TECHNICAL REPORT

ON

THE STUDENT INDUSTRIAL WORKS EXPERIENCE SCHEME (SIWES)

HELD AT

FEMI OLA CASH & CARRY ENTERPRISES

ILOFFA, BESIDES MICROFINANCE BANK, ILOFFA, KWARA STATE

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SUBMITTED TO:

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IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF NATIONAL DIPLOMA (ND) CERTIFICATE IN ELECTRICAL/ELECTRONICS ENGINEERING

AUGUST TO NOVEMBER 2023

DEDICATION

This report is dedicated to Almighty Allah, the guidance, provider, protector, the creator of one and all. I also appreciate my parents **Mr and Mrs OLUWAFEMI and** amiable friends for their full support throughout this program.

ACKNOWLEDGEMENT

I hereby express my profound gratitude to Almighty God for His absolute control over my life during this program. Also to my parents, **Mr and Mrs OLUWAFEMI**, who has done all within their capacity to ensure me of a better and bright future. I pray Almighty God in His mercy will grant you good health and make sure you reap the fruits of your labour.

I hereby say a very big thank to you all my lecturers. I also appreciate the efforts of the staffs of **FEMI OLA CASH & CARRY ENTERPRISES ILOFFA,** particularly **Mr FEMI OLA** and his crew for their useful encouragement and adequate knowledge impacted on me during the SIWES May Almighty God reward them back abundantly.

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CHAPTER ONE

1.0 INTRODUCTION

Student Industrial Work Experience Scheme (SIWES) was established under Federal Government of Nigeria through ITF (Industrial Training Fund) in 1973 to solve the problem of inadequate practical skill for employment industrial by Nigeria graduate of tertiary institution.

The program is designed for four months and it is mandatory for all ND I engineering and science applied students in Nigeria Polytechnic. It is also controlled by the school management and IFT (Industrial Training Fund).

SIWES has become an acceptable training program for the award of National Diploma (ND) and degree certification in specific tertiary institutions for engineering and science applied courses. It s also set up for schools of engineering college of education.

1.1 DEFINITION OF SIWES

Student Industrial Work Experience Scheme (SIWES) can be defined as a program meant for student in tertiary institution in which they are exposed to practical training in their respective field of study in order to be

able to handle machinery, requiring tools and respond to challenges in labour market.

1.2 SCOPE OF SIWES

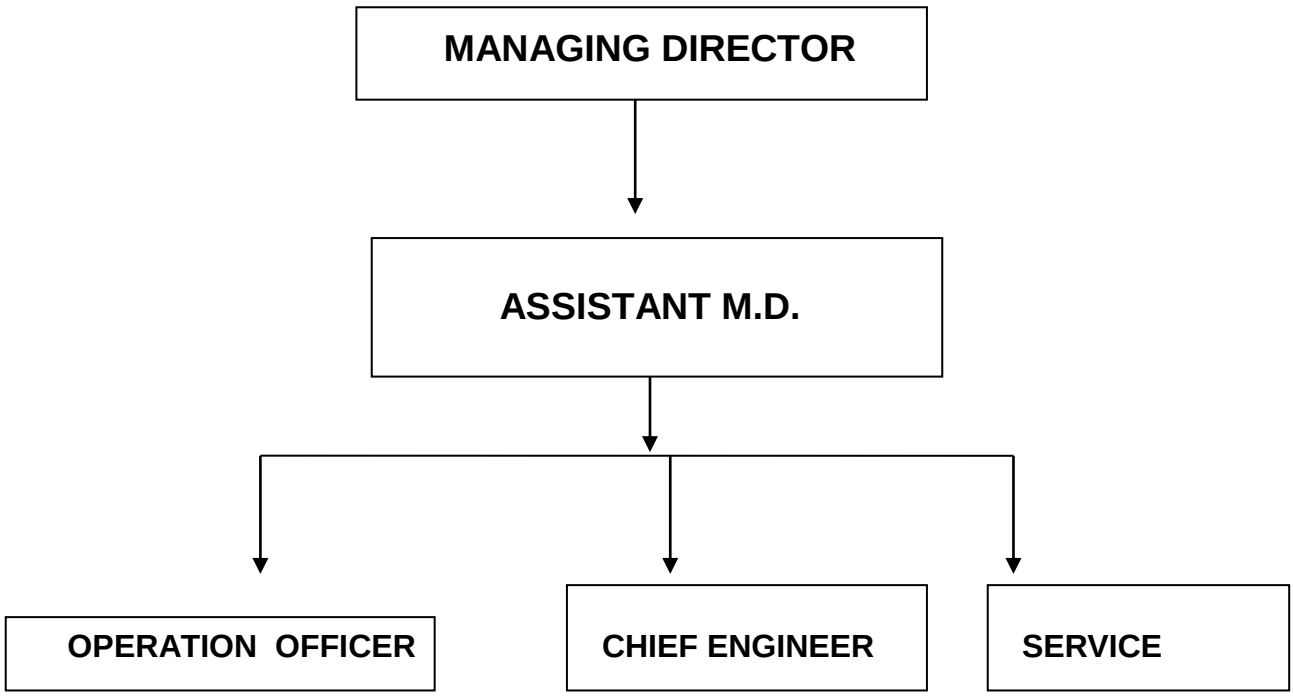
SIWES has contributed toward the progress and achievement of the student that undergoes its training, most of the theoretical aspect of the courses, thought in lecture rooms demand practical with SIWES training more practical skilled are learned.

1.3 AIMS AND OBJECTIVES OF SIWES

The aims and objectives of the Industrial Training Fund (ITF) in conjunction with the National Board for Technical Report about introducing the Students Industrial Work Experience Scheme (SIWES) are as follows:

- To give opportunity to student to transform their theoretical knowledge into practical.
- To familiarize student with typical environment in which they are likely to function professionally.
- Prepare student to work method and techniques in handling equipment and machineries that may not be available in institutions.
- To help improve technological development of the country.

1.4 ORGANIZATION CHART



CHAPTER TWO

2.0 SAFETY PRECAUTION IN ELECTRICAL INSTALLATION

- Use proper tools when making connection or repair
- Avoid wearing of loose clothes or ties whenever dealing with electrical equipment
- Turn off the main switch when working on any receptacle
- Avoid water at all time when working with electricity
- Treat all electrical devices as if they are live or energized, never assume a cable or conductor is not live.
- Disconnect the power source before servicing or repairing electrical equipment unless it is mandatory
- Use only tools and requirement with non-conducting handle when working on electrical device
- Never use metallic pencil, ruler or metal watch bands when working with electrical equipment. This is very easy to forget and should always be taking seriously
- When it is necessary to handle equipment that is plugged-in, be sure all hands are dry and protective gloves, protective clothes and shoes with insulated sole should be kept on.
- The use of electrical equipment should be minimized in cold rooms or

other area where condensation is likely to be present or occur. If equipment must be used in such area, mount the equipment on a wall or vertical panel before operation.

- Equipment producing a tingle should be disconnect and reported promptly for repair
- Never handle electrical equipment when hand, feet, or body are wet or when standing on a wet floor
- A circuit breaker or fuse with the appropriate current rating should always be use when making a connection so as to make it serve it purpose.
- Whenever water or any form of liquid is spilled on an equipment or circuit, the main power should be switched off at the man switch or circuit breaker and unplug the equipment. Never try to remove water or similar liquids from equipment while it is energized.

2.1 IDENTIFICATION OF USAGE OF TOOLS

Proper equipment is required to perform several jobs and in our case, these are:

Hammer, cutting pliers, voltage tester, spirit level, screw driver, fishing tape, bending spring, hack saw, pencil, measuring tape, ladder.

Hammer: This is usually used in hitting nails use to drill a wall, clipping a clip, tap a concrete surface and breaking a wall during conduit wiring.

Cutting Plier: This tool is use in stripping an insulator off a conductor, and cutting a small conductor to its required length.

Side Cutting Plier: are to cut wire and to substitute for a set of pliers.

Voltage Tester: This is use in testing the presence and effectiveness of live wire

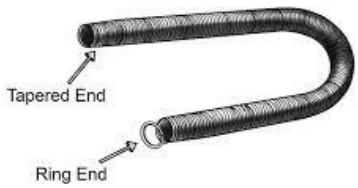
Hacksaw: This is usually use in cutting a pvc pipe during conduit installation of a building

Measuring Tape: This is use in measuring our conductor and also measure length of placement of a fitting to ensure accuracy.

Ladder: This is use to climb poles and reach higher height of work like ceiling fittings.

Fishing Tape: This is use to fish cables and conductor out of conduit pipes.

Bending spring: This is use to bend pvc pipe to required shape.



Screw driver: This is use to rive tools in and out of fittings and accessories.

PVC Tape: This is use to tape open conductor and in joining cable together or hold an accessories to something.

CHAPTER THREE

3.0 WIRING SYSTEMS

Wiring system is the process of connecting various accessories for distribution of electrical energy from suppliers meter board to home appliances such as lamb, fan, fridges and other domestic appliances.

3. METHODS OF WIRING SYSTEM

Joint Box Systems: This is a method of wiring system in which connection loop in system are made through joints. These joints are made in joint boxes by means of suitable connectors. This method of wiring doesn't consume too much cable size. This is the most type of wiring system in Nigeria because it is cheaper and economical.

Loop-In System: In this method of wiring systems, the connections and other appliances are connected in parallel so that each appliance can be controlled individually and wouldn't depend on each other. This type of connection is not so common in Nigeria.

3.2 TYPE OF WIRING SYSTEM

There are three type of wiring system:

- Surface wiring
- Conduit wiring
- Trunking system of wiring

Surface Wiring System

This type of wiring system is also known as “surface mount wiring” is a type of wiring system not channelled through the wall of ceiling but in a surface mounted channel or raceway.

Advantages of Surface Wiring

- Fault is easy to find and rectify
- It is more cheaper
- It is easier to wire
- Additional management is easier in the future

Disadvantages

- It easily to damage
- It ugly
- It also attract dust and difficult to clean.

Conduit Wiring System

Conduit wiring is a type of wiring in which cable are concealed in wall or ceiling by channelling it through a pipe or tube. This is also a very common type of wiring system in Nigeria for many factors.

There are two types of conduit wiring which are concealed conduit and surface conduit. The concealed conduit is the most common here in Nigeria. The surface conduit is not common except in industrial building

which is usually metallic conduit and not pvc for some reason including chemical spill and fire hazard.

Accessories and Tools use in Conduit Wiring System include:

- Breaking of walls
- Bearing of boxes
- Laying OF pipe
- Fishing of cables
- Fittings of accessories

Advantage of conduit wiring system

- It is the safest of them all (especially for concealed type of conduit)
- It’s appearance is more beautiful
- No risk of mechanical wear and tear
- Repair and maintenance is easier
- No risk of damages

Disadvantages of conduit wiring system

- It is more expensive
- It’s very hard to find fault and defects
- Installation is not easy and simple
- Risk of electric shock if metallic conduit is use without proper earthing.

- Very complicated to manage additional connection in the future.

Trunking Wiring System

Trunking wiring system is similar to surface type of conduit wiring system except that the accessories use in the system is differs. It's like a wiring system in between surface wiring system and conduit wiring system. This type of wiring system is not so common as the other two types of wiring system.

Advantages

- The cables are enclosed in trunking, there is no risk of cable insulation to be damaged
- Cheap and easy installation
- Alternation are possible
- Trunking system has a long life.

Disadvantage

- Expensive compare to two other wiring system
- Care and god workmanship are needed to ensure a successful installation.

CHAPTER FOUR

4.0 INSTALLATION OF ELECTRICAL ACCESSORIES

4.1 POLES: A utility pole is a column or post used to support overhead power lines and various other public utilities, such as electrical cable, fiber optic cable, and related equipment such as transformers and street lights. It can be referred to as a transmission pole, telephone pole, telecommunication pole, power pole, hydro pole.

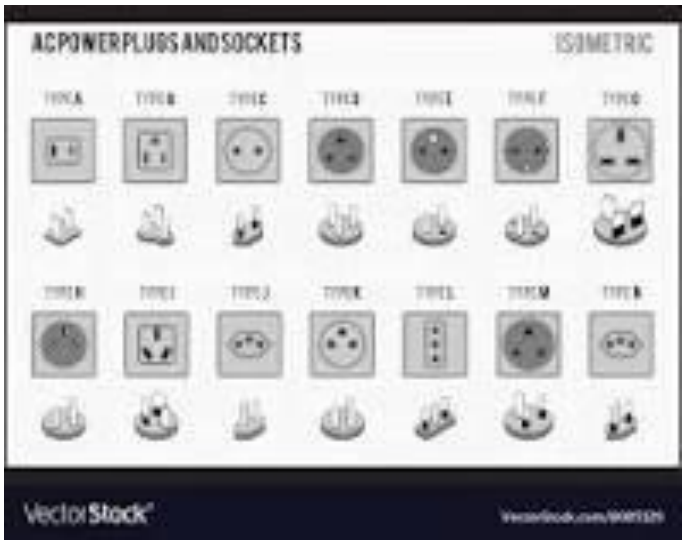
4.2 TRANSFORMER: is an electrical device which transform mechanical energy to electrical energy.

There are two types of transformer

i. Step up transformer

ii. Step down transformer

4.3 SOCKET: It connect electric equipment to the alternating current power supply in buildings and at other sites.



4.4 ELECTRICAL SWITCH: is an electrical component that can "make" or "break" an electrical circuit, interrupting the current or diverting it from one conductor to another.

4.5 CHANDELIER: is a branched ornamental light fixture designed to be mounted on ceilings or walls.

4.6 CHANGE OVER SWITCH: A **changeover** switch is designed to transfer a house (or business) **electricity** from the commercial power grid to a local generator when an outage occurs.

4.7 DISTRIBUTION BOARD: It is also called panel board or breaker panel a component of an electricity supply system which divides an electrical power feed into subsidiary circuit while providing a protective fuse or circuit breaker for each circuit in a common enclosure.

Other names of distribution boards are:

- Breaker panel
- Circuit breaker panel
- Consumer unit
- Electrical panel

- Fused board
- Breaker box e.t.c

4.8 TYPES OF DISTRIBUTION BOARD

- Single phase
- Double phase e.t.c

4.9 Problem Encountered and Proffer Solution

- Transport fare – payment of Student's Allowance to assist in transportation during the period of training
- Technicality – Most trainers, instructors are not all registered engineers, local description instead of technical description.
- Further reading and Make consultation with expert in the field of wiring.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The experience I have gathered over four months of the SIWES program has afford me the opportunity to compared my theory and practical knowledge gained in the class with real time practice. For instance:

Electrical installation and wiring is a very prospecting and exclusive skill to possess and a very profitable business if one is to take an entrepreneur approach which can never be under emphasized. This SIWES is success as more than 90% of its targeted objectives were accomplished by one within the stipulated period.

5.2 RECOMMENDATION

I recommend that any student(s) participating in this SIWES program should take it serious dedicate his/her energy and time to get the most out of it.

Also, I wish to emphatically recommend to the management of industrial training to help the SIWES students with some financial backup during the SIWES program.