

PHYSICAL SCIENCE LAB PROFILE



Ayan Arnab Sikshan Sanstha-B.Ed.

The University of Burdwan

Ajodhya, Kanksa, Burdwan-713148

Contents

Sl. No.	Subject	Page No.
1.	List Of Equipments With Description & Figure	3-15
2.	Importance Of Science Lab	16
3.	Future Plan	17

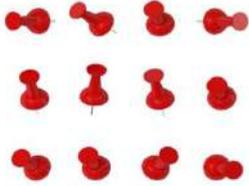
List of Equipments with Description & Figure

Name of Equipments	Description or Purpose	Figure
Resistance Box	A resistance box contains a set of resistance coils of known values.	
Thermometer	Thermometer is an instrument which is used for measuring temperature of a body.	
Ammeter	A ammeter is a device used for measuring large electric currents in circuits.	
Volt meter	A voltmeter is a device used for measuring electric potential difference between two points in a circuit.	
Galvanometer	A galvanometer is a device used for detecting feeble electric currents in circuits. The deflection is proportional to the current used.	
Tuning fork	It is a source of a standard frequency very useful in sound experiment where a frequency standard is needed.	

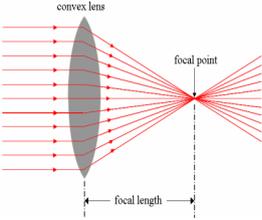
Bar Magnet	Bar Magnet is a one type of magnet used for drawing lines of force of the magnet in school level laboratory.	
Horse shoe magnet	A Horse shoe magnet is a U-shaped metal object that produces a magnetic field..	 wiseGEEK
Compass (Big)	A Compass is an instrument used for navigation and orientation that shows direction relative to the geographic cardinal directions or "points"	
Compass both side glass(Needle Magnet)	A Compass needle aligns itself and points towards the top of Earth's magnetic field, giving explorers and lost souls a consistent sense of direction.	

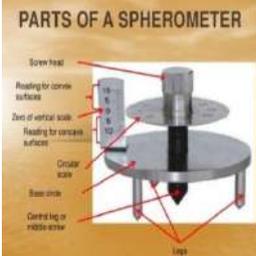
Stop clock	it is used for measurement of duration of an event or time interval between two events.	
Stop watch	It is used for more accurate measurement of duration of an event or time interval between two events.	
Day & wet Thermometer	It is an instrument used to measure the relative humidity of the atmosphere.	

<p>Max & Min Thermometer</p>	<p>Max/Min thermometers are used to record extremes of temperature during the day and night..</p>	
<p>Ring Bolt Apparatus</p>	<p>This apparatus is used for determining the softening point of asphalt, coal tar pitch, and other visco elastic bitumens in the range of 30° – 157° c.</p>	
<p>Electro Magnet</p>	<p>It is a one type of artificial magnet, when electric passes through, it acts as a magnet.</p>	
<p>ML Glass (Magnifying)</p>	<p>Magnifying glass is a convex lens. When an object is place near the convex lens, the image is magnified.</p>	
<p>Hare's Apparatus</p>	<p>An apparatus for comparing the densities of liquids in two separate vessels by means of their rise in two graduated vertical tubes immersed at their lower ends.</p>	
<p>Resonance Column Apparatus</p>	<p>The resonance column apparatus works on the phenomena of resonance of air column with tuning fork.</p>	

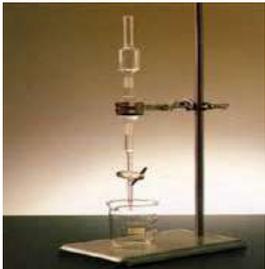
Drawing Board	Drawing board is a rectangular wooden board. It is used for many experiments like – drawing of lines of force of a magnet, determination of r.i using a glass slab and proving the laws of reflection etc in school level laboratory.	
Board Pin	Board pin is a short pin used to fasten items to a wall or board for display and intended to be inserted by hand.	
Hair Pin	It is used in physics lab for experiments like Reflection and Refraction.	
Multimeter (Digital)	It is an electronic measuring instrument that combines several measurement functions in one unit. A typical multimeter would include basic features such as the ability to measure voltage, circuit and resistance.	
Meter Bridge	Slide wire bridge or meter bridge is the practical form of Wheatstone bridge. Since the bridge uses 1 meter long wire, it is called meter bridge.	

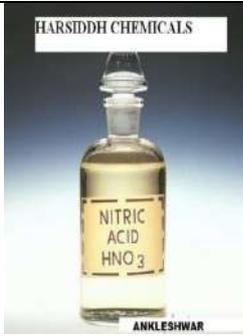
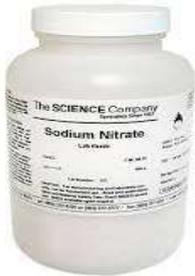
<p>Power Supply</p>	<p>It is used in laboratories as a substitute for cells and batteries.</p>	
<p>Half meter Scale</p>	<p>Wooden scale to measure any length up to half meter that is 50 centimeters.</p>	
<p>Ohm Law apparatus</p>	<p>Ohm Law apparatus is a device with circuit connection of ammeter, a voltmeter, a resistance, a rheostat, key and a battery. This apparatus is used for determination of unknown resistance.</p>	
<p>Physical Balance</p>	<p>The mass of a body is measured with a Physical Balance upto 1 milligram accurately.</p>	
<p>Physical Weight Box</p>	<p>Ideal weights are adjusted in a box for weighing masses.</p>	

<p>Specific Gravity Bottle</p>	<p>A small bottle or flask used to measure the specific gravities of liquid</p>	
<p>Pendulum</p>	<p>A simple pendulum is the simplest device for measuring time.</p>	
<p>Optical Bench</p>	<p>The Optical Bench is and consists of a long, rigid member with a linear scale applied to it. Holders for light sources, lenses and screens are placed on the apparatus so that image formation can be observed.</p>	
<p>Convex lens</p>	<p>Convex lenses are thicker at the middle .A Convex lens is a converging lens.</p>	
<p>Connecting wire</p>	<p>Connecting wire is a piece of wire used to attach two circuits or components together.</p>	

<p>Robber Pad</p>	<p>When the tuning fork is hit with a rubber, the tines begin to vibrate.</p>	
<p>Spherometer</p>	<p>The Spherometer is a simple instrument for determining the radius of curvature of convex or concave mirrors and lenses.</p>	
<p>Key</p>	<p>Key is a key of electrical accessory used in electric circuits to start and stop current in the circuit.</p>	
<p>Lycopodium powder</p>	<p>In physics experiment, because of the very small size of its particles, lycopodium powder can be used to demonstrate Brownian motion.</p>	

<p>Digital Balance</p>	<p>Digital balances are used by chemists for accurate weighting of a substance.</p>	
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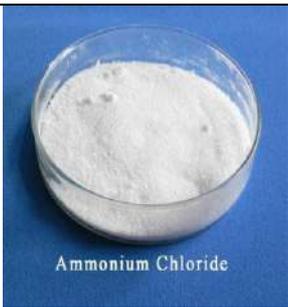
<p>Burette</p>	<p>A burette is a device used in analytical chemistry for the dispensing of variable, measured amounts of a chemical solution.</p>	
<p>Pipette</p>	<p>Pipette types that are used to measure liquids or fluids include serological, micro capillary, aspirating, bacteriological, Ostwald Folin, Mohr & Pasteur</p>	
<p>Beaker</p>	<p>A beaker is a simple container for stirring, mixing and heating liquids commonly used in many laboratories.</p>	
<p>Spatula</p>	<p>In laboratories, spatulas & micro spatulas are used for scraping, transforming or applying powders & paste like chemicals or treatments.</p>	
<p>Test tube Stand</p>	<p>Test tube stands or racks are commonly used in laboratories to keep test tubes upright so that the equipment does not roll away.</p>	
<p>Conical Flask</p>	<p>It is a type of laboratory flask which features a flat bottom, a conical body and a cylindrical neck.</p>	

<p>Sulfuric Acid</p>	<p>It is a highly corrosive strong mineral acid with the molecular formula H_2SO_4. The historical name of this acid is oil of vitriol.</p>	
<p>Hydrochloric acid</p>	<p>It is a clear, colorless, highly pungent solution of hydrogen chloride strong mineral acid with many industrial uses.</p>	
<p>Nitric acid</p>	<p>The formula of Nitric acid is HNO_3. It is a highly corrosive mineral acid. It is colorless but older samples acquire a yellow cast due to decomposition into oxides of nitrogen and water.</p>	
<p>Ammonia acid</p>	<p>It is compound of nitrogen & hydrogen with the formula NH_3. It is colorless gas with a characteristic pungent smell. It is both caustic & n hazardous.</p>	
<p>Sodium Nitrate</p>	<p>It is the chemical compound with the formula $NaNO_3$ It is a white solid which is very soluble in water.</p>	

Potassium Sulphate	(K ₂ SO ₄) it is a non-flammable white crystalline salt which is soluble in water. The chemical is commonly used in fertilizers, providing both potassium & sulfur.	
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Potassium Nitrate	It is a chemical compound with the formula KNO ₃ . It is an ionic salt of potassium ions K ⁺ & nitrate ions NO ₃ ⁻ . It occurs as a mineral niter & is a natural solid source of nitrogen.	
Potassium Hydroxide Pellet	It is an inorganic compound. Its molecular formula is KOH and is commonly called caustic potash.	
Sodium Hydroxide	It is an inorganic compound. Its molecular formula is NaOH. It is soluble in ethanol and methanol.	
Oxalic Acid	Oxalic acid is an organic compound with the formula C ₂ H ₂ O ₄ . It is colorless crystalline solid that forms a colorless solution in water.	

<p>Ethanol</p>	<p>Ethanol is ethyl alcohol, Ethanol is a renewable, domestically produced alcohol fuel made from plant material.</p>	
<p>Phenol</p>	<p>Phenol is also known as Carboic acid, is an aromatic compound with the molecular formula C_6H_5OH.</p>	
<p>Ferri Chloride Solution</p>	<p>Ferric Chloride Solution is a colorless to light brown aqueous solution that has a faint hydrochloric acid odor.</p>	
<p>Aniline</p>	<p>Aniline is a toxic organic compound with the formula $C_6H_5NH_2$.</p>	
<p>Sodium Nitrate</p>	<p>Sodium Nitrate ($NaNO_3$) salt is known as Chile saltpeter or Peru salt paper to distinguish it from ordinary salt paper.</p>	

<p>Calcium Chloride</p>	<p>Calcium Chloride is an ionic compound of Calcium and Chlorine. It is highly soluble in water.</p>	
<p>Ammonium Chloride</p>	<p>Ammonium Chloride (NH₄Cl) is a systematic and urinary acidifying salt.</p>	
<p>Ammonium Hydroxide</p>	<p>Ammonium Hydroxide is also known as Ammonia Solution or Ammonia liquor or simply Ammonia.</p>	
<p>Ammonium Carbonate</p>	<p>Ammonium Carbonate (NH₄)₂CO₃ is a colorless crystalline solid or a white powder with a strong odor of ammonia.</p>	
<p>Ammonium Oxalate</p>	<p>Ammonium Oxalate (C₂H₈N₂O₄ or (NH₄)₂C₂O₄) is a colorless salt under standard conditions and odorless and non-volatile.</p>	

<p>Phenolphthalene</p>	<p>Phenolphthalein ($C_2OH_{14}O_4$) is an organic compound used as a laboratory reagent and pH indicator.</p>	
<p>Measuring Flask</p>	<p>Measuring Flask (Volumetric cylinder) is a piece of laboratory glassware, used for precise dilutions and preparation of standard solutions.</p>	
<p>Measuring cylinder</p>	<p>Measuring cylinders are for holding measuring varying amounts of liquid.</p>	
<p>Dropping bottle</p>	<p>Dropping bottle is an instrument used to supply small quantities of a fluid to a test tube or other vessels.</p>	

Importance of Science Lab

- In pre-service and in-service teacher education courses the teaching skills are needed for the student-teacher to organize and facilitate meaningful practical activities and effective operation of the school science laboratory.
- Practical experiences familiarize the student-teacher with the pedagogical techniques needed to facilitate inquiry based laboratory method to appropriate science content.
- Safety equipment and annual safety training should be provided so that science teacher-educators and student-learners are well informed about yearly changes in safety procedures to ensure that students and educators are protected.
- Training to work with student-teachers for academic and remedial needs, so that Teacher Educators can differentiate instructions appropriately.
- Science labs are also the central part of every science curriculum.

Future Plan of Science Laboratory

- ❖ To uplift the conditions of lab with reference to the modern trends and research of Teacher Education.
- ❖ To introduce modern techniques on the new innovations of the science subject so that the interest and attitude of the student-teachers be positive towards the subject.
- ❖ To meet up the inquisitiveness and interest of the student-teachers the instruments should be provided for practical activities on the subject.
- ❖ For practical activities in the laboratory necessary support system to be provided to student teachers.