Annex 1

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 Ignitior** 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** 3.1.1Diversity of organisms Domain -Archae - Bacteria - Eukarya Domain – Eukarya Kingdom – Protista Fungi Plantae Animalia Kingdom - Plantae Phylun – 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

	Class- Polyplacophora Bivalvia Gastropoda Cephalopoda Phylum – Arthropoda Class – Arachnida Chilopoda Diplopoda Crustacea Insecta Phylum - Echinodermata Class – Asteroidea Ophioroidea Echinoidea Holothroidea Crinoidea These domains, kingdoms, phyla , classes should include - General Characteristics - Appropriate examples - Pictures/ Videos (moving) of organisms - Identification (Characters) (Time – 30 min)
1.010	**Audio Visual of Ecosystems of Sri Lanka** Ecosystems – rivers, lakes, estuaries, grassland, forest –their biotic and abiotic factors and artificial ecosystems (CD- 15 minutes)
1.011	**Audio Visual of Genetic Engineering** - 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 Animal Husbandry Plant breeding Pest control Medicine Threats and problems of Genetic Engineering -Genetic code - Replication - Role of restriction enzymes - Vectors – Plasmids

	λ phage (Time – 15 min)
	1 Animation of • DNA recombinant technology • DNA Finger printing • Gene cloning • DNA extraction (10 min) 11.2.2 Non mendelian genetics – Incomplete dominance, poly allelism, gene interaction polygenic interaction, gene linkage, human sex determination. 11.1.6 Mutation – types, causes & human genetic disorders. 11.1.8 Evolution – Larmask and Darwin's evolution theory (10 min)
1.012	**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, Dolamite, Mica, Feldspar, Quartz, Keoline, Corrundum, 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
1.013	**Audio Visual of Nano Technology** Introduction to Nano Technology Applications (15 min)
1.014	**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 - Lock and Key theory - Induced Theory (Time – 10min) 2.4.4 – Cellular respiration - Structure of mitochondria - Anaerobic and Aerobic respiration - Glycolysis - Kreb Cycle - Electron transport $NADH_2$,$FADH_2$ oxidation (Time – 15 min) <u>Photosynthesis</u> - Light Reaction Cyclic photophosphorilation Non Cyclic photophosphorilation 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 Xylem – uplifting of water -Transpiration pull - Adhesion - Cohesion - Root Pressure Water movement within cell. - Apoplast pathway - Symplast pathway - Vascular pathway Animation for xylem water movement (Time 15 min) 6.1.3 – Transpiration - Structure of dicot and monocot epidermal peel –(grass) stomata - Opening and closing mechanism of stomata - K^+ ion mechanism - Starch - Photosynthesis - Factors affecting transpiration – Internal, External. - Adaptations found in plants to reduce transpiration with examples (Time – 15min) 9.1.6 – Plant movements - Tropic - Mastic - Tactic Types with examples – animation + moving videos
1.015	**Audio Visual of Structure and Function of Human Biological Systems** <u>Connective Tissues</u> Loose con. Tissue White fibrous tissues Yellow fibrous tissues Adipose Tissue <u>Cartilage</u> Hyaline White fibrous Yellow fibrous

Bone
Compact bone –T.S, L.S
Spongy bone

Muscles
Smooth muscle
Cardiac muscle
Skeletal muscle

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 O_2 &CO_2 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 nephrone

- 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'scorpurcle, 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 percepted (Time – 10min) <u>Human Endocrine system</u> Major endocrine glands - Pitiuitary glands - Pineal gland - Thyroid gland - Parathyroid gland - Thymus gland - Adrenal gland - Pancrease - 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 – Invitra 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) 10.1.6 – Audio visuals of sexually transmitted diseases - HIV - Gonorrhea - Syphilis - Herpes (10 min)
1.016	**Audio Visual of Tissue Culture Process** Tissue culture process demonstration with totipotency and micro propagation Culture media preparation (moving video demonstration is a must.) 9.1.7 – Moving video of tissue culture - Steps of process of tissue culture - Totipotency - Explants - Micropropagation - Advantages & disadvantages Should be included along with narration Uses of tissue culture Use of plant growth substances in tissue culture (10 min)

1.017	**Audio Visual of Water Quality Testing Kit** CD/DVD to demonstrating methods of testing. (30min) Physical quality – Colour, turbidity. Chemical Quality – Electrical conductivity (or Salinity) - Nitrate ions - Hardness of Water. - pH - Heavy metals in water (Lead/ mercury/Chromium ect.) - Chlorine - Nitrite - Ammonia BOD and COD values
1.018	**Audus Apparatus (Photosynthesis apparatus)** Designed for the measurement and analysis of the gas evolved by water plants under different light conditions. The gas evolved is drawn into a calibrated capillary tube for measurement. It can be drawn eventually into a plastic syringe and removed for analysis. 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. The open end of the tube is bent downwards to contain the specimen which is supported in a beaker. 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.
1.019	**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 and0-1g x 10mg respectively. 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.

1.020	**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.
1.021	**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.
1.022	**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
1.023	**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.
1.024	**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.
1.025	**Basic Education Meter.** To be used as an Ammeter and Voltmeter by moving the top cover. Measuring range 100µA 1A 5A. 100 mV 1V 10V 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 10000ml. 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, height70 mm Ø 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 trip (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	**BoxBattery** 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 guage 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. Nickle 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 colourdiagrammes.
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 te spiral fitted in a wooden case packed with felt for thermal insulation with removable front for showing te 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.
1.093	**Dynamic Trolley & Inclined Plane (U Type)** Angle adjustable with indicator, with weights.

1.094	**Dynamo – Demonstration** A dynamo to demonstrate both AC and DC A 2 pole armature wound with enameled copper wire, and a permanent magnetic field provided by a removable bar magnet. Open construction with all components readily observable. Mounted on a base plate each carries a hand – driven pulley which is coupled to the smaller dynamo pulley to give a step – up ratio approx. 9:1 Electrical out put via 2mm sockets. Low voltage bulb as output indicator. Also useable as a motor on 4-6 V DC.
1.095	**Earth Globe** 18.2 cm dia with stand
1.096	**EHT Supply** Impact 220V/50 Hz AC output 0-6kV,2mA,DC 6.3V, 3A AC With indicating Voltmeter. (kV)
1.097	**Electric Bell Demonstration Model** 3- 6 V mounted on wood/plastic base
1.098	**Electro Magnetic Induction Apparatus** **(Basic Solenoid Set)** Comprises a solenoid 500 mm x 60 mm dia. Wound wit 2500 turns per meter of 22 SWG insulated copper wire on a suitable for and provided with internal search coil of 600 turns and an external secondary coil of 1000 turns. Coils connected to 4 mm socket terminals. Facility to remove or replace secondary coil. Possibility to slide search coil for preferred positions. Provision for fixing rotating this inside the solenoid rotating this – for measurement of flux density. Brass disc 50mm dia. Mounted on a spindle and supported in a frame work design to slide in to solenoid given above Disc to be positioned exactly at centre. Framework fixed to an acrylic end – plate securely clamped to end solenoid. Spring contacts press on rim and axle of disc and connected to 4mm socket on end plate. Supplied complete instructions fitted with transformer 230 V 12 V /6V/3V/1A

1.099	**Electronic Demonstration Kit for O. L.** This kit should be specifically designed to cover the needs of the Electronic Unit of the G.C.E. (O/L) Science Syllabus. This kit should consist of circuits in Blocks or Units. (PCB) This should be designed so that the individual functions can be examined and then combined to form complete circuits. Each Block or Unit should be made by using Printed circuits and should be simple, clear and easily understood by the students. 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 groves 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 or 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 μF, 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 with the circuit No. 16) 16) A speaker mounted on a PCB with terminal connected to 3 mm sockets. 17) A transistor (D 400) mounted on a PCB to demonstrate the amplification (when connected with No. 15 and No. 16) 18) Simple circuit with two torch batteries, a LED or a Bulb and 2 press switches to demonstrate the Action of AND gate. 19) Same as 18 to demonstrate the OR gate. 20) Same as 18 to demonstrate the NOT gate. 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) 22) Same as 21, to demonstrate the principle of OR gate. 23) Same as 21, to demonstrate the principle of NOT gate.

1.100	**Electronic Trainer Panel kit** 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	**Electrophorus** 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.
1.102	**Electroscope with book of gold leaves** 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.
1.103	**Flask Conical 100ml** Borosilicate glass conical flask. Narrow neck. With rim capacity 100ml. Without spout.
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⎓ + . – • 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 Lenseplano convex Lenseplano 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 Lenseplano convex Lenseplano 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 x 45^0 x 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 x 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 The case should be so made that the items could be taken out easily from each pocket. The container box should also be made of fibre or high quality durable plastic. Should include a quality rexingwith printing following items. 10 cm circle and a marked ruler in the diameter. The ruler should be marked as follows Length of the rexin 37 cm Width of the rexin 21 cm An user manual will be supplied.

1.125	**Hare's App.** 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. Mounted on a stand. Scale with zero at the bottom. Two sliding distance metal rods. Overall dimensions 680 x 300 x 150mm

1.126	**Heat Transfer Kit** **Heat conductivity apparatus INGEN – HAUSZ** 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 **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 0C divided in 1 degree calibrations Thermometer range - 5 to 50 0C divided in 0.5 degree calibrations **Expansion of Liquids** Ungraduated thermometer Ungraduated tube, mercury filled 180 mm long to cover the range 0 – 100 ^{0}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 0C **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 molded bases 80 mm x 50 mm each with engraved index line, brass pillar and locking screw. Following accessories also to be provided. Lamphouse 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 17. Container Container should be 65 cm in length x 21 cm in width & height 7 cm Each and every item should have easy access and also inserted in a durable fiber sac.

1.127	**Holder - Lens/Mirror** 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.
1.128	**Holder -Test Tube** Flat stout steel holder (preferably stainless steel). Sliding metal collar. Mounted in turned wooden handle. Accepts test tubes of dia. From 5mm to 25mm.
1.129	**House Wiring Model – Current Operated** 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.
1.130	**Hydrogen Spectrum Set** This set comprises of three units. 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 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. 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.
1.131	**Hydrometer (700kg-3-1200)** Short filled subdivided in 5 kgm^{-3}. Overall length 250mm.

1.132	**Hydro Meter Universal** Direct reading. Relative density hydrometer of steam lined form. Graduated stem with parallel sides and shot – loaded bulb. All glass. Range at 16^0C = 0.7- 2.0 x 0.01
1.133	**Hygrometer – Whirling** Comprises 2 thermometers of range 5-50 ^{0}C x0.5^{0}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.figh 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 lengh 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 lengh 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**
	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 mao 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 0165mm. 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) <u>Rocks Minerals</u> Ba salt Chalk Coal Conglomerate Gneiss Granite Lime Stone Marble Mud Stone Sand Stone Zercone Illmanite Mica Apatite Calcite Graphite Gypsum Hematite Malachite Feldspar Quartz Rutile Corundum Samples of rocks and minerals should be labeled in English and chemical formulae should be given
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: 30x20x51cmshowing 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 scale30mm =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 commentator 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	**Mutimeter Digital** 3½ digits LCD with a max. Reading of 1999 with digital height. 25mm. Audible continuity &
	diode test. Auto power off low battery indication. Data hold, overload protection. Technical specification. DC V – 200mV – 2-20-200-1000V AC V – 200mV -2-20 -200 – 750V DC A - 20µA – 200 µA – 2mA – 20mA – 200mA- 2A – 20A AC A - 20µA – 200 µA – 2mA – 20mA – 200mA- 2A – 20A Ohm – 200 -2K – 20K- 200K – 2m-2mA-200m ohms Accuracy DC-V ± 0.5% AC-V ± 0.8 % DC-A ± 0.5% AC-A ± 1.0 % Battery – Popular 9V +1 Dimension – 191x 89 x 35 mm
1.207	**Mutimeter Analog** Multimeter test meter. Range selection by single control knob. Moving coil movement. Anti parallel mirror. Knife- edge pointer. Fitted with overload electronic protection circuit. Working on one /two penlight batteries. DC current – 50 µA/2.5mA/25mA/250mA/500mA/Separate/10A DC Voltage – 0.1mA/0.25 mV/2.5V/10V/50V/250V/1000V AC Voltage – 10V/50V/250V/1000V Resistance ohm – 2KΩ/20KΩ/2mΩ with other facilities.

1.208	**Newton's Colour Disc** For demonstration that white is composed from all the spectral colors, by the rotation of a multi-colored disc. Comprise a multi colored rigid card disc 180mm. Dia. Mounted on a metal stand and driven by a hand wheel. Dimensions + base 100x60mm. Overall height of stand 165mm. Approx.
1.209	**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. Lamphouse 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 – 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 65 cm in length x 21 cm in width & height 7 cm Each and every item should have easy access and also inserted in a durablefibre sac.

1.210	**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. <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. <u>Horizontal deflection (X)</u> Band width 1Hz-1MHz Input Impedance – 1MΩ approx. <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.
1.211	**Oven** 30 litres. Internal dimension 240x360x350mm. External dimension 460 x 450x 470mm. 750w, 20kg, 230V AC with Thermostat, temperature regulator. 40 ^{0}C- 175^{0}C approximately.
1.212	**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.
1.213	**Pendulum Bob** 1cm diameter cross with hook

1.214	**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
	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	**pH meter** 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. Meter should come in a protective wallet complete with pH 4, pH 7 and pH 10 buffers for calibration. Range 0-14pH Resolution 0.01pH Accuracy ± 0.03pH Repeatability ± 0.02pH Display LCD digital Temperature compensation Automatic 0 to 45^0C Power Supply 7 x 1.4V mercury cells Battery life 200 hours continuous use. Input impedance 10”Ω Dimensions (including electrode) 275 x 35 x 30mm Mass (meter + electrode) 100g
1.216	**Pipette 10ml (Graduated)** Borosilicate glass bulb form pipette. 10ml Capacity. Single graduation on upper arm. Permanent dark stained graduation. 10ml capacity.

1.217	**Pipette 10ml (Normal)** Borosilicate glass bulb form pipette. 10ml Capacity.
1.218	**Pipette 25ml (graduated)** Bulb type. 25ml capacity. Single graduation on upper arm. Borosilicate glass.
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	**PotometerGanong'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 & 121^0C 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 30^0 x 60^0 x 90^0** 30^0 x 60^0 x 90^0 Polished crown glass of refractive index 1.5 approx. Hypotenuse 30mm. Length 40mm.

1.231	**Prism 45^0 x 45^0 x 90^0** 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 60^0 x 60^0 x 60^0** 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:- 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 in 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** Resistance Rated value 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** *Mucor* – Hyphae with sporangia *Allomyces* – Bacteria – Bacillus, Coccus, Spirillum *Cycus* – 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. *Nerium Oleander* – T.S. of leaf Dicot stem TLS after secondary growth Dicot stem RLS after secondary growth C4 plant leaf –T.S *Anabeana* *Nostoc* *Microcystis* *Paramecium* *Amoeba* Diatom *Chlamydomonas* –vegetative stage *Spirogyra* *Cladophora* *Cosmarium* *Clostridium* *Aspergillus*

	Penicillium Yeast *Nephrolepis*-Prothallus (whole mount) Pollen Sac TS Paranchyma Collenchyma } T.S. Sclerenchyma Xylem – T.S, L.S Phloem – T.S., L.S. Pollen sac – T.S. Ovary – L.S. Ovary LS Specimens (Whole) – Sargassum - *Gelidium* - *Ulva* - *Selaginella* - Sea animone - Jelly Fish - *Neris* 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.
1.261	**Slides Prepared Zoology** 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: 1. Squamous epithelium (scrapings from human mouth) 2. Cuboidal epithelium (kidney tubules section)
	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 keratinizedt.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. – intervertibral 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. *Amoeba proteus* (stained)
33. *Euglena* (stained)
34. *Paramecium* (stained)
35. *Hydra* (whole, budding)
36. *Obelia* (w.m. stained)
37. *Fasciola hepatica* (w.m.stained)
38. *Planaria*(w.m. Stained)
39. *Teania*sp.T.S (stained) -Segments
40. *Teania*scolex (w.m)
41. *Ascaris*t.s. female stained.
42. *Ancylostoma* (male w.m)

(slides 01 to32 of human tissue, except slide 23)

1.262	**Slinky 150mm** Wire helix for illustrating wave motion. Flat section steel wire in helical coil, anodized, 75mm. dia, coil. Closed length 150mm.
1.263	**Sodium Lamp Kit** 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.
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 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. **Includes** • String Vibrator Unit • Constant Frequency Power Supply (60 Hz) • Wave Cord (3 meters) **Features** • 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 **Driving frequency from** • Depends on the main power supply (50 or **included Power** 60 Hz in most countries) **Supply** **Acceptable output power** **from a variable** • ±1 Amp at 10 V max **signal** **Approximate dimensions** • 12.7 cm x 7.5 cm x 5 cm

	Thickness at recessed clamping • 3 cm **surface**
1.282	**Stroboscope – Electronic** With power LED flasher. AC/DC operated.
1.283	**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.
1.284	**Tape Measure -30m** Tape measure - 'FIBRON' 14 mm wide Graduated every 10 mm Figured every 100 mm Length 30 m
1.285	**Tape Measure -2m** 2m. length. Metric scale. Tape size 10mm x 1mm. Made of rust proof metal. Rewind handle / spring.
1.286	**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.

1.287	**Test Tube Rack** Made of hard wood. Waxed. With heavy wooden base 10 holes of 20mm. dia. And 2 holes of 30mm dia.
1.288	**Thermocouple** Copper – constantan wires. One each of copper and constantan, approx. 300mm. long, twisted and brazed together.
1.289	**Thermometer 0C to 360C** Celsius scale. Supplied in protective case. Scale 0° - 360° x 5° c . Length approx 300 mm.
	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}FLength 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 ^{o}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)** 1. Hand drill with bit set (60f) 2. Hacksaw frame 3. Chesil 1", ½". ¼" 4. Pliers Combination 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 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 cuter 20. Pop rivet machine (small) 21. Mains tester 22. Hack Saw blades- 6 23. Hammer (Ball ended) <u>Oscilloscope, Cathode Ray (Single Trace)</u> Oscilloscope for students offering multi range band width and time base speed ranges. 15 M Hz, single channel, 125 mm dia, CRT. Volt Div. and Time Div. controls are digitally enco ded type controls with LCD display of settings Supplied with matching microphone System must generate high voltage using a power tra nsformer secondary winding. Must have built in a signal generator cable of gene rating 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. Input voltage max. 400 V DC or AC peak to pack Horizontal deflection (X) Band width – 1 Hz – 1 mHz Input Impedance -1M Ω approx. Time Base Time coefficient - 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. With build in Component Tester and Continuity tester (to test voltage, current frequency etc) Must provide operation manuals.

1.302	**Transformer Demonstration** 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. 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.
1.303	**Transformer Step Down 230V/3V** Input 230V, output 2V, 6V,9V,12V. 2A. with input power card, mounted in a box (metal covered) for safety.
1.304	**Trolleys (for ticker timer vibrator)** Dynamic wooden / plastics trolleys for investigation of momentum, velocity, acceleration, using the ticker timer specified above.

1.305	**Trough – Glass (Large)** 300mm Dia./125height glass
1.306	**Tuning Forks - Set of 8** 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.
1.307	**Voltmeter 0-1V** 0-1V DC. Accuracy 2% DC, 2.5%AC. Zero adjustable. Electronic protection. Dimension 210 x 150 x 60mm.
1.308	**Voltmeter 0-5V**
	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** • 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 • 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. Bottom dia. Top dia. 15mm 18.0mm 19mm 22.5mm 21mm 24.5mm 23mm 26.5mm 25mm 28.5mm
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^3cavity. 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)**
2.078	**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.

		Grade	Minimum Assay/Specific gravity
3.001	1 Propyl Alcohol 100g	Tech	About 99%
3.002	2 Propyl Alcohol250g	Tech	About 99%
3.003	2-4 Dinitrophenyl Hydrazine 50g	Tech	
3.004	Acetaldehyde 250g	Lab	99.0%
3.005	Acetamide 100g	Lab	98.0%
3.006	Acetic Acid 500ml	Tech	97% -99%
3.007	Acetone 250ml	Tech	S.G. 0.79,98% -99%
3.008	Agar Powder 500g	Lab	Fine Powder
3.009	Aluminium Foil 100g	Lab	0.05 mm. thick
3.010	Aluminium Nitrate 100g		97%
3.011	Aluminium Oxide 100g	Tech	S.G. 2.70 Fine Powder
3.012	Aluminium Powder 100g	Tech	S.G. 2.70 (Grease free)
3.013	AluminiumSulphate 100g	Tech	98%
3.014	Aluminium Turnings 200g	Tech	
3.015	Ammonia Solution 1 l	Tech	25% S.G. 0.91
3.016	Ammonium Acetate 100g	Tech	95% - 96%, S.G. 1.07
3.017	Ammonium Carbonate 250g	Tech	30% Powder
3.018	Ammonium Chloride 500g	Tech	98% - 99%
3.019	Ammonium Chromate 250g		99%
3.020	Ammonium Dichromate 100g	Tech	98% - 99%
3.021	Ammonium Nitrate 100g	Tech	
3.022	Ammonium Sulphate 100g	Tech	98%
3.023	Ammonium Thiocyanate 100g	Tech	96%
3.024	Amylase 250g	Lab	Water Soluble
3.025	Aniline 100ml	Tech	98%
3.026	Aniline Chloride (Hydro) 100ml	Lab	98%
3.027	Barium Carbonate 250g	Tech	98% - 99%
3.028	Barium Chloride 100g	Tech	98%- 99%
3.029	Barium Hydroxide 500g		97%

3.030	Barium Nitrate 500g		98%
3.031	Benedict Solution 250ml	Tech	98% Qualitative
3.032	Benzaldehyde 100ml	Tech	98%
3.033	Benzene (Crystalizable) 500g		0.875-0.879gmm 20^0C (Amber)
3.034	Benzoic Acid 100g	Tech	99%
3.035	Benzyl Alcohol 100ml	Tech	98%
3.036	Bismuth Tri Chloride 100g	Lab	92.0%
3.037	Bromine 100ml	Lab	99.5%
3.038	Bromothymole Blue 50ml	Tech	
3.039	Buton - 1- ol 100ml	Tech	S.G. 0.81
3.040	Buton - 2- ol 100ml	Tech	S.G 0.80
3.041	Cadmium Nitrate 100g	Lab	98.0%
3.042	Cadmium Sulphate 100g	Lab	98.0%
3.043	Calcium Bicarbonate 250g		
3.044	Calcium Carbonate (Marble Chips) 500g	Tech	
3.045	Calcium Carbonate (Precipitated) 250g	Tech	98%
3.046	Calcium Chloride 250g	Tech	S.G. 2.15, Coarse powder
3.047	Calcium Hydroxide 100g	Tech	90%
3.048	Calcium Nitrate 250g	Tech	97%
3.049	Calcium Oxide 100g	Lab	S.G. 3.4. powder
3.050	Carbon Disulphide 250ml	Lab	98.5%
3.051	Carbon Tetra Chloride 500ml	Tech	S.G. 1.580
3.052	Chloroform 500ml	Tech	S.G. 1.48 about 2% V/V
3.053	Cinnamon Leaf Oil 50ml	Tech	
3.054	Clove oil 50ml	Tech	
3.055	Cobalt (II) Chloride 100g	Lab	98%
3.056	Cobalt Nitrate 100g	Lab	98%
3.057	Copper (I) Chloride 100g	Lab	96%
3.058	Copper (I) Oxide 100g	Tech	About 90%
3.059	Copper (II) Carbonate 250g	Tech	54%

3.060	Copper (II) Chloride 100g	Lab	98%
3.061	Copper (II) Nitrate 250g	Lab	
3.062	Copper (II) Oxide 100g	Tech	About 94%
3.063	Copper (II) Sulphate 500g	Tech	About 98% Granular crystals
3.064	Copper Foil 250g	Lab	0.1mm. thick squares
3.065	Copper Gauze 100g	Lab	40 mesh
3.066	Copper Granule 250g	Tech	
3.067	Copper Plates 250g	Tech	
3.068	Copper Sheets 250g	Tech	
3.069	Copper Turnings 250g	Tech	
3.070	Copper Wire 100g		20 S.W.G. reels
3.071	Diastase 100g	Tech	
3.072	Diethyl Ether 100ml	Lab	
3.073	Dolomite 500g	Tech	
3.074	Ethyl Alcohol (Ethanol) 250ml	Lab	90% (rectified spirit)
3.075	Fehlings Solution I 250ml	Tech	
3.076	Fehlings Solution II 250ml	Tech	
3.077	Ferrous Ammonium Sulphate 250ml	Tech	About 98%
3.078	Formaldehyde 40% 100 ml	Tech	About 36%
3.079	Formic Acid 100ml	Tech	About 95% - 90%
3.080	Fructose 50g	Tech	
3.081	Galactose 50g	Tech	
3.082	Glycerol 250g	Tech	
3.083	Hydrochloric Acid Conc. 250 ml		Amber 35-38% s.g. 1.18
3.084	Hydrogen Peroxide 250ml		Tech
3.085	Invertase 50g	Tech	
3.086	Iodine Crystals 100g		About 99% resubtimed
3.087	Iodine Solution 250ml	Tech	
3.088	Iron (II) Chloride 100g	Tech	
3.089	Iron (II) Nitrate 100g	Lab	98%

3.090	Iron (II) Sulphate 250g	Tech	About 93%
3.091	Iron (II) Sulphide 250g	Tech	S.G. 4.75
3.092	Iron Fillings 100g	Tech	Coarse
3.093	Iron Powder 100g	Tech	
3.094	Iso Propyl Alcohol 100ml	Tech	
3.095	Lactose 50g		m.w.t.360.32,pH not less than 5
3.096	Lead Acetate 250g	Tech	About 98%
3.097	Lead Carbonate 250g	Tech	About 98%
3.098	Lead Dioxide 100g	Lab	About 94%
3.099	Lead Foil 250g	Tech	0.13mm. thidk
3.100	Lead Monoxide 100g	Tech	About 98%
3.101	Lead Nitrate 250g	Lab	99.0%
3.102	Lithium Carbonate100g	Tech	
3.103	Lithium Nitrate 100g	Tech	
3.104	Magnesium Carbonate 250g	Tech	Hydrated basic light
3.105	Magnesium Chloride 250g	Tech	
3.106	Magnesium Nitrate 250g	Lab	99%
3.107	Magnesium Ribbon 250g	Tech	
3.108	Magnesium Sulphate 100g	Tech	About 70%
3.109	Maltose 50g	Tech	
3.110	Manganese Sulphate 100g	Tech	About 97%
3.111	Manganese Dioxide 100g	Tech	About 85%,
3.112	Mercury – Metal (for demonstration purpose) 50g	Tech	Supplied in a sealed transparent container.
3.113	Methanol 500ml	Tech	S.G. 0.79
3.114	Methyl Orange 50g	Lab	pH indicator 2.9 – 4.6,
3.115	Methyl Red 50g	Lab	pH indicator 4.2 – 6.3
3.116	Methylene Blue 50g	Tech	
3.117	Naphthol 100g	Tech	
3.118	Nessler'sReaegent 100ml	Lab	For detection of NH_3

3.119	Nickel Sulphate 100g	Tech	About 98% - 22%
3.120	Nitric Acid Conc. 100ml	Tech	S.G. 1.42
3.121	Oxalic Acid 50g	Tech	About 98%
3.122	Phenol 100g	Tech	
3.123	Phenolptheline 100ml	Lab	powder
3.124	Potash Alum 50g	Tech	
3.125	Potassium Bicarbonate 100g	Tech	
3.126	Potassium Carbonate 100g	Tech	About 98% anhydrous
3.127	Potassium Chlorate 100g	Tech	98%
3.128	Potassium Chloride 100g	Tech	About 98%
3.129	Potassium Chromate 100g	Tech	About 98%
3.130	Potassium Dichromate 100g	Tech	About 98%
3.131	Potassium Ferricyanide 250g	Tech	About 98%
3.132	Potassium Ferrocyanide 250g	Tech	About 98%
3.133	Potassium Hydroxide 100g	Tech	About 85%
3.134	Potassium Iodide 100g	Tech	About 98%
3.135	Potassium Nitrate 250g	Tech	About 98%
3.136	Potassium Permanganate 250g	Tech	About 98%
3.137	Propionic Acid 100ml	Lab	99%
3.138	Safranine 50ml	Tech	
3.139	Salicylic Acid 100g	Tech	99%
3.140	Silica Gel 50g	Tech	Coarse, self indicating, for desiccators
3.141	Sodium Acetate 250g	Tech	
3.142	Sodium Bicarbonate 250g	Tech	
3.143	Sodium Bromide 250g	Lab	99%
3.144	Sodium Carbonate 500g	Tech	About 98% anhydrous
3.145	Sodium Chloride 250g	Tech	
3.146	Sodium Hydroxide 250g	Tech	About 95%
3.147	Sodium Iodide 250g	Lab	99%

3.148	Sodium Metal 50g	Lab	99.8%
3.149	Sodium Nitrate 250g	Tech	About 96%
3.150	Sodium Nitrite 250g	Tech	
3.151	Sodium Nitroprusside 50g	Lab	98%
3.152	Sodium Oxalate 100g	Lab	99%
3.153	Sodium Phosphate 100g	Tech	
3.154	Sodium Sulphite 500g	Tech	
3.155	Sodium Thiosulphate 250g	Tech	About 99%
3.156	Stannous Chloride 100g	Lab	
3.157	Starch (Soluble) 500g	Tech	About 99%
3.158	Strontium Carbonate 250g	Lab	99%
3.159	Strontium Nitrate 250g	Tech	
3.160	Sudan III 100g	Tech	
3.161	Sulphar Roll 50g	Tech	98%
3.162	Sulphuric Acid conc. 1 l	Tech	About 96% - 98%
3.163	Tin Foil 500g	Lab	99.5 Tin 0.1 mm tick squares
3.164	Tin Nitrate 250g	Tech	
3.165	Universal Full Range Indicator 100ml	Lab	With water -proof colour card
3.166	Urea 500g	Lab	About 99%
3.167	Zinc Carbonate 100g	Tech	About 67 %
3.168	Zinc Chloride 100g	Tech	About 97%
3.169	Zinc Foil 250g	Lab	0.35 mm tick squares
3.170	Zinc Granules 250g	Tech	
3.171	Zinc Oxide 50g	Tech	About 99%
3.172	Zinc Powder 100g	Tech	