A TECHNICAL REPORT

STUDENT INDUSTRIAL WORKING EXPERIENCE8U SCHEME

(SIWES)

Held at

Munirat hospital

(sango harmony estate ilorin)

Prepared by:

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SUBMITTED TO

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CERTIFICATION

This is to certify that this report of SIWES program for the 2023/2024 session is written and submitted by **QUADRI SOFIAT OYINKANSOLA** with matriculation number **ND/23/SLT/PT/0295** to the department of SCIENCE LABORATORY TECHNOLOGY (SLT), Kwara state Polytechnic, Ilorin.

_____ _____

Student signature Date

_____ _____

SIWES Coordinator Signature Date

DEDICATION

This work is first dedicated to God almighty for his immeasurable love and faithfulness upon my life throughout my period of Industrial Training. This work is also dedicated to my entire family especially my parent Mr. and Mrs. **EYINADE** love, and provision.

ACKNOWLEDGEMENT

I sincerely offer priceless and invaluable gratitude to the Almighty God for his boundless love and mercy upon me throughout the period of my industrial training. I am most grateful to my parents Mr. and Mrs. **QUADRI** for their financial and moral support throughout the period of my Industrial Training. Not left out my siblings, friends and loved ones especially my brother future and favor. I love you all. My profound gratitude goes to the managements, staff and my fellow industrial Trainee. Finally I want to say a big thank you to my HOD, all my lecturers, the Kwara state polytechnic, Ilorin. And every other person that has been helpful during the period of my Industrial Training. I say may God bless you all beyond measures amen.

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CHAPTER ONE

1.0 INTRODUCTION/HISTORICAL BACKGROUND OF THE ESTABLISHMENT

1.1 Introduction

The students' Industrial Work Experience Scheme (SIWES) was established in 1973/1974 session. Prior to the establishment of the scheme, there was a growing concern among our industrialists that graduates of our institutions of higher learning lacked adequate practical background studies preparatory for employment in the Industries. It is against this background that the rationale for initiating and designing the scheme was hinged. Consequently, the scheme affords students the opportunity of familiarizing and exposing themselves to the needed experience in handling equipment and machinery that are usually not available in their institutions.

The growing concern among our industrialists that graduates of our institutions of Higher learning lack adequate practical background studies preparatory for employment in industries, led to the formation of Students Industrial Work Experience Scheme (SIWES) by ITF in 1993/1994. (Information and Guideline for SIWES 2002) ITF has as one of its key functions; (1) to work as cooperative entity with industry and commerce where students in institutions of higher learning can undertake mid-career work experience attachment in industries which are compatible with students area of study. The scheme was designed to expose students to industrial environment and enable them to development and enable them develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The Scheme also enables students to acquire knowledge, skill and experience to perform jobs in their respected fields.

The Student Industrial Work Experience Scheme (SIWES) was established by ITF in 1973 to solve the problem of lack of adequate practical skills preparatory for employment in industries by Nigerian graduates of tertiary institutions. The SIWES Programmes being a skills acquisition programme blends theory with practice in the industrial and commercial activities of our national economy.

SIWES is a cooperative industrial internship program that involves institutions of higher learning, Industries, the Federal government of Nigeria, Industrial Training Fund (ITF), Nigerian Universities Commission (NUC) and NBTE/NCCEE in Nigeria.

The scheme affords students the opportunity of familiarizing and exposing themselves to the needed experience in handling equipment and machinery that are usually not available in their institutions. Thus, the students' industrial work experience scheme generally referred to I.T (Industrial Attachment) is an initiative of the Industrial Training Fund (ITF) that provides avenues for student in institutions of higher learning to acquire practical skills that they are likely to meet after graduation.

It is against this background that the rationale for initiating and designing the scheme by the Fund during its formative years – 1973/74 was introduced to acquaint students with the skills of handling employers' equipment and machinery.

The ITF solely funded the scheme during its formative years. But as the financial involvement became unbearable to the Fund, it withdrew from the Scheme in 1978. The Federal Government handed over the scheme in 1979 to both the National Universities Commission (NUC) and the National Board for Technical Education (NBTE). Later the Federal Government in November 1984 reverted the management and implementation of the SIWES Programme to ITF and it was

effectively taken over by the Industrial Training Fund in July 1985 with the funding being solely borne by the Federal Government

Participation in SIWES has become a necessary pre-condition for the award of Diploma and Degree certificates in specific disciplines in most institutions of higher learning in the country, in accordance with the education policy of government.

1.2 The objective of SIWES among others include, to:

a. Provide an avenue for students in institutions of higher learning to acquire industrial skills and experience in their course of study, which are restricted to Engineering and Technology including Environmental studies and other courses that may be approved. Courses of NCE (Technical), NCE Agriculture, NCE (Business), NCE (Fine and Applied Arts) and NCE (Home Economics) in Colleges of Education are also included.
b. Prepare students for the industrial work situation they are to meet after graduation;
c. Expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.
d. Make the transition from school to the world of work easier, and enhance students' contacts for later job placement;
e. Provide students with an opportunity to apply their knowledge in real work situation thereby bridging the gap between theory and practice; and
f. Enlist and strengthen employers, involvement in the entire educational process and prepare students for employment in Industry and Commerce.

1.3 Benefits of Industrial Training to Students are;

a. The scheme provides students the opportunity to apply the theoretical principles taught in schools is real job situation. This leads to better understanding of the subjects.

b. It affords them the opportunity to interact with a larger spectrum of people in industrial set up which is different from campus life. Hence this helps personality and maturity development.

c. It enables the students prepare themselves for the future of work. The taste of the pudding is in the eating. Hence, this is an opportunity to peep into the future and determine how much they are ready for it.

d. The scheme helps the students in developing intellectual skills as they are often left on their own to take technical decisions and often analyze complex inter disciplinary problems and offer appropriate solutions applicable to real situation.

CHAPTER TWO

2.1 HISTORY OF MUNIRAT HOSPITAL

His stripes specialist hospital is one of the well-recognized indigenous drug manufacturing company in Nigeria which is fully approve by the National Agency of Food and Drugs (NAFDAC)**.**

It was registered in May 1996 and was founded by Mr. Oluwole Awotuyi with 36 workers and 4 managerial team as there foundation staff

The raw materials used by the industry are exploited from Germany through it agent at Lagos while some other raw materials are prepared locally.

The company product has a wide range of market network to various part of the country where the products are sold via sales representatives.

2.2 TYPES OF DEPARTMENT IN MUNRAT PHARMACEUTICAL INDUSTRIES LTD.

- Administrative Department
- Maintenance Department
- Production Department
- Quality Department

Administrative Department

This consists of account, secretary, auditing, sales and marketing.

Auditing section examine the company financial record to check that they are correct. The sales and marketing section deals with how the product produces will get to the market and the accounting section is concern with the money.

Maintenance Department

This department consists of mechanical, electrical section. They deal with maintenance and services of any faulty machine and equipment.

Production Department

It consists of quarantine, granulation, packaging copulating section. These are for product and for syrup we are compounding, filling, packaging, quarantine finish product. This department deals with the production of different product.

Quality Control Department

These departments consist of chemical lab and microbiological lab. This department is the heart beat of the company because it control all the department in the organization. The department over sees sampling, testing and analysis of raw materials to inter-mediary and finish product that it meet the require laid down standard.

CHAPTER THREE

3.1 ACTIVITIES CARRIED OUT

I was inside the factory where I was thought about several drugs and their Active Pharmaceutical Ingredient (API).

Drugs and their API

Tablet

Product Name	API
Pcmx96	Paracetamol
Tumol x 500	Paracetamol
Tumol x 200	Paracetamol
Tumol Extral x 200	Paracetamol and Caffin
Vamadiacapsule	Furazonidone
Bonso Tablet	Dioxmin

Syrup

Product Name	API
Monomn	Vit B2, B12, B6, B1, Vit A, D Cold liver Oil and vit Bit B5
Vamobion	FAC (ferric Ammonium Citrate) Folic Acid, Vit B9, B12, B2, B1, B6

Vamivite Syrup	Vit B, Vit B6, Vit K, and Vit D
Vamicee Syrup	Ascorbic Acid
Babyrec Syrup	PCM, Chrlorophenicanine oil

Vetenary

Product	**API**
Bamiziole green sus	Ambemazole
Tubezole Yello Sus	Ambebazole
Vamizole	Leravamizole
Votrasc Pink Bolus	Leramizone Hcl

Antibiotic

Product Name	**API**
Amp Sus.	Ampiciline trihydrate
Amp Dry sus.	Ampiciline trihydrate
Tuclose dry sus.	Ampiciline trihydrate and clsaciline sodium.

I was taken to the quality control department. I learnt that, thequality control department (QC Department) oversees sampling, testing analysis of raw material to the intermediary and finish product. It consists of chemical and micro section where various test are being carried out to ensure that product meet the required lay down specification. Good manufacturing factor (GMF) plus Quality Control = Quality Assurance

GMF+QC = QA

It's to ensure compliance of facility and control use for manufacturing processing, packaging, storage, warehousing confirmed to be current GMF, so that finish product meet the quality identity , strength, quality and purity standard which it passes out it life.

I was thought some safety precaution in the laboratory. These are safety measures and precautions to be before any laboratory experiment is carried out so as to avoid accident.

- Lab should be kept clean, free of any materials except those needed to perform day to day function.
- Sterile lab coat, factory shoe, nose cover or nose mask, eye google and gloves must be wore during work.
- Do not eat, drink or apply cosmetic caulk creates contamination.
- Do not taste or drink any chemical, near small any chemical directly.
- Work areas and bench top should be free from obstruction.
- The lab should be well ventilated to avoid suffocation
- Lab floor and benches should be always be clean and disinfected before or after each works
- Do not touch surface of hot plate always assume that it hot and many more.

I was taught some standard Operating procedure for in processing on tablet.

- The granules must be Weight in the present of QC inspector and LOD must be tasted .
- After giving the recommended weight for Approving the granules, it can be compress to Tablet

The in-process officer monitor the standard in weight and test of the tablet the following parameter:-

- Hardness between 4-7kg/cm^3
- Tablet disintegration not more than 15mins.
- Weight variation:- when the granules is too wet, it will cause stinking of the granules to the bunches and it can be redry.
- When the granules are too dry it will cause capping of the tablet which makes the percentage friability too high. It can be moist.
- The uniformity of weight must be monitored at regular interval of 15min and find the deviation
- The sample of the tablet can be sent to the lab for analysis
- The Room and personal must be clean

HOW TO CALCULATE DEVIATOR

$$\text{Deviator} = \frac{\text{HV-RRW}}{\text{RRW}}$$

Where

HV- Highest Value

RRW- Recommended running weight

Standard Operating procedure for in processing for dry syrup or Anti Biotic

- After drying the Anti-biotic granules & sugar, the in-process office will check for moisture content and LOD.
- The weight of gunwales will be sent for running weight

- The personal will check for viscosity and PH and SG (specific gravity)
- An approved will be placed at the filling room
- The weight should be monitor at interval of 15mins and find the deviation.
- The personnel must put on nose court, neat over all, hand gloves and avoid sides talk

I learnt about vitamins

Types of vitamins, structure and Appearance

- Folic Acid (vit B9)

Structural:- C_{19} H_{19} A_7 O_6

Percentage content:- 96 to 102%

Appearance:- A yellowish orange Crystal powder

Solubility:-partially insoluble in H_2O and in most in organic solvent. It dissolve in dilate acid and alkaline solution

Vitamin B12 (Cyanotabalamine)

Structural formular:- C_{63} H_{88} (N_{14} D_{14} P

Percentage content;- 96-102%

Appearance:- Dark red, crystals

Solubility:-sparingly soluble in H_2O and ethanol 96%, partially insoluble in acetone.

I was taught how to prepare some indicators

Methyl Orange solution:-

A dissolve 0.1g of methyl orange power in 8m/s of H_2O and dilute to 100_{ml} ethanol.

Appearance:- orange yellow crystalline power, slightly soluble in H_2O and partially insoluble in ethanol.

Methyl Orange Xynene Cyanol Solution

Dissolve 0.1g of methyl orange and 0.2g of xynene Cyanol in 50ml of ethanol and add sufficient H_2O to produce 100mls

Methyl Red:

Appearance: dark red powder, violet crystals, partially insoluble in ethanol.

Preparation

50 mg of methyl red in a mixture of 1.86ml of 0.1 molar sodium hydroxide and 50ml ethanol (96%) and dilute to 100mls with H_2O.

I Prepared Some Re- Agent Use in the Lab

0.1m silver nitrate ($Ag\ No_3$)

5% weight per volume of potassium chromate solution as indicator ($K_2Cr\ O_3$)

Procedure

Measure 100ml of H_2O in the chronicle flask, add 1ml of K_2CrO_3 and titrate to 0.1m silver nitrate, stir continually by the means of glass rod until permanent finite brick red colour is obtained.

Production of Some Drugs

1. PCM (paracetamol)

   Drug preparation in PCM

Chemical name: - Paracetamol is fore- hydroxide milinde. It contains not less than 99% and not more than 101%.

Chemical formula $C_8H_9No_2$

Characteristic of PCM powder

White crystalline powder, odorless sparely soluble in water freely soluble in ethanol 1.96%, very soluble in chloroform and other (physic- chemical Test).

Identification Test: -

A) Dissolve 50g of PCM in a sufficient methanol to produce 100ml to 1m of solution add 0.5ml of 0.1 Hcl and dilute to 100ml with ethanol, protect the solution from bright light and immediately measure the absorbance at the maximum of 249µm. The A (1%, 1cm) at the maximum absorbent 0.88 absorbance.

B) Boil 0.1g of PCM powder in 1ml of Hcl acid for 3 minutes, add 10ml of H^2O and cool, no precipitate is produce. Add 0.05ml of 0.1m potassium Cr_2, a violent colour develops which does not turn to red.

Melting point: - Between 168^0c. to 172^0c.

LOD: - when dry to concentrate at 100^0c to 105^0c close more than or 0.5% of its weight use 1g

Sulphated ash: - Not more than 0.1% use 1g

Analysis of PCM Powder

Weigh 0.15g of PCM Powder in a mixture of 10ml H_2O add 30ml in H_2S0_4 acid and boil under reflex for 1hr. Cool and dilute with 100ml with H_2O. Pipette 20ml of sodium into conical flask. Add 40ml of distilled water, 40g of H_2O inform of ice (40ml of cold H_2O) plus 15ml of 2m Hcl acid and 0.1 of Feroin solution and titrate with 0.1ml ammonium cerium (IV) sulphate until a

green color is produce repeat the operation without the substance, examine the difference between the titration repeat the amount of ammonium cerium (IV) Sulphate required. Each Ml of 0.1m ammonium cerium (IV) sulphate equivalent to 7.56 mg of $C_8H_9No_2$.

Manufacturing process of PCM

The raw materials are taken from the raw materials section after dispensary to the granulation section.

The raw materials need for the manufacturing process for PCM tablets are: -

PCM Powder, Maize Starch, gelatin, Magnesium Sterate, Talc Powder, Methyl parapenpropane

Prepare in the preparatory room Granulation sections the granules is prepared as followed.

Stage 1: -

Take about 10kg of maize starch in a bowl and make it into a solution measure about 10L- 15L into a parte pot and boil the water to 100^0c, transfer your starch solution to the boiling water and sold gelatine, methyl propane parapen into it and stir properly.

Stage 2: -

Transfer the PCM powder into mixer and pour the paste into the mixer and allow it to mix for about 30 minutes. The process is called SLURY.

Stage 3: -

Take the wet granules and transfer to the dryer and allow dry about 40minutes, after the drying transfer the granules into the milling machine of different mesh where the granules will be grounded into smaller particles.

Stage 4: -

The dry granules is powder into the dryer for the second time, add lubricant materials to it such as magnesium sterate and talc powder are all to stay in the dryer for about 30 minutes from the dryer, transfer the granules into selopen lylon.

Stage 5: -

The granules will be taken to the balance for weighing where by the granulation personal will write the name of the product, batch number, expiry date, date of manufacture, gross weight and net weight are affixed on the product.

The In-process personnel will affixed on under test label bearing the above information.

The in-process personnel will take the sample of Product to the lab to test LOD, percentage purity or essay. After the granulation has passed the required perimeter an under test label will now be change to an approved label. The product will be taken to quarantine for temporary arrange, from quarantine. The product will be taken to compressor department where it will be compress to tablet by compressing machine.

The compressing machine compressing of the following parts.

- Upper and Lower Punches
- **Frame:** during the compression of tablet the weight of the tablet will be monitored properly and also some are processed, test will be carried out on the table. Such as DT friability, hardness, and weight variation)

After the person as done with the compressing of the tablet will be packed in a container and take the weight of the balance and it will be taken to the quarantine for temporary storage.

Stage 6:

The tablet will be transfer in the blister department for blistering, the blister machine comprises of the following part: upper forming heater & forming block, P.V.C.: the tablet will then be packed to the man or carton then from there the tablet will be transfer into the finish goods store. From there to the consumer outside the via representative.

Ascorbic Acid (vitamin c)

Chemical Formula: $colt_8\ 0_6$

Percentage content: 99.0% to 100.5%

Appearance: a white or dark white crystal line powder or colourless crystal becoming this colored on exposure to air and moisture.

Solubility: freely soluble in water

M.P: It melt at about $19^0{}_0$c with decomposition.

MANUFACTURING PROCESS OF VIT C SYRUP

Equipment required transferring pump

Jacketed vessel pip stick

Holding tank

Stirrer

PROCEDURE

The raw material is taken from the raw material stored to the compounding section in the mixing room where the syrup production will take place.

Such material is ascorbic acid (AP_I) citric acid, sodium benzoate, CMC, sugar color, flavour and water.

Assuming you are manufacturing in 2000l jacketed vessel.

Transfer about lool of H_2O in to the jacketed vessel. Heat the water to the boiling point 1000^oc by opening the steam, and put sugar into the jacketed vessel and stir properly to dissolve. The process is called sugar syrup.

The sugar syrup is allowed to cool down, dissolved each of the following material in a separate container and transformed to sugar inside the jacketed vessel and mix them for several minute. Soak the carbon methyl cellulose in hot H_2O and stir very well to give a smooth viscous CMC and transfer to the jecketted vessel.

Transfer the flavour into the jacketed and stir it properly. Also dissolve the color and transfer it to jacketed vessel.

Make it up to the volume with treated water, in the process, in- process officer will affixed an under test label on the jacketed vessel bearing the Name of the product, batch number, manufacturing date, expiry date on the jacketed vessel inside the compounding room in which the drug has been produce.

Allow the temperature of the drug to cool down to 4^0c^0

takes the sample to the lab for in process officer to check i.e. PH temperature SG, ACT.

It meet the required specification, the under test label is changed to approved label bearing all the information on the under test label.

The syrup is filter using a filter using pross and transfer to the holding tank. Then put approved label to the holding tank.

I was also taught Record Keeping

Record keeping can be describe as a systematic compilation of similar data in an officer setting or store in files or folders for the purpose of office administration.

Reasons for Record Keeping

1. Accountability
2. For future reference
3. To keep the track of event
4. For monitoring of program
5. For keeping effect of result.

Qualify of Good Record Keeping

- A good record must be available when needed
- A good record must be transparent to every body
- A good record must be chair writhen
- It must be kept in a save people
- It must be accessible when day need
- It must be dated

- In case of paper record in any part is tore out it must be put back by either replacing it or gumming its
- Record must be properly label for easy identification
- Record must be traceable
- Record must be kept in files or folder and cabinet
- Record should be arrange orderly maybe according to date and name of events records of Tumolx500 shall be kept differently from Tumolx200 and should be placed in ascending or descending order according to dere date
- Record are to be hand with care
- Digital record like electronic record should have backup storage in case of system spoil
- Tangible record should be kept in a dry place that is free from H_2O

I was taken to microbiology laboratory where I was taught to prepare enrichment medium for liquid/ syrup, solid/ powder/ tablet.

I was also taught determination of total viable count for bacterial using pour plate method

I was also taught the determination of TVC of microbes in the environment.

CHAPTER FOUR

4.1 SOME LABORATORY EQUIPMENT AND THEIR USE

- **Weighing Balance:-** use to get the exact weighing of chemical composition of a simple Lab gene:- use for drying samples or drying processes.
- **Heat Mental:-** This is use for heating samples Tablet Disintegration:- To determine the time taken for a particular tablet to disco lice in the body system.
- **Tablet Dissolution:-** To determine the amount of API that will be absorb by the body system
- **Moisture Analyses**:- it is used to determine the moisture of granules
- **Distiller:-** This is use for distilling or to remove purity
- **PH Meter:-** This is an instrument use for checking the acidity and alkalinity of sample
- **viscous Meter**:- Is use to determine it thickness.
- **Friability Test machine:-** is used to determine the friability i.e the strength of a tablet or cablet

CHAPTER FIVE

5.0 CONCLUSION, CHALLENGES ENCOUNTERED, AND RECOMMENDATIONS

5.1 CONCLUSION

My experienced gained during the period of Industrial Training at Tuyil Pharmaceutical was a huge success and a great time of acquisition of knowledge and skills. Through my training I was able to appreciate my chosen course of study even more, because I had the opportunity to blend

the theoretical knowledge acquired from school with the practical hands-on application of knowledge gained here to perform very important tasks that contributed in a way to my productivity in the research institute.

5.2 PROBLEM ENCOUNTERED

The main problem encountered is getting placement

5.3 RECOMMENDATIONS

I recommend that all institutions or bodies involve in Student Industrial Working Experience Scheme, should provide places of placement for industrial attachment for Student Industrial Training Fund and also pay some allowances to students.