

Ministry of Education
Standard List of Science Equipment for School Science Laboratories
Requirements for Year 6 to 13- Specification

	Permanent Equipment
1.001	Accumulator- Lead Acid 2V Multiplate type. 2V. 20Amp/Hr. Transparent case of plastic. Supplied charge, but not filled, Supplied with electrolyte in separate container.
1.002	Accumulator- Lead Acid 2V Demo Nominal voltage 2V per cell. Final voltage 1.85V at the 10 hour rate of discharge. In polystyrene container with screw terminals and vent plugs. Supplied uncharged without acid, 2V, 20Ah.
1.003	Accumulator- Lead Acid 6V With 3 cells, Nominal voltage 2V per cell. Final voltage 1.85 V at the 10 hour rate of discharge. In polystyrene container with screw terminals and vent plugs. Supplied uncharged without acid, 6V 60Ah
1.004	Air Compression Ignitor Transparent cylinder with piston
1.005	Ammeter 0-5A Moving coil. DC Ammeter. Anti parallax mirror zero adjusted. Large clear dial. Sturdy protective cover (preferably transparent. 0-5A x 0.1A. colour coded. 4mm. socket and screw terminals. Scale not less than 50mm long.
1.006	Ammeter – Milli Moving coil type, for DC measurement only. Range 0 to 100 mA. Scale not less. than 50 mm. Long. Large clear dial. Study protective cover. Antiparallax mirror. Zero adjustor. 2 colour code 4 mm. socket and screw terminals. Graduated every 2 mA. With relevant shunts.
1.007	Anemometer (Cup Model) A portable hand held instrument providing a direct reading of wind speed in four different units. With plastic outer case and cups and engraved scales. Ranges 0-120 km/h, 0 to 35m/s, 0 to 12 Beaufort 0 to 60 kt.
1.008	Astronomical Telescope (Refraction Model) Aperture : 11.4mm Objective piece focal length 700mm, 600mm Finder scope : 5 x 24 Hybrid diagonal : 90 ⁰ Metal tripod with slow motion control rod for easy vertical micro adjustment Most height: 125cm. Accessory tray Standard 0.965 accessories include: Eye piece: SR4mm H 12.5mm, H 20mm. 3 X Barlow lens, 1.5 x erector
1.009	Audio Visual of Diversity of Organism 3.1.1 Diversity of organisms Domain -Archae

- Bacteria
- Eukarya

Domain – Eukarya

Kingdom – Protista

Fungi

Plantae

Animalia

Kingdom - Plantae

Phylum – Bryophyta

- Pterophyta

-Lycophyta

- Cycadophyta

- Coniferophyta

-Anthophyta

Kingdom – Fungi

Phylum – Chytridiomycota

- Zygomycota

- Ascomycota

- Basidiomycota

Kingdom – Protista

Phylum - Ciliophora

- Rhizopoda

- Chrysophyta

- Phaeophyta

-Rodophyta

- Chlorophyta

Kingdom – Animalia

Phylum- Coelenterata

Class – Hydrozoa

Scyphozoa

Anthozoa

Phylum – Platyhelminthes

Class – Turbellaria

Trematoda

Cestoda

Phylum – Nematoda

Phylum – Annelida

Class – Polychaeta

Oligochaeta

Hirudinia

Phylum – Mollusca

	<p>Class- Polyplacophora Bivalvia Gastropoda Cephalopoda</p> <p>Phylum – Arthropoda Class – Arachnida Chilopoda Diplopoda Crustacea Insecta</p> <p>Phylum - Echinodermata Class – Asteroidea Ophiuroidea Echinoidea Holothroidea Crinoidea</p> <p>These domains, kingdoms, phyla , classes should include</p> <ul style="list-style-type: none"> - General Characteristics - Appropriate examples - Pictures/ Videos (moving) of organisms - Identification (Characters) <p>(Time – 30 min)</p>
1.010	<p>Audio Visual of Ecosystems of Sri Lanka Ecosystems – rivers, lakes, estuaries, grassland, forest –their biotic and abiotic factors and artificial ecosystems (CD- 15 minutes)</p>
1.011	<p>Audio Visual of Genetic Engineering</p> <ul style="list-style-type: none"> - Glossary of genetic engineering - Definitions and theories of genetic Engineering - Genetic Engineering – Using microbes, plants and animals - Gene transferring - Cloning - Uses of genetic engineering in Agriculture <ul style="list-style-type: none"> Animal Husbandry Plant breeding Pest control Medicine <p>Threats and problems of Genetic Engineering</p> <ul style="list-style-type: none"> -Genetic code - Replication - Role of restriction enzymes - Vectors – Plasmids <ul style="list-style-type: none"> λ phage <p>(Time – 15 min)</p>

	<p>1 Animation of</p> <ul style="list-style-type: none"> • DNA recombinant technology • DNA Finger printing • Gene cloning • DNA extraction (10 min) <p>11.2.2 Non mendelian genetics – Incomplete dominance, poly allelism, gene interaction polygenic interaction, gene linkage, human sex determination.</p> <p>11.1.6 Mutation – types, causes & human genetic disorders.</p> <p>11.1.8 Evolution – Larmask and Darwin’s evolution theory (10 min)</p>
1.012	<p>Audio Visuals of Minerals in Sri Lanka DVD of 30 minutes. Introduction – differences of rocks and minerals Types of rocks – Igneous, sedimentary, metamorphic (with picture and description) Rock cycle Digestion of rocks Types of minerals – granite, Gneiss, appetite, graphite, Ilmanite, rutile, zercone, rock salt, calcite, Dolomite, Mica, Feldspar, Quartz, Keoline, Corundum, Lime stone (pictures with description – “oral & written”, Chemical composition, physical properties, hardness, usages, locations in Sri Lankan Map, Sustainable use of these minerals.(30 minutes) About the radioactivity of some minerals and rocks Impact of that on health</p>
1.013	<p>Audio Visual of Nano Technology Introduction to Nano Technology Applications (15 min)</p>
1.014	<p>Audio Visual of Structure and Function of Plant Tissue <u>Structures and Function of Plant Tissue</u> CD/VCD (30min) Cholenchyma Paranchyma Sclerenchyma Phloem Xylem <u>Epithelial Tissues</u> Cuboidal, Squamose Columner Cilliated Pseudostratified Transitional Stratified 2.4.2 – Hypothesis of enzyme reaction</p>

- Lock and Key theory
- Induced Theory

(Time – 10min)

2.4.4 – Cellular respiration

- Structure of mitochondria
- Anaerobic and Aerobic respiration
- Glycolysis
- Krebs Cycle
- Electron transport

NADH₂, FADH₂ oxidation

(Time – 15 min)

Photosynthesis

- Light Reaction
 - Cyclic photophosphorylation
 - Non Cyclic photophosphorylation
 - Photolysis of water

Dark reaction

Carboxylation
PGA reduction
RuBP

Photosystem I & II

Structure of chloroplast

C4 pathway

Kranz anatomy of C4 plant leaves

Definition of Photosynthesis

Significance of Photosynthesis

(Time 15 min)

6.1.4 – Phloem translocation

Structure of Phloem

3D

LS

TS

Pressure flow hypothesis of phloem translocation

- Phloem uploading
- Phloem Downloading
- Transfer cells

Animation of the above hypothesis

(Time – 10 min)

6.1.2 – Water movement in plant

Xylem structure

3D

LS

TS

	<p>Xylem – uplifting of water</p> <ul style="list-style-type: none"> -Transpiration pull - Adhesion - Cohesion - Root Pressure <p>Water movement within cell.</p> <ul style="list-style-type: none"> - Apoplast pathway - Symplast pathway - Vascular pathway <p>Animation for xylem water movement (Time 15 min)</p> <p>6.1.3 – Transpiration</p> <ul style="list-style-type: none"> - Structure of dicot and monocot epidermal peel –(grass) stomata - Opening and closing mechanism of stomata <ul style="list-style-type: none"> - K⁺ ion mechanism - Starch - Photosynthesis - Factors affecting transpiration – Internal, External. - Adaptations found in plants to reduce transpiration with examples <p>(Time – 15min)</p> <p>9.1.6 – Plant movements</p> <ul style="list-style-type: none"> - Tropic - Mastic - Tactic <p>Types with examples – animation + moving videos</p>
1.015	<p>Audio Visual of Structure and Function of Human Biological Systems</p> <p><u>Connective Tissues</u></p> <p>Loose con. Tissue</p> <p>White fibrous tissues</p> <p>Yellow fibrous tissues</p> <p>Adipose Tissue</p> <p><u>Cartilage</u></p> <p>Hyaline</p> <p>White fibrous</p> <p>Yellow fibrous</p> <p><u>Bone</u></p> <p>Compact bone –T.S, L.S</p> <p>Spongy bone</p> <p><u>Muscles</u></p> <p>Smooth muscle</p> <p>Cardiac muscle</p> <p>Skeletal muscle</p>

Nervous Tissue

- General structure of a neuron
- Nerve Cell type
 - Sensory neuron
 - Motor neuron
 - Intercalary neuron

6.1.6 – Audio visual/CD/DVD

- Blood circulatory system
 - Open circulatory system
 - Closed circulatory system
- Close circulatory system
 - Single circulation
 - Double circulation
 - Complete double circulation
 - Incomplete double circulation

These topics should be briefly explained with animation, beach ground narration and examples, definitions to be included. (Time 20min)

Evolution of aortic arches in vertebrates

- Typical aortic arch, system (6 aortic arches- Fishes)
- 3 aortic arch system (Amphibians)
- Left half aortic arch (Mammalia)
- Right half aortic arch (Aves)

Evolution of aortic arches should be with explanation narration and animation (Time 15min)

Human Heart

Anatomy

- Right & left atria
- Right and left ventricles
- Bicuspid, tricuspid, Mitral valves
- Chorda tentanae
- Aorta
- Pulmonary artery
- Pulmonary veins
- Superior & inferior vena
- Coronary arteries cava

Under Anatomy

- Outer appearance (Front back and side view
- Sections showing all the parts mentioned above

Should be demonstrated with narration
(time 10 min)

Human Heart Function

- Cardiac cycle

systole
Diastol
Blood circulation through heart – double circulation
ECG
How heart beats
Nervous control of heart

These topics should be demonstrated with animations (preferred)/ diagrammatical explanation along with narration (Time 20min)

Blood

Components of blood

- Granulated blood cells
- Agranulated blood cells
- Plasma

Structure and functions of each type of blood cells

- Red blood cells
- White blood cells
- Platelets

Components of plasma

Functions of blood

Pictures of blood cells – anterior posterior and lateral views – should be explained with animations/ colour variations along with narration
(Time 15 min)

Blood Diagnostic tool

- Full blood report (FBR)
- Blood count

These topics should be explained showing a real / authentic full blood report of a patient and how blood related diseases could be diagnosed based on FBR.

With the help of haemocytometer, how blood counts could be made. And based on blood counts how and what kind of diseases are diagnosed, should be shown with brief explanation along with narration.

(Time -15min)

Heart Surgeries

- By pass
- Open heart
- Transplantation

(Time – 6 min)

5.1.1 – Respiration

Respiratory structures of animals

- Body surface
- External gills
- Internal gills

- Book lungs
- Respiratory tree
- Lungs

Real structures / pictures of the above structures is a must with narration of how they adapted to their environment for respiration/ gaseous exchange.

Animation of

- Expiration
- Inspiration

Structure of human respiratory tract

Gaseous exchange of O₂ & CO₂ via alveoli.

Animation / moving video is preferred

(Time – 15min)

7.1.9 – Homeostatic of

- body temperature
- Blood glucose

Moving video / animation describing along with narration of how these homeostasis mechanisms take place with flow charts

(Time – 10min)

8.1.3 – Excretory system

Excretory structure of animals

- Body surface
- Flame cells
- Nephridia
- Green Glands
- Malphigian tubules
- Kidneys

Pictures with examples

Human excretory system

- Structure of kidney showing all major parts including –medulla, cortex, pelvis, ureter
- Structure of nephron
- Function of
 - Ultra filtration
 - Active reabsorption
 - Secretion

Animation showing these 3 steps.

Water regulation and mineral regulation (animation)

Diseases of urinary system

- Kidney stones
- Nephritis

(Time – 20 min)

7.1.4 – Nervous structures in animals

- Nerve net of **cnidarian**
- Ladder nerve structure of planaria
- Nematoda
- Annelida
- Arthropoda
- Mollusca
- Echinodermata
- Chordata

Nervous system of human

- Central nervous system
 - Brain
 - Spinal cord
- Peripheral nervous system
 - Autonomic nervous system
 - Sympathetic
 - Parasympathetic
- Voluntary nervous system
 - Cranial nerves
 - Spinal nerves

Brain – major parts of brain

- Cereberlem
- Cerebellum
- Midbrain
- Corpus callosum
- Medulla oblongata
- Pons varoli
- Hypothalamus
- Thalamus
- Basal nucleus

Structure and functions of the above mentioned parts

Functional areas of cerebrum

- Motor
- Sensory

Nerve impulse

- Resting potential
- Action potential

(animation of nerve impulse and nerve impulse condition through nerve synopsis)

Structure of synopsis

(Time - 20 min)

7.1.6 Receptors

- Chemoreceptors
- Thermoreceptors
- Mechanoreceptors
- Photoreceptors
- Pressure receptors

Structure and function of the above receptors

Types- Cones, rods, Merkel bodies, Meisner's corpuscle, Paciniar, corpuscle

(Time – 10 min)

7.1.8 – Human eye and ear

- Structure
 - major parts
- Functions of major parts
- How an image is formed and sound is perceived

(Time – 10min)

Human Endocrine system

Major endocrine glands

- Pituitary glands
- Pineal gland
- Thyroid gland
- Parathyroid gland
- Thymus gland
- Adrenal gland
- Pancreas
- Ovaries
- Testis

Structure , functions, locations and deficiency symptoms

(Time – 15 min) – Colorful animation is a must

9.1.5 – Animation of sliding filament theory of skeletal muscle

(Time – 5 min)

9.1.6 – Invitro fertilization

- Steps of how IVF is carried out

(Time – 10min)

10.1.3 – animations of

Ovulation

Menstrual cycle hormonal regulation

(5 min)

10.1.4 – Audio visual / animation of

Placenta

Trimester development of human embryo

(10 min)

	<p>10.1.6 – Audio visuals of sexually transmitted diseases</p> <ul style="list-style-type: none"> - HIV - Gonorrhea - Syphilis - Herpes (10 min)
1.016	<p>Audio Visual of Tissue Culture Process</p> <p>Tissue culture process demonstration with totipotency and micro propagation</p> <p>Culture media preparation (moving video demonstration is a must.)</p> <p>9.1.7 – Moving video of tissue culture</p> <ul style="list-style-type: none"> - Steps of process of tissue culture - Totipotency - Explants - Micropropagation - Advantages & disadvantages <p>Should be included along with narration</p> <p>Uses of tissue culture</p> <p>Use of plant growth substances in tissue culture</p> <p>(10 min)</p>
1.017	<p>Audio Visual of Water Quality Testing Kit</p> <p>CD/DVD to demonstrating methods of testing. (30min)</p> <p>Physical quality – Colour, turbidity.</p> <p>Chemical Quality – Electrical conductivity (or Salinity)</p> <ul style="list-style-type: none"> - Nitrate ions - Hardness of Water. - pH - Heavy metals in water (Lead/ mercury/Chromium ect.) - Chlorine - Nitrite - Ammonia <p>BOD and COD values</p>
1.018	<p>Audus Apparatus (Photosynthesis apparatus)</p> <p>Designed for the measurement and analysis of the gas evolved by water plants under different light conditions.</p> <p>The gas evolved is drawn into a calibrated capillary tube for measurement.</p> <p>It can be drawn eventually into a plastic syringe and removed for analysis.</p> <p>Comprises with white plastic panel 190 x150mm with miniature 3 way plastic stop cock, the lower limb of which connected to a horizontal capillary tube about 1mm bore. Calibrated 0 to 60 x 1mm.</p> <p>The open end of the tube is bent downwards to contain the specimen which is supported in a beaker.</p> <p>The other two arms of the stop cock are connected to 2ml plastic syringe, which enable liquid and gas to be withdrawn. Complete with a 50mm length of transparent plastic tubing to hold specimen.</p>

1.019	<p>Balance Four Beam (suspended pan) A four beam balance with a suspended pan. Weighing capacity 311g x 10mg. Sensitivity 0.01g. Height of stirrer. Approx. 190mm. Beams notched. Four beams each provided with a slider and graduated. 0-200g x 100g 0-100g x 10g 0-10g x 1g and 0-1g x 10mg respectively.</p> <p>Additional masses are not required, with zero adjustment and stainless steel pan approx. 90mm dia. With two pouring spouts and handle. Height of stirrer 175mm Magnetically dampened beam. Movement ensured rapid weighing. A platform housed in the base can be used for density determinations Supplied with- dust cover and instructions manual.</p>
1.020	<p>Balance - Spring 100g/1N Tubular metal/plastics body. Suspension loop and load hook. Zero adjustor. Overall length when closed not less than 200mm. Scale 0 to 100g x 1g. along one edge and 0 to 1N x 0.01N along other edge.</p>
1.021	<p>Balance - Spring 500g/5N along Specifications same as for Balance – spring 100g /1N above. Scale – 0 to 500g x 5g along one edge and 0 to 5N x 0.1N along other edge.</p>
1.022	<p>Balance – Electronic Battery operated, dual range, single push button operated, light, rugged and portable. <u>Overall dimensions</u> Excluding pan – 160mm x 185mm x 130mm (w x d x h) Capacity 1000g Sensitivity 1mg</p>
1.023	<p>Balance Triple Beam (Top –pan) A single pan, low form balance to weigh up to 2610g. Using supplementary masses. Three notched weighing beams with centre –indicating sliding masses, giving total weighing capacity of 610g. Additional masses to increase capacity by 20610g. Also supplied. Equipped with facility for under – balance weighing. Beams : 0-500 g x 100g 0-100g x 10g 0-10 g x 0.1g Supplementary masses = 2 x 1000g ; 1x500g Top pan – Stainless steel, 150mm. Diameter. Rod with clamp to fix to the table with the facility for under weighing. Slotted rubber bung to stop moving indicator when storing. Thicker plastic dust cover to cover the balance when storing.</p>
1.024	<p>Barometer Aneroid An accurately reading Aneroid Barometer with 150mm dia. Silvered dial. Mounted in a sturdy protective case (preferably transparent) with provision for wall mounting. Stout cover glass, index pointer, setting knob. Graduation approx. 660mm – 800mm x 1.0mm 945 mb – 1050mb x 02 mb Accuracy x 1.0mb Calibration method should be included in the manual.</p>

1.025	Basic Education Meter. To be used as an Ammeter and Voltmeter by moving the top cover. Measuring range 100 μ A <input type="checkbox"/> 1A <input type="checkbox"/> 5A. 100 mV <input type="checkbox"/> 1V <input type="checkbox"/> 10V <input type="checkbox"/> 50V
1.026	Battery Ni/Cd (wet) Nickel /cadmium battery of nominal 5V comprising 4 cells, of the wet electrolyte type, of capacity 5Ah, in high impact polystyrene containers and fitted in a wooden crate with carrying handle. Independent socket terminals for each pair of cells to enable supply of 2.5V and interconnecting plugs and lead to enable supply of 5V. Charging instructions. Supplied with electrolyte in separate container.
1.027	Beaker 1000ml Borosilicate glass beaker. Squat form. Parallel sides. With rim and spout. Capacity 1000ml
1.028	Beaker 1000ml (Tall Form) Borosilicate glass beaker. Squat form. Parallel sides with rim and spout. Capacity 1000ml. Dia x ht: 95mm x 180mm
1.029	Beaker 250ml Borosilicate glass beaker. Squat form. Parallel sides. With rim and spout. Capacity 250ml
1.030	Beaker 400ml Borosilicate glass beaker. Squat form. Parallel sides. With rim and spout. Capacity 400ml
1.031	Beaker 500ml Borosilicate glass beaker. Squat form. Parallel sides. With rim and spout. Capacity 500ml
1.032	Beehive Shelves For pneumatic troughs, height 70 mm \varnothing 100 mm.
1.033	Bell Jar Strong glass bell jar with socket top and fitting glass stopper. Bottom edge ground. Height 300mm. Dia. 200mm.
1.034	Bicycle Dynamo 12V AC
1.035	Bimetallic Strip Compound bar to show differential expansion in metal strips. Comprises a length of bimetallic strip (preferably brass/aluminium) of approx. dimensions 150mm x 1.0mm thick. Mounted in a wooden handle. Overall length 270mm. (revert 1.5cm)
1.036	Binocular 10 x50, 99m / 100m
1.037	Block Acrylic / Glass Rectangular glass or acrylic block for refraction experiments. High Quality glass/ acrylic with optically worked surfaces. All angles accurately worked. 115 x 65 x 20 mms.

1.038	Blow Pipes Mouth, nickel-plated brass with nipple.
1.039	Bottle Aspirator - 5 l Capacity 5l. Rigid Polythene. Plastic screw cap. Stop cock and handle.
1.040	Bottle Specific Gravity 25ml Spherical pattern, adjusted, light blown glass. Flat bottom and perforated stopper. 25 ml
1.041	Box Battery D- size dry cell (3,2,1 Piece). To be connected as series and parallel.
1.042	Box Insect A wooden box for displaying preserved insects. Outer dimensions approx. 45 cms x 30cms. Bottom lined by 2.5 cm. Foam - Plastic sheet. Tight fitting glazed lid, leaving inner space 4cms. High.
1.043	Boyle's Law App Syringe Type With pressure gauge 15 x 10 x 20 cm.
1.044	Brass Plate Square 5 cm x 5 cm. Thickness 2mm.
1.045	Bucket & Cylinder For demonstrating Archimede's principle. Apparatus made of brass. Size of cylinder 50mm x 16mm. dia. Bucket with suspension loop and load hook. Cylinder with suspension hook.
1.046	Bunsen Burner For use with LP gas. Bunsen type. Nickel plated brass burner tube, outer diameter 13mm. Enamelled pressed steel base. Jet controlled by stainless steel needle valve, adjustable from maximum to zero. Burner tube outer dia. 13mm. Riffled gas inlet tube of outer dia. 8.0mm. with air regulator. Overall height 125mm with base and burner tube.
1.047	Burette 50ml Borosilicate glass. Rota flow type. PTFE. Interchangeable stop cock, giving excellent flow control. Resistant to chemical attack. Permanent graduation. Capacity 50 ml. Graduation 0.1 ml.
1.048	Caliper Gauge Vernier Stainless steel construction. For external and depth measurement. Metric scale. Graduated to 125mm. Vernier reading to 0.1mm. Provided with knurled fine adjustment roller and locking screw.
1.049	Calorimeter – Aluminum 75" x 50mm (height x diameter) Wooden lid fitted with rubber stopper and aluminium stirrer / Holes for thermometer and stirrer.

1.050	Calorimeter - Copper (Small) One piece spinning, with parallel sides and rolled rim. With lid fitted with bored rubber stopper and stirrer of copper with copper jacket. Height 70mm x dia. 35mm
1.051	Calorimeter - Copper (Stirrer, Lid & Jacket) Polished finish. 75mm x 50mm (height x diameter) wooden lid with rubber stopper and copper stirrer. Holes for thermometer and stirrer.
1.052	Calorimeter –Joules For determination of specific heat capacity of a liquid. Comprises a nickel plated copper calorimeter approx. 70mm. x50mm dia. Lagged and enclosed within an outer vessel approx. 100mm x 75mm dia. Close fitting ebonite lid with wire stirrer. Pair of 4mm socket. Terminals connected to a constantan wire heating coil 06 ohms. Water equivalent of stirrer to be approx. 1g
1.053	Calorimeter - polished Calorimeter copper with chromium plated polished outer surface. With copper jacket.
1.054	Cathode Ray Tube (Set) (with induction coil) Cathode ray tube set comprising of following tubes. C.R.T with Maltase cross, conical shape, diameter of widest end 100mm and 40mm narrow C.R.T single beam (screen ZnS), Tube like, 50mm dia. C.R.T. with Paddle Wheel, Tube like, 50mm dia. All C.R. tubes should be supplied with stands Ba/Fe Magnet Induction coil 230V → 2000V
1.055	CD/ Posters (Natural Disaster) Include drought, flood , Tsunami, Landslide, tornado, lightning- definitions, signs and precautions with disaster management. CD- each natural disasters running time – 5 minutes. Altogether one CD's running time not exceeds 30 minutes.
1.056	Cell – Daniel Comprises a heavy gauge copper outer vessel with internal perforated shells for copper sulphate crystals. A porous pot and an amalgamated zinc rod. The zinc rod and copper vessel are each provided with a 4mm socket and screw terminal Size of copper vessel; 125mm x 90 mm dia. Size of porous pot 140 mm x 60 mm dia.
1.057	Cell – Lechlanche e.m.f. approx. 1.5V. Comprises glass / polystyrene container 95 x 95 x 150 mm height. Supplied with seal porous pot, carbon anode and depolarizer, zinc rod with terminals.
1.058	Chart s - Animal Diversity Classification of kingdom Animalia under phylum, class, order, family, genus and species. Features of each level, examples and pictures of relevant species should display on the chart. Upper & the lower edges should have rigid bars. The upper bar should have a wire to hang it on the wall

1.059	Chart s – The Human Body A life sized figure, about 1.4m high, shows the position and size of all organs and parts of the skeleton and blood system. Printed on varnished heavy stock with cloth reinforcement. Coloured drawing. Parts labeled.
1.060	Charts - Model of Nephron Parts of nephron with labeling. Display of urine formation describing in colour diagrammes.
1.061	Charts - Varieties of Reptiles Features, examples and pictures of the five orders under Phylum – reptile Crocodilia - crocodiles, gharials, caimans and alligators Sphenodontia - Squamata - lizards, snakes and amphisbaenids Testudines - turtles and tortoises
1.062	Charts of Mammary Gland Anatomy of mammary gland showing the importance and changes take place in globules and ducts during lactation.
1.063	Charts of Menstrual Cycle Phases of menstrual cycle Hormone level demonstration Changes in ovary and uterus (graphs showing hormonal changes- pituitary gland hormones and by ovarian hormones)
1.064	Charts of Placenta, Embryonic Membranes Structure and function with whole diagrammes..
1.065	Charts of Sexually Transmitted Diseases HIV AIDS, Gonorrhea, Syphilis & Herpes Symptoms, causative organisms, effects & prevention.
1.066	Charts - Skeletal Muscle contraction. Step wise demonstration of sliding filament theory. Audio visual, showing stages contraction and relaxation.
1.067	Circuit Board Consists of base – board of dimensions 16 " x 16" ½" Fitted with set of 16 metal connection pillars / springs , placed at intervals of 4" in 4 rows Supplied with 01 knife switch 10 clip- on flexible connection strip / wires 03 clip – on battery holders for D size torch batteries 03 clip- on bulb – holder for screw- on type torch bulbs 03 screw on type 3V with torch bulbs Enabling construction of variety of circuits quickly and easily

1.068	Clinostat For demonstrating heliotropism and geotropism. A cork table to which seedlings may be attached is rotated by a clock work mechanism at 4 revs. Per hour. The plane of the table can be set at any angle, between the horizontal and the vertical. Cork table covered by cylindrical Perspex cover. Dia. Of cork disc 95mm. Perspex cover 105 x 100 mm. dia.
1.069	Clock Stop With two hands indicated 60 mts. And 60 secs. Respectively, on a dial approx. 100mm dia with 30 hrs spring driven movement. Levers / push buttons for start, stop and reset in stored enameled or unbreakable plastic case with protected dial.
1.070	Compass – Plotting With needle pivoted between top and bottom glass plates. Without dial. Dia. 20mm.
1.071	Compass - Traveller's Diameter of dial approx. 45mm graduated in degrees compass points marked. In sturdy protective case with transparent cover. Locking mechanism to protect needle during transport.
1.072	Condenser Liebig Borosilicate glass. Inner tube fused into potter jacket. Length 500mm.
1.073	Conductivity App.Searle's Apparatus for measuring thermal conductivity of copper comprises a copper bar 40mm dia. And 30 mm long fitted with steam jacket heater at one end to be supplied from a steam generator (boiler) and a water pool copper spiral at other end. Sockets are provided for thermometers at two points on the bar and at the extremities of the spiral fitted in a wooden case packed with felt for thermal insulation with removable front for showing the construction.
1.074	Constant Pressure Head Unit (Constant level Cistern) Comprises a cylindrical copper vessel 100mm x 75 mm dia. Approx. With tubes for water inlet, out-let and over-flow. A rod is attached for supporting by ordinary boss head and stand.
1.075	Cork Borer - Set Plated metal with rod for clearing borers. Sizes- number consecutively from one upwards in each set. Diameter range 4mm – 10mm. Set of 6 pcs.
1.076	Cork Borer- Sharpener Borer diameter 11 mm to 27mm. Plated metal cone with hinged cutter plate set in slot and metal handle.
1.077	Crucible - With Lid 30ml White porcelain. Medium type. 30 ml. Capacity. With lid.
1.078	Current Balance To Measure the force on a conductor carrying an electric current in a magnetic field and also verify the relation $F=BIL$. B,I and L are independently variable. Beam with current conductor balanced on knife edges which also lead the current. Beam fitted with screwed masses with

	which equilibrium and sensitivity are adjusted. Supplied with set of magnets and supports for magnets.
1.079	Cutter - Glass (Glazier's Diamond) A diamond glass cutter for cutting sheet glass up to 3 mm thickness. Length 160mm.
1.080	Cylinder - Measuring 1000ml Capacity 1000ml. Graduations in 10.0ml. Clear glass. Graduations and inscriptions in permanent stain. With rim and spout. Made out of borosilicate glass.
1.081	Cylinder - Measuring 500ml Capacity 500ml. Graduations in 5.0ml. Other specifications same as 1000ml Cylinder above.
1.082	Desiccator 200mm Novus pattern. Borosilicate glass. Flange dia. 200mm. Accurately ground top and rim. Knob cover. Flat bottom. With perforated Zinc or ceramic stage.
1.083	Dishes - Evaporating Large Evaporating basins. Shallow form. Porcelain. Capacity 125ml.
1.084	Dishes - Evaporating Small Evaporating basins. Shallow form. Porcelain.
1.085	Dissecting Forceps – Blunt end Blunt head length 12.5cm stainless steel.
1.086	Dissecting Forceps – Pointed Sharp head/ pointed length 12.5cm stainless steel.
1.087	Dissecting Needle 5cm with a wooden or plastic handle
1.088	Dissecting Scalpels 3 handle with blade. Stainless steel.
1.089	Dissecting Scissors – Medium Straight pointed scissors. Closed shanks. Overall length 125mm.
1.090	Dissecting Tray Size: 310x 210x 42mm. White paraffin (Filling)
1.091	DNA Model Double helix model. Three dimension Size 23x22x68.5cm
1.092	Drawing Boards Soft wood with clamped edges 600x450x20 mm.

Components used in the circuits and the connection in the circuits should be shown by clearly drawn lines on the upper side of the PCB. Connections between blocks should be made using 3 mm sockets and Banana plugs.

Width of a block or unit should be 9 to 10 cm (each block or unit being of the same width)

Seven connecting flexible wires should be provided (4 red and 3 blue wires) Each end of a wire should be connected to two 3 mm Banana plugs. Length of each wire should be 12 cm.

There should be an assembling board (made of hard board or acrylic or plastic plate)

So that the blocks or units can be assembled on it to form electric circuits and demonstrated. Assembling and disassembling on the board must be easy (measurement 32 cm x 10 cm.)

Each block or unit should be numbered as in the list given below.

Kit must consist of a board with grooves on it (MDF) to store the components or the blocks or units. (Length 32 cm, width 20 cm) This is made in a manner in which is easy to read the number on the block and easy to pick it up for use.

A user manual with the description of the circuits, connection and functions of the blocks or units and the explanation of the experimental details should be provided.

- 1) A circuit to demonstrate and identify the electrical conductors, Insulators and Diodes, Forward Bias and Reverse Bias of Diodes.
(Two Pen torch Batteries and a bulb must be included in the circuit)
- 2) A circuit to demonstrate the F/B and R/B of a L.E.D. (using the pen torch Battery and three LEDS)
- 3) Pen torch Battery Holder mounted on a PCB with or 3V, 6V terminal (sockets)
- 4) Demonstration of Half wave rectification (Using single diode and 4 LEDS)
- 5) Demonstration of full wave rectification (using 4 diodes and 4 LEDS)
- 6) Transformer (230 V / 12V 300 mA) mounted on a PCB. (with an AC mains chord with 2 pin plug)
- 7) Bulb (12V) mounted on a PCB (four 3 mm socket for inputs and outputs)
- 8) Single diode rectifier mounted on a PCB (Four 3 mm sockets connected to inputs and outputs)
- 9) Rectifier Bridge made of four diodes mounted on a PCB. (From 3 mm sockets connected to input and output of the bridge)
- 10) Smoothing capacitor (1000 μ F, 25 V) mounted on a PCB (with the capability to connect and disconnect to the positive and negative power lines)
- 11) A circuit to demonstrate the current amplification of a transistor (with two pen touch batteries, two bulbs and a press switch)
- 12) A circuit to demonstrate the amplification of a transistor (using one LED, transistor and two pen touch batteries)
- 13) A circuit to demonstrate the switching action of a transistor (switching on to darkness) using a LDR in the circuit.
- 14) A circuit to demonstrate the switching action of a transistor (switch on to light) using a LDR in the circuit.
- 15) A circuit with UM66 integrated circuit to give out an Audio signal. (when connected

	<p>with the circuit No. 16)</p> <p>16) A speaker mounted on a PCB with terminal connected to 3 mm sockets.</p> <p>17) A transistor (D 400) mounted on a PCB to demonstrate the amplification (when connected with No. 15 and No. 16)</p> <p>18) Simple circuit with two torch batteries, a LED or a Bulb and 2 press switches to demonstrate the Action of AND gate.</p> <p>19) Same as 18 to demonstrate the OR gate.</p> <p>20) Same as 18 to demonstrate the NOT gate.</p> <p>21) A circuit to demonstrate the principle of AND gate using a CEMOS I. C. chip Inputs and Outputs should be indicated by LED s. (using 6V battery power)</p> <p>22) Same as 21, to demonstrate the principle of OR gate.</p> <p>23) Same as 21, to demonstrate the principle of NOT gate.</p>
1.100	<p>Electronic Trainer Panel kit</p> <ol style="list-style-type: none"> 1. Semiconductor Diode trainer. Diode characteristics. (to show input & current & voltage.) Diode as a switch. Half wave rectification. (to show input, output wave forms using a CRO) Full wave rectification (to show wave forms) DC voltage regulation using Zener diode as a regulator 2. Transistor trainer Transistor characteristics (to measure input output currents & voltages) DC Biasing of a transistor (to show input output wave forms using a CRO) Transistor as a switch. Transistor amplifier (to show input output wave forms using CRO & to measure input and output voltages using voltmeter) 3. Operational amplifier trainer Inverting amplifier (to show input output wave forms using CRO & to measure input and output voltages using voltmeter) OP- AMP as a switch (to show using LED) Non inverting amplifier (to show input output wave forms using CRO & to measure input and output voltages using voltmeter) 4. Basic logic trainer. To show AND, OR, NOT, NAN, NOR, EXOR gates.
1.101	<p>Electrophorus</p> <p>A simple form electrophorus comprising a plated metal disc 50 mm. dia. Mounted on an (Perspex) acryl handle 90mm, long. The sole or charging plate is a polythene tile 75 mm square.</p>
1.102	<p>Electroscope with book of gold leaves</p> <p>In rectangular die cast glazed case with insulated lid. Case fitted with 4mm.Earthing socket. Front glass window slides up. Disc top electrode with gold leaf attached. Supply with three sets of gold leaves.</p>
1.103	<p>Flask Conical 100ml</p> <p>Borosilicate glass conical flask. Narrow neck. With rim capacity 100ml. Without spout.</p>

1.104	Flask Conical 250ml Borosilicate glass, 250ml.capacity.with rim. Without spout, narrow neck
1.105	Flask Conical 50ml Borosilicate glass, 50ml.capacity.with rim. Without spout, narrow neck
1.106	Flask Distillation 500ml Side arm set at 75^0 to vertical axis. A borosilicate glass ware.
1.107	Flask Flat Bottom 250ml Borosilicate glass, 250ml. Capacity. With rim. Without spout. Narrow medium neck
1.108	Flask Flat Bottom 500ml Borosilicate glass, 500ml capacity. With rim. Without spout. Narrow medium neck
1.109	Flask Round Bottom 250ml Round bottom. Other specification as above (2.041).250 ml.capacity
1.110	Flask Round Bottom 500ml Borosilicate glass. With rim. Medium neck. Capacity 500ml
1.111	Flask Titration 100ml Borosilicate glass with rim. Volume 100ml.
1.112	Flask Titration 250ml Borosilicate glass with rim. Volume 250ml.
1.113	Flask Volumetric 1000ml Borosilicate glass. Single mark of dark stain. With neutral, non-staining, chemically resistant, polypropylene stopper. Capacity 1000ml
1.114	Flask Volumetric 100ml Borosilicate glass. Single mark of dark stain. With neutral, non-staining, chemically resistant, polypropylene stopper. Capacity 100ml
1.115	Flask Volumetric 250ml Borosilicate glass. Single mark of dark stain. With neutral, non-staining, chemically resistant, polypropylene stopper. Capacity 250ml
1.116	Flask Volumetric 500ml Borosilicate glass. Single mark of dark stain. With neutral, non-staining, chemically resistant, polypropylene stopper. Capacity 500ml

1.117	Friction Board/Inclined Plane A planned board 600mm x 75mm hinged to the base at one end and provided with a pulley for the force cord at the other. A movable block enables variation of inclination. The friction slider 100mm is reversible and has one side cutaway for hat its area. In the friction slider of the two long edges. One is planned to fine polish while the other is unplanned and rough. Complete with brass roller 75mm x 25mm dia. and scale plan.
1.118	Funnel Separating 250 ml Pear shaped. Borosilicate glass. With interchangeable stopper and glass stopcock. Pyrex.
1.119	Funnel Thistle Stout walls. Flint glass. Stem 200mm
1.120	G-Clamp Malleable iron frame with square cut thread clamping bolt. Swivel head on bolt adapts itself to any angle of grip. Maximum opening 150mm
1.121	Galvanometer Centre zero moving coil galvanometer + 1 mA to – 1 mA, graduated every 0.1 mA . Mounted in a protective case (preferably transparent). Large clear dial protected by unbreakable glass/ plastic. Anti parallax mirror. Zero adjustment. Colour coded terminals – screw and plug type.
1.122	Gas cylinder with Regulator and connecting tube, clip. Gas cylinder of capacity 12.5kg of gas Regulator Connecting tube (pressure polythene). length of 2m with 2 clips.
1.123	Generator –Steam Steam boiler. A copper vessel having a cylindrical body & a conical top with a short neck for a bung. Fitted with a finger loop handle, steam outlet tube, riffled for rubber tubing of bore 6mm. Glass water gauge tube, capacity 2l.

1.124

Geometric Optics

Laser ray box

- 5 cm x 8.5 cm x 2.3 cm
- With four standing knobs
- Switch to on/off
- Four way switch to get one beam, two beams, three beams and five beams (Beams should be red in colour)
- Class 111a Laser product
- DC power input socket 6.3V $\text{-----} + \quad . \quad -$
- A single white beam is also needed
- Laser warning label
- Max out put power < 1 mW
- Wavelength 650nm
- AC/DC Adaptor for Laser ray box
- Input; 100 – 240 V AC 50 Hz
- Out put 6V DC - 500 mA
- DC Adapter with Jack – DC
- Input: 6 – 12 V DC
- Output: 6V DC - 500mA

Flexible mirror with adjustable stand

Mirror – 6.5 cm x 2 cm

Double side mirror surface

Plane mirror – 6.5 cm 2 cm (With adjustable mount in the same stand)

Parabolic mirror – 6.5 cm x 2 cm (for same stand)

Block – Acrylic: 7.5 cm x 5 cm x 2 cm

Rectangular acrylic block for refraction experiments. High quality acrylic with optically worked surfaces.

All angles accurately worked and should be rough (translucent)

One surface (25 cm x 5 cm) should be rough

Block – Acrylic Hollow

7.5 cm x 2.5 cm x 2 cm

Rectangular acrylic hollow block for refraction experiments.

High quality acrylic with optically worked surfaces

All angles accurately worked and should be rough (translucent)

Bottom surface (7.5 cm x 2.5cm)

Lens – Biconcave (Acrylic)

Length – 8 cm height 2 cm

Diameter of the curve 8 cm

High quality acrylic with optically worked surfaces

One flat bottom surface should be translucent

Lens – Biconvex (Acrylic)

Length – 8 cm height 2 cm

Diameter of the curve 8 cm

Lense plano convex

Lense plano concave

High quality acrylic with optically worked surfaces

One flat bottom surface should be translucent

Lens – Semi cylindrical lense

Diameter 8 cm

Height 2 cm

Lense plano convex

Lense plano concave

High quality acrylic with optically worked surfaces

Bottom surface should be translucent

Jar Semi cylindrical

Diameter 6 cm

Height 2 cm

Thickness of the jar should be 1.5 mm

High quality acrylic with optically worked surfaces

Bottom surface should be translucent

Prism – Acrylic $45^0 \times 45^0 \times 90^0$

Hypoteneus 7.7 cm

Height 2 cm

High quality acrylic with optically worked surfaces

Bottom surface should be translucent

3.Trapezium –Glass

Block acrylic trapezium. Acrylic block for refraction experiments.

High quality acrylic with optically worked surfaces. Bottom surface should be rough.

Length 9 cm

Height 3.5 cm

Depth 2 cm

$45^0 \times 60^0$ (These angles should be made with the largest edge)

Container

Length 40 cm, Height 5.5 cm, Width 22 cm

All the items should be inserted in a case which is made of plastic or fibre glass.

	<p>The case should be so made that the items could be taken out easily from each pocket.</p> <p>The container box should also be made of fibre or high quality durable plastic.</p> <p>Should include a quality rexing with printing following items.</p> <p>10 cm circle and a marked ruler in the diameter.</p> <p>The ruler should be marked as follows</p> <p>Length of the rexin 37 cm</p> <p>Width of the rexin 21 cm</p> <p>An user manual will be supplied.</p>
1.125	<p>Hare's App.</p> <p>For comparing densities of liquids. Comprises a 3 limbed glass tube with 250mm of rubber tubing on centre limb closed by a Hoffmann Screw Clip. The two long glass tubes connected to the M tube by rubber tubing.</p> <p>Mounted on a stand. Scale with zero at the bottom. Two sliding distance metal rods. Overall dimensions 680 x 300 x 150mm</p>
1.126	<p>Heat Transfer Kit</p> <p>Heat conductivity apparatus INGEN – HAUSZ</p> <p>Metal rods 150 x 3 mm Copper, brass, iron, aluminum, glass, wooden embedded along one side of a metal tank 150 x 90 x 100 mm</p>

Convention tube – To show the convention of heat in a liquid. Glass tube 20 mm outside diameter bent into rectangle approximately 380 mm x 300 mm fitted with small funnel.

Ventilation Apparatus

Metal box 220 x 100 x 165 mm, length x width x height with sliding plate glass front : two glass chimneys, standing over turbulence at top of box ; candle holder fixed to the base of the box beneath the left hand chimney.

Leslie cube

Constructed from tin plate 125 mm side with dull surface, black bright, black white and bright tin,

Reflector Parabolic (Parabolic Mirror)

Chromium plated copper 400 mm x 80 mm

Heat Capacity

Calorimeter with Jacket (2 Calorimeters- same measurements)

Copper calorimeter 75 x 50 mm (height x diameter) resting on felt pad inside outer copper vessel, 100 x 75 mm (height x diameter) which is provided with a detachable clip – type thermometer support, with stirrer calorimeter cover) wooden with apertures for thermometer and stirrer to fit calorimeter.

Thermometer range – 10 to 110 °C divided in 1 degree calibrations

Thermometer range - 5 to 50 °C divided in 0.5 degree calibrations

Expansion of liquids

Ungraduated thermometer

Ungraduated tube, mercury filled

180 mm long to cover the range 0 – 100 °C

Expansion of Gases

Hand boiler (Love Thermometer)

Ring and ball-

Length 15cm. Brass ring with hardwood handle, and ball 25mm diameter attached by chain – 30cm.

Compound bar –

To demonstrate curvature induced by unequal expansion. Each brass and aluminum plate 20mmx150mm reverted together from end to end fitted with handle.

Refer L 41- 300, Griffin page 739

Bimetallic Strip

To demonstrate curvature on heating. Brass - invar strip 150mm x15mm x 20 SWG fitted with handle.

Capillary tube with glass bulb

Bulb – To demonstrate the expansion of liquids approx. 3cc (cm³) capacity.

Capillary tube – Glass 200mm long 1mm bore, graduated 0 to 190 mm in millimeters

Capillary tube fitted in to a bulb using a piece of thin walled rubber tubing as sleeving provides a useful laboratory apparatus for experiments of expansion of liquids.

Ungraduated thermometer

Ungraduated tube, mercury filled

180 mm long to cover the range 0- 100 °C

Expansion of gases**Hand Boiler (Love thermometer)****Optical Bench with Accessories**

Comprising of a polished wooden base 60cm x10cm with a 60cm scale divided into millimeters fixed to the front edge, plus six sliding moulded bases 80 mm x 50 mm each with engraved index line, brass pillar and locking screw.

Following accessories also to be provided.

Lamp house with white 230V, lamp connected 1No

1. Lamp house with white LED s 20W with reflector shaped P (Capital P)

Height of P	4cm	1No
2. Lens holder universal to take any lens /mirror up to 75mm dia,	2Nos	
3. Lens. Mirror holder spring pattern for 50mm dia, lenses and mirror		
4. Prism table, for supporting prisms, glass blocks etc.		
5. Objects needle, mounted safety type.		
6. Cross wires		
7. Pinhole screen		
8 Object screen – with illuminated millimeter glass scale.		
9 Adjustable slit		
10. Receiving screen		
11. Ground glass screen		
12. Holder for diffraction objects 50mm Square mount		
13. Biconcave – Lenses		
F =100 mm	-	1No
F = 50 mm	-	1No
14. Biconvex	f = 100mm	1No
	f = 50mm	1No
15. Mirror	- Concave	
	f = 100mm	1No
	f = 50mm	1No
16. Mirror	- Convex	
	f = 100mm	1No
	f = 50mm	1No

	<p>17. Container</p> <p>Container should be</p> <p>65 cm in length x 21 cm in width & height 7 cm</p> <p>Each and every item should have easy access and also inserted in a durable fiber sac.</p>
1.127	<p>Holder - Lens/Mirror</p> <p>Spring pattern metal holder for holding 1 lens or mirror. Metal Holder mounted on a 6 mm brass rod. Supplied with stand consisting of stout metal pillar with clamping screw supported on a moulded base 100x50mm. Metal pillar accepts rods of 6.0mm dia. Centre height adjustable from 100mm – 140mm accepts lenses/ mirrors of 50mm dia.</p>
1.128	<p>Holder -Test Tube</p> <p>Flat stout steel holder (preferably stainless steel). Sliding metal collar. Mounted in turned wooden handle. Accepts test tubes of dia. From 5mm to 25mm.</p>
1.129	<p>House Wiring Model – Current Operated</p> <p>Kilo watt hour meter, main switch, current operated trip switch, two battery holders, two toggle switch, three pin plug base. Fuse and main circuit breakers, connected as a house wiring circuit.</p>
1.130	<p>Hydrogen Spectrum Set</p> <p>This set comprises of three units.</p> <ol style="list-style-type: none"> 1) Discharge tube :- Straight pattern, capillary length approximately 50mm. Fitted with a 4mm plug at each end. Filled with hydrogen 2) Power supply unit- A simply self contained power unit for operating discharge tube. Power unit out – put 3mV and 3mA, rms, 50 Hz <p>Metal top carriers an ON/OFF switch, pilot lamp, 1A fuse rod assembly and recesses rubber socket into which the discharge tube is inserted, making contact with live side of the circuit.</p> <p>Metal end cap of the tube is completely hidden to avoid electrical shocks from touch. The rod assembly comprises a screw in support rod, 260mm long, carrying a horizontal rod at its upper end secured and adjusted using a lock – screw and having a 4mm aperture for tube connection. Mounted in a plastic box 168mm x 92mm x 85mm (length, height, width), on four plastic feet. Complete with tommy – bar screwing into power unit top.</p>
1.131	<p>Hydrometer (700kg-3-1200)</p> <p>Short filled subdivided in 5 kgm^{-3}. Overall length 250mm.</p>
1.132	<p>Hydro Meter Universal</p> <p>Direct reading. Relative density hydrometer of steam lined form. Graduated stem with parallel sides and shot – loaded bulb. All glass.</p> <p>Range at 16°C = 0.7- 2.0 x 0.01</p>

1.133	Hygrometer – Whirling Comprises 2 thermometers of range 5-50 °C x0.5°C mounted in a plastic/ wood body. One thermometer has a wick dipping into a water reservoir. Facility for whirling. Supplied completely spare wicks, humidity calculator and carrying case.
1.134	Induction Coil For use with vacuum tubes, gas filled discharge tubes, ect. Capable of producing a spark length of up to 20mm. with an input of 4-6 V DC. Electrodes- discs and point type. Point electrode has insulated handle for adjustments of the spark gap. Low voltage input via two 4mm socket and screw terminals.
1.135	Inertia Balance (Wig Wag Machine) For the qualitative investigation of the nature of mass and distinction between mass and weight. Comprises two metal trays 130 x 55x25mm joint together by a pair of spring steel strips 10mm wide. Trays are 215mm apart. One tray drilled to hold three equal cylindrical masses. Other tray acts as anchorage and may be clamped to bench either horizontally or vertically. Supplied with three suitable masses and G clamped.
1.136	Jaeger Surface Tension App. Comprises a test tube 150 x 30mm dia. Fitted with rubber stopper carrying stirrer and glass tube. Manometer reading to 200 mm. 250ml filter flask with stopper and dropping funnel. Complete with connecting tubing 600ml beaker for water bath. Adjustable pointer and 3 jets of different sizes, ends round and polished. Supplied fully assemble and with instructions.
1.137	Jars Gas – Large Clear glass, with heavy foot and ground flange. Cover of circular sheet glass ground on one side. 200mm. high x 50mm. Inner dia.
1.138	Jars Gas –Medium Height 250mm, Int. Dia.50mm
1.139	Jars Gas –Small Height 150mm, Int. dia.50mm
1.140	Jars Specimen 10x12.6x6 cm Strong clear glass.10x12.5x6 cms
1.141	Jars Specimen 15x15x8 cm Strong clear glass.15x15x8 cms
1.142	Jars Specimen 20x20x10 cm Strong clear glass.20x20x10 cms
1.143	Jars Specimen Cly 10x6cm Dia Cylindrical jar. Heavy base.10x6 cms. dia. Glass

1.144	Jars Specimen Cly 20x8 cm Dia Cylindrical jar. Heavy base.20x8 cms. dia. Glass
1.145	Keys- Plug – One Way Contact keys, split block plug type. One way. Plated metal with terminals, and silver contacts. On plastic base with rubber feet.
1.146	Keys- Plug- Two Way Contact keys, split block plug type. Two ways. Plated metal with terminals, and silver contacts. On plastic base with rubber feet.
1.147	Keys Reversing Sliding contact type key. With sprung brass contacts on rotatable spring loaded ebonite beam. Plated metal, with screw terminals. Plastic base rubber feet.
1.148	Keys Slide Contact keys- sliding arm type. Two ways. Plated metal with terminals and silver contacts. On plastic base with rubber feet.
1.149	Keys Tap Contact keys. Sprung arm type. Based off. Plated metal with terminals and silver contact on plastic base with rubber feet.
1.150	Knife Grafting /Budding Folding type. Steel blade at one end and flat tongue of buffalo horn or similar material at other end. Overall length 150 mm.
1.151	Laminated Transformer Core With plastic bobbin 15x30x20mm
1.152	Lamp Spirit Spirit burner, porcelain wick holder, Glass burner and cap. Capacity 125ml.
1.153	Lens Biconcave 100f mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 100mm power, d -10 .50mm dia
1.154	Lens Biconcave 150f mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 150mm power, d -6.7 .38mm dia
1.155	Lens Biconcave 200f mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 200mm power, d -5 .38mm dia

1.156	Lens Biconvex f 100 mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 100mm power, d +10 .38mm dia
1.157	Lens Biconvex f 150 mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 150mm power, d +6.7 .38mm dia
1.158	Lens Biconvex f 200 mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 200mm power, d +5 .38mm dia
1.159	Lens Biconvex f 500 mm Optically worked glass with ground edges. Refractive index μ_d 1.52 approx. Focal length 500mm power, d +2 .38mm dia
1.160	Lens Converging Meniscus f 100mm 50mm dia
1.161	Lens Diverging Meniscus f 100mm 50mm dia
1.162	Lens Hand x 3 Biconvex lens. Mag x 3.5 lens dia.50mm. Mounted in circular metal frame with metal/ plastic handle
1.163	Lens Plano Concave f 100mm 50mm dia
1.164	Lens Plano Convex f 100mm 50mm dia
1.165	Leslies Cube Comprises a stainless steel box of sides 130mm. The vertical faces of the box are blackened, roughened, varnished and polished, respectively. The top opening is 75mm. dia. And is fitted with a lid.
1.166	Loud Speaker 2W 3" 2W 80 ohm dynamic loudspeaker. Mounted.
1.167	Loud Speaker 3W Moving coil loudspeaker mounted in wooden /metal enclosure and provided with two socket and screw terminals. Dia. Approx. 100mm. Impedance 3-4 ohms. Power 3W. Supplied as a matched pair.

1.168	Magnet Ba/Fe Barium ferrite magnets (magnadur type). 45mm.x20mm.x10mm.magnetised on broader surfaces.												
1.169	Magnet Bar Strongly magnetized steel bar magnets, 100 mm. X16 mm.x5mm.packed in pairs in boxes, with keeper. Poles marked or colour coded.												
1.170	Magnet Cylindrical <table><tr><td>Type</td><td>Length</td><td>x</td><td>Diameter</td></tr><tr><td></td><td>(mm)</td><td></td><td></td></tr><tr><td>1</td><td>75</td><td>x</td><td>6</td></tr></table>	Type	Length	x	Diameter		(mm)			1	75	x	6
Type	Length	x	Diameter										
	(mm)												
1	75	x	6										
1.171	Magnet Horse Shoe Powerful magnet of magnetic alloy. Horse shoe shape. With keeper. Overall length 100mm.												
1.172	Magnet Ring 32 mm dia.												
1.173	Magnet Strip Length x Width x Thickness = 100 x 13 x 6.5 mm												
1.174	Magnet U Type Size 80 x 50 x 10 x 10mm. Metal Almico.												
1.175	Map of Minerals of SL 120cm x 90cm map of Sri Lanka with locations of mineral deposits (prepared according to the Geological and survey department)												
1.176	Masses Slotted, Set of 11kg Hanger approx. 500mm. high. Individual masses are inter- locking for safety. Tough black enamel finish. Hanger = 1kg Set of masses = 1 of 0.1kg:, 2 of 0.2 kg., 1 of 0.5kg:, 2 of 2.0 kg., 1 of 5.0kg.,												
1.177	Masses slotted – Set 110g Set of 10 masses, each 10gm with hanger- also 10gm. Masses made of brass. Weights marked												
1.178	Meter Bridge (Wheatstone Bridge) Four gap bridges, fitted on base of metal or seasoned wood strengthened to prevent warping. A 1mm length constantan wire 0.5mm dia. Anchored to heavy copper end strips with 1m rule graduated 0-100 cm x1mm mounted alongside. Three heavy gauge copper strips each fitted with two large terminals with 4mm sockets and secured opposite the wire; provide four gaps.												

	The gaps are closed by removable brass connecting strips. Supplied with knife-edge jockey.																												
1.179	Micrometer Screw Gauge A precision micrometer. Made of stainless steel, with girder - section. Specially hardened and ground screw, locknut and ratchet. Range 0 -25mm x 0.01mm supplied in protective case.																												
1.180	Microscope Compound Magnification 50 to 1000. Supplied with 3 objectives, 2 eye pieces Condenser with iris diaphragm. Supplied with cabinet with lock & key.																												
1.181	Microscope – Traveling (Vernier) For measurement on two axes. Vertical scale 0-120mm. Vernier 0-01mm. Horizontal scale 0-165mm. Vernier 0-01mm. Optical eye piece x 10 Objective x 3. Focal length 50mm. Spirit level. Height adjustable legs. Supplied in sturdy protective case, with instruction/ maintenance manual. Main and vernier scale, of brass electroplated.																												
1.182	Microscope x 600 Magnification 50 to 600. Supplied with 3 objectives, 2 eye pieces (preferably with pointer.) All metal sturdy construction. Condenser with iris diaphragm. Plano – concave mirror. Coarse and fine focusing. Supplied in cabinet with a lock & key, carrying handle. With light source.																												
1.183	Mineral Box Individually numbered specimens in a partitioned wooden box with glass lid, handle and lock. Size 40cm x 30cm x 6cm (out side) <table border="0"> <tr> <td><u>Rocks</u></td><td><u>Minerals</u></td></tr> <tr> <td>Ba salt</td><td>Mica</td></tr> <tr> <td>Chalk</td><td>Apatite</td></tr> <tr> <td>Coal</td><td>Calcite</td></tr> <tr> <td>Conglomerate</td><td>Graphite</td></tr> <tr> <td>Gneiss</td><td>Gypsum</td></tr> <tr> <td>Granite</td><td>Hematite</td></tr> <tr> <td>Lime Stone</td><td>Malachite</td></tr> <tr> <td>Marble</td><td>Feldspar</td></tr> <tr> <td>Mud Stone</td><td>Quartz</td></tr> <tr> <td>Sand Stone</td><td>Rutile</td></tr> <tr> <td></td><td>Zircon</td></tr> <tr> <td></td><td>Ilmanite</td></tr> <tr> <td></td><td>Corundum</td></tr> </table> Samples of rocks and minerals should be labeled in English and chemical formulae should be given	<u>Rocks</u>	<u>Minerals</u>	Ba salt	Mica	Chalk	Apatite	Coal	Calcite	Conglomerate	Graphite	Gneiss	Gypsum	Granite	Hematite	Lime Stone	Malachite	Marble	Feldspar	Mud Stone	Quartz	Sand Stone	Rutile		Zircon		Ilmanite		Corundum
<u>Rocks</u>	<u>Minerals</u>																												
Ba salt	Mica																												
Chalk	Apatite																												
Coal	Calcite																												
Conglomerate	Graphite																												
Gneiss	Gypsum																												
Granite	Hematite																												
Lime Stone	Malachite																												
Marble	Feldspar																												
Mud Stone	Quartz																												
Sand Stone	Rutile																												
	Zircon																												
	Ilmanite																												
	Corundum																												
1.184	Mirror Concave f 100mm 50mm dia.																												
1.185	Mirror Concave f 150mm 50mm dia.																												

1.186	Mirror Convex f 100mm 50mm dia.
1.187	Mirror Convex f 150mm 50mm dia.
	Models To be mounted on a base (plastic / wooden base) Plastic material Colour parts Shapes of parts should resemble natural body parts.
1.188	Model and charts of Male/Female Reproductive System Showing major parts- Anatomy of male and female reproductive system.
1.189	Model Animal Cell Animal cell through electron microscope. Size: 30x20x51cm showing organelle. (plastic)
1.190	Model of Cell Membrane Showing phospholipids bilayer, protein size 30 x20x15cm. Fluid mosaic structure.
1.191	Model of Mitosis and Meiosis Showing major changes of chromosomes in prophase, anaphase, meta phase and Telophase. Made with plastic.
1.192	Model Human Urinary Kidney L.S. Model of human kidney L.S. with adrenal gland. Half section showing medulla, cortex, pelvis etc.
1.193	Model of Human Brain & Spinal Chord Brain – Whole module muscle showing inner parts such as cerebrum , cerebellum, medulla, oblongata, mid brain pons varoli, Corpus callosum Size – Natural brain size. Separable into parts. Plastic.
1.194	Model Human Ear A four part model showing the human ear enlarged, approximately 3 times. It shows all the essential details of the ear for hearing and balance.
1.195	Model Human Eye 5 times enlarged of life size. 6 dissectible parts (important parts of eye) Shows all parts Size 130 x 140 x 210mm.
1.196	Model Human Heart Enlarged model made from plastic material Dissectible into 4 parts. All vessels chambers and valves of the heart are represented. Carefully coloured and finished to show all the features of this organ. Size 180x 180 x 320mm.

1.197	Model Human Skeletal System – Natural Skull, vertebral column, pelvic & pectoral girdle, thoracic cage, fore limb & hind limb. (Whole bones included)
1.198	Model Human Skin Showing dermis, epidermis, sweat gland, sebaceous gland, nerve endings, receptors- heat, cold, connective tissues, subcutaneous fat and hair follicle with hair. Size: 30 x 15cm
1.199	Model Human Torso The Torso Model accurately details over 100 intricate body structures. The model's outside shows superficial musculature, rib casing, and other anatomical features. The torso opens to expose the respiratory, circulatory, digestive, nervous, and urinary systems. The lungs, heart, and digestive organs (stomach, liver, and intestines) are easily removable for further examination.
1.200	Model Plant Cell Plant cell through electron microscope. Size: 30 x 20 x 51cm
1.201	Models of Organelles Models for Chloroplast, Mitochondria, Golgi apparatus, Nucleus Size: 27 x 20 x 17cm. Made with plastic.
1.202	Models -Sun Earth Moon A model of Sun, Earth and Moon to demonstrate the relative motions of each other. Supplied with a data charts of Sun, Earth and Moon.
1.203	Molecular Model Set Atom centres in 15 different shapes. Centers are colour coded according to elements. multiple bond pegs supplied prevent the rotation of double bonds and atom centres are joined by plastic tubes cut to length on a scale 30mm = 100pm (picometer)
1.204	Motor & Pestle 150mm White porcelain. Grinding face unglazed. External dia. 140mm. with pestle. Glazed outside. Capacity 100ml. Height 45mm.
1.205	Motor (Electric) Model Demonstration electric motor. A model of the simplest form of dc electric motor, having a 2 pole armature wound with enameled copper wire and a permanent magnetic field provided by a removable bar magnet. Construction of the model is completely open and all components are readily observable. A disc type commutator is incorporated and external connection to the phosphor bronze brushes is by means of a pair of 4mm sockets and screw terminals. Operates on 4 to 6V, DC.
1.206	Multimeter Digital 3½ digits LCD with a max. Reading of 1999 with digital height. 25mm. Audible continuity &

4. Prism table, for supporting prisms, glass blocks etc.
5. Objects needle, mounted safety type.
6. Cross wires
7. Pinhole screen
- 8 Object screen – with illuminated millimeter glass scale.
- 9 Adjustable slit
10. Receiving screen
11. Ground glass screen
12. Holder for diffraction objects 50mm Square mount
13. Biconcave – Lense

F = 100 mm	-	1No
F = 50 mm	-	1No
14. Biconvex

f = 100mm	1No
f = 50mm	1No
15. Mirror

- Concave	
f = 100mm	1No
f = 50mm	1No
16. Mirror

- Convex	
f = 100mm	1No
f = 50mm	1No
17. Container

Container should be

	<p>65 cm in length x 21 cm in width & height 7 cm</p> <p>Each and every item should have easy access and also inserted in a durable fibre sac.</p>
1.210	<p>Oscilloscope (dual Trace) Oscilloscope for students offering multi range bandwidths and time base speed ranges, 15MHz. Single Channel 125mm CRT. Volt Div. and Time Div. controls are digitally encoded type controls with LCD display of settings. Supplied with matching microphone. System mark generates huge voltage using a power transformer secondary winding. Must have built in signal generator capable of generating basic waveforms sine/ square/triangular in the audio range of frequencies.</p> <p><u>Vertical deflection (Y)</u> Bandwidth –DC-15MHz Rise time 20 – 100ns Input Impedance – 1MΩ approx. Input voltage max. 400V DC or AC peak to peak.</p> <p><u>Horizontal deflection (X)</u> Band width 1Hz-1MHz Input Impedance – 1MΩ approx.</p> <p><u>Time Base</u> <u>Time Coefficients</u> – Micro controller based 18 calibrated Steps 0.5μs/ Div – 0.25/Div (1-2.5 seq) with variable control to 1.2ms/Div With built in component tester and continuity tester (to list voltage, current frequency) Must – provide operation manual.</p>
1.211	<p>Oven 30 litres. Internal dimension 240x360x350mm. External dimension 460 x 450x 470mm. 750w, 20kg, 230V AC with Thermostat, temperature regulator. 40 $^{\circ}$C- 175$^{\circ}$C approximately.</p>
1.212	<p>Parallogramm Apparatus For verifying the relation between forces acting at a point. Board 750 x 500 x 13 mm on batteries, with two aluminium pulleys 50mm diameter, with clamp, for mounting in any position; roll of cellulose tape, for fixing paper to board; four hooks, Bakelite scale pan 100mm diameter with cord, and two lengths of cord. Without masses.</p>
1.213	<p>Pendulum Bob 1cm diameter cross with hook</p>
1.214	<p>Periodic Chart Long form wall chart. Size 180 cm x120 imprinted on edge reinforced plastic paper, supplied with rollers and cord for suspension. The visual presentation of each element makes the periodic system easier to understand than the conventional periodic table. Should be printed in colour to differentiate gases, liquids and solids and also different blocks(s,p,d,f). Includes</p>

	relevant information such as atomic number, atomic weights electron configuration, radio activity etc. Letters and number should be of suitable size to be easily read at a distance of 20ft. to be used as a teaching aid.
1.215	<p>pH meter</p> <p>pH meter stick type. A precession portable pH meter with a combination electrode that has built in automatic temperature compensation. The gel – filled electrode is plastic bodied and connected directly to the meter to provide rugged hand –held unit which enables simultaneous stirring and reading. When not in use, the electrode is protected by a screw on plastic sachet which maintains a moist environment for the membrane.</p> <p>Meter should come in a protective wallet complete with pH 4, pH 7 and pH 10 buffers for calibration.</p> <p>Range 0-14pH</p> <p>Resolution 0.01pH</p> <p>Accuracy ± 0.03pH</p> <p>Repeatability ± 0.02pH</p> <p>Display LCD digital</p> <p>Temperature compensation Automatic 0 to 45⁰C</p> <p>Power Supply 7 x 1.4V mercury cells</p> <p>Battery life 200 hours continuous use.</p> <p>Input impedance 10⁹Ω</p> <p>Dimensions (including electrode) 275 x 35 x 30mm</p> <p>Mass (meter + electrode) 100g</p>
1.216	<p>Pipette 10ml (Graduated)</p> <p>Borosilicate glass bulb form pipette. 10ml Capacity. Single graduation on upper arm. Permanent dark stained graduation. 10ml capacity.</p>
1.217	<p>Pipette 10ml (Normal)</p> <p>Borosilicate glass bulb form pipette. 10ml Capacity.</p>
1.218	<p>Pipette 25ml (graduated)</p> <p>Bulb type. 25ml capacity. Single graduation on upper arm. Borosilicate glass.</p>

1.219	Pipette 25ml (Normal) Bulb type.25ml capacity. Borosilicate glass.
1.220	Pipette Filler Comprises a bulb and three pinch valves controlling influx and efflux of pipette contents. dimensions bulb diameter 54mm.
1.221	Potentiometer – 4 wire (four meter) Base of metal or seasoned wood, strengthened to prevent warping. Four 1m. Lengths of constantan wire of dia. 0.5mm. Anchored to heavy copper end strips with 1m. Rule, graduated 0-100 cm x 1mm. mounted along side. Large brass terminal screws with 4mm. Sockets Provided at centre and end strips. Three additional terminals fitted on an isolated copper strip enable the use of this potentiometer as a Wheatstone bridge. Supplied with knife – edge jockey.
1.222	Potometer Ganong's For demonstration of transpiration rates and rate of absorption of water by a cut shoot or small plant. Consists of graduated horizontal glass tube bent down at one end to two reservoirs. The near reservoir with stopcock to control flow of water and the far reservoir fitted with a bored rubber stopper to take cut – shoot. Apparatus mounted on a wooden base (by spring clips). Horizontal capillary tube graduated in mms.
1.223	Power Pack 6V, 230V Input Output (+12) – 0-(-12) 1Amp regulator. DC
1.224	Power Supply Regulated + -12V Voltage In (V) Voltage out (V) 4.75 - 5.25 -12 to + 12
1.225	Power Supply Regulated + 12V AC DC 12 V ac Max 24 W 0 - 4 V dc Length x Width x Height = 168 x 92 x 85 mm
1.226	Power Supply Regulated + 5V Voltage In (V) Voltage out (V) 17.5 - 30 +5
1.227	Power Supply Unit – variable Voltage Low tension variable voltage supply, providing DC or AC at high currents. Continuously variable output, smoothed DC, overload safety cutout, regulated. Continuously variable 0 to 25 V.D.C. or 0 to 22V. AC. Output from two colour coded 4mm. Socket terminals. Lamp on front panel. Robust metal case with legs and carrying handle. With meters to indicate output

	voltage and current. Mains fuse. Works on 230V. AC. Supplied with 2.0m mains cable and plug top.
1.228	Pressure Cooker Pressure cooker 4l. Domestic type. Suitable for gas or electric heating 3 alternative pressure setting giving temperature of 108,115 & 121 ⁰ C with emergency valve.
1.229	Prism – Hollow Optically worked glass. For alcohol etc. 60 ⁰ X 60 ⁰ X 60 ⁰ . Height 60mm. Length of face 50mm. With glass stopper.
1.230	Prism 30⁰ x 60⁰ x 90⁰ 30 ⁰ x 60 ⁰ x 90 ⁰ Polished crown glass of refractive index 1.5 approx. Hypotenuse 30mm. Length 40mm.
1.231	Prism 45⁰ x 45⁰ x 90⁰ 45 ⁰ x 45 ⁰ x 90 ⁰ Crown glass with refractive index 1.5 approx. Polished faces. Hypotenuse 70mm. Length 50mm.
1.232	Prism 60⁰ x 60⁰ x 60⁰ 60 ⁰ x 60 ⁰ x 60 ⁰ Clear polished crown glass. Refractive index 1.5 each face 50mm x 50mm
1.233	Pulleys - System of 3 Open sided frame with hooks at each end. Brass/ Al pulleys of dia 25,37 & 50mm. mounted one below another in single line.
1.234	Pulleys Bench Type – Horizontal Pulley parallel to plane of board when clamped. Other specifications same as for pulley-bench type vertical.
1.235	Pulleys Bench Type – Vertical Brass pulley - 50 mm. Dia. In metal frame for clamping to benches or boards up to 30 mm. Thick. Simple bearing. Deep groove. Pulley at right angles to board when clamped.
1.236	Pulleys Double Two 50mm. brass pulleys mounted parallel in a stout metal frame. Plain bearings. Top and bottom hooks.
1.237	Pulleys Single 50mm. brass pulley in plain bearing with wide groove for whip cord. In stout metal frame with top and bottom hooks.
1.238	Pulleys Single Bench Rotating Aluminum pulley Diameter = 51 mm Thickness = 28 mm

1.239	Quill Tube Diameter = 0.5 cm Length = 1 m				
1.240	Resistance Box - 110ohms Same as for Resistance box 1110 ohms. Resistance 1,2,2,5,10,20,20 and 50 ohm. With total resistance of 110 ohms.				
1.241	Resistance Box - 1110ohms Plug pattern resistance box comprising a set of twelve non-inductively wound constantan wire coils with resistances of 1,2,2,5,10,50,100,200,200 and 500 ohms. Adjusted to accuracy within 0.1% giving a total of 1110ohms. Coil values are clearly marked on the top panel and an infinity gap is provided. A set of thirteen plugs, accurately tapered with a fluted plastic top. Case is of polished wood.				
1.242	Resistances - Standard Set None inductively wound coil in insulating case 55mm x 25mm. High with 2mm. Socket terminals. Set of six coils as follows:- <table> <tr> <td>Resistance</td><td>Current</td></tr> <tr> <td>Ohms.</td><td>mA</td></tr> </table>	Resistance	Current	Ohms.	mA
Resistance	Current				
Ohms.	mA				
1.243	Resonance Tubes Set Comprising two seamless brass tubes 305 mm.x 32mm. Dia and 305 mmx 25 mm.dia				
1.244	Respirometer Plant Seed For comparing rates of absorption or evolution of gases by small organisms, during respiration. The apparatus consists of 2 stoppered, boiling tubes connected by 3 way taps to either limb of a graduated manometer. One tube holds the organisms and has a syringe for altering the level of liquid in the manometer during setting up. The other tube acts as a control thermo-barometer. CO ₂ given off by the respiring organisms is absorbed by KOH resulting in a change in the level of liquid in the manometer tube.				
1.245	Rheostat - 20ohms Single tube, open Rheostat. Comprises a layer of resistance wire wound on an insulating, heat resistant tube which is supported by cast-metal end –cheeks. A sliding contact and three 4mm. Socket terminals provided. Resistance 0-20 ohm's/1A				
1.246	Rheostat -50ohms <table> <tr> <td>Resistance value</td><td>Rated current</td></tr> <tr> <td>0 – 50 ohms</td><td>1.5 A</td></tr> </table>	Resistance value	Rated current	0 – 50 ohms	1.5 A
Resistance value	Rated current				
0 – 50 ohms	1.5 A				

1.247	Rheostat 0-1000 ohms Construction same as Rheostat 20 ohms. Resistance 0-100ohm/2A
1.248	Ripple Tank Kit For the visual demonstration of the properties of wave motion and the effects of reflection, refraction, diffraction and interference. Apparatus consists of wooden tray with plate- glass base and detachable legs. (Overall size of tray 600mm x 500mm x 55mm. deep approx.) pair of support rods with integral G clamps attached to the sides to carry the wave generating system. Set of 4 metal barriers – two straight barriers 150mm x 25mm. A curved barrier 215mm cord length x 25mm high. A short straight barrier 25 x 25mm. 1.5 to 4.5 V DC electric motor mounted at centre of waxed wooden wave generator bar (330mm long) with row of holes. Two spherical dippers Set of 4 mesh beaches Apparatus to be supplied complete with all necessary accessories and instructions book. Accessories :- one each of the following Water dropper Wooden rod 230x 25mm. dia. Rubber tube 600mm x 6mm bore Glass plate 300 x 202 x 4mm Sponge Hoffmann clip Support for illuminant Illuminant Rheostat to control motor speed Ripple tank power supply unit Extra = 4.5 V.D.C. Motor.
1.249	Rod Lead Diameter x Thickness = 15.9 mm x 9.5 mm
1.250	Rod Acrylic (Perspex) Cylindrical rod. 300mm x 15mm dia. Polished.
1.251	Rod Cu Diameter x Thickness = 15.9 mm x 9.5 mm
1.252	Rod Ebonite Cylindrical rod. 300mm x 15mm dia. Polished.

1.253	Rod Glass Type Diameter (mm) 1 3 - 4 2 4 - 5 3 5 - 6
1.254	Rod Iron Length x Diameter = 150 mm x 10 mm
1.255	Rod Zn Length x Dia.= 150mm x 10mm
1.256	Rotating Platform Comprising a platform 300x300 mm. On which a student may stand in angular momentum experiments. Fixed with large diameter bearing to withstand off-center forces, at the same time allowing free rotation. The base is fitted with anti-slip rubber feet.
1.257	Rule 1/2m Light coloured box wood ruler of length 50cms. Horizontal reading. One edge calibrated in cms. and mms. And the other edge in cms. Only. Self coloured. Figured every 10mms.
1.258	Ruler 1m Length 100cms. Other specifications same as for ruler 1/2m.
1.259	Signal Generator For sine, triangle and square wave outputs Wide frequency range of 0.07Hz to 100kHz. Facilities for the modulation of the output by an external signal. Output amplitude =0-2V peak to peak Sine wave distortion = 0.6 % typical, 1.5% max. at 1kHz. Triangle wave linearity = 1% typical. Square wave rise & fall times = 0.3 S typical Frequency modulation = Max. to Min. Frequency ratio 3:1 Modulating frequency range DC to above 10 kHz. Frequency response = Oscillator input 0.07 Hz. To 30kHz. Input impedance 10k ohms. Supplied with instructions and maintenance manual.
1.260	Slides prepared Botany <i>Mucor</i> – Hyphae with sporangia <i>Allomyces</i> – Bacteria – Bacillus, Coccus, Spirillum <i>Cycus</i> – T.S. Microsporophyll, L.S. ovule Monocot – Stem L.S & T.S Dicot stem – T.S. primary & secondary growth Dicot root – T.S. Primary & secondary growth Monocot (grass) & Dicot – Leaf T.S.

	<p> <i>Nerium Oleander</i> – T.S. of leaf Dicot stem TLS after secondary growth Dicot stem RLS after secondary growth C4 plant leaf –T.S <i>Anabeana</i> <i>Nostoc</i> <i>Microcystis</i> <i>Paramecium</i> <i>Amoeba</i> Diatom <i>Chlamydomonas</i> –vegetative stage <i>Spirogyra</i> <i>Cladophora</i> <i>Cosmarium</i> <i>Clostridium</i> <i>Aspergillus</i> <i>Penicillium</i> Yeast <i>Nephrolepis</i>-Prothallus (whole mount) Pollen Sac TS Paranchyma Collenchyma Sclerenchyma } T.S. Xylem – T.S, L.S Phloem – T.S., L.S. Pollen sac – T.S. Ovary – L.S. Ovary LS Specimens (Whole) – Sargassum <ul style="list-style-type: none"> - <i>Gelidium</i> - <i>Ulva</i> - <i>Selaginella</i> - Sea animone - Jelly Fish - <i>Neris</i> Microscope slides for students use 76 x 26mm thickness. 1-1.2mm. edge, finished ground. Soda glass Cavity slides – 76 x 26 mm thickness 1.2 – 1.5mm 15mm cavity diameter Cover slips / Cover glass – 18x18 mm 0.09- 0.13 thick colourless made with clear glass. </p>
1.261	<p>Slides Prepared Zoology</p> <p>Set of 43 micro slides stained and labeled, permanently mounted on microscope slides. Supplied in slide box. Each set to consist of one each of following slides:</p> <ol style="list-style-type: none"> 1. Squamous epithelium (scrapings from human mouth) 2. Cuboidal epithelium (kidney tubules section)

	<ol style="list-style-type: none"> 3. Ciliated epithelium. 4. Pseudostratified ciliated columnar epithelium(t.s.trachea or bronchus) 5. Simple columnar epithelium. (t.s. small intestine) 6. Stratified squamous epithelium (non keratinized t.s. oesophagus) 7. Transitional epithelium (bladder section) 8. Areolar connective tissue. (Stained for collagen and elastic fibers.) 9. Adipose tissue (showing empty flat cells.) 10. White fibrous connective tissue (l.s. tendon) Muscular tendinous junction l.s. 11. Yellow elastic connective tissue (l.s.ligament) 12. Hyaline cartilage (section rib or t.s. trachea) 13. Yellow elastic cartilage (section epiglottis or ear) 14. White fibro cartilage (l.s. – intervertebral disc) 15. Compact bone T. S. Femur (showing periosteum and vessels in harversian canals). 16. Striated muscle (teased for striation and nuclei) 17. Non striated muscle (intestinal wall) 18. Cardiac muscle (for striation) 19. Nerve cells (isolated smear of spinal cord) 20. Vertebral column T.S. (to show spinal cord ,ganglion & nerve) 21. Artery and vein (thin section) 22. Entire heart L.S. (L.S. of entire heart of small mammal.) 23. Human blood smear (suitably stained) 24. Stomach T.S. (injected) 25. Small intestine (injected to show capillaries in villi. 26. Thyroid gland (section) 27. Human oesophagus T.S. 28. Human scalp (T.S) 29. Kidney L.S. entire organ near median plane 30. Human ovary T.S.(mature organ) 31. Human testis T.S. 32. <i>Amoeba proteus</i> (stained) 33. <i>Euglena</i> (stained) 34. <i>Paramecium</i> (stained) 35. <i>Hydra</i> (whole, budding) 36. <i>Obelia</i> (w.m. stained) 37. <i>Fasciola hepatica</i> (w.m.stained) 38. <i>Planaria</i> (w.m. Stained) 39. <i>Teania</i> sp.T.S (stained) -Segments 40. <i>Teania</i> scolex (w.m) 41. <i>Ascaris</i> t.s. female stained. 42. <i>Ancylostoma</i> (male w.m) <p>(slides 01 to32 of human tissue, except slide 23)</p>
1.262	<p>Slinky 150mm</p> <p>Wire helix for illustrating wave motion. Flat section steel wire in helical coil, anodized, 75mm. dia, coil. Closed length 150mm.</p>
1.263	<p>Sodium Lamp Kit</p> <p>45 W sodium discharge tube. Housed in a metal shield with a 25 mm diameter aperture. For use on 200 – 250 V a.c supplies.</p>

1.264	Soil Augur Steel, 25 mm diameter with eye for Tommy bar.
1.265	Solar Cell Kit To demonstrate conversion of solar energy to electrical energy, storage of electrical energy and subsequent use for lighting etc. Kit to consist of <ol style="list-style-type: none"> 1. Matched solar panel 0.5W 2. Nickel Cadmium dry battery 1.5Ah 3. Electric bulb with holder 4. Miniature motor Each solar panel having peak current output of above 250 mA. Terminal screws to be provided. Kit to be contained in a suitable box together with instructions.
1.266	Solenoid For demagnetizing nails etc. The coil of about 250 turn of insulated heavy guage copper wire is wound on an insulating bobbin and should be able to carry max. current of 3A. When used on a low voltage AC supply in series with a control rheostat. Approx. 250mm. long x 30mm int. dia.
1.267	Sonometer (with wire plank and weight) Comprising a hollow wooden sounding box 1.2m x 115 x 60mm. having a 1m. scale attached between the fixed bridges and with a pulley and wrest pin for the wires. Complete with a long movable bridge, wrest pin key and two each of brass and steel wires of length 1.5m dia. 0.7mm.
1.268	Spectrometer Main structural parts including the collimator and telescope are heavy castings. Other metal parts are polished bright. Carried upon three plastic legs. Scale = 170mm. dia. 0-360 x 1 independently rotatable with locking screw. Spring loaded vernier scale of rust proof metal Collimator = with axis adjustment. Objective lens 150mm. focal length. 21mm. aperture. Unilaterally adjustable slit 6mm. long. Telescope – Fine adjustment, locking screw and axis adjustment. Objective of 170mm, 21mm. Aperture spiral focusing system. Eyepiece incorporated with cross wire, and locking ring focus adjustment. Prism table with three leveling screws and lines marked to assist placement of prism. Supplied with –small screw driver, tommy bar, prism clamp for prisms up to 40mm. high. 1 diffraction grating holder of aperture 25 x 25mm Packed in sturdy box with carrying handle. Supplied with instructions and maintenance manual.
1.269	Spherometer Range +7 to -7 x 0.001mm. Vertical scale +7 to -7 in 1mm. divisions Dial 50mm dia. 50 divisions. Screw thread =0.5 mm pitch x 6mm dia. Sturdy metal construction. Stainless steel.

1.270	Spot Plate Concave depressions on a pure white porcelain block of dimensions 85 x 55 x 10mm. dia. of depressions 20mm. Number of depressions 6.
1.271	Springs Helical For experiments of spring pendulum, single pendulum, Hopkins law etc. 0.5N, 1N, 3N range set.
1.272	Stand – Funnel Comprising white polythene base 300 x 230mm. PVC rod 600 x 12mm and acrylic support for two conical funnels
1.273	Stand –Thermometer Universal clamp 3 forks with boss head.
1.274	Stand Burette (metal) Circular burette stands to hold 10 burettes vertically. Polypropylene, polyester and glass fiber construction adjustable for height. Base should be triangular and made of hard iron. Lower disc with depressions to hold 10 burettes. Upper disc with 10 holes for burettes with 15mm diameter.
1.275	Stand Jack Laboratory Jack. 10 x 10cm, 18cm high max.
1.276	Stand Laboratory (with base boss head and clamp) Heavy metal base 2 kg . Base dimensions 250x 160 mm. plated screw-in metal rod 600 mm x 12 mm. Dia. Supplied with boss head, clamp and holder., boss head is cast-iron, with slots to take rods up to 15 mm. dia . Clamp-twin cork lined die-cast, compressed steel jaws. Length of rod 135 mm. jaw capacity 100mm. funnel holder=iron ring of inner dia. 60 mm. To hold funnel is welded to arm 120 mm. Long. Supplied in set of 1 stand, 1 clamp, 2 boss heads and 1 funnel holder.
1.277	Stand Pipette Circular Pipette stands to hold 10 Pipette vertically. Polypropylene, polyester and glass fiber construction adjustable for height. Base should be triangular and made of hard iron. Lower disc with depressions to hold 10 Pipette. Upper disc with 10 holes for Pipettes with 10mm diameter.

1.278	Stand Tripod Triangular/circular top. All metal construction. Painted. Height 200 mm. side of triangle 100 mm./inner dia. of circle 90 mm.
1.279	Steam Trap All glass Over length approximately 160 mm
1.280	Stop Watch – Digital Resolution : 1 / 100 s Power supply: 1 battery. Dimensions : 80 x 57 x 19 mm Weight : 80g Time up to 9 hrs 59 mins 59 secs.
1.281	String vibrator with speaker and Amplifier The String Vibrator allows students to study the fundamental characteristics of mechanical waves including wave speed, frequency, wavelength, amplitude, interference and resonance. <div style="background-color: #e6f2ff; padding: 5px; margin-top: 10px;"> Includes </div> <ul style="list-style-type: none"> • String Vibrator Unit • Constant Frequency Power Supply (60 Hz) • Wave Cord (3 meters) Features <ul style="list-style-type: none"> • Two recessed clamping surfaces allow it to be secured to a table with a C-clamp • Built in rod clamps allow for mounting vertically or horizontally on a standard lab rod • Tough custom plastic case to stand up to student use <div style="margin-top: 20px;"> Driving frequency from included Power Supply • Depends on the main power supply (50 or 60 Hz in most countries) </div> <hr style="border: 0.5px solid #ccc; margin: 20px 0;"/> <div style="margin-top: 20px;"> Acceptable output power from a variable signal • ± 1 Amp at 10 V max </div> <hr style="border: 0.5px solid #ccc; margin: 20px 0;"/> <div style="margin-top: 20px;"> Approximate dimensions • 12.7 cm x 7.5 cm x 5 cm </div>

	<p>Thickness at recessed clamping surface</p> <ul style="list-style-type: none"> • 3 cm <hr/>
1.282	<p>Stroboscope – Electronic With power LED flasher. AC/DC operated.</p>
1.283	<p>Switch Simple Contact Nickel - Plated, with Silver contacts, on Keys black plastics base 90 x 65 mm with rubber feet. Plug Nickel - plated, on black plastics base Keys 90 x 65 mm with rubber feet.</p>
1.284	<p>Tape Measure -30m Tape measure - 'FIBRON' 14 mm wide Graduated every 10 mm Figured every 100 mm Length 30 m</p>
1.285	<p>Tape Measure -2m 2m. length. Metric scale. Tape size 10mm x 1mm. Made of rust proof metal. Rewind handle / spring.</p>
1.286	<p>Telescope /Microscope Mount For investigation of the principle of lenses and their magnification, telescopes and microscopes. An angle section metal bar 750 x 25 x 25 mm.is provided. With a support rod 150 x 10 mm. Dia. for mounting in an ordinary laboratory stab and boss head. Three spring lens - holders for 50 mm.dia. Lenses are mounted on spring clips to permit movement along the bar for focusing.</p>
1.287	<p>Test Tube Rack Made of hard wood. Waxed. With heavy wooden base 10 holes of 20mm. dia. And 2 holes of 30mm dia.</p>
1.288	<p>Thermocouple Copper – constantan wires. One each of copper and constantan, approx. 300mm. long, twisted and brazed together.</p>
1.289	<p>Thermometer 0C to 360C Celsius scale. Supplied in protective case. Scale 0° - 360° x 5° c . Length approx 300 mm.</p>

	Length of scale approx. 200mm. 75 mm. Immersion. Yellow background preferred.
1.290	Thermometer 0-50 C Alcohol Alcohol thermometer. Range 0-50 ⁰ C x 0.5 ⁰ C. Supplied in protective case. Length approx. 300mm. Length of scale approx 200mm. immersion. Yellow background preferred.
1.291	Thermometer -10 to 110C Alcohol thermometer. - 10 to 110 °c x 1.0 °c supplied in protective case. Length approx 300mm. Length of scale approx 200mm. 75mm. Immersion. Yellow background preferred.
1.292	Thermometer -32F to 212F Mercury Alcohol in glass with yellow enameled black and reinforced bulb diameter 6.5 mm. Range 32 ⁰ F to 212 ⁰ F Grade 1/180 ⁰ F Length 460 mm.
1.293	Thermometer -50 to 50C Alcohol thermometer. Range -50 to 50 ⁰ C. Supplied in protective case. Length of scale approx. 200mm. 75mm. Immersion. Yellow background preferred.
1.294	Thermometer Clinical Scale in Celsius. Supplied in protective case. Lens front. Stubby bulb. Digital type.
1.295	Thermometer Constant Volume Air With detachable air thermometer bulb approx. 75mm. dia. Connected via three way stop cock to mercury tube with zero index fused inside its upper end. Reservoir tube sliding on vertical clamping rod alongside scale graduated 0 to 500mm. Copper vessel surrounding the bulb supported by detachable metal shelf mounted on heat insulating metal screen. Mounted on wood stand with base in the form of mercury tray. With instructions.
1.296	Thermometer Max & Min Wall mounting alcohol in glass thermometer with the markers mounted on a dual scale -10 ⁰ - 50 ⁰ C x 1 ⁰ C. Designed for horizontal mounting and reset by swirling the frame to the vertical position. Overall length 235mm. In plastic frame with instructions. Calibrated - 20 ⁰ C - + 55 °C Overall length 224 mm
1.297	Thermometer Wet Dry Bulb Comprising two -10 ⁰ C to +55 ⁰ x 1 ⁰ C thermometers. One bulb is covered in muslin which is kept moist by being connected to a reservoir of water. Mounted in an enameled case with hinged cover. Supplied with spare wicks and hygrometric tables.
1.298	Thermopile A cylindrical plated metal body 60 x 40mm. dia. Houses, in one end face, a pile comprising 112 copper / constantan couples, connected in series, arranged to give a sensitive area of approx. 5cm. Rear end of body carries a plastic panel with two colour coded 4mm. sockets. Mounting rod. Copper funnel to fit over sensitive end – length 150mm Mouth dia. 105mm.
1.299	Ticker Timer - (Vibrator)

	3-6 v dc vibrators for measurement of velocity and acceleration, using timing marks produced on a moving paper tape. Working on the same principal as the electric bell. Mounted on a wooden base. With two reels of tape.
1.300	Tongs Crucible Wrought iron. Straight with bent jaws. Jaws corrugated inside. Length 200 mm.
1.301	Tool Kit (supplied in a plastic box) <ol style="list-style-type: none"> 1. Hand drill with bit set (60f) 2. Hacksaw frame 3. Chesil 1", ½", ¼" 4. Pliers Combination <ul style="list-style-type: none"> Pliers Pointed nosed Pliers Long nosed Pliers cutting 5. Tin snips 6. Soldering iron 40W (electric) 7. Spirit Level 8. Wire stripper 9. G, Clamp 6" 10. Hammer Claw 11. File Tri angular <ul style="list-style-type: none"> Flat 12. Planer 13. Hand saw 14. Screw driver (Set of 6)

Screw driver (Philips –set of 6)

15. Hand Grinder (Bench mount)

16. Engineers square

17. Spanner (set of 6)

18. Allen Keys Set

19. Paper cutter

20. Pop rivet machine (small)

21. Mains tester

22. Hack Saw blades- 6

23. Hammer (Ball ended)

Oscilloscope, Cathode Ray (Single Trace)

Oscilloscope for students offering multi range bandwidth and time base speed ranges.
15 M Hz, single channel, 125 mm dia, CRT.

Volt Div. and Time Div. controls are digitally encoded type controls with LCD display of settings

Supplied with matching microphone

System must generate high voltage using a power transformer secondary winding.
Must have built in a signal generator capable of generating basic wave forms sine/
square/ triangular in the Audio range of frequencies.

Vertical deflection (Y)

Band width – DC – 15 MHz

Req time 20 – 100 ns.

Input Impedance -1M Ω approx.

	<p>Input voltage max. 400 V DC or AC peak to pack</p> <p><u>Horizontal deflection (X)</u></p> <p>Band width – 1 Hz – 1 mHz</p> <p>Input Impedance -1M Ω approx.</p> <p><u>Time Base</u></p> <p><u>Time coefficient</u> - Micro controller based 18 calibrated steps.0/5 μs / Div – 0.25 /Div (1-2.5 seq) With variable controls to 0.2 ms/ Div.</p> <p>With build in Component Tester and Continuity tester (to test voltage, current frequency etc)</p> <p>Must provide operation manuals.</p>
1.302	<p>Transformer Demonstration</p> <p>With one mains coil 230 v.50 hz, 2400 turns and two interchangeable secondary coils, 65 and 13 turns giving outputs of 6 and 12 v. approx. At 2 a max. Laminated iron core is in 2 sections t and u with butt joints. Stem of the t having a cross section 25 x 25 mm.</p> <p>Simple channels and wing - nut clamping arrangement facilitates quick assembly and Interchange of coils. Mains coil provided with 1 m. Of 2 core captive mains cable. Secondary coil has 4 mm. socket terminals. Number of turns, voltage and current is marked on each coil.</p>
1.303	<p>Transformer Step Down 230V/3V</p> <p>Input 230V, output 2V, 6V,9V,12V. 2A. with input power card, mounted in a box (metal covered) for safety.</p>
1.304	<p>Trolleys (for ticker timer vibrator)</p> <p>Dynamic wooden / plastics trolleys for investigation of momentum, velocity, acceleration, using the ticker timer specified above.</p>
1.305	<p>Trough – Glass (Large)</p> <p>300mm Dia./125height glass</p>
1.306	<p>Tuning Forks - Set of 8</p> <p>Eight tuning forks of best quality steel, giving scales from C 256 to C 512. Each fork marked with its pitch and frequency. Prong lengths between 85 and 120 mm. supplied in protective box.</p>
1.307	<p>Voltmeter 0-1V</p> <p>0-1V DC. Accuracy 2% DC, 2.5% AC. Zero adjustable. Electronic protection. Dimension 210 x 150 x 60mm.</p>
1.308	<p>Voltmeter 0-5V</p>

	0-5V DC. Moving coil type. Anti - parallax mirror. Zero adjustor. Large clear dial. Sturdy cover. (Preferably transparent). Colour coded terminals- screw on and 4mm socket. Scale 0-5 V x 0.1V
1.309	Water Bath Electrical boiling water 230V.4 Liters; Test tube diameter13mm:No. of holes 36 stainless steel racks with a perforated bottom shelf.
1.310	Water Turbine <ul style="list-style-type: none"> Water wheel may make out of wood, metal, or plastic. It takes the shape of a spool set on its rim, with flat planks (called "blades") attached between the top and bottom of the spool. The water pushes against these blades, turning the wheel. The axle, is a bar of metal that holds the wheel up. The ends of the axle rest in bearings, which sit in some kind of support structure. The generator consists magnets, coils of wire, and metal plates. Mechanical connections attach the water wheel to the generator. This connection can be made with spoked wheels and a chain or belt. Needs additional electrical equipment in order to function properly. It needs storage batteries to charge, and also a voltage regulator to make sure that the electricity from the water turbine is regular and even. It should also have a blocking diode to prevent the batteries from leaking electricity back into the generator
1.311	Wind Power Kit Mini wind turbine that generates actual electricity <ul style="list-style-type: none"> Attached weather vane for repositioning into the wind Power output of 8.0V/100mA at wind speeds of 12 mph Perfect for teaching wind power fundamentals
1.312	Wind Wane The vane rotates on a ball- bearing spindle which is extended below the base. By means of connecting sleeves and direction rods this spindle can be extended into the building on which the vane is mounted and a simple direct – reading dial improvised. The base of the wind vane has a 1 ½ “ socket for screwing to a steel pipe.
1.313	Young's Modulus App. With Vernier Type For wires. Apparatus comprises a scale plate carrying a scale 0-25 mm. approx. Vernier scale, which is movable, reads to 0.1 mm. Both have bars with clamping screws for the wires being investigated, and hooks to carry tension weights and loading masses. Provision is made for zero. Adjustment. A ceiling clamp is provided. A tension weight between 1.0 kg and 1.5 kg is also to be supplied. Set of wires = one each of 6 m long wires of brass, copper and stainless steel of gauge 21 swg and 22swg (six wires per set)
2.000	PERISHABLES
2.001	Beaker 100ml

	Tall form beaker of borosilicate glass. Parallel sides. With rim and spout capacity 100ml
2.002	Beaker 25ml Borosilicate glass beaker. 50 ml. Capacity. Parallel sides. Rim and spout tall form capacity 50ml
2.003	Beaker 50ml Borosilicate glass beaker. 50 ml. Capacity. Parallel sides. Rim and spout tall form capacity 50ml
2.004	Block Charcoal For blow pipe work.
2.005	Bottle Dropping - 30ml TK pattern. 30 ml. Clear glass bottle with grooved glass grip stopper and spout
2.006	Bottle Dropping - 60ml Polythene with screw cap. Polythene teat and polythene pipette. Capacity 60 ml.
2.007	Bottle Polythene 2 1/2 l Rigid polythene. Wide mouth. Polythene screw cap with
2.008	Bottle Reagent - 100ml Amber Amber glass. Other specification as for reagent bottle-clear.
2.009	Bottle Reagent - 100ml Clear Clear glass reagent bottle 100ml. Capacity with narrow neck and lip polypropylene or glass (hexagonal) stopper.
2.010	Bottle Reagent - 125ml Amber Amber glass. Other specification as for reagent bottle-clear.
2.011	Bottle Reagent - 125ml Clear Clear glass reagent bottle 125ml. Capacity with narrow neck and lip polypropylene or glass (hexagonal) stopper.
2.012	Bottle Reagent - 250ml Amber Amber glass. Other specification as for reagent bottle-clear.
2.013	Bottle Reagent - 250ml Clear Clear glass reagent bottle 250ml. Capacity with narrow neck and lip polypropylene or glass (hexagonal) stopper.
2.014	Bottle Wash 250ml –Plastic Flexible walled polythene squeeze bottle. Round section with swan-neck and jet through screw cap. Capacity 250ml.
2.015	Brushes Beaker Bristle head 70mm dia x 150mm long. on wood handle. Overall length 400mm.
2.016	Brushes Burette

	Nylon, with bristle end mounted on galvanized iron twisted wire handle. Overall length 900mm. Head 15 x 150mm.
2.017	Brushes for Measuring Cylinder Nylon fan shaped end on wire handle. Head diameter x length : 65 x 120mm. Overall length 380mm.
2.018	Clay Triangle Pipe Clay. Length of clay per side 65mm. Overall length of side of triangle 110mm.
2.019	Clips Crocodile With strong spring and clamping screw for wire. Shank accepts 4mm. plugs. Colour coded. Rust resistant.
2.020	Clips Mohr Nickel/chrome plated brass, jaw length 70mm. Jaw spread 25mm. Spring loaded.
2.021	Clips Screw Heavy duty. Extra strong for heavy wall, flexible tubing. distance between bars 30mm.
2.022	Clock Glass Borosilicate glass. Heavy duty. Concave, Smooth edges
2.023	Cobalt Glass Cobalt - blue glass for examination for potassium in the presence of sodium etc. 75 x 50 mm
2.024	Corks Bark (Stoppers) Assorted Long form. Bottom dia. 13, 16,19,22,25 and 28 mm. Supplied in packs of 150, 25 nos. of each size, per pack.
2.025	Cylinder - Measuring 100ml Clear glass. Graduations and inscriptions in permanent stain. 100ml. capacity. Graduations in 1.0 ml. With rim and spout.
2.026	Cylinder - Measuring 10ml Clear glass. Graduations and inscriptions in permanent stain. 10ml. capacity. Graduations 0.2ml. With rim and spout.
2.027	Cylinder - Measuring 250ml Capacity 250ml. Graduations in 2.0ml. Other specifications same as above.
2.028	Cylinder - Measuring 25ml Capacity 25ml. Graduation in 0.5ml. Other specifications as above.
2.029	Cylinder - Measuring 50ml Capacity 50ml. Graduation in 0.5ml. Other specifications as above.
2.030	Cylinder - Measuring 5ml Clear glass. Graduations and inscriptions in permanent stain. 5ml capacity. With rim and spout.

2.031	Droppers Polythene Polythene with screw cap. Polythene teat and polythene pipette. Capacity 60ml.
2.032	Funnel Glass Medium Glass Funnel. Medium Neck
2.033	Funnel Glass – Small With 6mm diameter side arm. For small scale filtration applications.
2.034	Funnel Short Neck 100mm dia Glass Funnel. Short Neck. 100mm dia.
2.035	Glass Tubing - Assorted (Pack of 30 pcs) Strong glass. Length 50 cms. Wall thickness 1.5 to 2.0 mms. Outer dia. 5 and 7 mms. 20 of each respectively per pack.
2.036	Litmus Paper – Blue Litmus indicator paper in book form – blue.
2.037	Litmus Paper – Red Litmus indicator paper in book form – red.
2.038	Mirror Plane Plane strips. Optically flat. 150x50mm.silvered back with protective covering.
2.039	Petri Dish Borosilicate glass.90mm diameter.15mm height. With cover.
2.040	pH Paper pH indicator paper in book form.
2.041	Pins – Optical Nickel plated brass. Heavy gauge. Length 75mm. In boxes of 100.
2.042	Potentiometer 100K A potentiometer (volume control) of 100k for radio.
2.043	Resistors -20 ohms
2.044	Resistors -30 ohms
2.045	Resistors with colour bars Set of resistors 22 Ω , 47 Ω ,56 Ω ,100 Ω ,220 Ω , 470 Ω 1K,5.6K,10K,15K,47K,100K,220K,470K,1m Ω ½W or 1W, carbon resistors with colour bars.

2.046	Rod Glass (Pack of 30Pcs) Outer dia. 5mm., 6mm., 7mm., length 50cms. 10 of each size per pack.
2.047	Rod Polythene Polypropylene coated metal. Length 300mm. Both ends plain.
2.048	Rule 30cm Injection moulded transparent plastic rules. Could be submerged in liquids for long periods without warping or swelling. Black marking (permanent). Vertical reading. Both edges divided to cms and mms. Figured every cm. Reads from bottom to top.
2.049	Slides - Microscope (Box of 50) Good quality glass slides for microscopy. In boxes of 50.
2.050	Spatula (plastic) Polypropylene. With parallel sides, Flexible, Plastic blades. Blade length 150mm. Blade width 25mm. Can be autoclaved. Moulded taper shape. with chamfered ends.
2.051	Stopper (Rubber) Asstd. Best quality solid rubber stoppers. Hardness range 41-47. Long form. Supplied in packs of 100, 20 nos. of each size per pack. <div style="display: flex; justify-content: space-between;"> <div>Bottom dia.</div> <div>Top dia.</div> </div> <div style="display: flex; justify-content: space-between;"> <div>15mm</div> <div>18.0mm</div> </div> <div style="display: flex; justify-content: space-between;"> <div>19mm</div> <div>22.5mm</div> </div> <div style="display: flex; justify-content: space-between;"> <div>21mm</div> <div>24.5mm</div> </div> <div style="display: flex; justify-content: space-between;"> <div>23mm</div> <div>26.5mm</div> </div> <div style="display: flex; justify-content: space-between;"> <div>25mm</div> <div>28.5mm</div> </div>
2.052	Test Tubes (Borosilicate) standard sizes 150mm X 16mm. Borosilicate glass. With rim. Supplied in pack of 100.
2.053	Tiles Porcelain (white) Pure white glazed tiles. 150 x 150mm.
2.054	Transistors D –400 C-828 C3055 C 1061
2.055	Transistor power PNP Transistor power –PNP =max. A 5-7 collected current 5 amp. Of suitable value.
2.056	TTL Chips Set of 6 TTL chips of fol. Values- 7400, 7402, 7404, 7408, 7432, 7486 set to consist of 1 each of the above.
2.057	Tube – Rubber For general laboratory use. Bore 6mm. Wall Thickness 2mm.lengths of 5m.
2.058	Tube boiling (Borosilicate) 150mm X 25mm. dia. Borosilicate glass. With rim. Supplied in packs of 100.

2.059	Tube Capillary (Pack of 40) Bore 0.5-1mm, 1-1.5mm External diameter 4- 5mm Approximately 0.5m length. Set of 12 several diameter tubes.
2.060	Tube Ignition Soda glass test tubes with rim. 50mm X 10mm. dia. In packs of 100.
2.061	Tube Pressure (Rubber) For pressure and vacuum work. Bore 6mm. Wall thickness 5mm. lengths of 3m.
2.062	Tube Specimen 100mm Flat bottom. With polythene stopper.
2.063	Tube Specimen 50mm Flat bottom. With polythene stopper.
2.064	Tube- Synthetic Transparent polythene tube of inner dia. 6mm. wall thickness 2mm. lengths of 3m.
2.065	Tube T Borosilicate glass, Horizontal limb 75mm, Vertical limb 50mm long, Riffled edges. Ext. dia. 7- 8mm.
2.066	Tube U Absorption tube.- U form. Strong glass walls. Height of arm 150mm. Bore 20mm.Parallel arms
2.067	Tube Y Borosilicate glass. Each limb 50mm plain edges. Ext. diameter 7-8mm.
2.068	Watch Glass Block form with cavity, complete with cover glass. 40x 40mm with 4 cm ³ cavity. Borosilicate glass.
2.069	Wire connecting Enameled copper - Dia 0.7mm 0.4mm 0.2mm 0.15mm
2.070	Wire Constantan Dia 0.71 mm
2.071	Wire Copper (Dia 0.2mm)
2.072	Wire Copper (Dia 0.4mm)

2.073	Wire Copper (Dia 0.71mm) Enameled
2.074	Wire Copper (Insulated)
2.075	Wire Gauze Asbestos centre. 150mm x 150mm.
2.076	Wire Nichrome (Dia 0.4mm)
2.077	Wire Sonometer Steel wire. Specific density approx. 7.93 gm./cm^3 Set of 4 wires. Each of length 1.5m. Diameters 0.8, 0.7, 0.56, 0.46mm. Ends looped, ready for use.
2.078	Wire Young's Modulus One each of 6m long wires of brass copper and stainless steel of gauge 21 SWG and 22SWG. Six wires per set.