A TECHNICAL REPORT
STUDENT INDUSTRIAL WORKING EXPERIENCE SCHEME
(SIWES)

Held at
YUSJIB PHARMACY

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SUBMITTED TO

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DEDICATION

I dedicate this technical report to the Almighty Allah, the giver of knowledge, wisdom and who is rich in mercy.

ACKNOWLEDGEMENT

I take this opportunity to express my profound gratitude and deep regards to the creator of heaven and earth, the one who knows the beginning and the end, the alpha and the omega, the Almighty Allah and also to my guides (MR & MRS ABDULSALAM, and to all those who has helped me during my SIWES programme. The blessings, help and guidance given by them, time to time has carry me so this far and shall carry on the journey of life on which I am about to embark. I also take this opportunity to express a deep sense of gratitude to compliment my mentor for his cordial support valuable information and guidance which helped me in completing my SIWES through various stages.

Lastly my deep regard to the best and most inspiring brother and sister in person of Sheriff, Mariam.

A big thanks goes to my friends, May Almighty Allah bless, protect, keep, nourish and guide you through all your life's entire journey. And also my regard to the school board of trustees and the staff a very big thank you to all and sundry.

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CHAPTER ONE

1.1 INTRODUCTION TO SIWES

Students Industrial Work Experience Scheme (SIWES) is a Skills Training Program designed to prepare and expose Students of Universities, Polytechnics, Colleges of Technology, Colleges of Agriculture and Colleges of Education for the Industrial Work situation they are likely to meet after graduation. The Scheme affords Students the opportunity of familiarizing and exposing themselves handling equipment and machinery that are usually not available in their institutions.

1.2 HISTORY OF SIWES

The Students' Industrial Work Experience Scheme (SIWES) was initiated in 1973 by the Federal Government of Nigeria under the Industrial Training Fund (ITF) to bridge the gap between theory and practice among products of our tertiary Institutions. It was designed to provide practical training that will expose and prepare students of Universities, Polytechnics, and Colleges of Education for work situation they are likely to meet after graduation.

Before the establishment of the scheme, there was a growing concern among the industrialists that graduates of institutions of higher learning lacked adequate practical background studies preparatory for employment in industries. Thus the employers were of the opinion that the theoretical education going on in higher institutions was not responsive to the needs of the employers of labour.

As a result of the increasing number of students' enrolment in higher institutions of learning, the administration of this function of funding the scheme became enormous, hence ITF withdrew from the scheme in 1978 and was taken over by the Federal Government and handed to National Universities commission (NUC), National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE). In 1984, the Federal Government reverted back to ITF which took over the scheme officially in 1985 with funding provided by the Federal Government.

1.3 OBJECTIVES OF THE PROGRAMME

The specific objectives of SIWES are to:

- Provide placements in industries for students of higher institutions of learning approved by relevant regulatory authorities (NUC, NBTE, NCCE) to acquire work experience and skills relevant to their course of study
- Prepare students for real work situation they will meet after graduation.
- Expose students to work methods and techniques in the handling of equipment and machinery that may not be available in schools.
- Make transition from school to the labour market smooth and enhance students' conduct for later job placement
- Provide students with the opportunity to apply their knowledge in real life work situation thereby bridging the gap between theory and practice
- Strengthen employer involvement in the entire educational process and prepare students for employment in industry

Promote the desired technological knowhow required for the advancement of the nation.

1.4 OBJECTIVES OF ESTABLISHMENT

- To provide optimum and individual care to patients.
- To develop recognition for patients needs for privacy and preservation of dignity.
- To maintain good relationship with patients, relations and the community through health education.
- To carry out diagnosis and intervention.
- To provide training for students.
- To maintain sufficient hospital supply of equipment and promote their utilization and maintenance.

  To treat and control diseases.

CHAPTER TWO

2.1 BENEFIT DERIVED FROM SIWES TRAINING PROGRAMME

The experience, knowledge, skills and exposure acquired during the period of attachment in the industrial exercise cannot be over emphasized. I was exposed to certain areas in my course of study, such as:

1. Introduction to laboratory apparatus
2. Malaria parasite test (MP)
3. Blood grouping test
4. Fasting blood sugar and Random blood sugar (FBS & RBS)
5. HIV screening test (LVS or RVS)
6. Packed cell volume (PCV)
7. Haemoglobin estimation (HB)
8. Pregnancy test (Serum & urine)
9. Widal test (typhoid)
10. Urinalysis test
11. Hepatitis test (Hepatitis B and C)
12. Stool microscopic
13. Syphilis
14. Ovulation test (LH)
15. Prolactin (PRL)
16. Prostrate specific antigen (PSA)
17. Microfilariasis, etc.

2.2 PRECAUTION TAKEN IN THE MEDICAL LABORATORY

1. Always wear a laboratory coat when working in the laboratory.
2. Ensure wearing of disposable glove when carrying out any test in the laboratory.
3. Do not eat, drink or smoke whenever you are in the laboratory.
4. Always wash your hand before and after any test.
5. The laboratory must be well ventilated.

6. Handle all laboratory apparatus with care.
7. All needles and any other sharp object must be properly disposed.
8. Every sample must be corked and well labeled for easy identification.
9. The book of record must be kept properly.
10. There must not be any naked wire in the laboratory.
11. There must be a proper waste segregation in the laboratory.
12. There must be a fire extinguisher in the laboratory.

2.3 INTRODUCTION TO MEDICAL LABORATORY APPARATUS

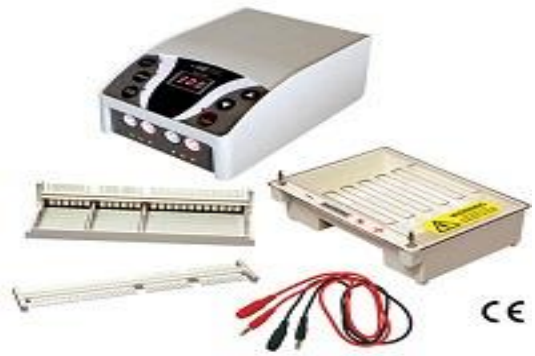
Some apparatus used in medical laboratory are as follow:

- GLUCOMETER:- A glucometer is a medical devices used to determine the approximate concentration of glucose in the blood of a particular patient.

Glucometer

- CENTRIFUGE:- this is a machine or an instrument used for hasting sedimentation of samples. E.g. blood, urine etc.

ELECTROPHORESIS:- This is one of the apparatus used for the determination of genotype.

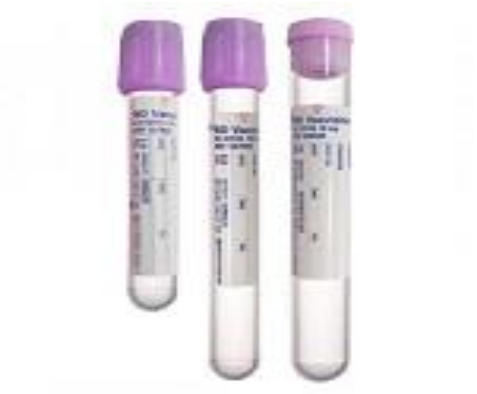


Electrophoresis machine

- RUBBER PIPETTE:- This is used for picking samples such as blood, sperm etc.
- PLASTICINE:- It is used to seal one of a capillary tube.
- LANCET:- This is used to prick patients thumb for collection little blood sample.

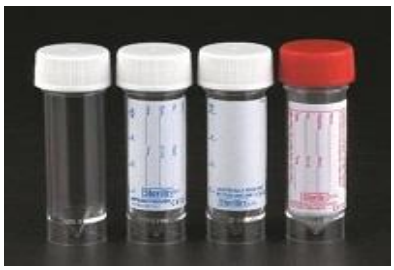
Lancet

- SLIDE:- This is used when carrying out experiment under microscope in which sample is put on it to view under microscope.
- STIRRER:- It is used to mixed sample and reagent together.
- WIRE LOOP:- It is used for fixing culture.
- TOURNIQUET:- It is used to tight arm in other to view the prominent vein before collecting the blood sample.
- HAND GLOVES:- It is used during experiment in the medical laboratory to prevent infections.
- SWAB:- It is used to disinfect the area where sample will be collected
- EDTA BOTTLE:- It is a prepare bottle used to keep blood from clothing before the test is done.



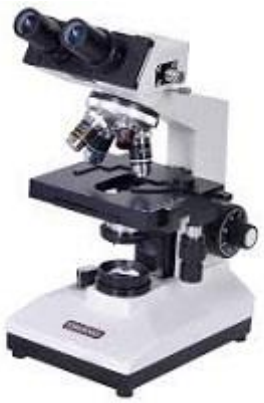
EDTA Bottle

- UNIVERSAL BOTTLE:- It is used to collect sample from patients such as urine, sperm etc



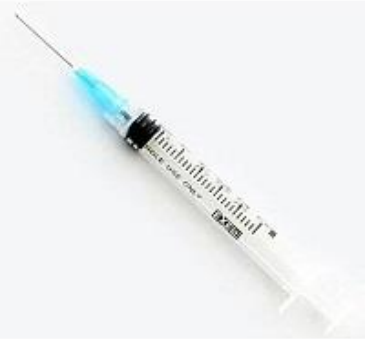
Universal bottle

- MICROSCOPE:- This is an instrument used to view minutes organisms that can not be seen with the naked eyes.



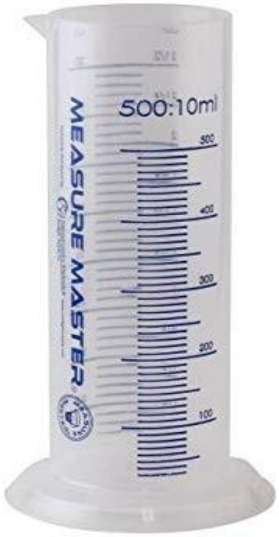
Microscope

- SYRINGE/NEEDLE:- An instrument (for the injection of medicine or withdrawal of bodily fluids) that consist of a hollow barrel fitted with a plunger and a hollow needle.



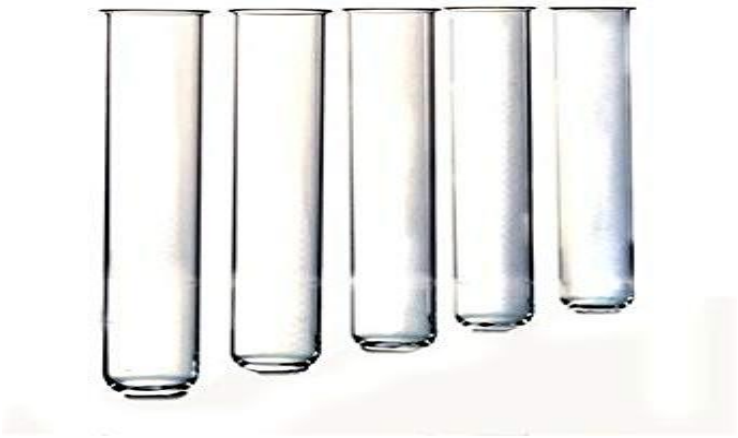
Syringe/needle

- MEASURING CYLINDER:- A graduated cylinder or mixed cylinder is a common piece of laboratory equipment used to measure the volume of a liquid.



Measuring Cylinder

- EST-TUBE:- A thin glass tube closed at one end, used to hold small amounts of material for laboratory testing or experiments.



Test-tube

BLOOD COLLECTION IN THE LABORATORY

Ways of collecting blood in the laboratory are:

- Vein collection
- Capillary collection

1. Vein collection:- This is done by using syringe and needle, where by the patient stretch his/her arm, tight his/her arm with tourniquet at the upper region and look for the prominent vein, then disinfect the area with alcohol pad and gently insert the needle into the vein then withdraw the sample gently.
2. Capillary collection:- this is done by using lancet, where the patient thumb is warm, disinfect the puncture site with alcohol pad, prick the thumb and collect the blood into capillary tube either plain or heparinized.

ORGANIZATIONAL CHART OF THE PHARMACY

Board of Directors

|

Chief Executive Officer (CEO)

|

| | |

Chief Operating Officer (COO) Chief Financial Officer (CFO) Chief Pharmacist

| | |

Pharmacy Manager Retail Manager Marketing Manager

| | |

Pharmacists Retail Associates Marketing Team

| |

Pharmacy Technicians Inventory Specialists

|

Customer Service Representatives

|

Administrative Assistants

|

Janitorial/Maintenance Staff

Yujib Pharmacy Organizational Chart Explanation

1. Board of Directors

Responsible for strategic decisions, governance, and overall direction of the pharmacy.

2. Chief Executive Officer (CEO)

Oversees the entire organization and ensures alignment with the pharmacy's mission and vision.

3. Executive Leadership Team

Chief Operating Officer (COO): Manages day-to-day operations, including supply chain, staffing, and customer service.

Chief Financial Officer (CFO): Handles financial planning, budgeting, and reporting.
Chief Pharmacist: Oversees all pharmaceutical operations, ensuring compliance with regulations and quality standards.
Human Resources Manager: Manages recruitment, training, and employee relations.

4. Department Heads
Pharmacy Manager: Supervises pharmacists, technicians, and inventory management.
Retail Manager: Manages the front-end retail operations, including over-the-counter sales and customer service.
Marketing Manager: Handles promotions, advertising, and customer engagement.
IT Manager: Oversees technology systems, including point-of-sale (POS) and inventory software.

5. Operational Staff
Pharmacists: Dispense medications, provide patient counseling, and ensure prescription accuracy.
Pharmacy Technicians: Assist pharmacists with dispensing medications and managing inventory.
Retail Associates: Handle customer inquiries, sales, and stock management in the retail section.
Inventory Specialists: Manage stock levels, order supplies, and ensure proper storage of medications.

6. Support Staff
Administrative Assistants: Provide clerical support to management and staff.
Customer Service Representatives: Handle customer complaints, inquiries, and feedback.
Janitorial/Maintenance Staff: Ensure the pharmacy is clean and well-maintained.

CHAPTER THREE

3.1 LABORATORY TESTING

BLOOD PREGNANCY TEST

Blood pregnancy test is a method used to check the presence of human chorionic gonaldotropin (HCG) in the blood of a female patient. This is to determine whether the patient is pregnant or not, by using blood as test sample.

MATERIALS/REAGENT: EDTA bottle, syringe and needle, centrifuge machine pregnancy test strip.

PROCEDURE

- ✓ Collect the blood sample from the patient into an EDTA bottle to prevent it from clothing.
- ✓ Transfer the blood sample into test-tube.
- ✓ Put the sample into centrifuge to separate the serum from packed cell.
- ✓ Dip the strip into the serum.
- ✓ Do not pass the maximum line (MAX) on the strip when immersing the strip.
- ✓ Lay the test strip horizontal on a clean surface.
- ✓ Leave it for 5 minutes.
- ✓ Read the result after 5 minutes

READING OF RESULT

If two red lines appear, one line at control region (c) and another line at the test region (T) it means the result is **positive**. This result shows that the patient is pregnant.

If one red line appeared at the control region (c) and no line appears at the test region (T) it means the result is **negative.** This result shows that the patient is not pregnant.

If there is no line appear at the control region (c) and at the test region (T) it means the test is invalid, this may be as a result of insufficient volume of serum on the strip or incorrect procedure are the most likely reason for an invalid result then the test should be repeated.

3.2 MALARIA PARASITE TEST USING TEST KIT (MP)

Malarial parasite test is any method used to test for the presence of an infection disease due to the presence of parasitic protozoa of the genus plasmodium falciparium malaria and plasmodium ovale within the red cell.

REAGENT/MATERIAL: lancet, pipette, buffer solution, alcohol pad or swab and test kit.

PROCEDURE

- ✓ Clean the area to be prick usually thumb with alcohol pad.
- ✓ Squeeze the end of the thumb tip and prick
- ✓ Clean the first blood that comes out of the pricked area.
- ✓ Collect 5µl of blood using pipette.
- ✓ Add a drop of blood into the space provided for it on the test kit
- ✓ Add 4 drops of buffer solution on the kit and leave for 15 minutes.

RESULT

- If only one line appear on the test kit at the control region (c) this signifies that the test is negative.
- If two lines appear at the test region (T) and at the control region (c) this signifies that the test is positive
- If no line appears at the test region (T) and at the control region (c) it signifies that the test is invalid.

3.3 PACKED CELL VOLUME (PCV)

Packed ell volume is a relative measure of an erythrocyte (RBC) present in a sample of whole blood usually measure in percentage (%) or liter per liter (L/L). it is also expressed as a percentage of the known of whole blood occupied by packed blood cells, when the blood is centrifuge at a constant speed and period of time.

CAPILLARY METHOD OF DETERMINE PACKE CELL VOLUME

The capillary method is the most convenient and has been adopted as a method of choice for the routine estimation of packed cell volume. This is because it require little quantity of blood sample.

MATERIALS:- syringe and needle, alcohol pad, sealant (plasticine), hematocrite machine, plain or heparinize capillary tube and EDTA bottle.

PROCEDURE

- ✓ Tight the tourniquet at the upper arm of the patient to view the prominent vein.
- ✓ Disinfect the area where you want to take the sample using alcohol pad.
- ✓ Collect the blood sample into an EDTA bottle.
- ✓ Fill the plain or heparinized capillary tube with at least ¾ length of the blood.
- ✓ Seal one end with plasticine.
- ✓ Put it inside hematocrit.
- ✓ Set it at 10,000 revolution per minutes for 5 minutes
- ✓ Disconnect the hematocrit from the main socket and allow it to stop on its own.
- ✓ Open the lid and remove the capillary tube.
- ✓ Used the hematocrit reader to read the PCV.

NORMAL VALUE

1. MEN 42% - 54%
2. WOMAN 36% - 47%
3. NEW BORN BABY 53% - 65%
4. SICKLE CELL PATIENT 20% - 25%

READING THE RESULT

- ✓ Place the capillary tube on the reader slide tray
- ✓ Align the base of the red cell in the column with 0, and the bottom of the meniscus of the plasma with 100
- ✓ The volume of the packed cells is taken directly from the capillary read by moving the adjustable of the reader
- ✓ Read the result in percentage (%)

3.4 URINALYSIS (URINE DISPSTIC CHEMICAL ANALYSIS)

Urinalysis is the analysis of urine, using practical, chemical and macroscopically test to determine the proportions of its normal constituents which includes bilirubin, urobilinogen, leucocytes, nitrite, protein, PH, specific gravity, ketone and glucose.

Urinalysis can reveal diseases that have gone unnoticed because they do not produced striking signs or symptoms. Example include diabetes mellitus various forms glomerulonephrites and chronic urinary tract infections. The first part of urine analysis

is direct visual observation. Normal, fresh urine is clear and pale yellow in colour due to the presence of a pigment **urochrome** a compound of urobillin, urobilinogen and a peptide substance, but could be cloudy at times.

PROCEDURE

- ✓ Collect little quantity of urine sample from the patient in the universal bottle.
- ✓ Dip the urinalysis test strip in to the urine.
- ✓ March the strip with the chart provided on the strip container.
- ✓ Take your reading and discard.

OBSERVATION

- ✓ The presence of blood in the urine of a male patient suggests that the patient is likely to be infected with the parasite called **schlist stoma haematobium.**
- ✓ The presence of many degenerate white blood cell (pus cells) indicates that there is an infection.
- ✓ The presence of red blood cell in female (if the patient is not menstruating) indicates some infection or wound in the urethral tract.
- ✓ Cast indicates kidney disorder and epithelial cells is normal if formed moderately, but in large quantities indicates inflammation of the urinary tract.

3.5 HEPATITIS B SURFACE ANTIGEN (HBsAg) TEST (WHOLE BLOOD/PLASMA)

The HBsAg one step Hepatitis B surface Antigen Test Strip (whole blood/plasma) is a rapid chromatographic immunoassay for the quality detection of Hepatitis B Surface Antigen in whole blood or plasma. The HBsAg one step Hepatitis B surface antigen test strip (whole blood/plasma) is a qualitative, lateral flow immunoassay for detection of HBsAg in whole blood and plasma. The membrane is pre-coated with anti-HBsAg Antibodies on test line region of the strip. During testing, the whole blood or plasma specimen reacts with the particle coated with anti-HBsAg antibody.

The mixture migrates upward on the membrane chromatographically by capillary action to react with anti-HBsAg antibodies on the membrane and generate a colour line. The presence of this colour line at the test region (T) and control region (C) indicate a positive result, while it the presence of only one line at the control region (C) indicate

that the result is negative. To serve as a procedural control, a colored line will always appear in the control region indicating that proper volume of specimen has been added and membrane wicking has occur.

HEPATITIS C VIRUS (WHOLE BLODD/PLASMA)

This is rapid test for the qualitative detection of antibodies to Hepatitis C virus (HCV) in whole blood or plasma. The HCV one step Hepatitis C virus test strip (whole blood/ plaasma)

Is a rapid chromatographic immunoassay for qualitative detection of antibody to Hepatitis C virus in whole blood or plasma.

Antibody to HCV is found in over 80% of patients with well – documented non-A, non-B hepatitis. The HCV one step hepatitis C virus test strip (whole blood/plasma) is a qualitative, membrane based immunoassay for the detection of antibody to HCV antigen on the test line region of the strip. During testing, the whole blood/plasma specimen reacts with the protein A coated particles. The mixture migrates upward on the membrane chromatographically by capillary action to react with recombinant HCV antigen on the membrane and generate a colour line. The presence of this colour line at the test region (T) and control region (C) indicate a positive result, while it the presence of only one line at the control region (C) indicate that the result is negative. To serve as a procedural control, a colored line will always appear in the control region indicating that proper volume of specimen has been added and membrane wicking has occur.

CHAPTER FOUR

4.1 HIV SCREENING

The HIV screening is an easy-to-used, rapid within (15 minutes) test for HIV antibodies. It is an in vitro, visually read, qualitative immunoassay for the detection of antibodies to HIV in human septum, plasma or whole blood. The test is intended as an aim to detect antibodies to have HIV from the infected individual.

PROCEDURE

- ✓ Collect the patient blood sample.
- ✓ Put the blood sample on the test strip.
- ✓ Add 1-2 drop of buffer solution to it.
- ✓ Wait for 5 minutes and read the result.

RESULT

- ✓ If two lines appear at the test and control line region the result is positive.
- ✓ If one line appears at the control region the test is negative.
- ✓ If there is no line at the control and test line the result is invalid.

4.2 BLOOD GROUPING

There are four different blood groups which are blood group A,B ,AB and O all this are blood group with rhesus **D positive** and also with rhesus **D negative** where blood group O rhesus D negative referred to as universal **donor** and AB is referred to as universal recipient. The purpose of blood grouping is to determine the phenotypic and genotypic properties of an individual. With these properties, one can determine the paternity of a child, help in blood transfusion, and help in porensic study. The principle behind this is that when an antigen is introduced into the body, it triggers the production of antibodies. In this test, the blood sample acts as the antigens while the antiserum (which is the presence of antibodies in the serum) acts as the antibody. There are three anti-sera that are used in this test. These are anti-serum A,B and rhesus D. anti-sera A is tilt with blue colour, anti-sera B, is tilt with yellow colour while Rhesus D is colorless.

PROCEDURE

- ✓ Patient blood sample s collected into an anticoagulant bottle
- ✓ With the use of pipette, a drop of the blood sample is place on three places on a white tiles
- ✓ Add anti-sera A to the first sample; add anti-sera B to the second sample and anti-sera D to the third sample.
- ✓ Then mixed together with different stirrer for reaction to occur
- ✓ A result clumping of the cells indicates the presence of antigen to the anti-sera used. The clumping of the cells is referred to as hem agglutination.
- ✓ If agglutination occur with Anti-sera A and D the blood group is A Rh D positive
- ✓ If agglutination occur with Anti-sera A only the blood group is A Rh D negative
- ✓ If agglutination occur with Anti-sera B and D the blood group is B Rh D positive
- ✓ If agglutination occur with Anti-sera B only the blood group is B Rh D negative
- ✓ If agglutination occur with Anti-sera A,B and D the blood group is AB Rh D positive
- ✓ If agglutination occur with Anti-sera AB only the blood group is AB Rh D negative
- ✓ If agglutination occur with Anti-sera O and D the blood group is O Rh D positive
- ✓ If agglutination occur with Anti-sera O only the blood group is O Rh D negative

Agglutination is the reaction between antigen and the corresponding antibody to make clomping.

BLOOD GROUP RESULT

ANTI-SERA A	ANTI-SERA B	ANTI-SERA D	RESULT
+	-	+	A+
+	-	-	A-
-	+	+	B+
-	+	-	B-
+	+	+	AB+
-	-	+	AB-
-	-	+	O+
-	-	-	O-

\+ means agglutination

\- means no agglutination

4.3 BLOOD SUGAR TEST (FBS & RBS)

This is a test used to determine the glucose level in the blood of a patient. There are two ways of carrying out this test. It could be done while the patient is has not eat or drink in the morning (fasting blood sugar - **FBS**) or by finding the average result of the patient's blood sample after eating (Random blood sugar - **RBS**).

MATERIAL: Glucometer machine, glucometer test strip, lancet, alcohol pad

PROCEDURE

- ✓ Disinfect the site to be prick with alcohol pad
- ✓ Pricked the patient with lancet
- ✓ Clean the first blood that comes out at the site of puncture
- ✓ Collect the sample into capillary tube
- ✓ Put the test strip into the glucometer
- ✓ Add a drop of blood sample and wait for 2 minutes
- ✓ Read the result and record it in mmol/L.

Note: if the result is high it called hyperglycemia it means the patient is diabetic. Also, if the result is low it called hypoglycemia.

4.4 WIDAL TEST

This is test for determine typhoid in a patient blood sample usually (serum) whether salmonella typhi is present in a sample of a patient or not.

MATERIALS: EDTA bottle. Blood sample, syringe/needle, alcohol pad, pipette, widal test reagent, white tile, stirrer and centrifuge machine.

PROCEDURE

- ✓ Tight the tourniquet to the patient arm to view prominent vein
- ✓ Disinfect the area where to collect the blood sample
- ✓ Pour the blood into and EDTA bottle
- ✓ Spin the sample in centrifuge machine for 4-5 minutes
- ✓ Remove the sample from the centrifuge
- ✓ Used pipette to separate serum from the packed cell and drop it on tile in eight different places
- ✓ To the first four rows add salmonella typhi H, salmonella paratyphi A,B and C respectively, to the second row add salmonella typhi O, salmonella paratyphi A,B and C
- ✓ Stir the sample and the reagent to gether
- ✓ Rock the sample continuously until it agglutinate together

RESULT

Ranges of the result are as follow

- ✓ 1:20
- ✓ 1:40
- ✓ 1:80
- ✓ 1: 160
- ✓ 1:320

PROCEDURE

1. Collect urine sample from patient into a universal bottle.
2. Dip the strip into the collected urine.
3. Wait for 1-2 minutes and compare the colour change from the colour chart provide to the strip container.
4. Write the result.

CHAPTER FIVE

5.1 CONCLUSION

The SIWES program has been a transformative experience, equipping me with the knowledge and skills required to excel in the field of procurement and supply management. The exposure to real-world challenges and solutions has prepared me for the demands of the professional world.

I was able to apply the theoretical knowledge gained in the classroom to real-world scenarios. The program enhanced my understanding of procurement processes, inventory management, supplier relationship management, logistics, and compliance. It also equipped me with essential skills such as problem-solving, communication, and teamwork, which are critical for success in the procurement and supply chain industry.

Overall, the SIWES program was a transformative experience that prepared me for the challenges of the professional world. I am confident that the skills and knowledge I acquired during this program will significantly contribute to my career growth and development.

5.2 RECOMMENDATION

I wish the government and the school authority to provide necessary materials for the students during this programme. They should also try to pay the students allowance so as to serve as help for the students in one way or the other.

Also, the supervisors should make sure they visit the students in their place's of attachment for proper monitoring, improvement and progress for the benefit of the societies as a whole.

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