

Lect.2.

Laboratory Apparatus and Their Uses:

1- Glass Beakers

A beaker is a common container in most labs. It is used for mixing, stirring, and heating chemicals. Most beakers have spouts on their rims to aid in pouring. They also commonly have lips around their rims and markings to measure the volume they contain, although they are not a precise way to measure liquids. Beakers come in a wide range of sizes.



2-pipets

There are a large variety of pipettes designed to accomplish specific goals. However, they are all for measuring an exact volume of liquid and placing, it into another container.



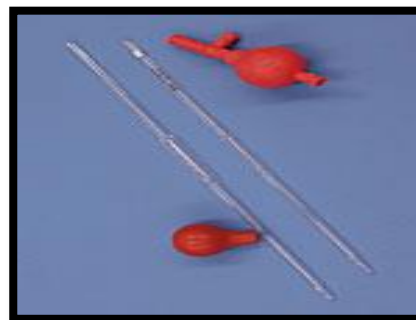
3-Graduated cylinders

This is a primary measuring tool for the volume of a liquid. There are several markings up and down the length of the container with specific increments. Graduated cylinders come in many sizes. The smaller they are in diameter, the more specific the volume measurements.



4-Pipets Bulbs

The orange pipet bulbs can be used with The 10 ml pipet.



5-Thermometers

A laboratory thermometer is used for measuring the temperature of liquids. It can be made of glass or it can be a thermocouple made of different metals.



6- Balances

A balance is used to weigh chemicals. The chemicals are always in some form of container and never placed directly on the balance, To use a balance to determine the weight of a chemical.





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7-PH Meter

A PH Meter used for measure the electron chemical potential between a known liquid inside the glass electrode and an unknown liquid outside .



8-Microscope

A Microscope is an instrument, for viewing objects that are too small to seen by the naked in eye.



9- Spectrophotometer

A Spectrophotometer is an instrument designed to detect the amount of radiant light energy absorbed by molecules.





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10-Volumetric flask

A Volumetric flask is used to measure very precise amount of liquid .



11-centrifuges

A centrifuge is a piece of equipment . that puts an object in rotation around a fixed axis (spins it in a circle), applying a potentially strong force perpendicular to the axis of spin (outward). The centrifuge works using the sedimentation principle, where the centripetal acceleration causes, denser substances and particles to move outward in the radial direction.

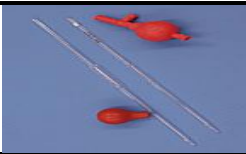
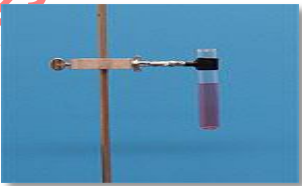


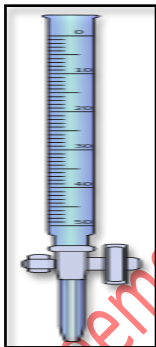
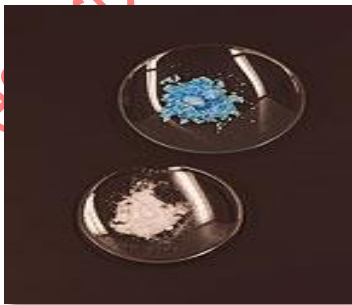
At the same time, objects that are less dense are displaced and move to the center. In a laboratory centrifuge that uses sample tubes, the radial acceleration causes denser particles to settle to the bottom of the tube, while low-density substances rise to the top.

Assist prof

Lec.2.**Figure .1. some of common laboratory wares.**

No.	Figure	Name
1		Bunerr
2		Crucible cover
3		Crucible in Triangle
4		Crucible tongs
5		Dropper in action
6		Dropper
7		Flasks
8		Evaporating dish
9		Forceps

10		Funnel
11		Goggles
12		Pinch Clamp
13		Pipets and Bulbs
14		Ring stand with support
15		Clamp
16		UtiClamp
17		Wash Bottle

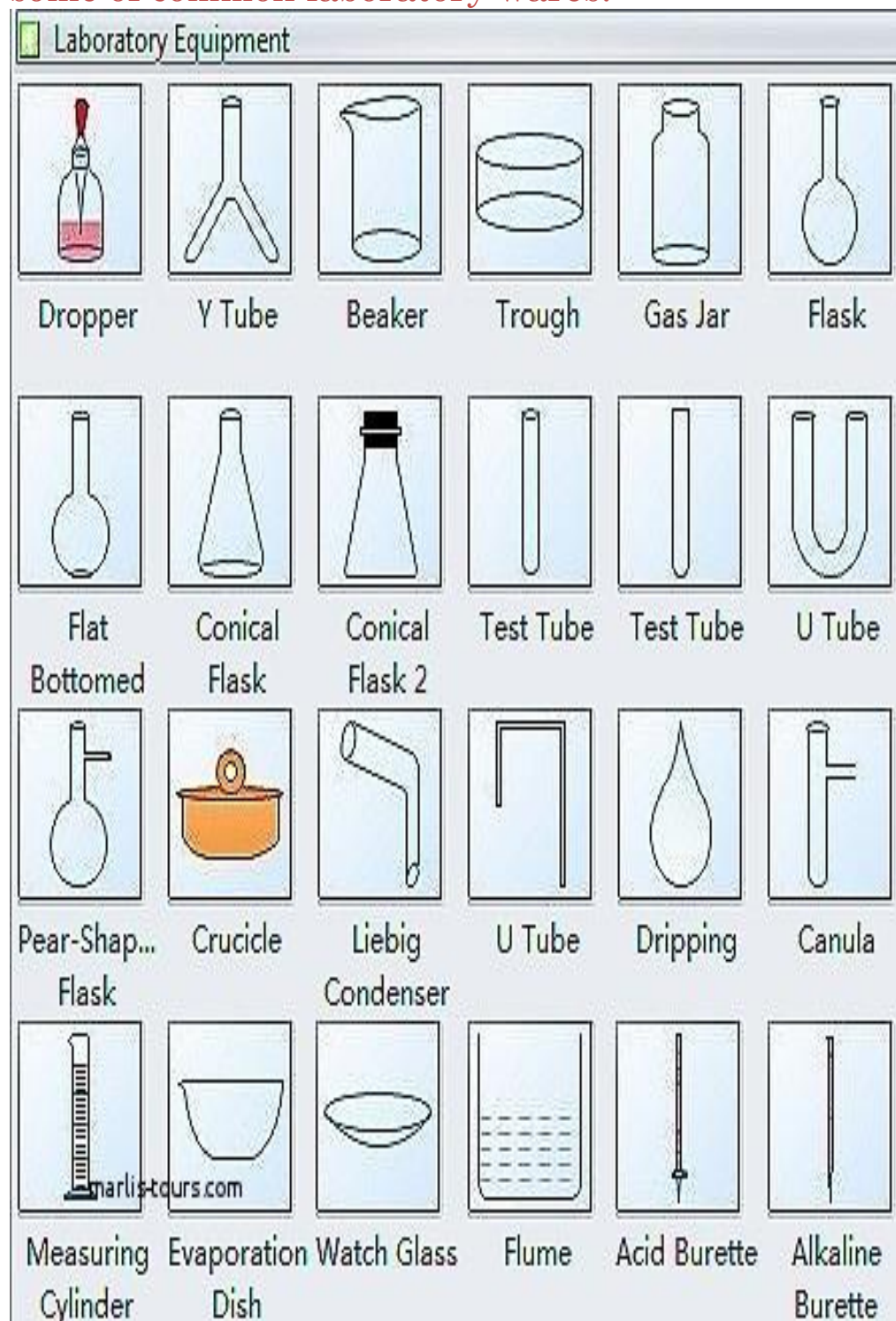
18		Tube & Holder in Action
19		Combined for Heating
20		Buret
21		Watch glass
22		Graduated Cylinders

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23		Glass wear
24		Heat
25		Eye and face
26		Sharps
27		Electrical
28		Animal
29		Chemical
30		Fire

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some of common laboratory wares.



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Laboratory Safety Symbol found in text book

1-Toxic \ poison

are substances that cause disturbances in organisms, usually by chemical reaction or, other activity on the molecular scale, when an organism absorbs a sufficient quantity.

The fields of medicine (particularly veterinary) and zoology often distinguish a poison from a toxin,

Poisons are toxins produced by organisms in nature, and venoms are toxins injected by a bite or sting (this is exclusive to animals). The difference between venom and other poisons is the delivery method. Industry, agriculture, and other sectors use poisons for reasons other than.



2-Corrosives

A Substance that can destroy or burn living tissue and can eat away at other materials .



3-Explosive

A Substance that can explode if exposed to heat or Flame.





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4- Flammable

Flammable is used for materials which, ignite more easily than other materials, are more dangerous and more highly regulated,



5-Irritant:

Substance that cause in Flammation upon contact with skin .



6-Environmental

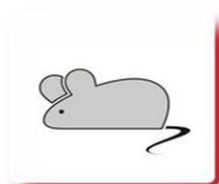
Substance that are harmful to the environmental , they must be disposed of properly, not washed down the drain.





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some of common laboratory wares.



Animal hazard



Sharp instrument hazard



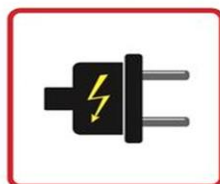
Heat hazard



Glassware hazard



Chemical hazard



Electrical hazard



Eye & face hazard



Fire hazard



Biohazard



Laser radiation hazard



Radioactive hazard



Explosive hazard

Assist professor



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LAB SAFETY



We want to avoid this.





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Questions For Lect1 & Lect 2

Q1\ why is Lab Safety important?

Q2\ Full in the blanks..

1-most organic solvents are -----, keep these liquid away from open flames.

2 - Before you leave the lab - ‘-----‘

3-If corrosive liquids touches your skin-----,

4-Do not ----- strong acids and organic substances together.

**5-If a chemical gets into your eye, have someone help you. Hold your eye-----and-----, your eye for at least -----.minutes.
Be sure the TA/instructor knows.**

Q3\ put (T) or (F) of the following

1-Always add acid to water, not the reverse. Never add water to acid the mixing can produce a lot of heat and dangerous spattering().

2-A beaker is a common container in most labs. It is used for mixing, stirring, and heating chemicals.().

3-Pipets Bulbs The orange pipet bulbs can be used with The 10 ml pipet().

4-A balance is used to weigh chemicals The chemicals are always in some form of container and never placed directly on the balance().

5-Explosive A Substance that can explode if exposed to heat or Flame().

6-Toxic \ poison are substances that cause disturbances in organisms, usually by chemical reaction().

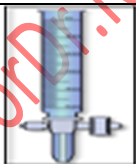
7-Corrosives A Substance that can destroy or burn living tissue and can eat away at other materials

8-A centrifuge is a piece of equipment that puts an object in rotation around a fixed axis (spins it in a circle().

8-A Spectrophotometer is an instrument designed to detect the amount of radiant light energy absorbed by molecules().

10-A PH Meter used for measure the electron chemical potential between a known liquid inside the glass electrode and an unknown liquid outside().

Q4\Give the name of laboratory wares.

			
1			
			
			
			
			
			

Q5\ choose the correct answer

1- Irritant is.....

- a) Substance that cause in Flammarion upon contact with skin**
- b) are substances that cause disturbances in organisms, usually by) chemical reaction.**
- c) The fields of medicine (particularly veterinary) and zoology**
- d) Poisons are toxins produced by organisms in nature**

2-Safety in the Laboratory RULES (Personal Safety).....

- (a) Safety goggles must be worn at all times**
- (b) No eating, drinking, or smoking in the lab**
- (c) Before you leave the lab, wash your hands**
- (d) all three choose**

3-thermometer is-----

- .a) used for measuring the temperature of liquids)**
- (b) is used to weigh chemicals**
- c) is an instrument designed to detect the amount of radiant light energy)**
- d) is of utmost importance in the labs, Your actions can and should) minimize the danger of injury**

4- Explosive is -----

- a)A Substance that can explode if exposed to heat or Flame)**
- b)A Substance that can destroy or burn living tissue and can eat) away**
- (C) The fields of medicine (particularly veterinary) and zoology**
- (d) is of utmost importance in the labs)**