

A
On Job Training Report
On
CLINICAL LABORATORY
Completed at

KolhapurLife Science Super Speciality Laboratory
Abhishek Plaza 2nd Floor,
NearSwayam Siddha Sykes Extension Kolhapur.

By

Miss.Prajakta Krushna Patil.
M. Sc. Microbiology Part I Semester II
PG Department of Microbiology
Vivekanand College
(An Empowered Autonomous Institute)
Kolhapur, 416003
Maharashtra, India

2025-26

Dissemination of Education for Knowledge, Science and Culture"
- Shikshanmaharshi Dr. Bapuji Salunkhe



Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE, KOLHAPUR
(AN EMPOWERED AUTONOMOUS INSTITUTE)



PG Department of Microbiology

CERTIFICATE
OF
"ON JOB TRAINING"

This is to certify that Miss. Prajakta Krushna Patil (Roll no. 5416) has satisfactorily carried out the required practical work prescribed by the BoS Department of Microbiology, Vivekanand College, Kolhapur (An Empowered Autonomous Institute) for M.Sc. - Part- I Semester II course in On Job Training (Sub code – OJT20MIC21) and this report represents his/her Bonafide work in the year 2025-2026.

Place: Kolhapur

Date: 23/3/2026

Damode
25/3/26
Examiner
25.03.26

Smali
OJT Incharge

Sanpale
Head

I/C Head
Department of Microbiology
Vivekanand College, Kolhapur
(Empowered Autonomous)

CERTIFICATE

This is certify that Miss. Prajakta Krushna Patil from Vivekanand College, Kolhapur (An Empowered Autonomous Institute) has successfully completed On Job Training (OJT) at Galaxy Hospital Pathology Lab from 16th December 2025 to 31th December 2025.

During this period, the Student observed and assisted in basic pathological procedures and daily laboratory activities. Her performance during training was satisfactory.

She is found to be hardworking, sincere and good character We wish her all the best for future.

Date : 31/12/2025.



• HEMATOLOGY TEST DONE ON SYSMEX:xs800i & Xp 100. • BIOCHEMISTRY TEST DONE ON RANDOM ACCESS AUTO ANALYZER: Em 18
• Na + K + T.Cal + I.Cal + Chloride TEST ARE DONE ON DME ELECTROLYTE ANALYZER. • SEROLOGY TEST LIKE RA, ASD, CRP, HBAIC
DONE ON SMART NEPHELO ANALYZER.

Nivrutti Colony, Warananagar, Dist Kolhapur. Tel.: (02328) 224175, 9561245858. Email : dr.anandkore@yahoo.com / galaxyhospital007@gmail.com

DECLARATION

I hereby declare that I have successfully completed the On Job Training program at Galaxy Hospital Warnanagar. I acknowledge that skills acquired during this training program are valuable to me and will contribute to my professional development.

I express my gratitude to Miss.Vaishnavi Patil, Designation, Kolhapur Life science Super Speciality Laboratory and the whole training team for their support and guidance throughout the training.

Date: 23/02/2026

Place: Kolhapur

Miss.Prajakta Krushna Patil.





Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE, KOLHAPUR

(AN EMPOWERED AUTONOMOUS INSTITUTE)
2130, 'E' Tarabal Park, Kolhapur, Tal. Karveer, Dist. Kolhapur -416003
Affiliated to Shivaji University, Kolhapur (M.S.)
NAAC Reaccredited : "A+" (CGPA3.29)
College with Potential for Excellence by U.G.C., New Delhi
"Star College" by D.B.T Govt. of India
ISO 9001 : 2015



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M.A.

Secretary
Prin.Mrs. Shubhangi Gawade
M.Sc.,B.Ed.

Inch. Principal
Dr. S. P. Thorat
M.Sc.,M.Phil.,

Ref. No. VCK/ 2127/2025-26

Date : 17/12/2025

To,
The Managing Director,
Galaxy Hospital (Lab)
Warnanagar,
Kolhapur.

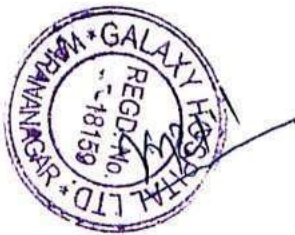
Subject: - Regarding permission to carry out On Job training in your esteemed industries

Respected Sir/Madam,

Our students of M.Sc. part I Microbiology are interested to carry out On Job training as a part of their curriculum during the period of 16th December to 31st December 2025. So, kindly grant the permission and guide them for their training work. The names of students attending training are as follow:

Sr. No.	Names of students	Roll No.
1.	Anuradha S Khavare	5411
2.	Janhvi J Jadhav	5405
3.	Sanika S Jadhav	5406
4.	Prajakta K Patil	5416
5.	Prithviraj S Shewale	5420
6.	Pratik S Kadam	5409

Thanking you,



Yours faithfully

S.P. Thorat
Dr. S.P. Thorat

I/c Principal
Vivekanand College, Kolhapur
(An Empowered Autonomous Institute)



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Date:

Place: Kolhapur

Miss. Janhvi Jaywantrao Jadhav

Miss. Prajakta krushna Patil

Miss. Sanika Shahaji Jadhav

Internship Undertaking

1. Student Name:	Prafecto Krishna Patel.		
2. Current Address	-		
3. Residence Address	At post kande, Tal-shirala, Dist -Sangli.		
4. Email id	prafectap866@gmail.com.		
5. Mobile Nos.	9767007155		
6. Aadhar	4755 2972 1010		
7. PAN	-		
8. Overall GPA	-		
9. Mode of Internship	Offline		
10. Internship Preferences			
	Location	Core Area	Organization / Institute
Preference-1	-	-	-
Preference-2	-	-	-
Preference-3	-	-	-
<p>I confirm that I agree with the terms, conditions, and requirements of the Internship Policy</p> <p>Student Signature: <u>Prafecto</u></p> <p>Date <u>2/11/2026</u></p>			
<p>I confirm that the student has attended the internship orientation and has met all paperwork and process requirements to participate in the internship program, and has received approval from his/her mentor.</p> <p style="text-align: center;"><u>Smali</u></p> <p>Sign of Department Faculty Coordinator</p> <p>Date <u>23/3/2026</u></p>			

Student Diary (Log) Recording Format

Week	Task Assigned	Activities Performed	Key Learnings	Additional Remarks
16/12/2025 to 21/12/2025	Introduction of laboratory - Blood collection - Blood test & smear preparation - serum analysis	Learned lab rules, bio safety, waste disposal, venipuncturing, labelling sample, observed doctor centrifugation, biochemical test.	Importance of PPE & understand lab work - proper sample collection - microscope handling - used biochemistry analyzer.	Gained basic lab-awareness Gained basic idea. - need practice in smear preparation
22/12/2025 to 27/12/2025	- urine & stool testing. - lab maintenance - biochemistry testing.	Physical & microscopic examination - checked reagent + expiry	Identification of abnormalities - importance of quality control	- need practice. - Good experience
28/12/2025 to 31/12/2025	- Reporting - Revision	Entering patient data - Reviewed all sections	- Importance of accuracy & clarity - overall lab review	- Developed responsibility - Training completed successfully.


 Signature of Industry Supervisor

Attendance Sheet

Name & Address of Organization

Galaxy Hospital, Laboratory.
Nivru^o colony, Warananagar.
Karona, Maharashtra - 416 113

Name of the Student	Prajakta Keshna Patel.
Roll Number	5416
Name of Course	M.Sc - I, microbiology
Date of Commencement of Training	16/12/2025
Date of Completion of Training	31/12/2025

Month and Year:

Day	Date	Sign of student
1	16/12/2025	<u>Prajakta</u>
2	17/12/2025	<u>Prajakta</u>
3	18/12/2025	<u>Prajakta</u>
4	19/12/2025	<u>Prajakta</u>
5	20/12/2025	<u>Prajakta</u>
6	21/12/2025	<u>Prajakta</u>
7	22/12/2025	<u>Prajakta</u>
8	23/12/2025	<u>Prajakta</u>
9	24/12/2025	<u>Prajakta</u>
10	25/12/2025	<u>Prajakta</u>
11	26/12/2025	<u>Prajakta</u>
12	27/12/2025	<u>Prajakta</u>
13	28/12/2025	<u>Prajakta</u>
14	30/12/2025	<u>Prajakta</u>
15	31/12/2025	<u>Prajakta</u>

- Attendance Sheet should remain affixed in Daily Training Diary. Do not remove or tear it off.
 - Holidays should be marked in Red Ink in attendance column. Absent should be marked as A in Red Ink.
- Name and Signature with date of Internship Supervisor Vaishnavi M. Patil
Mptil

Supervisor Evaluation of Intern

Student Name: Miss. Prajalata K. Patil Date: 31-12-2025

Work Supervisor: Vaishnavi M. Patil Title: _____

Organization: Galaxy Hospital Pathology Lab

Internship Address: Nivrutti colony, Warananagar

Dates of Internship: From 16th Dec. 2025 To 31th Dec 2025

Please evaluate intern by indicating the frequency with which you observed the following behaviors:

Parameters	Needs Improvement	Satisfactory	Good	Excellent
Behaviors				✓
Performs in a dependable manner				✓
Cooperates with co-workers and supervisors			✓	✓
Shows interest in work				✓
Learns quickly				✓
Shows initiative				✓
Produces high quality work			✓	✓
Accepts responsibility				✓
Accepts criticism				✓
Demonstrates organizational skills				✓
Uses technical knowledge and expertise				✓
Shows good judgment				✓
Demonstrates creativity/originality				✓
Analyzes problems effectively				✓

Is self-reliant					
Communicates well					✓
Writes effectively					✓
Has a professional attitude					✓
Gives a professional appearance					✓
Is punctual					✓
Uses time effectively					✓

Overall performance of student intern (circle one):

Excellent

(Needs improvement / Satisfactory / Good / Excellent)

Additional comments, if any:

Signature of Industry supervisor Vipul

HR Manager _____



Student Feedback of Internship

(To be filled by Students after Internship completion)

Student Name: Poojita Krishna Patel Date: _____

Industrial Supervisor: _____ Title: _____

Supervisor Email: _____ Internship is: _____ Paid Unpaid

Organization: Galaxy Hospital Laboratory, Warananagar

Internship Address: Nivrti Colony, Warananagar, Warana

Faculty Coordinator: _____ Department: _____

Dates of Internship: From 16/12/2025 To 31/12/2025

Give a brief description of your internship work (title and tasks for which you were responsible):

Was your internship experience related to your major area of study?

- Yes, to a large degree
- Yes, to a slight degree
- No, not related at all

Indicate the degree to which you agree or disagree with the following statements.

This experience has:	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
Given me the opportunity to explore a career field	✓				
Allowed me to apply classroom theory to practice		✓			
Helped me develop my decision-making and problem-solving skills	✓				
Expanded my knowledge about the work world prior to permanent employment	✓				
Helped me develop my written and oral communication skills	✓				
Provided a chance to use leadership skills (influence others, develop ideas with others, stimulate decision-making and action)	✓				

Expanded my sensitivity to the ethical implications of the work involved	✓				
Made it possible for me to be more confident in new situations	✓				
Given me a chance to improve my interpersonal skills	✓				
Helped me learn to handle responsibility and use my time wisely	✓				
Helped me discover new aspects of myself that I didn't know existed before	✓				
Helped me develop new interests and abilities	✓				
Helped me clarify my career goals	✓				
Provided me with contacts which may lead to future employment	✓				
Allowed me to acquire information and/ or use equipment not available at my Institute	✓				

- In the Institute internship program, faculty members are expected to be mentors for students. Do you feel that your faculty coordinator served such a function? Why or why not?
Yes, the faculty co-ordinator guided & supported me throughout the internship.
- How well were you able to accomplish the initial goals, tasks and new skills that were set down in your learning contract? In what ways were you able to take a new direction or expand beyond your contract? Why were some goals not accomplished adequately?
I was able to achieve most of the goals & learned several new practical skills.

- In what areas did you most develop and improve?

I improved my laboratory techniques, communication, & practical knowledge.

- What has been the most significant accomplishment or satisfying moment of your internship?

Successfully performing laboratory experiments independently.

- What did you dislike about the internship?

Limited time to explore more advanced techniques.

- Considering your overall experience, how would you rate this internship? (Circle one).

-Satisfactory/ Good/ Excellent

- Give suggestions as to how your internship experience could have been improved. (Could you have handled added responsibility? Would you have liked more discussions with your professor concerning your internship? Was closer supervision needed? Was more of an orientation required?)

more hands-on training & longer internship duration would improve the experience.

Signature of Student: Prajakta

Name: Prajakta Krishna Patel

Roll number: 5416.

Date: 5/11/2026.

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Date: 23/3/2026

Place: Kolhapur

Miss.Prajakta Krushna Patil

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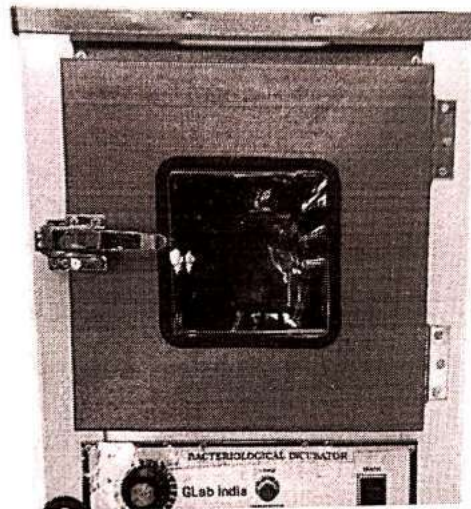
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About Laboratory-

- A clinical laboratory is an important place where different medical tests are performed for the diagnosis of diseases. Galaxy Laboratory is located in warana and is well equipped with modern instruments and facilities. The laboratory provides various pathological tests such as blood tests, urine tests, and other diagnostic investigations at reasonable charges.
- The laboratory staff is well trained and experienced. They follow proper laboratory procedures and maintain accuracy in test results. Cleanliness and safety are maintained in the laboratory to ensure reliable testing.
- This laboratory also provides a good learning environment for students. Students can observe different laboratory techniques and understand various diagnostic procedures. Therefore, a pathology laboratory plays an important role in medical education as well as in the diagnosis, treatment, and prevention of diseases. A clinical laboratory is an important place where different medical tests are performed for the diagnosis of diseases. Galaxy Lab is located in warana and is well equipped with modern instruments and facilities. The laboratory provides various pathological tests such as blood tests, urine tests, and other diagnostic investigations at reasonable charges.
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Instruments

- **Incubator**



Lab incubators are essential equipment in the laboratory that provide a temperaturecontrolled environment to support the growth of microbial cultures.

A laboratory incubator is a heated and insulated box used to grow and maintain microbiological or cell cultures. The incubator maintains optimal temperature, humidity and gaseous conditions inside.

- **Working of Incubator**

An incubator works on the principle that microorganisms require specific environmental conditions for their growth and development. It maintains artificial conditions such as temperature, humidity, oxygen and carbon dioxide levels.

- **Parts of Incubator**

1.Cabinet:

The cabinet is the main body of the incubator consisting of a double-walled cuboidal enclosure with a capacity ranging from 20 to 800 L.

2.Door:

A door is present in all incubators to close the insulated cabinet. A handle is provided on the outside of the door for easy opening and closing.

3.Control Panel:

The control panel contains switches and controls to regulate the temperature of the incubator.

4.Thermostat:

The thermostat is used to maintain the desired temperature inside the incubator.

5.Perforated Shelves:

The perforations on the shelves allow circulation of hot air inside the incubator.

6.L-shaped Thermometer:

A thermometer is placed on the top part of the outer wall of the incubator to monitor temperature.

7.HEPA Filter:

Some advanced incubators are provided with HEPA filters to reduce contamination caused by air flow.

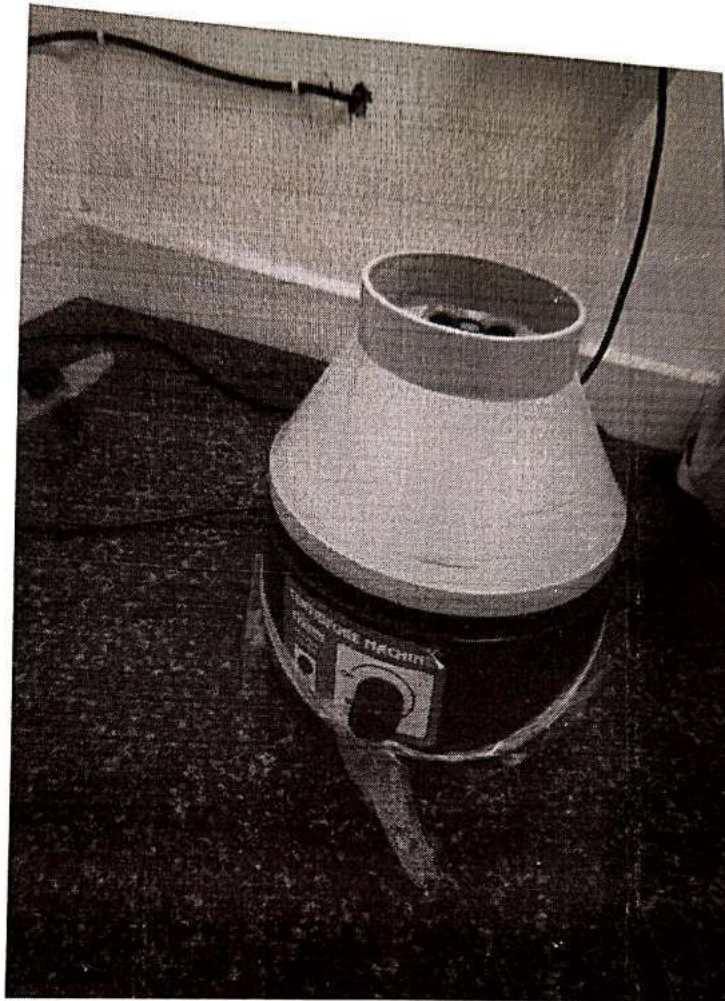
8.Humidity and Gas Control:

Some incubators have a reservoir containing water to maintain humidity inside the chamber.

- Uses of Incubator

1. Incubators provide controlled conditions for sample storage before processing.
2. They provide a contamination-free environment for cell and tissue culture.
3. They are used for growth and storage of bacterial culture colonies.
4. They are used in microbiology, biochemistry, pharmaceutical work and food analysis.
5. Provides suitable conditions for growing microorganisms like bacteria and fungi
6. Used in experiments, research, and testing
7. Maintains constant temperature (usually 37°C for bacteria)
8. Used in cell culture and tissue culture
9. Maintains controlled CO₂ levels for cell growth
10. Essential in genetic and pharmaceutical research

- **Centrifuge**



Centrifugation plays an important role in both biological and industrial fields. Medical laboratories use centrifuges to separate plasma from heavier blood cells. Modern centrifuges can also separate mixtures of particles of different sizes such as cell components.

•Working Mechanism of Centrifuge

The centrifuge works on the principle of centrifugal force. When the centrifuge rotates at high speed, the heavier particles move outward and settle at the bottom of the tube, while lighter particles remain at the top. This process helps in separating different components of a mixture based on their density.

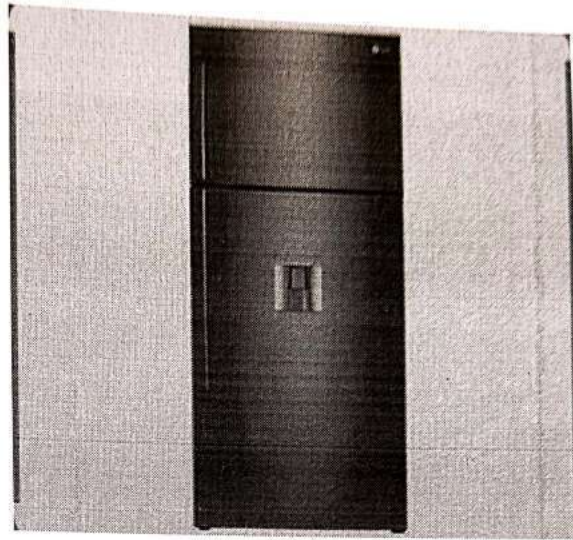
•Uses of Centrifuge

1 Centrifuge is used to separate solids suspended in a liquid by sedimentation. 2 It is used to separate blood components such as plasma, red blood cells, white blood cells, and platelets.

3 It is used in laboratories for biochemical and microbiological analysis.

4 It is also used in medical, research, and industrial laboratories

- Freeze-



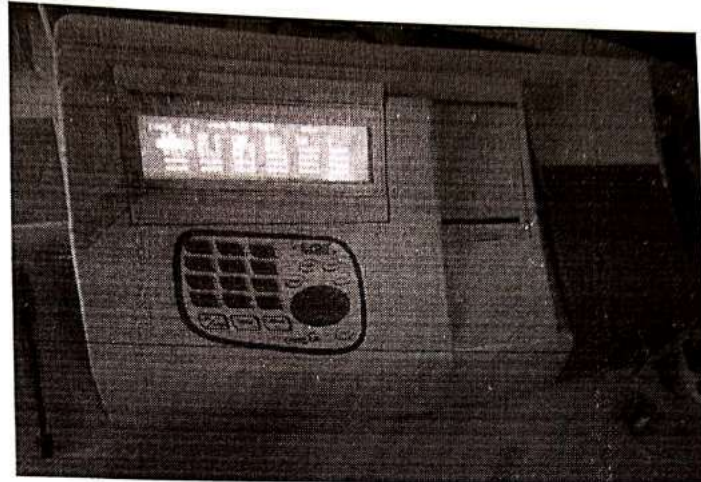
Laboratory freezers are used for storing and maintaining low temperatures for different biological materials. They help in preserving samples for a long period of time. Freezers are commonly used in laboratories to store blood plasma, serum, vaccines and other medical or pharmaceutical products. They maintain a constant low temperature which prevents the growth of microorganisms and protects the samples from damage.

A laboratory freezer is an important equipment because it is necessary for the long-term storage of biological materials such as bacterial cultures, tissue samples, vaccines and certain chemicals.

- Uses of Freezer

1. It is used to store blood, serum and plasma samples.
2. It is used to preserve vaccines and medicines.

- Analyzer –



A medical laboratory device used to calculate the concentration of certain substances within samples of serum, plasma, urine, and other body fluids.

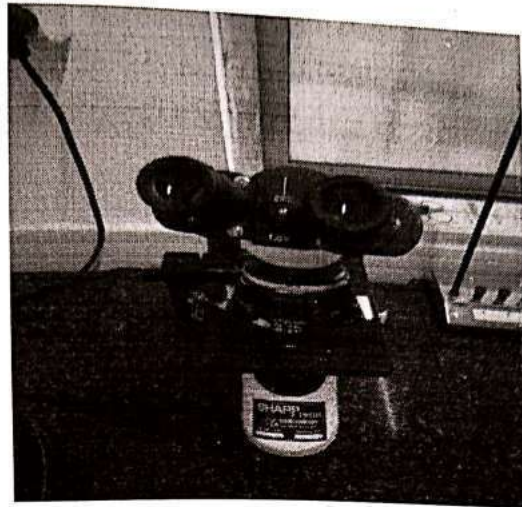
- Benefits of Analyzer –

1 Analyzers test fluids for metabolites, electrolytes, proteins, and drugs.

2 They ensure timely, accurate testing and speed up complex biochemical reactions. 3

These instruments streamline laboratory workflows and provide fast, reliable diagnostic reports.

• Microscopy –



Microscopy deals with the enlargement of microscopic objects in order to make them visible to the naked or unaided eyes

The instrument used for enlargement of such microscopic objects is called as the microscope.

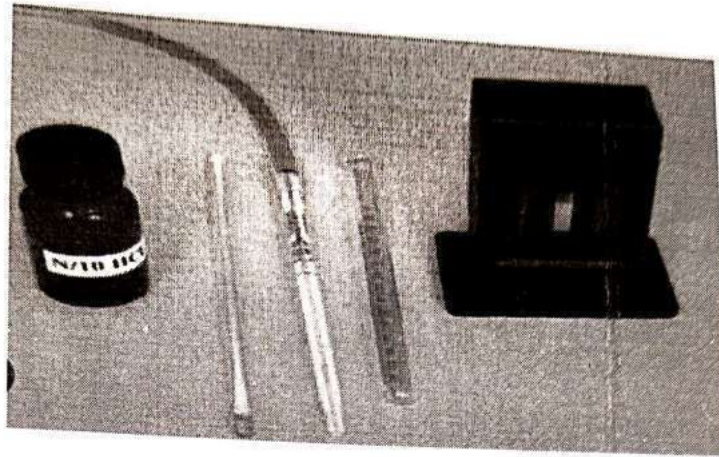
Light Microscope:

It uses natural or artificial light to illuminate the object and system of glass lens for magnification, light microscopes are extremely versatile instruments.

• **Principle:-**

As mentioned earlier, light microscopes visualize an image by using a glass lens, and magnification is determined by, the lens's ability to bend light and focus it on the specimen, which forms an image. When a ray of light passes through one medium into another, the ray bends at the interface causing refraction. The bending of light is determined by the refractive index, which is a measure of how great a substance slows the speed of light. The direction and magnitude of the bending of the light are determined by the refractive indexes of the two mediums that form the interface.

- **Test -**



Hemoglobin-Hb can be measured by 4 different principle like color, specific gravity iron concentration or oxygen combined capacity.

- **Saheli's Method**

Hb is converted in to acid hematin by the addition of 0.1 N Hcl and resulting brown color is comp air with standard brown glass the intensity of brown color is depend on Hb concentration in the blood.

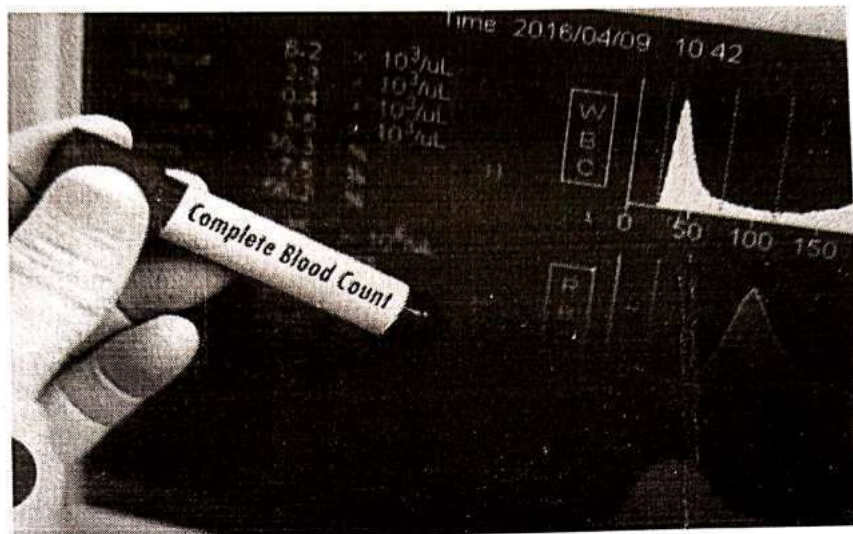
- **Sahali's Hb meter consist of**

1. Color completer
2. Qraduated tube
3. Hb pipette (20~1)
4. N/Hcl
5. Distilled water
6. Dropper
7. 18/43

- **Procedure**

1. Take 0.1 N HCl in sahalis tube at lowest mark.
2. Draw blood of to 20~llnake in Hb pipette by dvoiding bubble, wip excess blood on side of pipette with bubble.
3. Transfer blood into tube, rich the pipette mix well by sheking tube allow to stand at list to minute.
4. Dilute solution with distilled water (D/W) by adding few drops at a time by mixing reaction mixture until colour matches with the glass plate in the compareter.
5. After matching the level of fluid is noted this is the percentage of Hb present in blood.

• Complete blood counter –



1. Definition

A CBC machine is an automated device that counts and analyzes blood cells such as red blood cells, white blood cells, hemoglobin, and platelets to evaluate a person's health.

2. Parameters Measured

1. The CBC machine measures several blood components, including:
2. RBC (Red Blood Cells) – carry oxygen
3. WBC (White Blood Cells) – fight infection
4. Hemoglobin (Hb) – oxygen-carrying protein
5. Hematocrit (HCT) – percentage of RBCs in blood
6. Platelets (PLT) – help in blood clotting
7. MCV, MCH, MCHC – RBC indices
8. RDW – variation in RBC

- **Principle / Working Mechanis**

CBC machines work mainly on these principles:

1. Electrical Impedance (Coulter principle) – counts and measures the size of blood cells.
2. Flow Cytometry / Light Scatter – identifies different types of cells.
3. Colorimetry – measures hemoglobin concentration.

- **Procedure (Simple)**

1. Blood sample is collected in an EDTA tube.
2. The sample is placed in the CBC analyzer.
3. The machine dilutes and processes the blood.
4. Cells are counted and analyzed automatically.
5. The machine prints a CBC report.

- **Materials Required**

1. Clean glass slide
2. Sterile cotton balls & alcohol swabs
3. Lancet (for finger pricking)
4. Biohazard disposal container
5. Monoclonal Antibodies (MAB) kit: Anti-A, Anti-B, and Anti-D (Rh factor)

- **Procedure Summary**

Preparation:

Draw three circles on a clean glass slide.

Adding Antibodies: Place one drop of Anti-A in the first circle, Anti-B in the second, and Anti-D in the third.

Sampling:

Clean the ring fingertip with alcohol, prick it with a sterile lancet, and wipe away the first drop of blood.

Testing:

Place a fresh drop of blood into each of the three circles containing the antibodies.

- **Mixing:**

Use a clean toothpick to mix the blood and antibodies gently.

Wait one minute to observe agglutination (clumping).

Interpreting Results

Agglutination occurs when the antigens on the red blood cells react with the corresponding antibodies.

- **These test they can indicate the A+ positive blood group.**

• Danguue Test –



CBC test for dengue: Dengue fever is manifested by a decrease in White Blood Cells (WBC) < 5000 cells/mm³ count (leukopenia), platelet count (thrombocytopenia) < 150,000 cells/mm³ and an increase in hematocrit value (5-10%) with no evidence of plasma leakage.

A positive NS 1 test result confirms dengue virus infection without providing serotype information. A negative NS1 test result does not rule out infection. People with negative NS 1 results should be tested for the presence of dengue IgM antibodies to determine possible recent dengue exposure. Dengue NS1 IgM/IgG

The following are ranges -

Sr. no.	Test	Normal Range
1	IgG & IgM	Less than 1.64 IV =negative. More than 2.85 IV = positive.
2	Hemoglob n	Men = 13.3 to 16.6 gm/dL Women = 11.6 to 15
3	WBC	4500 - 11000 /mltr
4	RBC	Men - 4.0 to 5.9 x 10 ¹² /L Women - 3.8 to 5.2 x 10 ¹² /L

Fill the Dengue Antibody sample dropper up to lower circular part with 10 ul specimen (serum/ plasma) and add the specimen to the sample well's' of antibody device. Add 2 drops (70 ul) of sample (serum/ Plasma) using Dengue Antigen Test sample dropper to the sample well of antigen device. Read result at 20 minutes.

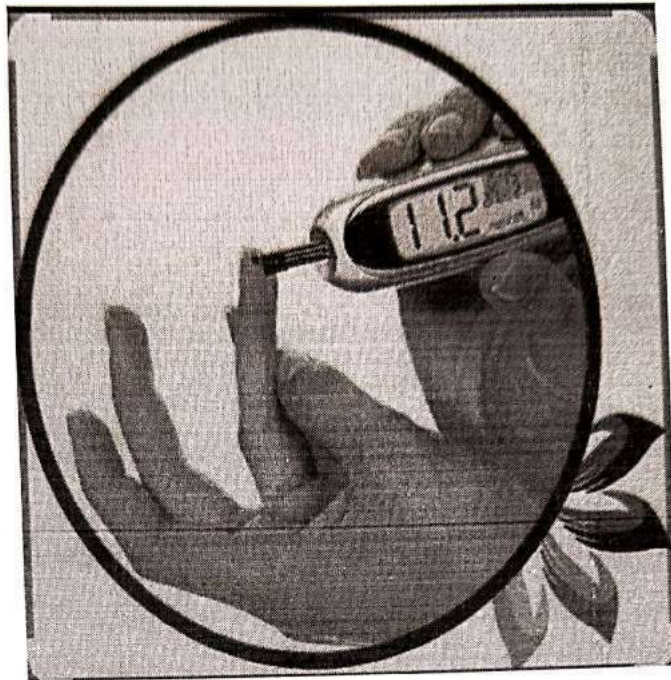
The most dangerous time of dengue fever occurs from day 3 to day 7 (from the time of onset first symptom of the disease). So how many days fever, dengue fever test? Patients can take a dengue test (dengue test) from the 3rd day since the first fever appeared, ie the fever has been 3 days.

When symptoms do occur, they may be mistaken for other illnesses - such as the flu - and usually begin four to 10 days after you are bitten by an infected mosquito. Dengue fever causes a high fever - 104 F (40 C) -

They of the following signs and symptoms:

1. Headache.
2. Muscle,
3. Bone or joint pain

- Blood sugar (Fasting pp) blood test :



The Blood Sugar (F, PP) blood test is performed in two stages: F (fasting) and PP (post-prandial) (Post Prandial). The blood test F (fasting) provides important information about the body's ability to regulate blood sugar levels. The PP test is used to detect the quantity of glucose present in the blood after eating.

Glucose fasting (F) and Post Meal (PP) Test (Fasting and Post Prandial Blood Sugar Test) It is a simple blood test that is used to detect fasting blood sugar (FBS) levels and post prandial blood sugar (PPBS) levels. Here the sugar which is measured in blood is glucose. Test results vary by age and are usually measured in milligrams per deciliter (mg/dL.). Normal results for the 2-hour postprandial test based on age are: For those who don't have diabetes: less than 140 mg/dL. For those who have diabetes: less than 180 mg/dL.

Blood sugars by age

A) Sugar Test

-Glucose Post Prandial (pp)-70-110 mg/dl -Glucose Fasting-100-125 mg/dl

- Routine Urea test –



- Routine Urine Culture

Routine urine cultures can look for a urinary tract infection (UTI) and see which germs are causing it

For a urinalysis, your urine sample is evaluated in three ways: visual exam, dipstick test and microscopic exam

Urine drug tests are most commonly used to detect alcohol, amphetamines, benzodiazepines, opiates/opioids, cocaine and marijuana

- Urine test reveal

Diabetes or prediabetes.

Chronic kidney disease Kidney

or bladder stones.

Kidney or bladder cancer.

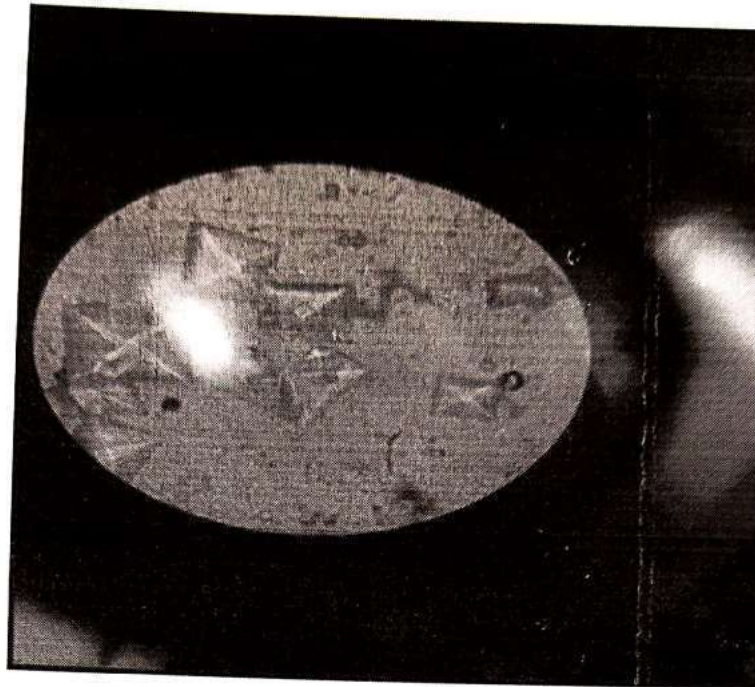
Bacterial or yeast infections.

A urinary tract disorder.

Sexually transmitted infections (STIs)

Liver or bile duct damage.

• **Microscopic Observation-**



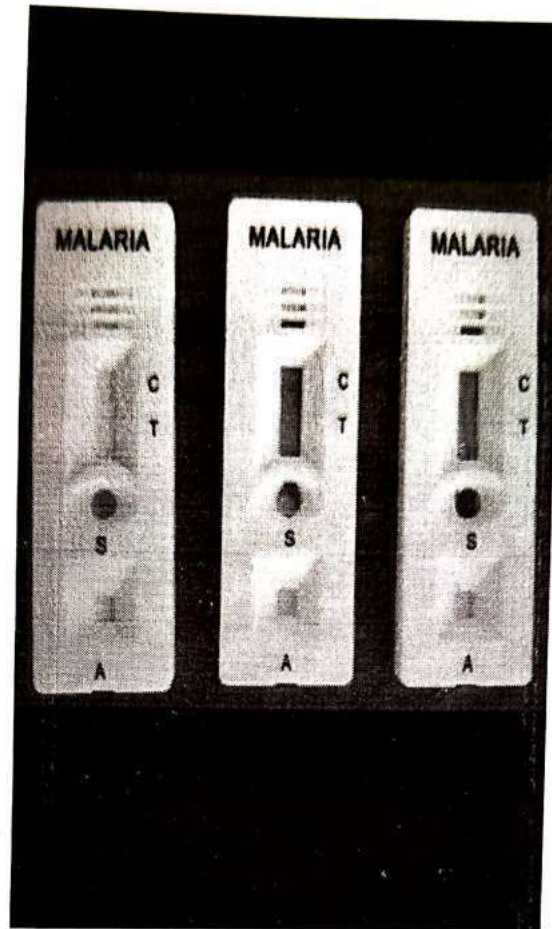
Microscopic Examination of urine –

1. It is a lab test where a urine sample is viewed under a microscope to identify cells, bacteria, yeast and crystals.
2. It helps to diagnose urinary tract infections, diseases, kidney stone.
3. If urine indicates presence of RBC then kidney infection or bladder infection may be present.
4. WBC often indicates infections such as UTI and inflammation.
5. Bacteria, yeast or parasite are clear signs of infections.
6. Red cell casts and white cell casts indicate kidney problems.
7. Crystals indicate probability of kidney stone.

Conclusion and skills learned –

1. Handling of various instruments.
2. To know the importance of various diagnostic tests.
- 3 .Practical skills.
4. To know the principles of diagnostic tests and their applications. •

- **Malaria –**



1. Malaria is a mosquito-borne disease caused by parasites of the genus Plasmodium. The malaria test helps to identify the parasite in the patient's blood.

2. Aim

To detect malaria parasites in the blood sample.

3. Materials

- Sterile lancet or syringe
- Glass slide
- Microscope
- Staining reagent (Giemsa stain)
- Cotton and spirit

4. Procedure

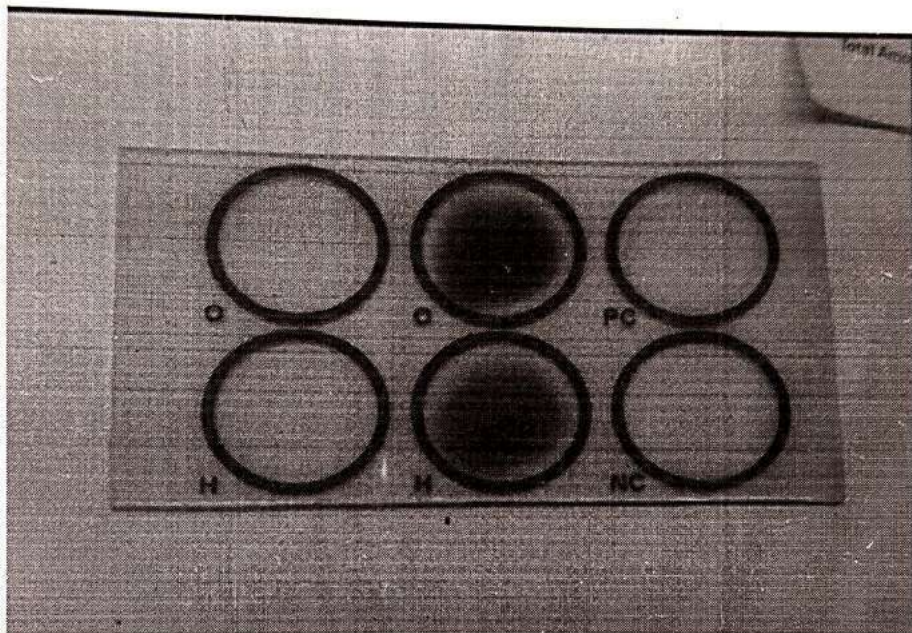
1. Clean the finger with spirit.
2. Prick the finger with a sterile lancet.
3. Place a drop of blood on a clean glass slide.
4. Prepare thick and thin blood smear.
5. Stain the smear with Giemsa stain.
6. Observe under microscope for malaria parasites.

5. Result

Positive: Malaria parasite is seen in the blood smear.

Negative: No malaria parasite is found

- **Widal test –**



- It is an serological blood test used to detect antibodies produced by immune system. In response to Salmonella bacteria.
- This bacteria causes typhoid. In this test it identifies antibodies against the bacterial antigen O and H. In this test the blood serum is mixed with Salmonella antigens O and H slides or in tubes.
- If the agglutination is formed then the test is positive. It helps to diagnose typhoid / paratyphoid fever to monitor treatment response.

- **Aim**

To detect antibodies against Salmonella organisms in the patient's blood serum.

- **Materials**

1 Patient serum

2 Widal antigen (O and H antigens)

3 Test tubes or slide

4 Micropipette

5 Saline

6 **.Test tube rack**

- **Procedure**

1 Collect the patient's blood sample and separate the serum.

2 Add a drop of serum on the slide or in test tubes.

3 Add Widal antigen (O and H antigen) to the serum.

4 Mix gently and observe for agglutination (clumping).

- **Result**

Positive: Agglutination occurs, indicating typhoid infection.

Negative: No agglutination occurs

- **Bilirubin Test-**

Blood Chemistries Report

IIN: 1520156 Sex: Male Age:
 LAB No: 5711099 Specimen type: Class:
 06/09/2015 Received date: 06/09

		Reference Range
Albumin		6.6 - 8.3
Total bilirubin		3.5 - 5.2
Direct bilirubin		2.4 - 3.5
AST (SGOT)	2,980 (High)	0.3 - 1.2
ALT (SGPT)	3,560 (High)	0.0 - 0.2
ALP		0 - 35
		0 - 45
		30 - 120

Date: _____ Approved by: _____

The bilirubin test is a laboratory test used to measure the level of Bilirubin in the blood. It helps to evaluate liver function and diagnose diseases like Jaundice.

- **Aim**

To estimate the level of bilirubin in the blood sample.

Materials

1. Patient serum
2. Test tubes
3. Pipette
4. Diazo reagent
5. Spectrophotometer or colorimeter

- **Procedure**

1. Collect blood sample and 2 separate the serum.
3. Take serum in a test tube.
4. Add diazo reagent to the serum.
5. Mix well and allow the reaction to occur.

Result

Normal bilirubin level: About 0.3 – 1.2 mg/dL.

High level: Indicates liver disease, bile duct obstruction, or jaundice.

Types of Bilirubin Measured

Total Bilirubin – Total bilirubin in blood.

Direct (Conjugated) Bilirubin – Bilirubin processed by the liver.

Indirect (Unconjugated) Bilirubin – Bilirubin before reaching the liver.

Normal Liver Bilirubin Levels-

Total bilirubin: 0.3 – 1.2 mg/dL

Direct bilirubin: 0 – 0.3 mg/dL

Indirect bilirubin: 0.2 – 0.8 mg/dL

Result –

2 Normal bilirubin level:-

Liver is functioning properly.

3 High Total Bilirubin:

May indicate Jaundice or liver dysfunction.

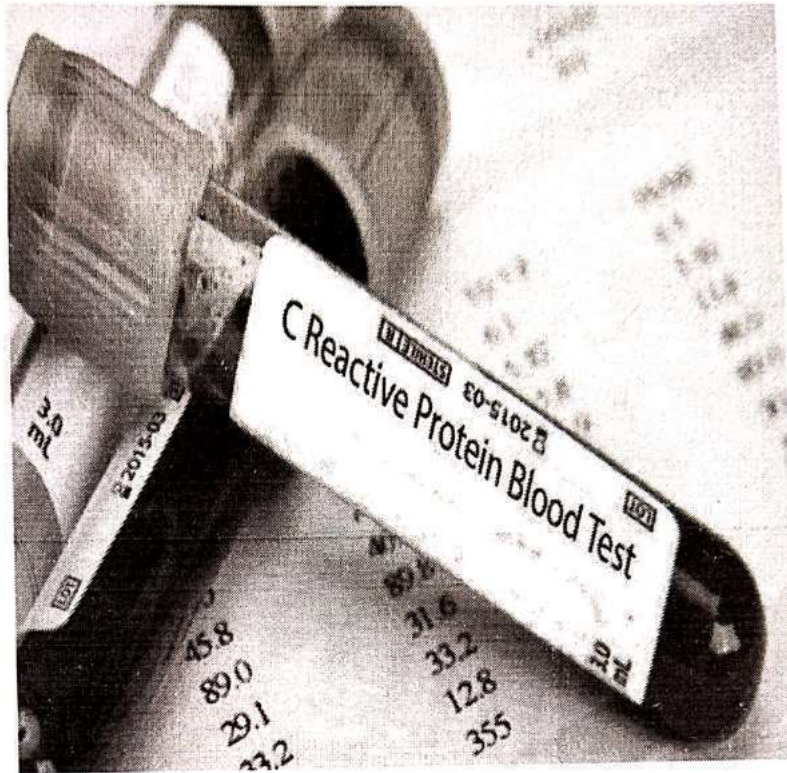
4 High Indirect (Unconjugated) Bilirubin:

May indicate excessive breakdown of red blood cells such as Hemolytic Anemia.

5 High Direct (Conjugated) Bilirubin:

1 May indicate liver or bile duct problems such as Hepatitis or Gallstones.

- **C -reactive protein –**



Introduction

The C-Reactive Protein test is a blood test used to detect the level of C-reactive protein in the blood. This protein is produced by the liver during inflammation or infection.

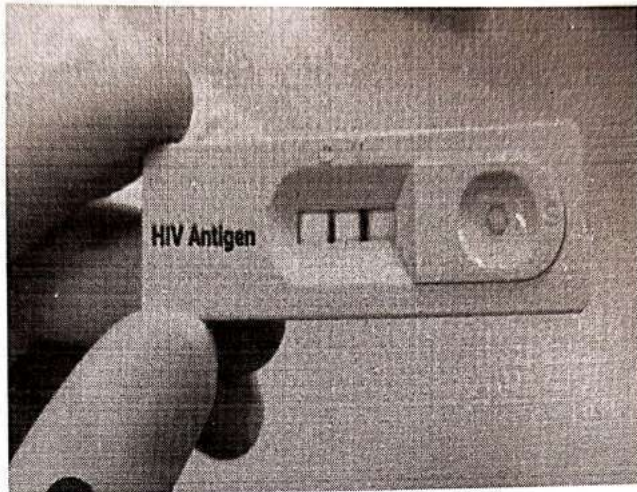
- **Aim**

To detect and measure the level of C-reactive protein in the patient's blood.

- **Materials**

1. Patient serum
2. CRP latex reagent
3. Test slide
4. Micropipette
5. Mixing stick

- **HIV –**



The HIV test is a laboratory test used to detect infection caused by the Human Immunodeficiency Virus. This virus attacks the immune system and can lead to Acquired Immunodeficiency Syndrome.

- **Aim**

To detect antibodies against HIV in the patient's blood sample.

- **Materials**

1. Patient serum or blood 2sample
3. HIV test kit
4. Micropipette or dropper
5. Test strip or cassette
6. Buffer solution

Laboratory safety includes rules, precautions, and protective measures followed while working in the laboratory.

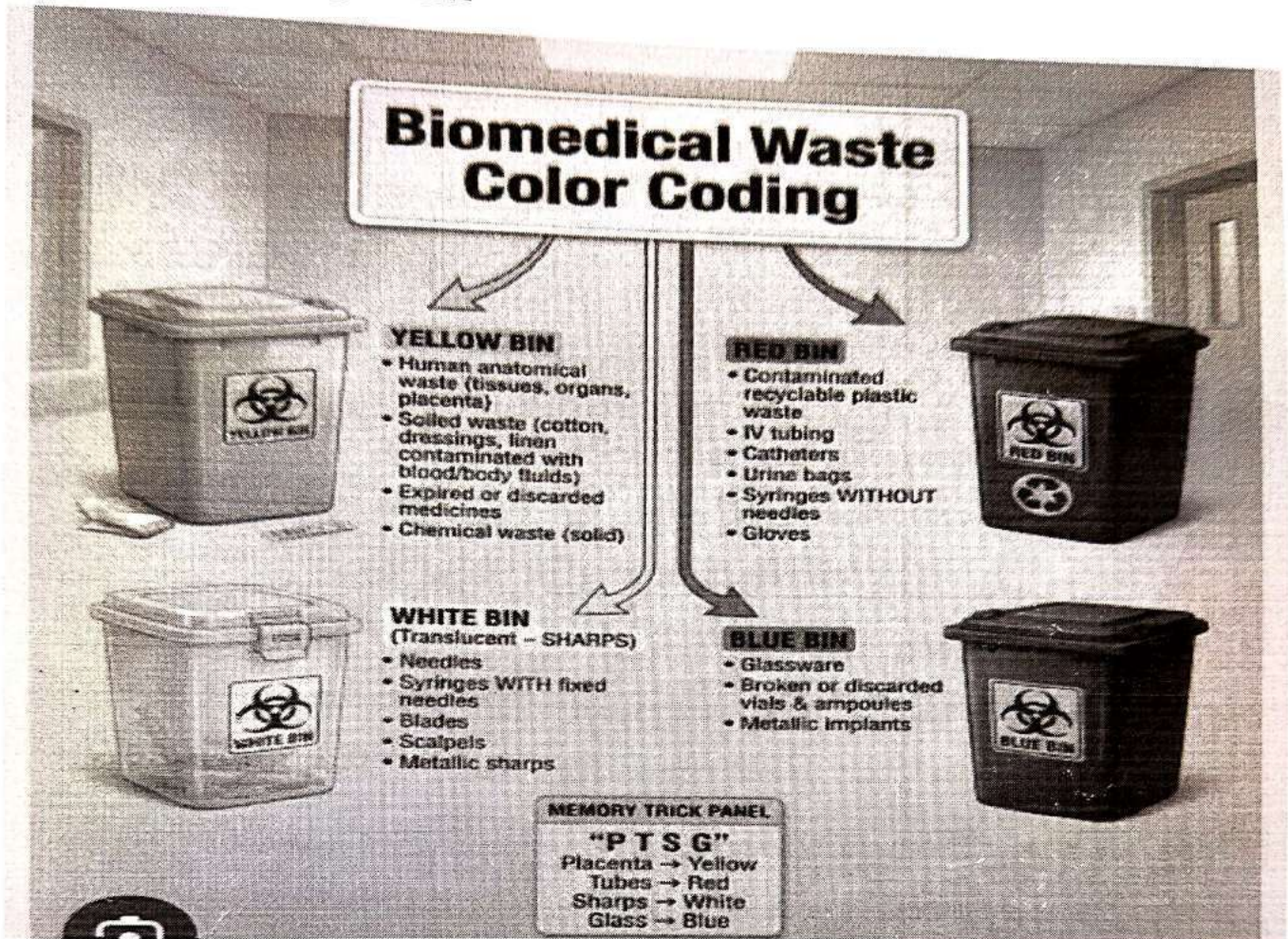
- **General Safety Rules**

- i. Always wear personal protective equipment such as lab coat, gloves, mask, and safety goggles.
- ii. Do not eat, drink, or smoke inside the laboratory.
- iii. Handle chemicals, reagents, and biological samples carefully.
- iv. Wash hands before and after laboratory work.
- v. Keep the working area clean and organized.
- vi. Label all chemicals and samples properly.
- vii. Follow instructions for operating laboratory instruments.
- viii. Report accidents or spills immediately to the supervisor.

- **Personal Protective Equipment (PPE)**

- i. Personal protective equipment helps protect laboratory workers from hazards.
- ii. Examples include:
- iii. Lab coat
- iv. Gloves
- v. Face mask
- vi. Safety goggles and closed shoes

• Waste Management -



Laboratory waste management is the process of collecting, segregating, treating, and disposing of laboratory waste safely. Proper waste management prevents the spread of infection and protects the environment.

• Types of Laboratory Waste

1. Biological waste– Blood samples, tissues, cultures of microorganisms.
2. Sharps Waste – Needles, blades, broken glass, syringes.
3. Chemical waste– Acids, reagents, solvents, and laboratory chemicals.
4. General Waste – Paper, plastic, packaging materials.
5. Waste Segregation
6. Waste should be separated at the source using different color-coded containers.

• Learning outcome of training

- Here, I have reached the conclusion of this report on the topic "CLINICAL LABORATORY" would like to share my experience while working on this report. I learned many new things about health, and it was a wonderful learning experience for me.
- This report has enhanced my thinking skills and deepened my interest in this subject. I have learned a lot about problem-solving and how to tackle challenges effectively. I have gained an understanding of the role of microbiology in testing blood and urine samples. I also learned about the importance of effective communication and cooperation skills required in the laboratory setting.
- Additionally, I have learned about various tests related to the human body and urine, such as Blood Grouping HB, Dengue, Sugar, CBC, HIV, and semen analysis. I have also understood the procedures and protocols used in performing tests in the clinical laboratory.
- Most importantly, I have acquired knowledge about collecting blood samples from patients using the vein puncture method. Thank you for entrusting me with this report. I thoroughly enjoyed the process of completing it.