TECHNICAL REPORT ON STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

Held at:

UNIVERSITY OF ILORIN TEACHING HOSPITAL KWARA STATE

Submitted By:

BAMIKOLE OLUWATOSIN ELIZABETH

ND/23/NAD/FT/0025

INSTITUTE OF APPLIED SCIENCE

DEPARTMENT OF NUTRITION AND DIETETICS

KWARA STATE POLYTECHNIC, ILORIN

DEDICATION

This report is dedicated to Almighty God for his guidance protection and provision to me and my family.

My special thanks to my parent Mr and Mrs Monsuru for their parental support and care throughout my SIWES programme and also to my beloved Obah Joy Chidima .

ACKNOWLEDGEMENT

First and foremost I give all glory to God whose strengthen me and gave me the grace to conclude my four months program of me, I acknowledge Almighty God, the beginning and the end of the universe.

From the depth of my heart I want to appreciate my God giving parent for their moral, prayer and financial support given to me during my attachment, my ever caring and lovely parent Mr and Mrs Monsuru.

My gratitude also goes to my supervisor Obah Joy Chidima.

REPORT REVIEW

I did my SIWES programme at General Teaching Hospital Ilorin kwara State within the period of September-December 2024.

In the course of my SIWES programme, I was exposed and I learnt how to run various medical tests at laboratory department.

I also had an opportunity to learn how to operate some of the machine and equipment that are being used to run medical test. Safety precautions in the laboratory were also taught.

Table of contents

Title page

Dedication

Acknowledgment

Report overview

CHAPTER ONE

1.0 Introduction

1.1 Aims and objectives

1.2 Safety precaution

1.3 Instrument used for various test

CHAPTER TWO

2.0 Determination of blood glucose

2.1 Retroviral screening

CHAPTER THREE

3.0 determination of packed cell volume

3.1 Haematology

3.2 Blood grouping determination

3.3 Other test include

CHAPTER FOUR

4.0 Widal test (Typhoid fever)

4.1 Malaria parasite test

4.2 Urinalysis

CHAPTER FIVE

5.0 summary, conclusion and recommendation

5.1 Summary of attachment activities

5.2 Problems encountered during the programme

5.3 Suggestion for the improvement of scheme

5.4 Conclusion

5.5 Recommendation

CHAPTER ONE

1.0 INTRODUCTION

The student working experience (SIWES) was established in 1973 and funded by the federal government of Nigeria and jointly co-ordinated by the industrial training fund (ITF)

SIWES is a skill training programme designed to expose and prepare polytechnic students for industrial work situation where they are likely to meet after graduation. It is an effort to bridge the gap existing between theory and practical of all professional education programme in Nigeria polytechnic.

My industrial training programme was undergo at the department of chemistry Pathology, Haematology, Microbiology as a laboratory investigation and researchers in University of Ilorin Teaching Hospital Kwara State Nigeria State.

1.1 AIMS AND OBJECTIVES OF SIWES

- It exposes students to the work methods and techniques in handling equipment and machinery that may not be available in the institutions.
- It provides an avenue for student in institution of higher learning acquire industrial skills and experience in their course of study.
- It provides student with an opportunity to apply their theoretical knowledge in real work situation, thereby bridging the gap between theory and practical.
- It prepare student for the industrial work situation they are likely meet after graduation.

1.2 SAFETY PRECAUTION

Lab coat must b wear while in the laboratory and remove it before learning

Sample must be properly labeled

Ensure that the laboratory is always kept clean

Wear gloves when handling specimen (blood and other body fluids) and discard glove after use

Do not eat in the laboratory

Do not pipette with mouth use pipette filter, micropipette.

1.3 INSTRUMENT USED FOR VARIOUS TEST

The haematocrit centrifuges/spilling machine: `This is a machine used to spin and separate particle in an applied centrifugal field based on the differences in their relative molecular mss density and shape. The blood sample separate to give serum and plasma.

MICROSCOPE: It is used in the examination of microorganism particles and materials that cannot be seen with the naked eye.

SPECTROPHOTOMETER: It is used for reading colour intensity which is proportional to the concentration of the sample.

AUTOCLAVE MACHINE: It is used for the sterilization of material/machines e.g Speculum, media and plates.

INCUBATOR: It is used in maintaining temperature of different kinds of agar to stimulate microbial growth and to dry the test tube.

GENOTYPE/ELECTROPHORESIS MACHINE: They are used in the determination of genotype which is based on electrophoresis migration.

GLASS SLIDE: They are used in the preparation of film for examination under the microscope. E.g thin and thick film .

TEST TUBE: They are used for the collection of sample on chemistry bench.

Pasteur pipette: They are used for dropping small amount of solution and samples.

MEASURING CYLINDER: They are used for quantitative measurements of liquid.

REFRIGERATOR: It is used to preserved sample or specimen for the following day.

TILES: It is used to mix the reagent with sample in time of blood grouping.

PETRI DISH: They are used culturing in preparation of agar with sample.

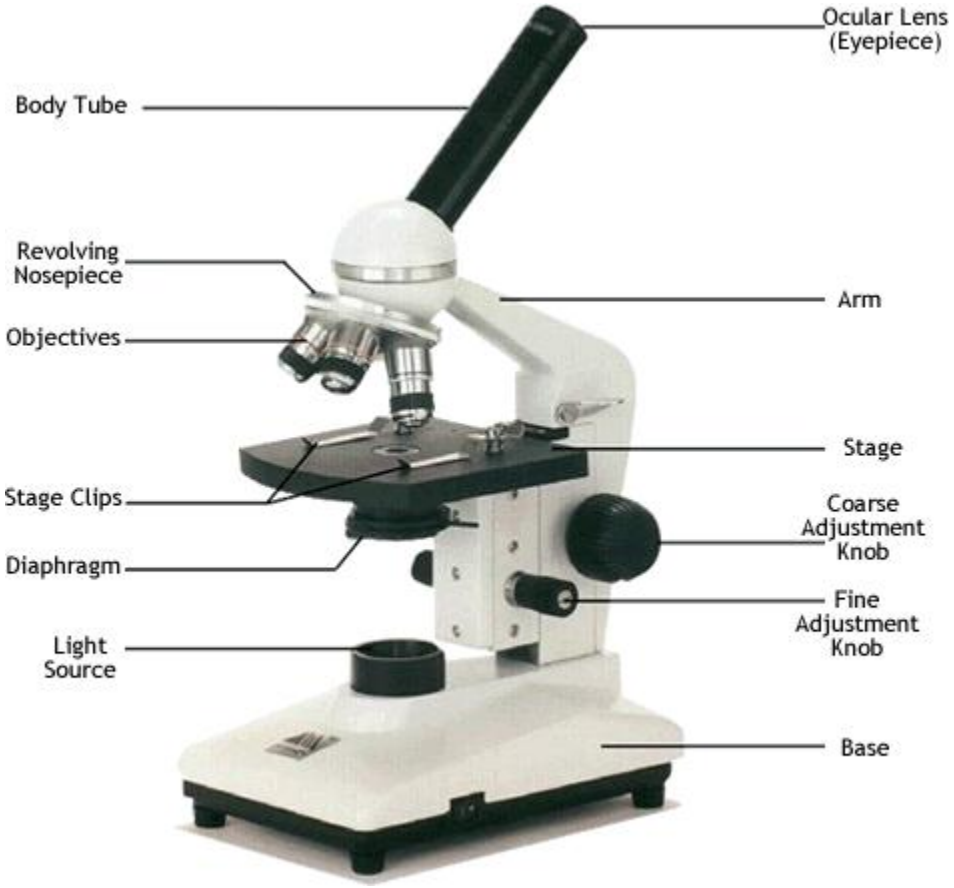
CAPILLARY TUBE: They are used for sucking blood for paced cell volume.

HAEMATOCRIT READER: It is used for reading percentage of blood in the body.

SPECULUM: It is used to open the service of a woman for endo-cervical swab.

WATER BATH: It is used to warm the sample at a room temperature.

GLUCOMETER: A glucometer is a medical device for determining the approximate concentration of glucose in the blood.



CHAPTER TWO

2.0 DETERMINATION OF BLOOD GLUCOSE

Most carbohydrate in the diet is digested to form glucose and fructose and is taken by the portal vein to the liver where fructose is converted to glucose. Tests are carried out diagnosing various kinds of disease such as hypoglycemia, hyperglycemia, diabetes etc.

FASTING BLOOD SUGAR (FBS)

PROCEDURE

Pierce the patient thumb with lancet

Collect the blood sample with strip

Insert the strip into the glocometer machine

Take the reading to know the glucose level of the patient

Random blood sugar (RBS)

This is the test carried out on blood sample collected after the morning meal or anytime of the day. Normal range value is between 100-180mg/dl.

Procedure

Pierce the patient thumb with lancet

Collect the blood sample with strip

Insert the strip into the glocometer machine

Take the reading to know the glucose level of the patient.

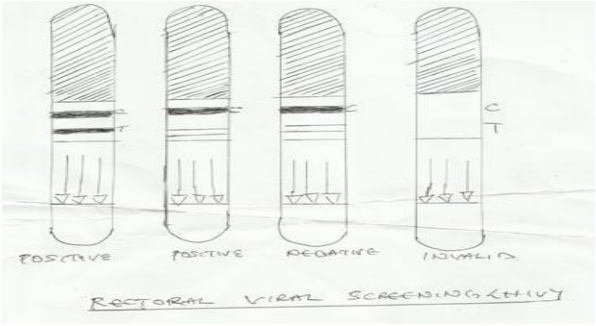
2.1 RETROVIRAL SCREENING (RVS)

It is also know as Human Immune Deficiency Virus (HIV). This test is taken in other to know or screen the patient if the patient is affected by HIV positive or HIV negative.

Procedure

Collect patient blood sample syringe and needle, put a littlr blood on the tip of the strip and add buffer solution.

If two line show, it mean the patient is HIV positive. But if one line show it mean the patient is HIV negative.



CHAPTER THREE

3.0 DETERMINATION OF PACKED CELLL VOLUME (PCV)

Packed cell volume is the ratio of red cells to whole blood. This test is performed to know the level of red blood cells (erythrocytes) in the body this is used to determine the state of health of an individual. PCV is also used to determine varying degree of anemia / percentage of blood present in the body the range for adult is between 37-40 which is normal.

PRINCIPLE

The test is based on the principle of sedimentation of particl under the influence of an applied centrifugal field, capillary tube and platicing for sealing the capillary tube. This particle sediment according to their specific gravity.

Procedure

A lancet is used to prick the upper part of the selected finger (thumb) and a haematocrit capillary tube is placed beside the thumb to allow the blood

to enter the capillary tube. The other end of the tube is sealed with crystal seal/platicing to prevent leakage. This tube is placed in a micro-haematocrit centrifuge for about 10 minutes. The tube is then remove and placed on micro-haematocrit reader where the PVC is then read in percentage.

Result

The normal ranges for woman is 35-45% while that of men about 39-54%, infant 40-63% people with 45% and above are considered potential blood donors. Anybody with a pcv value lower than this range is considered to be short of blood and such an individual is advised to eat fruits and vegetable. In some cases, blood given drugs can be administered, but in critical cases blood transfusion is required.

3.1 HAEMATOLOGY

Haematological test attempt to determine whether or not a woman is pregnant. The pregnancy test strip is impregnated with anti human chronic gonadotropin globulin. The test strip is immersed into vine or serum for minute the level should not excess the arrow head. Leave the strip on the desk and read the result at 10 minute for urine and serum. Two pink coloured band (control band and test band) appear above the arrow tail confirms the patient positive but if only one pink colour band (control band) appear confirm negative.

Procedure

Collect the blood sample, cellulose acetate paper is then soaked in buffer and dried using filter paper. Add the unknown sample in the same order on acetate paper using the applicator. The acetate paper is placed in electrophoresis tank/machine with its two edges touching the buffer and the machines is switched on. If the unknown blood sample aid not more it is AA, if it moves an inches is AS, 2 inches it is AC etc.

3.2 Blood group determination

Principle

The typical reaction in this test is that if an antigen antibody reaction. Therefore, the principle of agglutination is employed. There are four different blood group A, AB, B and O

Procedure

A drop of blood is placed on a white tile and a drop each of anti sera, B, O is add to each portion of the blood and mix together. The content is rocked or rotates for one to three minutes and the checked for agglutination.

The table below shows the result from agglutination test

Test	Antiserum A	Antiserum B	Antiserum O	Results
1	+	-	+	A+ve
	+	-	-	A-ve
2	-	+	+	B+ve

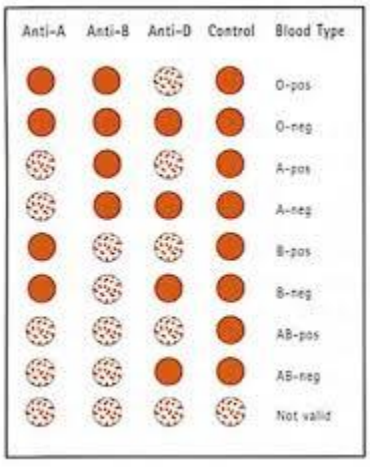
	-	+	-	B-ve
3	+	+	+	AB+ve
	+	+	-	AB-ve
4	-	-	+	O+ve
	-	-	-	O-ve

Figure – Table showing results of blood grouping by agglutination.

Note – Positive sign indicate agglutination.

Blood compatibility

Recipient Donor
Group B Group A and O
Group B Group B and O
Group AB Group A, B, AB and O
Group O, A, B, AB Group O



3.3 OTHER TESTS INCLUDE

Hepatitis B (HBS/Ag) Test

HBS/Ag test strip is immersed in either wole blood or serum. Strip is he removed and read the result at five minutes. The two pink coloured brand (control band and test band) appear above the arrow tail of the strip confirm the test positive. If negative only pink colored band (control band) appears.

Hepatitis C (HCV) Test

HCV is test strip is immersed in either serum or plasma. The strip is then removed and read the result at five minutes.

CHAPTER FOUR

4.0 WIDAL TEST

The widal test is antigen antibody reaction test carried out to determine the presence of level of salmonella SPP in the blood serum. The salmonella may be typhi that is salmonella typhi or salmonella paratyphi which is either paratyphi A, B, C there are two widal kit used. The blue coloured one is known

as ‘O’ antigen, while the pink coloured is H’ antigen . Salmonella typhi and paratypil are bacteria that transmit typhoid and paratyphoid respectively through water and food.

Procedure

The blood sample is collected through the vein and pour into EDTA bottle. Mix properly and spin for 5 minutes in the centrifuge to separate serum from other component. Put a drop of serum into eight row on the tiles and add one drop of anti-sera each row 4 ‘O’s and 4 ‘H’s. mix the content of each row and rocked for five minutes, there by looking for agglutination. Agglutination denotes positives while non-agglutination denotes negative.

Widal Reaction positive

	‘O’	‘H’
Salmonella typhi	1/180	1/160
Salmonella paratyphi A	1/180	1/80
Salmonella paratyphi B	1/40	1/40
Salmonella paratyphi C	1`/20	1/20

4.1 MALARIA PARASITE

Malaria is caused by plasmodium SPP which include plasmodium falciparum, plasmodium orale, plasmodium malariaea and plasmodium vivax and the most common one is plasmodium falciparum.

Malaria parasite test can be done by two methods.

By using staining method

By using malaria parasite kit.

Procedure for staining method

The blood sample was collected in the universal bottlr afte which a tick film preparation on a clean slide was made. The preparation film was air dried and stains with field stain A for 5 minutes, after which it was slightly washed with distilled water. The film dipped inside field stain B and removes immediately, wash slightly with distilled water and air dry. The film was then observed under the microscope using x100 ilo immersion objective in to magnify malaria parasite is stained yellow or brown.

Procedure

The stool sample was collected in a sterilize universal bottlr. Wet preparation of the stool was made on the slide by mixing little quantity of it with few drop of normal saline voiding air bubbles. A cover slip was places on it and observed under the microscope using x10mm objective lens to focus and 40mm to magnify.

4.2 URINALYSIS

Urinalysis is an array of tests performed on urine and one of the most common methods of medical diagnosis. A part of urinalysis can be perform using urine test strips in which the result can be read as colour changes. Some

parameters determines includes pH, Glucose, Protein, Ketone, Bodies, Nitites, urobilinogen, Bilirubin and Haemoglobin.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY OF ATTACHMENT ACTIVITIES

The major activities engages in during the period of attachment ranges from setting medical equipment for the tests, taking readings from the machines, recording of test results, and observation of various test performed.

5.2 PROBLEMS ENCOUNTERED DURING THE PROGRAMME

The problem encountered includes:

1. Inability to secure an establishment to be attached with on time due to the preference given to four months and a year attachments.
2. Financial constraint due to transport fare.

5.3 SUGGESTIONS FOR IMPROVEMENT OF THE SCHEME

The effort of SIWES is very much commended, below are few suggestion for improvement.

The scheme should always make concrete arrangement and interaction with the various establishments where students intend to undertake their IT for easy placement and acceptance.

5.4 CONCLUSION

The programme gave me an opportunity to work as a laboratory scientist and proper orientation of transforming theoretical knowledge in class to practical application. It was also an opportunity to handle and operate ultra modern equipments.

5.5 RECOMMENDATION

The federal ministry of education in cooperation with universities should make science laboratory technology related establishments to impress it on their staff to really train students and give them free hand to practice.

Educational materials about the practices of a particular establishment should be made readily available to students.