



**TECHNICAL REPORT ON THE STUDENT INDUSTRIAL  
WORKS EXPERIENCE SCHEMES (SIWES)**

**HELD AT  
AL-MARUF ELECTRICAL ENGINEERING SERVICES  
NO 418 BESIDE POST OFFICE JEBBA KWARA STATE**

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NATIONAL DIPLOMA (ND) CERTIFICATE IN ELECTRICAL ELECTRONIC  
ENGINEERING**

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## **DEDICATION**

This report is dedicated to Almighty Allah, the creator of life and the lord of the world for the privilege and opportunity to complete my (SIWES) programme in good health. Also to my parents; **Mr. & Mrs. ABDULMARUF** and to all my family for their moral and financial support towards the successful completion of this programme.

## **ACKNOWLEDGEMENT**

All thanks, praise and adoration due to Almighty Allah, the maker and sustainer of mankind, the Gracious Father and Merciful God for his love, preservation and Good Health granted to me before, during and after the training.

My sincere gratitude goes to my parents; Mr. & Mrs. Abdulmaruf for their moral, spiritual and financial support.

I also direct my thanks to all the ministry of work I want to use this medium thank all my friends & family for their continuous support morally, financially and their prayers.

I use this medium to acknowledge people who in one way or the other contributed to my success throughout my academic programme.

## TABLE OF CONTENTS

Title page	i
Dedication	ii
Acknowledgment	iii
Tables of Contents	iv
<b>CHAPTER ONE</b>	
1.0 Introduction	1
1.1 Specific Aims of Siwes	1
1.2 Objectives	2
<b>CHAPTER TWO</b>	
2.0 Brief History of the Organization	2
2.1 Organization Chart	2
<b>CHAPTER THREE</b>	
3.0 Installation of Electrical Appliances	3
3.1 Recommended tools for installing a ceiling fan	3
3.2 Wire wall control	4
3.3 Wire fan and receiver	4
3.4 Wire Receiver and Supply Line	5
<b>CHAPTER FOUR</b>	
4.0 Work Done	6
4.1 Electrical Tools	6
4.2 Uses of Electrical Tools	7
4.3 Electrical Materials	7
4.4 Electrical Cables	8
4.5 Types and Size of Electrical Cable	8
4.6 Safety Precaution	9
4.7 Practical Work Carried out	9

4.8	Conduit wiring and surface wiring conduit system of wiring	9
4.9.1	Types of Power Supply	9
Chapter five		
5.0	Conclusion and Recommendation	10
5.1	Conclusion	10
5.2	Recommendation	10

## **CHAPTER ONE**

### **1.0 INTRODUCTION**

Student Industrial Work Experience Scheme (SIWES) Programmed, it was established in year 1973 by Federal Government of Nigeria through the Industrial Training Fund (ITF) under the NTBE (National Board for Technical Examination). It has its headquarter in Jos, Plateau State. The major reason behind the establishment of SIWES programmed and the importance of the student to display their talents and also learn the practical aspects of their fields of study. After their graduation, they will have something valuable to contribute to the society. They will also be able to face future challenges in their respective field of study.

### **1.1 SPECIFIC AIMS OF SIWES**

- (a) To introduce trainee to the industrial atmosphere and discipline.
- (b) To provide opportunity for the trainee student to apply knowledge obtained in form of lecture and practical to industrial reality.
- (c) To provide an opportunity for the trainee student to assess their own suitability for carriers.
- (d) To enable the industrial to be able to recruit graduates to the post appropriate to their background, training and the orientation during the change over from students to work status.
- (e) To be introduced to as wide a range of industrial skills and much as possible.
- (f) To enable trainee student become familiar with the organization and control of the industrial similar to where they are likely to work after graduation.

### **1.2 OBJECTIVES**

Specifically, the objectives of the students industrial work experience scheme are to provide an avenue for students in Nigeria Tertiary Institution to acquire industrial skills and experience in their course of study.

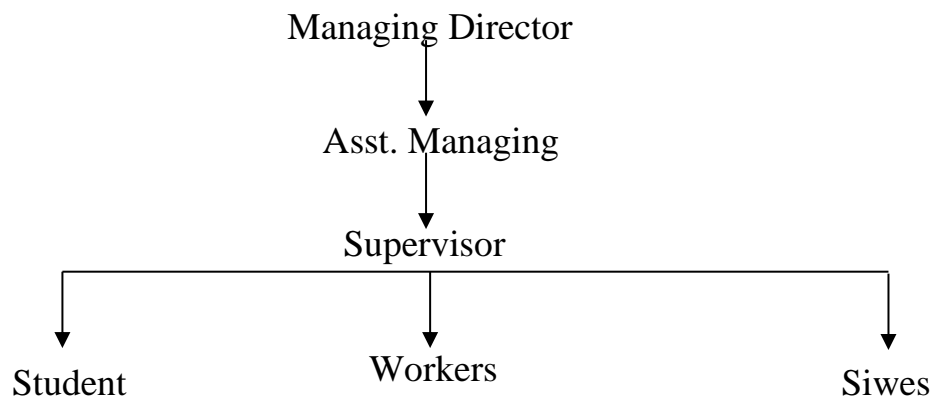
## CHAPTER TWO

### 2.0 BRIEF HISTORY OF THE ORGANIZATION

Al-Maruf Electrical Engineering Services was established in year 2010 and it is compose of the highly technical.

The director of the company has experience in electrical installation especially in construction of high tension (HT), low tension (LT) and construction of transformer.

### 2.1 ORGANIZATION CHART



## CHAPTER THREE

### 3.0. INSTALLATION OF ELECTRICAL APPLIANCES

#### INSTALLATION SAFETY RULE FOR CEILING FAN

To reduce the risk of personal injury and property damage, follow the safety rules below:

- Shut the power off at the circuit breaker box before beginning.
- Verify there are no obstructions at the installation site.
- Choose a UL-Listed outlet box marked "Acceptable for Fan Support".
- Confirm the electrical connections comply with local codes, ordinances, or National Electric Codes.
- Read the manufacturer's instructions for additional caution, safety, and warning information.

### 3.1. 10 RECOMMENDED TOOLS FOR INSTALLING A CEILING FAN

1. **Crescent Wrench** – Also known as an adjustable wrench, a crescent wrench has a set screw that adjusts the width of the wrench by moving one of the two jaws to the right or left. Use a crescent wrench to tighten a support brace or any bolts.
2. **Cordless Drill with Long Bit** – Drills holes in various materials. Use a cordless drill to install the junction box or utility box to the ceiling joists.
3. **Voltage Tester** – Also known as a test light, the tester consists of two leads that detect the presence of electricity in a fixture. Use a voltage tester when wiring a ceiling fan by placing one of the leads on the ground wire and the other lead on the hot wire to ensure there is no electricity running through these wires.
4. **Wire Cutters/Strippers** – Also known as diagonal pliers, wire cutters as their name implies cut wire by indenting and wedging the wire apart. Wire strippers strip the electrical insulation from the end of electrical wires. Many hand tool manufacturers offer wire cutters and strippers as a combo. Use these tools to install a ceiling fan by cutting and stripping the ceiling fan wires during the down rod assembly.
5. **Pliers** – Holds an object firmly in place. Use pliers to tighten set screws and lock nuts during the down rod assembly.



6. **Screwdrivers** – Used to turn or drive screws. The most common screwdriver types are flat-head screwdrivers and Philips screwdrivers. Use a screwdriver to tighten and secure the screws on the motor housing and blades to prevent any wobbling or shaking. Some brands may include a screwdriver in the packaging.
7. **Electrician's Tape** – Also known as insulating tape, secure electrical wires and other materials that conduct electricity.
8. **Ladder** – Use a ladder to reach the mounting bracket and hang the motor assembly as well as wire the ceiling fan.
9. **Safety Glasses** – Shields your eyes from hazardous materials and flying debris during the installation process.

### 3.2. WIRE WALL CONTROL

To connect the wires to the wall control:

- ❖ Remove the switch plate cover and remove all the wiring from the switch.
- ❖ Connect the black wires in the outlet box. Connect the two green wires from the outlet box to the grounding wires from the wall control.
- ❖ Push all the wire connections into the outlet box. Spread wire connections apart, with the grounded wires on one side of the box and black wires on the other side of the box.
- ❖ Insert the wall control into the outlet box and secure with the two screws provided.
- ❖ Install the switch plate cover with the two screws provided.

### 3.3 WIRE FAN AND RECEIVER

To connect the ceiling fan wiring and receiver wires, follow the steps below:

- ❖ Connect the grounding wires from the ceiling, down rod, and hanging bracket with a wire nut.
- ❖ Connect the white wire from the fan and white wire from the receiver marked "To Motor" with a wire nut.
- ❖ Connect the black wire from the fan and black wire from the receiver marked "To Motor" with a wire nut.

- ❖ Connect the blue wire from the fan and blue wire from the receiver marked "Motor" with a wire nut.

### **3.3 WIRE RECEIVER AND SUPPLY LINE**

To connect the supply line and the receiver, follow the steps below:

- ❖ Connect black wire from the ceiling to black wire from the receiver marked "AC In" with a wire nut.
- ❖ Connect white wire from the ceiling to white wire from the receiver marked "AC In" with a wire nut.
- ❖ Turn the connections up and push them through the hanger bracket into the outlet box. Separate the wire connections, with the grounded wires on one side of the outlet box and the ungrounded wires on the other side of the box. Be careful not to pinch any wire connections.

## **CHAPTER FOUR**

### **4.0 WORK DONE**

### **4.1 ELECTRICAL TOOLS**

These are the material use when carried out an installation, repair and maintenance of appliances in an industry or domestic service.

Tools and their Function

- ❖ Clip hammer: use for clipping cable to a surface.
- ❖ Combination plier: use of cutting, twisting and holding the cable.
- ❖ Hack saw: for cutting metal, conductor or pipe.
- ❖ Heavy duty screw driver: for tightening and loosening large screws.
- ❖ Flat and star screw driver: for tightening and loosening of small screw.
- ❖ Testing lamp: use in for a connection of wires when troubleshooting and testing the modular fittings of fluorescent before installation.
- ❖ Megger/Multi-tester: use to check the continuity and to test for some components like resistor, capacitor, transistor, e.t.c.



Plier



Hammer



Fishing Tape



Meter Tape



Screw Driver



Hack Saw

Bending Spring



Long Nose Plier



Tester

## 4.2 USE OF ELECTRICAL TOOLS

Electrical tools are used to make work faster and neat. Without these tools, electrical work will not be done properly.

## 4.3 ELECTRICAL MATERIALS

Electrical materials are used in completion of electrical work. In surface wiring, electrical materials used are clip, nail, cable, junction boxes, PVC protectors, etc. While in conduit wiring, we use PVC pipes, coupler, male bush, knockout boxes, PVC adaptable boxes, socket, distribution board.

#### **4.4 ELECTRICAL CABLES**

Cables used in electrical wiring are of different types. For domestic or household wiring, we use cable like twin wire, single cable etc., while for industrial use, we use single cable, armoured cable, etc.

#### **4.5 TYPE AND SIZE OF ELECTRICAL CABLES**

Cables like twin cable, single cable, armoured cable, etc, are the type of cables we used in electrical work.

Size of electrical cable depends on the work we want to do. For a domestic or household swirling, we use cable size of :

1.5mm, 2.5mm, 4mm, 6mm, 10mm, 16mm.

For industrial or heavy duty wiring, we use

1.5mm – lighting

2.5mm, 4mm – socket

D6mm, 10mm – A/C, heavy duty machine

Armoured cable ranging from 2.5mm to 100mm.

#### **4.6 SAFETY PRECAUTION**

When working on electrical installation such as piping, wiring and fixing of fittings we need to extra careful. This tips below are best when working:

- ❖ Do not were loose cloth when working.
- ❖ Use appropriate tool for the appropriate work.
- ❖ Keep all tools in clean, dry place.
- ❖ Switch off the power supply before working.
- ❖ You must not put on metals when working.
- ❖ Maintenance of machine or equipment.

## 4.7 PRACTICAL WORK CARRIED OUT

- ❖ Electrical piping of household.
- ❖ Electrical wiring of household.
- ❖ Fixing of fittings.
- ❖ Mounting of change over, distribution board, ELCB, etc.

## 4.8 CONDUIT WIRING AND SURFACE WIRING CONDUIT SYSTEM OF WIRING

A conduit can simply be defined as a tube or channel in electrical installation work “conduit” refers to metal tubing or non metal tubing.

The most common form of conduit used for electrical installation work in residential and office building is insulated or plastic conduit.

## 4.9 Power Supply

A power supply is an electrical device that supplies electric power to an electrical load. The main purpose of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters.



### 4.9.1 Types of Power Supply

- Linear power supply.
- Switched-mode power supply.
- Capacitive (transformerless) power supply.
- Linear regulator.

- AC adapter.

## **CHAPTER FIVE**

### **5.0 CONCLUSION AND RECOMMENDATION**

#### **5.1 CONCLUSION**

The SIWES programmed had contribution positively to my exposure and training in the field of electrical and electronics engineering. It has also helped me to put practice the knowledge gained in classroom with the actual industrial experience. Also to develop a critical and realistic approach to problems with their solution in the electrical field.

#### **5.2 RECOMMENDATION**

The polytechnics should make it compulsory for all students, since the programmed goes way in improving student's practical and theoretical experience.

SIWES programmed is such a program that exposes students to the practical aspects of what he/she has been taught theoretically in the school. A body also should be setup to give penalties to any student who refuses to go give him/her SIWES programmes.