TECHNICAL REPORT ON THE STUDENTS' INDUSTRIAL WORK EXPERIWENCE SCHEME (SIWES)

HELD AT

PREPAPEM GLOBAL SERVICE

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BY

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SUBMITTED TO:

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DEDICATION

I dedicate this write up to Almighty God who made this program a success for me and my lovely parents for their support and words of encouragement rendered to me during my industrial training. Also, my regards to my beloved parent **(Mr. & Mrs. Ashaolu)** May God bless and reward you Amen.

ACKNOWLEDGMENT

My profound gratitude goes to Almighty Allah for His infinite mercy, blessings, wisdom, knowledge and understanding and loving kindness that He bestowed upon me. I greatly express my gratitude to my lecturers in the Department of Electrical Engineering, Kwara State Polytechnic and also my (Head of Department, Electrical Engineering) for their advice to all their students.

A special thanks to my parents **(Mr. & Mrs. Ashaolu)**. I am really proud of them for their unrented effort, guidance and counseling, coupled with words of encouragement and my beloved sisters and brothers. Also very huge thanks to **Mr. Saheed Mustopha** for taking his time to ensure that my industrial training in **prepapem global services** was smooth and fruitful. I also want to express my profound gratitude to my colleagues I worked with, who provided a conducive environment for the exercise.

Finally, huge thanks to those who contributed in one way or the other to make my industrial training a success, that Almighty Allah His infinite goodness guide and grant their heart desires.

TABLE OF CONTENT

CHAPTER ONE

1.0 INTRODUCTION

The Student Experience Scheme (SIWES) is a program initiated and design by the industrial training fund I.T.F headquarters in 1974 under the policy of the National Board for Technical Education NBTE, was students from the school of Environmental, Engineering and Applied Art and Science are sent on a four (4) months compulsory attachment to industries related to their field of study to acquire practical knowledge for the award of National Diploma ND certificate. The scheme was design as part of manpower development program for Nation Building. It was also designed to practical knowledge and activities and aquarist themselves with equipment available in the industry and not existing in their respective school workshop.

1.1 AIMS AND OBJECTIVE OF THE SIWES

- It produces skilled manpower for the speedy development of the nation economy.
- Increase the level of working experience of students in respect theoretical knowledge.
- Expose students to some working condition and machine in the industry.
- Improve on mutual relationship between student and other professional in the industry thereby developing attribute of human leadership and relationship.
- It enhances the practical knowledge of students, hence, making the students professionally equipped and sound.
- SIWES enables students to see and practice on the use of machines or equipment applying theoretical knowledge acquires in the classroom or lecture hall.

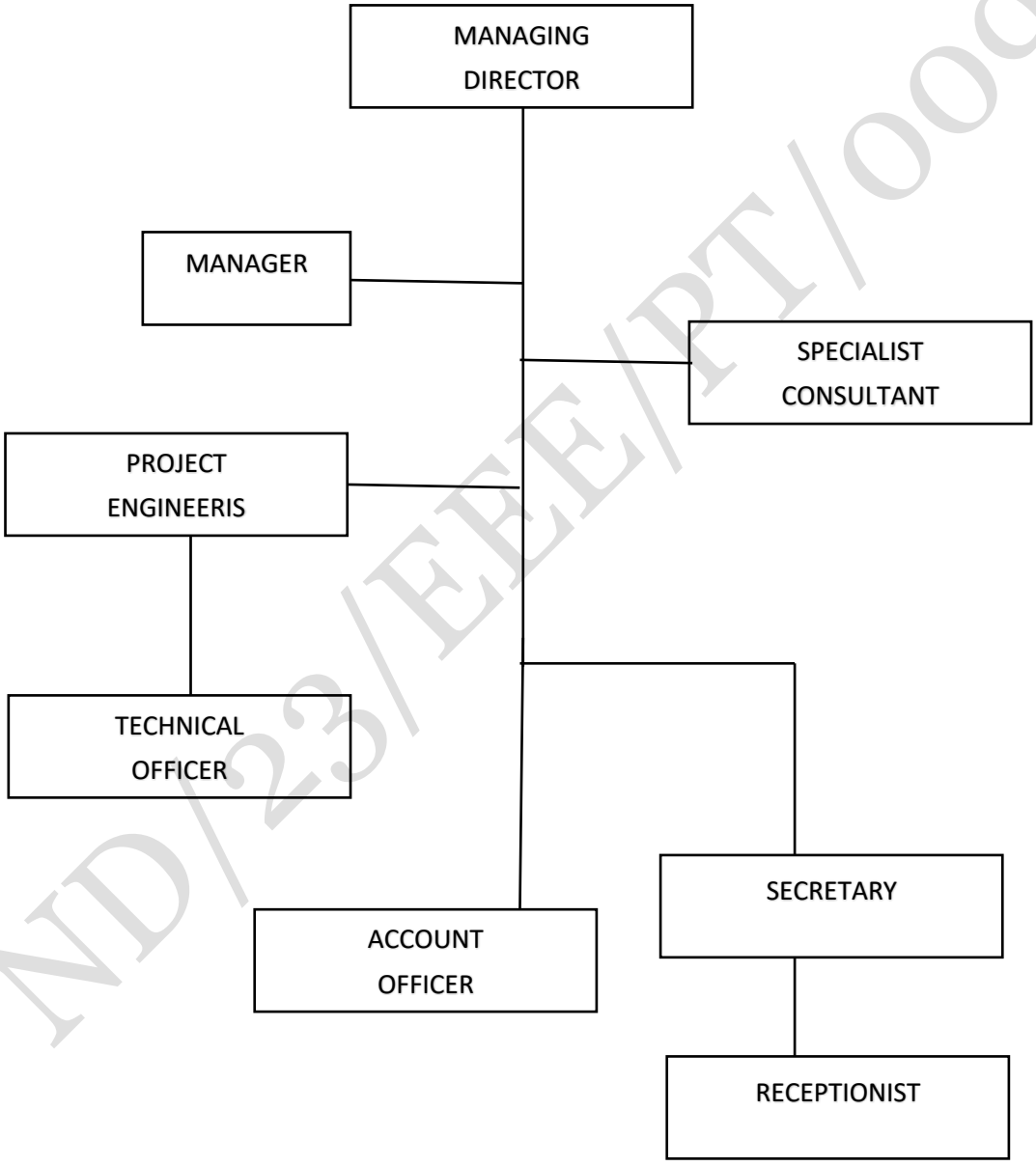
1.2 BRIEF HISTORY OF THE ORGANIZATION

Prepapem global service is a wholly Electronics hardware and software solution, research and training Hub with a bias in Wholesale and Retail of Electronics Components and tools Technological Services, Laboratory instrumentation Service and Training.

Prepapem global Services started with a goal to help individuals continuously achieve the abiding need to innovate and create what they heartily desired so as to put to bear their technological creativity. Over the years, we have done this by providing personalized

technological services and electronics hardware development in the highly specialized consumer electronics hardware/software development, alternative energy, supply and maintenance of laboratory equipment, house wiring, security surveillance installation, embedded system design and artificial intelligence.

1.3 ORGANISATION CHART



CHAPTER TWO

2.0 INTRODUCTION TO PRECAUTION IN ELECTRONIC WORKSHOP

Certain precautions that need to be taken when working with electronics tools or equipment, so that the person should be able to protect his/herself from any danger or to protect the equipment from getting damage and to protect the workshop itself to prevent any damages to them. Therefore safety precautions are categorized under different aspect and this includes:

- Personal safety precaution.
- High voltage safety.
- General safety precaution.

2.1 PERSONAL SAFETY PRECAUTION

It's important to ensure that you're safe when working on electronic circuits. Here are some personal safety precautions to keep in mind:

- Always keep your work area dry.
- Always work in a well-ventilated area.
- Don't wear flapping or loose clothing when working.
- Don't work with metallic jewelry on your hands like watches, rings and bracelets.
- Don't use bare hands to remove hot parts.
- Always wear non-conductive shoes.
- Always wear insulator gloves in your hands when carrying out repairs.
- When removing high-voltage charges on capacitors, always use a shorting stick.
- Don't hold the test prods when measuring voltage over 300V.
- Always remove power to a circuit before connecting alligator clips.
- Always wear safety goggles.
- Be careful when handling large capacitors as they can still hold high voltage even after you've disconnected the circuit from power.

2.2 HIGH VOLTAGE SAFETY

One mistake that electronics experts make when doing repairs or maintenance work is assuming routine safety procedures after getting all too familiar with their work. It's important to know that most electronic equipment use high-voltage that is dangerous and can be fatal. Always follow these safety precautions when working on or near high-voltage circuits.

- Don't work on electronic equipment or make repairs with high voltage on.
- Don't take chances doing what you're not sure about.
- Consider using an isolation transformer when working on AC powered electronic circuits or equipment.
- Never tamper with interlocks.
- Don't ground yourself: Make it a practice to use only one hand when connecting equipment to an electronic circuit.

2.3 GENERAL SAFETY PRECAUTION

Before working on any electronics, consider following these basic safety precautions to help reduce any hazards.

- Remove any electronic equipment you're testing or working on from the power source.
- Never assume the power circuit is off. Test and test again with a voltmeter to confirm.
- Remove fuses and replace them only after the power to the circuit is disconnected.
- Don't connect power to a circuit until you're done working on it and rechecked the work.
- Always ensure that all electronics equipment is properly grounded
- If it's damaged, replace it. For instance, replace cables instead of repairing with insulating tape.
- Always use the right electronics repair and maintenance tools.
- Always return covers after removing them to reduce the risk of electric shock.
- Make sure your circuit is not overloaded.
- Always have safety equipment like a fire extinguisher, a basic first aid kit and a mobile phone nearby.

2.4 ELECTRONICS WORKSHOP TOOLS AND COMPONENT

This aspect shows and explains about electronic workshop tools. This isn't a complete list but it does highlight the most common items used in electronics.

2.4.1 ELECTRONIC TOOLS

Digital Multimeter

A multimeter is a device that's used to measure electric current (amps), voltage (volts) and resistance (ohms). It's a great for troubleshooting circuits and is capable of measuring both AC and DC voltage.

Test Leads (Alligator Clips)

Test leads are great for connecting components together to test a circuit without the need for soldering.

An insulated screwdriver

An insulated screwdriver is a tool with an insulating layer that protects the user from electric shock when working with live wires. They are often used by electricians and technicians.

How they work

- The insulating material covers the handle and shaft of the screwdriver
- This reduces the risk of electrical accidents
- Insulated tools also help protect the equipment being inspected or repaired

Heat Gun

A heat gun is used to shrink plastic tubing known as heat shrink to help protect exposed wire. Heat shrink has been called the duct tape of electronics and comes in handy in a wide variety of applications.

Cable cutter

A cable cutter is a tool used to cut wires and cables, typically with minimal damage to the insulation or internal conductors. Cable cutters are used in electrical work and telecommunications.

How cable cutters work

- Cable cutters have sharp cutting blades that can cut through thick cables
- Cable cutters come in different sizes, with larger models able to cut cables up to several inches in diameter
- Cable cutters are designed to make clean cuts that improve the quality of electrical connections

Non-contact voltage tester

A non-contact voltage tester is a tool that detects the presence of AC voltage in a wire or electrical circuit without physically touching it, by sensing the electromagnetic field produced by the live wire, typically indicating a positive result with a visual light and audible beep when voltage is present; it's used to safely check for live wires without direct contact, making it a valuable tool for electricians and DIYers.

2.4.2 ELECTRONIC COMPONENT

Switch

Switches can come in many forms such as pushbutton, rocker, momentary and others. Their basic function is to interrupt electric current by turning a circuit on or off.

Diode

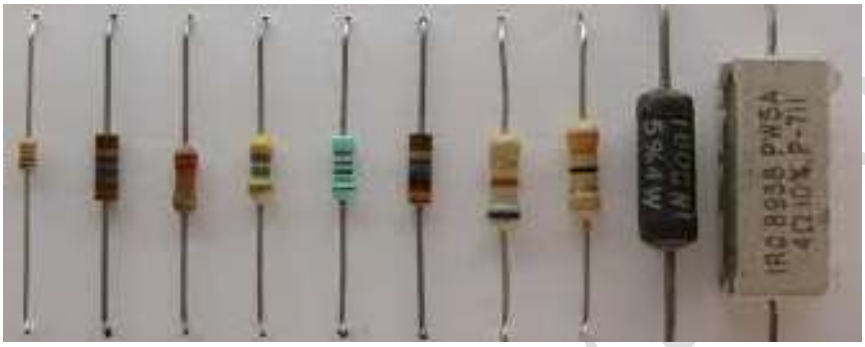
A diode allows electricity to flow in one direction and blocks it from flowing the opposite way. The diode's primary role is to route electricity from taking an unwanted path within the circuit.

Relay

A relay is an electrically operated switch that opens or closes when power is applied. Inside a relay is an electromagnet which controls a mechanical switch.

Resistors

Resistors are used to resist the flow of current or to control the voltage in a circuit. The amount of resistance that a resistor offers is measured in Ohms. Most resistors have colored stripes on the outside and this code will tell you it's value of resistance. You can use a multimeter or Digikey's resistor color code to determine the value of a resistor.



CHAPTER THREEE

3.0 PROCEDURE ON INSTALLATION OF AC

To install an air conditioner, you typically need to: choose the right location, prepare the area, install mounting brackets, position the indoor unit, run the refrigerant lines through the wall, install the outdoor unit, connect the refrigerant lines, set up the condensate drain, wire the electrical connections, and finally test the system for proper function; always consult the manufacturer's instructions for specific details regarding your AC model.

Key steps:

Site Selection:

Determine the best location for the indoor unit based on cooling needs and accessibility.

Find a suitable spot for the outdoor unit, ensuring proper drainage and ventilation.

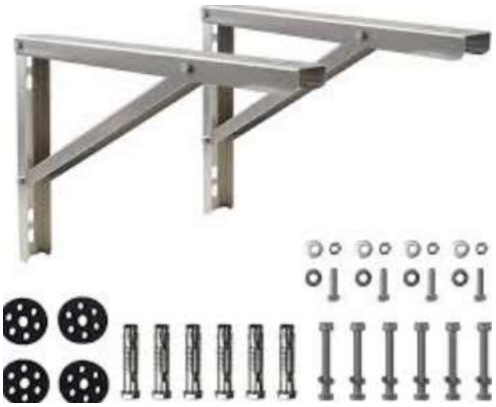
Preparation:

Measure and mark the wall where the indoor unit will be mounted.

Drill holes through the wall to run the refrigerant lines and drain pipe.

Mounting Brackets:

Install mounting brackets for both indoor and outdoor units according to the manufacturer's specifications.



Mounting Bracket

Indoor Unit Installation:

Carefully lift and position the indoor unit onto the brackets.

Secure the unit firmly to the wall using screws.

Indoor unit hanger

Line Routing:

Thread the refrigerant lines (copper pipes) and electrical wires through the wall hole, ensuring minimal bends.

Outdoor Unit Installation:

Place the outdoor unit on its designated mounting brackets.

Level and secure the outdoor unit properly.

Connecting Lines:

Connect the refrigerant lines from the indoor unit to the outdoor unit, ensuring correct connections and tightening fittings.

Connecting line

Condensate Drain Setup:

Install the condensate drain pipe and route it to a suitable drainage point.

Condensate Drain setup

Electrical Connections:

Connect the power cables according to the wiring diagram provided.

Ensure proper electrical grounding.

Vacuum and Charging:

Create a vacuum in the refrigerant lines to remove air and moisture.

Charge the system with the appropriate refrigerant.

Testing and Operation:

Turn on the AC unit and check for proper cooling, airflow, and drainage.

Adjust settings as needed to achieve desired comfort level.

Important Considerations:

3.1 Safety Precaution of Ac installation:

Always follow safety guidelines when working with electricity and refrigerant.

CHAPTER FOUR

4.0 EXPERIENCE GAINED

During the four months program, I learnt on how to repair some home appliances like pressing iron, electric cooker, water heater, electric blender etc. All this gives me the knowledge of constructing and designing a project.

I also learn on how to do full house wiring without any problem.

4.1 PROBLEM ENCOUNTERED

Every phase of human life is faced with one problem or the other. for the face that the scheme is a tripartite program, involving student, the Polytechnic and industry.

Therefore, the problems encountered during the training were very limited. Meanwhile, no man can do without problem, some pressing ones are;

1. Training placement.

2. Inadequate financial support.

3. Problem of transportation

4. Time wasted when being sent on an errand by my supervisors.

4.2 SUGGESTION FOR IMPROVEMENT OF THE PROGRAMM

Student industrial work experience scheme (SIWES) is very important. Scheme to enhance the student's growth practically.

Therefore, it should be taken very serious. For one to do better, the following measures have to be clearly checked:

1. Student has to be regular and punctual.

2. They should comply with the employ's/ industry/establishment rules and regulations.

3. Attached experienced staff to student for effective training and supervision.

4. Treat students with a good manner.

5. The scheme may be optical at course registration, just as we have sandwich program in develop countries.

CHAPTER FIVE

5.0 CONCLUSION

My ambition of being a professional with a good knowledge and understanding of Electrical Electronics Engineering carrier just be coming real. The experience acquired from various challenges during my stay with prepapem global services, Integrated Electronics Technology and Consultant has been very and highly useful in realizing and wish.

The experienced gained from working on different types of designs have really built up the assurance in me to problems relating to the field in future projects and of course on contribution on my own view to be continual development of the engineering profession in Nigeria and the world at large.

5.1 RECOMMENDATION

Having carefully observed all the experiences in the office, as far as Electrical Electronics Engineering is concern, for a period of not less than four months actively taken part. In all the daily activities, I wish to express my recommendations as follow.

TO THE STUDENTS

The SIWES period demands all your commitment and dedication with willingness to be an experienced Electrical Electronics Engineering in today and tomorrow. Understand the course of every problems you faced in this period and the way they are been solved.

National Diploma (ND) level student of Electrical Electronics Engineering Department should be introduced to AUTOCAD and electrical installation and electronics embedded works.

TO THE LECTURERS

Lecturer in the department should be able to help students in getting a better place of attachment.

There must be proper monitoring of all the student and constant intellectual challenges while on held to let achieve the total objectives of setting up the SIWES program.

They should try to help the student to get paid for their SIWES Industrial Training Funds on time, before the end of the SIWES program.