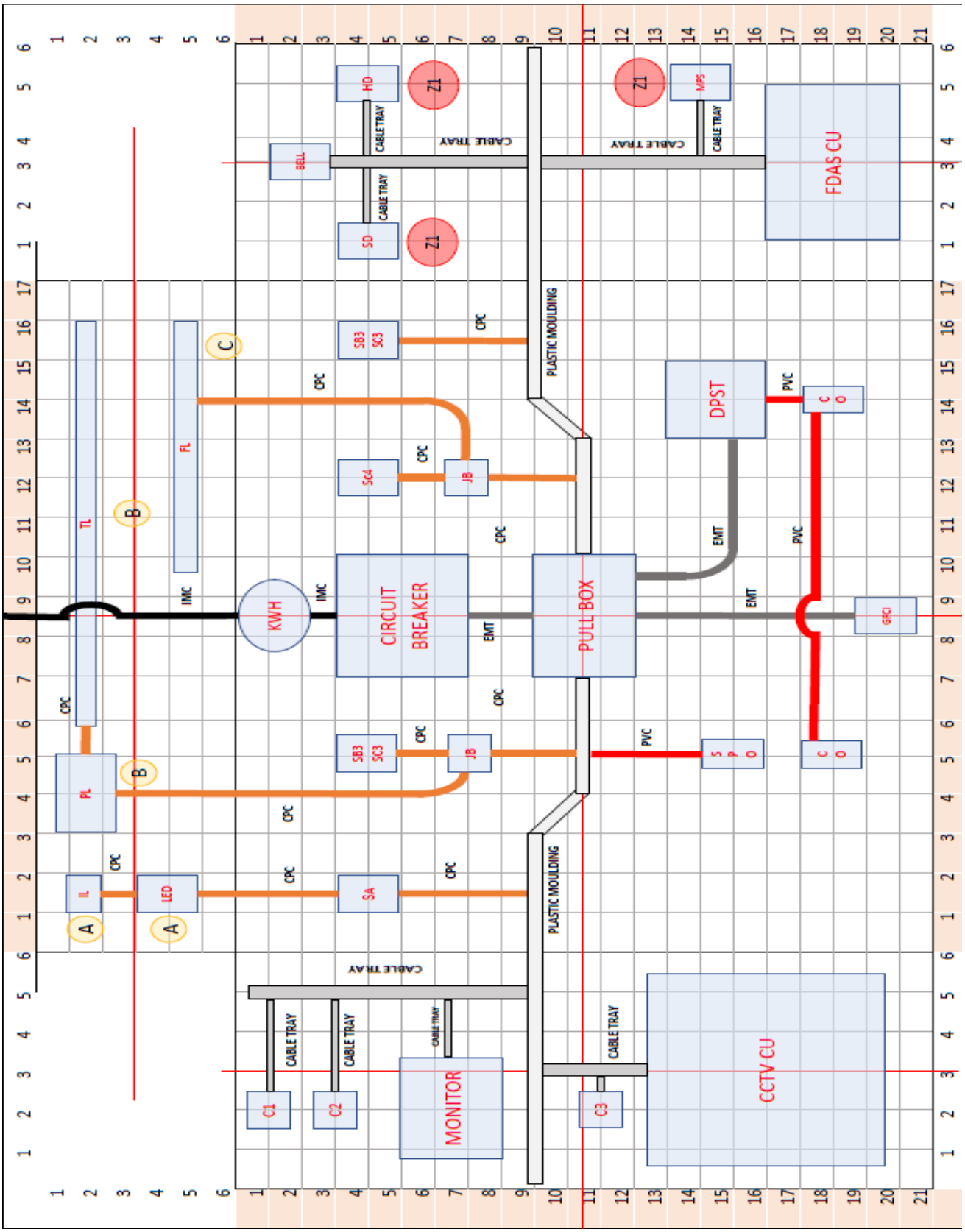
- Panel board with 70 amps main and four (4) branch circuit
  - 20 amps, 2pieces and 15 amps, 2 pieces
- Electrical Conduits
  - Flexible Non-Metallic
  - Rigid Metallic Conduit
  - Rigid Non-Metallic Conduit
  - PVC Trunking
- Residential Wiring
  - Junction / Utility boxes
  - Single switch ; 3way switches and 4way switch
  - Receptacle
  - SPO
  - GFCI
- Fire Detection Alarm System
  - Smoke Detector
  - Heat Detector
  - Fire Alarm Control Unit
  - Manual Call Point
  - Bell
- Closed Circuit Television (CCTV)
  - Digital Video Recorder (DVR
  - Dome Type Camera w/supplies
  - Bullet Type Camera w/supplies
  - Monitor

RATING SHEET FOR DEMONSTRATION

Trainee's Name:	
Trainer's Name:	
Qualification:	**ELECTRICAL INSTALLATION & MAINTENANCE NC II**

Unit of competencies:	• Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems • Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system • Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets			
Date of assessment:				
Time of assessment:				
Instructions for demonstration				
Given the necessary materials, tools, instrument and equipment, you are required to perform the following tasks in accordance with the set performance criteria, the given task will be done in 8 hours.				
Materials: Materials, tools, instrument and equipment				
OBSERVATION	✓ to show if evidence is demonstrated			
During the demonstration of skills, did the trainee...	**Yes**	**No**	**N/A**	
Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems				
• Installed electrical metallic /non- metallic (PVC conduit) *				
• Installed wire ways and cable tray*				
• Installed auxiliary terminal cabinet and distribution panel*				
• Prepared for cable pulling and installation*				
• Performed wiring and cabling lay out*				
• Notified completion of work*				
Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system				
• Correctly interpreted work instructions*				
• Selected appropriate tools, equipment and materials for installation of electrical protection system*				
• Selected and used correct PPE*				
• Demonstrated correct procedures on installation of electrical protective devices*				

• Demonstrated correct procedures on installation of lighting fixture and auxiliary outlet*			
• Followed safety procedures/protocol			
• Cleaned worksite, tools and equipment*			
• Stored surplus materials			
• **Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets**			
• Correctly interpreted work instructions*			
• Selected appropriate tools, equipment and materials for installing wiring devices and lighting fixtures/switches and auxiliary outlet*			
• Selected and used correct PPE*			
• Demonstrated correct procedures for installation of wiring devices and lighting fixtures/switches*			
• Followed safety procedures/protocol*			
• Cleaned worksite, tools and equipment*			
• Stored surplus materials*			
The trainee's demonstration was: Satisfactory ❑ Not Satisfactory ❑			



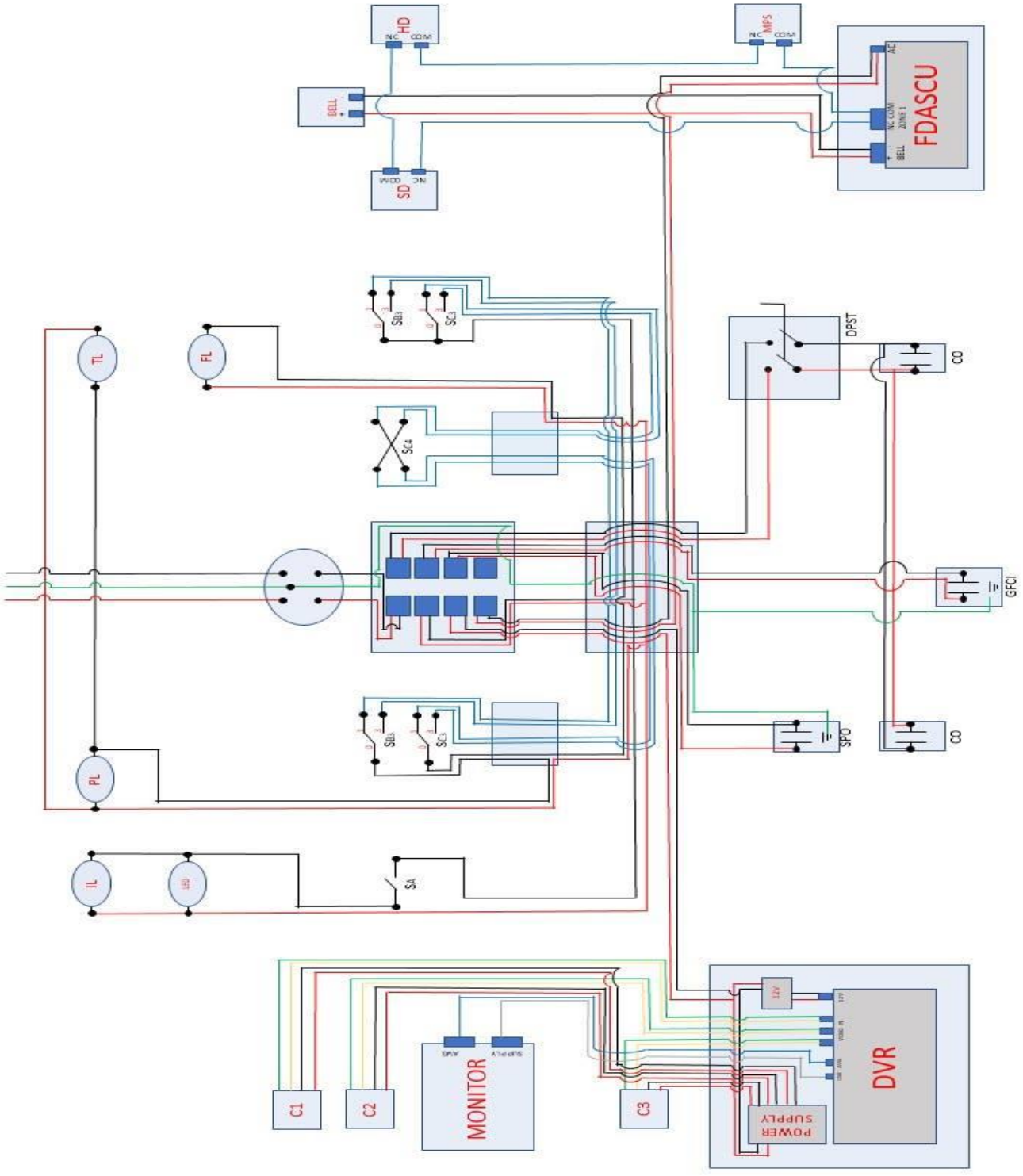
Vision

Provider of highly skilled electricians in Central Luzon

Mission

To create a passion for learning and promote innovation

TESDA Abot Lahat


HD
MPS
BELL
SD
FDASCU
TL
FL
SB3
SC3
SC4
DPST
CO
GFCI
SPD
PL
IL
SA
C1
C2
C3
MONITOR
DVR
POWER SUPPLY

PERFORMANCE CRITERIA CHECKLIST

OBSERVATION	Check ( ) to show if evidence is demonstrated		
During the demonstration of skills, the candidate:	**Yes**	**No**	**N/A**
☐ Identified and selected electrical power and hydraulic tools in line with job specification*			
☐ Read and interpreted drawings correctly based on job requirements			
☐ Determined correct quantities of conduit and accessories as per job requirements			
☐ Assembled conduits and ensured that fittings are fully inserted and tightened as per job requirements*			
☐ Bent conduits with bends not exceeding 90^{O} as per job requirements			
☐ Threaded conduit in line with job requirements			
☐ Installed electrical metallic conduits*			
☐ Installed wire ways and cable trays as per job requirements*			
☐ Performed correct procedures for installation of wiring devices*			
☐ Performed correct procedures for installation of electrical protection system in line with job requirements and PEC*			
☐ Performed correct procedures for installation of lighting fixtures in line with job requirements*			
☐ Followed safety procedures in line with SOP*			
☐ Made final checks to ensure that work conformed with instructions and job requirements			
☐ Cleaned, checked and returned tools, equipment and any surplus materials to storage in accordance with SOP			
☐ Cleaned and made safe the work area according to OH&S regulations			

The trainees underpinning knowledge was:

Satisfactory ❑ Not satisfactory ❑

The trainee's overall performance:

Satisfactory ❑ Not satisfactory ❑

Trainee's Signature		**Date**	
Trainer's signature:		**Date:**	

RATING SHEET FOR ORAL QUESTIONING

Trainee's name:	
Qualification:	**ELECTRICAL INSTALLATION & MAINTENANCE NC II**
Unit of competencies:	• Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems • Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system • Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets

Oral/Interview Questions	**Satisfactory response**	
	Yes	**No**
Performing roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems		
• Names at least three types of conduits?	❑	❑
• Why do we need to wear proper personal protective equipment?	☐	☐
• Name at least three type PPE?	❑	❑
• What is the meaning of PEC?	❑	❑
Install Electrical Protective devices for distribution, power, lighting, auxiliary, lightning protection and grounding system		
• Name at least three kind of hand tool?	❑	❑
• What are the tools needed in installing protective device?	❑	❑
• What are the tools needed in installing pipe and fitting?	❑	❑
• What will you do if there's a short circuit happened in your house?	☐	☐
• What will happen if the circuit breaker trip down?	☐	☐
Install Wiring Devices of Floor and Wall Mounted Outlet Lighting Fixture/Switches and Auxiliary Outlets		
• Name at least two components of FDAS?	❑	❑

• In Philippine Electrical Code (PEC) what is the number of wire use in lighting?	☐	☐
• What is the advantage of using digital multi-tester?	❑	❑
• The protective device can monitor 24 hours	❑	❑

The trainees underpinning knowledge was:

Satisfactory ❑ Not satisfactory ❑

The trainee's overall performance:

Satisfactory ❑ Not satisfactory ❑

Trainee's Signature		**Date**	
Trainer's signature:		**Date:**	