A TECHNICAL REPORT

ON

STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME

AT

AJIBOLA MEMORIAL CLINIC

OYUN, ILORIN, KWARA STATE

BY

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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 **ADEDOYIN MARIAM AJOKE** with matriculation number **ND/23/SLT/PT/0627** to the department of SCIENCE LABORATORY TECHNOLOGY (SLT), Kwara state Polytechnic, Ilorin.

Student signature _____ Date _____

SIWES Coordinator Signature _____ Date _____

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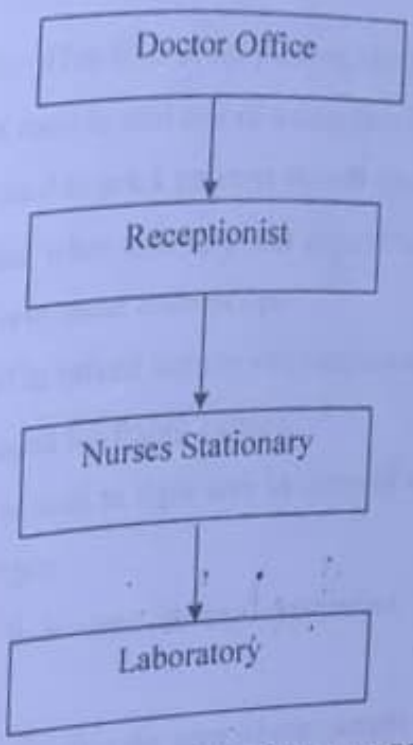
ELECTROPHORESIS:- This is one of the apparatus used for the determination of genotype.

- 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.
- 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.
- UNIVERSAL BOTTLE:- It is used to collect sample from patients such as urine, sperm etc
- MICROSCOPE:- This is an instrument used to view minutes organisms that can not be seen with the naked eyes.
- 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.
- MEASURING CYLINDER:- A graduated cylinder or mixed cylinder is a common piece of laboratory equipment used to measure the volume of a liquid.
- EST-TUBE:- A thin glass tube closed at one end, used to hold small amounts of material for laboratory testing or experiments.

26 ORGANIZATIONAL CHART OF THE COMPANY



27 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.

28 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.
- CENTRIFUGE:- this is a machine or an instrument used for hasting sedimentation of samples. E.g. blood, urine etc.

AUTOCALVE: This is used in sterilsation of glass wares and media used in the laboratory to avoid contamination. It consists of chamberson which the articles are placed and treated with steam At high pressure.

INCUBATOR: It is used for incubating cultured plate for 24 hours -48 hours at the temperature between 37oc-4000c so as to obtain proper growth of microorganisms.

LABORATORY OVEN: It is used for sterilization of Meta wares and also for preservation.

CENTRIFUGE: It is used for sedimentation of particles, is used in separating components of different densities in a liquid, using centrifugal force.

WEIGHING BALANCE: This is used for measuring mounts of substance required for analysis which measure in grams.

ELECTROPHORESIS MACHINE: It is used for carrying out test on genotype.

REFRIGERATOR: This is for the preservation of samples. HAEMATOCRITE CENTRIFUGE this is used for sampling blood with microhaeamatocrit capillary tubes to know the blood percentage of an individual

SYRINGE: They are used to give injection and also for collection of blood sample through venous blood collection in the lab for laboratory practical.

24 HAEMATOLOGY TEST: This is the test used in carrying out the investigation of anemia, infection and pyrexia 9 fever) of unknown origin, investigation heamoglobinopathies and monitoring patients receiving antiretroviral therapy (ART).

25 BLOOD GROUP: This is all ABC blood group system are clinically the most important. Blood group donors and patients must be grouped correctly to avoid the death of the patients when the ABC is incompatible. The ABC blood group w have :AB ,AB ,A, K ,B+,B,O+,0

AIM: The aim is to determine a patient's blood group Apparatus: Anti sera A,B, and C clean and dry title applicators, sterile blood lancet, sterile swap and hand glove.

TECHNIQUES: After a patient thumb has being cleaned with sterile swap and allow to dry. A puncture is made with the lancet and the first drop of the blood is cleaned off. And then pressed to get another drop of blood which is dro oped at three division on a tile. Add one volume of the respective anti-sera A B and 0 to the bloodsamplesUsing applicators mix the anti-sera with the blood respectively Rock for 2-3 minutes and then record your result.

CHAPTER ONE

1.1 INTRODUCTION

SIWES was purposely introduced in order to make student acquire more knowledge or skills about a methods of some professional work and to exposed them to the used of some equipment in the programme and also to help the students on how setup and safeguard their own industry and or organization in future.

1.2 AIMS AND OBJECTIVE OF SIWES

1. It expose the student to some equipment which are not available in school.
2. SIWES programme prepare students for the work situation they are likely to meet after graduation from school.
3. It enables student to be self-dependent not only on the theoretical aspects but also on practical aspects in the field of study.
4. It also helps to know the general safety precautions, rules and regulations of on organization or establishment.

1.3.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.

VOLUME (P.C.V)

P.C.V packed cell volume- it can be define as the volume of blood in a whole sample. That's the level of blood in the body of patient.

MATERIAL NEEDED

Heparinised tube, swab cotton wool, lancet, centrifuge machine, haematocrite readers, plastene.

PROCEDURE FOR PACKED CELL VOLUME

- Prick the finger with lancet to obtain a flow of blood.
- Use the heparinised tube to filed it up the blood to the end.
- The swab cotton wool is used to clan up the pricking finger.
- Seal the end of the heparinised with plastene.
- Then put into centrifuge bucket machine.
- Spin at 10,000 rpm for 2 to 5mins.
- After spinning down the sample
- Remove and read the result in the haematocrit reader.

NORMAL RESULT

Men = 44-56%

Women = 37 – 47%

Infant = 54-62%

3.2 BLOOD GROUPING

MATERIAL NEEDED

Blood sample, antisera, titre, pipette, swab cotton wool, syringe and needle.

PROCEDURE FOR BLOOD GROUPING

- The blood is collected into a chemically clean test tube that contain EDTA Bottle.
- The blood is mix together thoroughly
- A drop of blood is put into a slide in three places
- Then add the antiseras on each blood
- Mix together to obtain your result

RESULT

'A-positive

'B'-positive

'AB'– positive

'D'– positive

PROCEDURE FOR PREGNANCY TEST

- The urine is collected into a chemically clean bottle.
- Then the strip is put deeply into the urine to obtain a result.
- They move from the end at least for 2minutes
- To allow the colour to develop
- Remove to read the result

RESULT

- If there is one red blood – negative
- If there is two red band means – positive

That is the patient is pregnant

3.6 URINALYSIS TEST

This is a test carried out to detect the rate of some component present in the urine. It is used to know the physical, chemical properties of the patient's urine.

Apparatus: Urinalysis strip (Combi 2,9 &10), hand gloves plane universal bottle, toilet roll, stop clock.

Regent: Patient's urine.

Procedures:

- Put on hand gloves.
- Give the plane universal bottle to the patient to bring his/her urine.
- Examine the urine physically from the universal bottle.
- Bring out one of the strip from the Combi.
- Insert it into urine sample.
- Place the strip immediately you remove it from the urine on tissue paper in order to get rid of excess urine from the black of the strip.
- Read the result within 30 seconds to 60 seconds.
- Record your result.

Physical Examination of Urine

1. Check for color: Normal urine is slightly yellow or amber.
2. Check for odour: Uninfected urine is slightly aromatic.
3. Urine sample must be transparent.

Chemical Properties of Urine

This indicates any abnormality present in the urine sample. The chemical component/properties using Combi 10 includes: blood, urinobilinogen, bilirubin, protein, nitrite, ketones, glucose, PH, specific gravity, leukocytes.

CHAPTER TWO

2.1. VARIOUS DEPARTMENT OF THE LABORATORY.

1. **RECEPTIONIST/COLLECTION SECTION:** This is the unit where patients are received and attended to regarding to the investigation written on their laboratory request forms by the doctor. Activities such as collection of clinical specimens and issuing of laboratory result forms are carried out in this section.

2. **SEROLOGY SECTION:** This section is concerned with the laboratory investigation which involved the formation of immune complex (agglutination) from antigen and antigen and antibody reaction in the blood (serum). Clinical tests carried out in this section include Widal tests, PT Pregnancy test, hepatitis B surface Antigen (HBsAq), hepatitis C virus [HCV] and Veneral Disease Research Laboratory also known as syphilis, HIV TESTS and other sensitive test.

3. **PARASITOLOGY SECTION:** This is the unit where clinical specimens are analyzed in search for parasitic organisms. The clinical specimens analyzed include stool, urine analysis.

4. **HEMATOLOGY:** This section is concerned with Hemoglobin (blood penalty test), FBC, malaria test, HB-genotype, ABO groups, Erythrocytes Sedimentation Rate [ESR TEST]

5. **CHEMISTRY SECTION:** This section is concerned with cholesterol, FBS and RBS, Lipid profile etc.

6. **MICROBIOLOGY SECTION:** Deals with urine, stool, HVS (urine Swab), urethral,

2.2 LABORATORY RULES AND REGULATIONS

i. Laboratory coat and hand gloves should be worn in the laboratory
ii. Eating, drinking, smoking and dancing should be avoided in the laboratory
iii. Hands should be washed after handling a sample and when leaving the laboratory
iv. All benches should be cleaned before and after the day work.
v. Avoid being bare footed, cover shoes should be worn in the laboratory
vi. Hairs should be covered with Hair net.
vii. Fingers and nails should be cut short
viii. Labeling of sample should be done with care

2.3 LABORATORY EQUIPMENTS AND THEIR USES MICROSCOPE

This equipment is used of the examination of samples and magnification of microorganisms that cannot be seen with the naked eyes. Its parts include object lens which have100x, 40x, and 10x objective lenses other parts are fine and coarse adjustment knobs

(4) Plasmodium vivax

Plasmodium vivax

3.4 HUMAN IMMUNE VIRUS (HIV TEST)

MATERIALS NEEDED FOR LEME-VIRAL TEST/SCREENING TEST

TYPES OF KIT

- Global kit
- Determined kit
- Stat-pak kit
- Screening kit, buffer water, blood sample, centrifuge bucket machine, swab cotton wool, syringe and needle, test, HIV buffer kit.

PROCEDURE FOR HUMAN IMMUNE VIRUS

- 2mls of blood of the patient is converted into EDTA bottle.
- It is spin down at 10,000 rpm for 2mins to obtain fine serum.
- The serum is pipette and a drop of serum is drop into the global kit to run.
- Leave for 5minutes to allow the test to develop.

RESULT

- If there is one band that means its negative
- But if there is two band it is positive for type 1.
- When there is three red band + it is positive for Type 1 and type II - that is positive
- Sample drop

T – Stand for test

C – Stand for control

3.5 PREGNANCY TEST

We have urine pregnancy test and blood pregnancy test. The difference between the two are: in urine test when pregnancy is between two weeks or three weeks after doing the pregnancy urine test accidentally the result may not developed while the blood is used for the further investigation which we give us the normal result. If positive or negative

MATERIAL NEEDED

Urine sample, universal bottle, HCG strip

'D'- Negative

. 'O' Rh D+ve is the universal donor that gives blood at all the groups.

While

. 'O' Rh D-ve are our rhesus factors these group O-ve did not collect blood from anybody except only the group.

3.3 **MALARIA PARASITE TEST (MP TEST)**

MATERIAL NEEDED: Clean glass slide, coverslip, blood sample, microscopy H_20, leishman staining, lancet, swab cotton wool.

PROCEDURE FOR MALARIA PARASITE

. You prick the finger of the patient with lancet.

. A drop of blood is placed on a clean glass slide and clean the finger with swab cotton wool.

. A clean cover slip is used to spread the blood in order to make a thin smear and to obtain tail edger.

. The slide with leishman staining and leave for 2minutres to allow the parasite to fix.

- Then double dilute with water
- Leave for 8minutes
- Remove the water and allow the slide to air dry apply oil immersion and examine under the microscope using x100 objectives.

TYPES OF MALARIA PARASITES

i) Plasmodium falciparum

ii) Plasmodium ovale

iii) Plasmodium malariae

Precautions

- Check for the expiring date of the strip used.
- Put on hand gloves.
- Bring out the only strip needed.
- Handle the urine sample carefully.
- Read the result within the normal time.

3.7 WIDAL TEST

This is use for investigation of typhoid fever, this is caused by salmonella typhi. This is a test presumptive serological test for enteric fever or undulant fever whereby bacterial causing typhoid fever care missed with serum (containing specific antibody obtained from infected individual.

SAMONELLA INFECTION

Test result need to interpreted carefully in the light of past history of enteric fever, typhoid vaccination and the general level of antibodies in the population.

WIDAL TEST PROCEDURE

- Collection of blood sample from a patient.
- Allows the blood to settle to form a serum.
- Put the serum inside a small straight bottle.
- Prepare a plate which contain four, four rows.
- Prepare the antiseral
- A drop of each antiseral should be drop on a each hole and plate.
- Then draw a drap of serum with pipette on each antiseral on the plate
- Mix both the antiseral and the serum together.
- View with your eyes if positive or negative by checking of agglutination or non.

NOTE: If agglutination occurs, it is positive
If non agglutination it is negative.

3.8 VENERAL DISEASE RESEARCH LABORATORY

This test is for syphilis. It measure substance called antibodies. That your body may produce if you have come in contact with the bacteria that cause SYPHILIS. This bacteria is called Treponema Pallidium.

- **Syphilis:** This is a sexual transmitted in reaction causes by the spirocliaela bacterium treponema palladium.

CHAPTER FOUR

4.1 CONCLUSION

The student industrial work experience scheme (SIWES) helps students to expand their knowledge and experience in their field of study. It will also help student whenever they come across it in future career.

4.2 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.