



PRODUCT CATALOGUE

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ABOUT US

Dear Customers

We Feel Pleasure in presenting the revised edition of the catalogue SHARMA ELECTRICAL ENTERPRISES.

It is recognized fact that instruments have played a major role in achieving success in advance technology. As we have developed our brand image gradually & consistently. We are contemporary yet authentic, always evolving our fundamental philosophies to the modern area. At present our product have been widely used in Schools, Universities and Research purposes.

We are working hard to make every possible and required improvement in the quality of our product and due to those efforts, Our product are well known have in the time, Further we are still counting on our efforts to bring about more improvement and assure all our customer to serve better with our ESEL Brand products.

We are thankful for your kind patronage in the part and we hope the same and more in future too and we assume our best & prompt services as always.



BATTERY ELIMINATOR

EL 101 - Battery Eliminator

Portable and sturdily built with full wave bridge rectifier and low loss double wound Heavy transformer. Workable on 220 V AC output 2-

a) 500mA	b) 1 Amps.	c) 2 Amps.
d) 3 Amps.	e) 5 Amps.	



EL 101A - Battery Eliminator

Portable and sturdily built with full wave bridge rectifier and low loss double wound Heavy transformer. Workable on 220 V AC output

a) 500mA	b) 1 Amps.	c) 2 Amps.
d) 3 Amps.	e) 5 Amps.	



EL 102 - Battery Eliminator AC/DC

Portable and sturdily built with full wave bridge rectifier and low loss double wound Heavy transformer with provision for AC/DC output voltage. Workable on 220 V AC output 2-12 volts AC/DC

a) 1 Amps.	b) 2 Amps.
c) 3 Amps.	d) 5 Amps.

Note : (a) With Metal Rectifier EL 101 & EL 102 (Extra)
(b) Two volts extra is kept for Load Compensation



EL 103 - IC Regulated Battery Eliminator

Input : 230 Volts AC at 50 c/s.
Load Regulation : Better than 1%
Ripple : Less than 5 mV r.m.s
Out Put

a)	1.5-3-4.5-6-9-12 volts DC at 1 Amp
b)	2-4-6-8-10-12 Volts DC at 2 Amps.
c)	2-4-6-8-10-12 Volts DC at 3 Amps.
d)	2-4-6 Volts DC at 1 Amps.



BATTERY CHARGER

EL 105 - Battery Charger

Heavy transformer with bridge rectifier for continuous charging with Ammeter. Output 2 to 18V DC with Ampere Meter at

a) 4 Amps.	b) 5 Amps.
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EL 106 - Automatic Battery Charger

Workable on 220v AC with heavy Transformer output

a) 6-12-18 Volts DC at 2 Amp.
b) 6-12-18 Volts DC at 3 Amp.
c) 6-12-18 Volts DC at 4 Amp.



EL 104 - Battery Charger

Workable on 220 V AC with heavy transformer Output 2 to 12V DC with Ampere Meter at

a) 1 Amps.	b) 2 Amps.
c) 3 Amps.	d) 5 Amps.



TRANSFORMERS

EL 107 - Model Transformers

Nicely demonstrated on the wooden base. Input and output leads brought out on terminals on bakelite panel.

EL 108 - Model Transformers

Same as above but with step up voltage.

EL 109 - Model Transformers

Step Up/Step Down Combined.



EL 110 - Demonstration Transformers

Fitted on board with one main coils of 220 volts and two interchangeable secondary coils giving 6 and 12 volts AC 2 Amps. Assembly and interchanging of coils can be done easily. Input and output leads brought out on terminals.

EL 111 - Step Down Transformers

for low AC output voltage in steel box.

a)	2-12 V AC/1 Amps	b)	2-12 V AC/2 Amps.
c)	2-12 V AC/3 Amps.	d)	2-12 V AC/4 Amps
e)	2-12 V AC/5 Amps.		



EL 112 - Transformer for Sonometer

for Electromagnet and Sonometer Experiment 0-6 Volts at 2 Amp.



EL 113 - Sodium Vapour Lamp Transformers

Housed in Steel Cabinet nicely painted. Workable on 220 Volts AC

Output:- a) 35 Watts b) 55 Watts

EL 114 - Transformer for Calenders & Barnes Apparatus

6, 12, 18, 24 volts at 4 Amps fitted in a box



EDUCATIONAL ELECTRONIC INSTRUMENTS

VALVES AND SEMICONDUCTORS

EL 115 - Diode Valve

6AL5 (or Similar) mounted on base with diagram engraved on the front panel.

EL 116 - Diode Valve

6H6 mounted on base with diagram engraved on the front

EL 117 - Triode Valve

ECC 82 (or similar) mounted on base with diagram engraved on the

EL 118 - Triode Valve

6 J5 mounted on base with diagram engrave on the front

EL 119 - Tetrode Valve

EF89 mounted on base with diagram engraved on the front

EL 120 - Pentode Valve

EF89 mounted on base with diagram engraved on the front

EL 121 - Junction Diode/Semi Conductor Diode

A P.N. Junction diode on Board with 4mm socket and schematic diagram printing on the front



EL 122 - Zener Diode on Board

A Zener Diode mounted on board with 4mm socket and schematic diagram printing on



EL 123 - Thyatron Valve

Fitted on wooden base.

EL 124 - Thermistor

Mounted on base with look type terminal for each electrode on bakelite panel and Schematic diagram engraved on the front

EL 125 - Transistor on Board

A transistor mounted on board, with 4mm socket for each electrode on bakelite panel and schematic diagram printing on



EL 126 - F.E.T. on Board

A transistor mounted on board, (Same as above)

EL 127 - Standard Resist

1W - 10W mounted on board with 4mm socket and schematic diagram printing on the front panel.



EL 128 - High Resistance

1K, 5K, 10K, 15K, 20K mounted on board with one way plug key on bakelite panel.



CHARACTERISTICS APPARATUS OF VACUUM TUBES (VALVES)

EL 129 - Diode Valve Characteristic Apparatus with Stabilizer Power Supply

Instruments Comprises of DC regulated power supply 0-250V / 25mA AC power supply 6.3V AC/1A two round meters are provided to read a anode voltage & anode current. valve diagram is printed on the front panel.



EL 130 - Triode Valve Characteristic Apparatus with Stabilizer Power Supply

Instruments Comprises of DC regulated power supply 0-250V / 25mA & 0-25V / 10mA, AC power supply 6.3V AC/1A, three round meter for voltage & current measurement, valve diagram is printed on the front panel.



EL 131 - Pentode/Tetrode Valve Characteristic Apparatus with Stabilizer Power Supply

Instruments Comprises of two DC regulated power supply one 0-300V DC/30mA other is 0-150V DC/15mA and 0-25V DC/10mA for bias, AC power supply 6.3VAC/1amp. five round meters for voltage and current measurement valve diagram is printed on front



EL 132 - Photo Cell Characteristic Apparatus (Valve Type)

Instruments Comprises of DC supply 0-50 V DC Two round meters for voltage and current measurement valve diagram is printed on front panel & light source without bulb.



EL 133 - Photo Cell Selenium Characteristics Apparatus to verify Inverse Square Law

Selenium Photo Cell mounted in metal box having window for injecting light, light source without bulb, Photo Cell with DC Microammeter (0-500 μ A) & DC Millivoltmeter (0-500 mV) & one plank with $\frac{1}{2}$ meter scale.



EL 134 - To study Ionisation Potential of Mercury Vapour using Thyatron Valve

Instruments Comprises of one DC regulated power supplies 0-10 V DC/150mA, AC power supply 6.3 V AC / 1 Amp two round meters for voltage & current measurement, valve diagram is printed on front panel.



EL 135 - Planks Constant Apparatus

Instruments Comprises of power supply 0-1 V DC with one voltmeter & one sensitive microammeter, photocell mounted in box, having window for injecting light also for sliding the various filters, one wooden plank with $\frac{1}{2}$ meter scale, light source without bulb & set of Three filters.

EL 135A - With Digital Meter



EL 135B - Planks Constant Using LED



CHARACTERISTICS OF SEMICONDUCTOR DEVICES

EL 136 - P.N. Junction Diode / Semi-conductor Diode characteristics apparatus

Instruments Comprises the two DC supply 0-1 V DC / 150mA & 0-30V DC / 150mA, two dual range round meters for measurement of voltage & current PN Junction diode mounted behind the panel, connections of supplies, meters & diodes brought out at 4mm



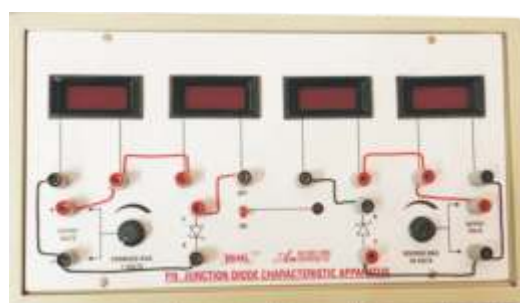
EL 136A - With Digital Meter



EL 137 - P.N. Junction Diode / Semiconductor Diode Characteristics Apparatus with Four round meters.



EL 137A - P.N. Junction Diode / Semi-conductor Diode with 4 digital meter



EL 138 - Zener Diode Characteristics Apparatus

Instruments Comprises the two DC supply, 0-1.5 V DC / 150mA & 0-15 V DC / 150mA, two round meters for voltage & current measurement, zener diode mounted behind the panel, connection of supply, meters & zener diode brought out 4mm



EL 138A - With Digital Meter



EL 139 - Voltage Stabilization Characteristics of Zener Diode with Load Resistance

Instruments Comprises the DC supply, two round meters to measure input voltage & output voltage, one zener diode mounted behind the panel & connections brought out at terminals / sockets.



EL 140 - Transistor Characteristics Apparatus with Regulated Power Supply

Instruments Comprises of one DC regulated power supply 0-10V DC / 150mA & one 0-1 V DC / 150mA, four round meters for voltage & current measurement one NPN transistor mounted behind the panel.



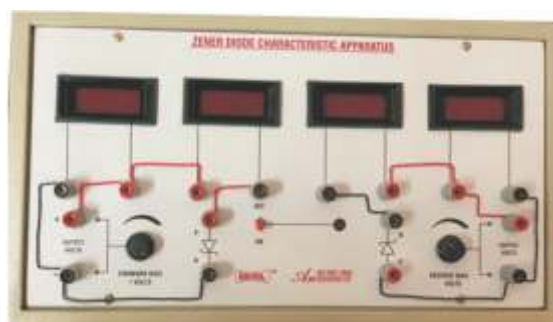
EL 138B - Zener Diode Characteristics Apparatus

Characteristics Apparatus with Four round meters.



EL 138C - Zener Diode Characteristics Apparatus

Characteristics Apparatus with Four digital meter.



EL 140A - Transistor Characteristics Apparatus with Regulated Power Supply

Instruments Comprises of one DC regulated power supply 0-10V DC / 150mA & one 0-1 V DC / 150mA, four round meters for voltage & current measurement one PNP transistor mounted behind the



EL 141 - Transistor Characteristic Apparatus with regulated Power Supply (NPN & PNP Combined)

Instruments Comprises of one DC regulated power supply 0-10 V DC / 150mA & one 0-1V DC / 150mA four round meters for voltage as current measurement. one PNP & one NPN transistor mounted behind the panel, connections of supplies & transistors brought out at 4mm sockets.



EL 142 - Transistor Characteristics Apparatus with Four Digital Meters

Instruments Comprises of one DC regulated power supply 0-10 V DC / 150mA & one 0-1V DC / 150mA four digital meters for voltage as current measurement. one PNP & one NPN transistor mounted behind the panel, connections of supplies & transistors brought out at 4mm sockets.



EL 143 - FET Characteristics Apparatus with regulated Power Supply

Instruments Comprises of two DC regulated power supplies 0-10 V DC / 150mA & 0-5 V DC / 150mA, three round meters for voltage & current measurement. FET BFW-10 mounted behind the panel, connections of supplies, Meter & FET brought out at 4mm



EL 143A - With Digital Meter (2 Digital Meters)

EL 144 - MOSFET Characteristics Apparatus with regulated Power Supply

Instruments Comprises of two DC regulated power supplies 0-15 V DC/150mA and 0-5 Volts DC 150mA three round meters for voltage & current measurement, one panel, connections of supplies, meter, Mosfet (IF 840) brought out at 4mm sockets.



EL 145 - Stefan's Constant Characteristics Apparatus with Regulated Power Supply

Instruments Comprises of DC supply 0-10 V DC Two round meters for voltage and current measurement diagram is printed on front panel.



EL 146 - UJT Characteristics Apparatus with regulated Power Supply

Instrument Comprises of two DC regulated Power Supply 0-20 V / 150mA & 0-20 V / 150 mA three round meters for voltage & current measurement, one UJT 2N2646 mounted behind the panel, connections of supplies, Meters & UJT brought out at 4mm sockets.



EL 147 - LDR Characteristics Apparatus

Instrument comprise of one DC regulated power supply 0-3 V/150 mA, two round meters of voltage and current measurement, LDR mounted on the panel. Connections of supplies



EL 148 - L.E.D. Characteristics Apparatus

Instrument Comprises of one DC regulated power supply 0-3 V / 150mA, two round meters of voltage and current measurement, L.E.D. mounted on the panel. Connections of supplies & L.E.D. brought out at 4mm sockets.



EL 149 - Diac Characteristics Apparatus with Regulated Power Supply

Instrument Comprises of DC regulated power supply 0-50 V DC / 150mA, two round meters of voltage & current measurements, one diac mounted behind the panel, connections of supplies & diac brought out at 4mm sockets.

EL 150 - Triac Characteristics Apparatus with Regulated Power Supply

Instrument Comprises of two Dc regulated power supplies 0-15 V DC / 150mA & 0-5 V dc / 150mA three round meters for voltage & current measurement, triac mounted behind the panel, connections of supplies & triac brought out at 4mm sockets.



EL 151 - SCR Characteristics Apparatus with Regulated Power Supply

Instrument Comprises of two DC regulated power supply 0-30 V dc / 150mA & 0-1.2 V DC / 150mA, three round meters for voltage & current measurement SCR.2P4M mounted behind the panel, connections of supplies, meters & SCR brought out at terminals.



EL 152 - Study of OPTO Electronic Devices

Instruments Comprises of DC regulated power supply 0-3 V dc / 150mA, two rounded meters for voltage & current measurement photo transistor, photo diode, L.E.D & L.D.R mounted on the panel, connections of supplies, meters & components brought out at 4mm sockets.

VERIFICATION OF VARIOUS LAWS

EL 156 - LR Circuit

Instrument comprises of one AC power supply 0-24 volts/500mA, two round meter for voltage and current measurement, three inductance and three resistance mounted behind on the panel and connection brought out at 4mm. socket.



EL 153 - Thermistor Characteristic Apparatus

Instruments Comprises DC regulated power supply 0-10 V dc / 150mA, two round meters for voltage & current measurement one glass thermistor is kept in oven. Connections of supplies, meters & thermistor brought out at 4mm sockets. also provided with oven with temperature control knob.



EL 154 - Energy Band Gap of P.N. Junction Diode

Instruments Comprises of DC regulated power supply 0-30V/150mA, two round meters for voltage & current measurement, one PN junction diode (GE type) is kept in oven, connections of supplies, meters & diode brought out at 4mm sockets, also provided with oven with temperature control knob.



EL 154A - Energy Band Gap of Intrinsic Semi Conductor Diode.

Instruments Comprises of DC regulated power supply 0-1V/150mA, two round meters for voltage & current measurement, one PN junction diode (GE type) is kept in oven, connections of supplies, meters & diode brought out at 4mm sockets, also

EL 155 - Solar Cell Characteristics Apparatus

The unit comprises of two moving coil meters one solar cell mounted on front panel and light source.



EL 156A - Series R LC Circuit

Instrument comprises of one AC power supply two round meter for voltage and current measurement, three inductance, three capacitors and three resistance mounted behind on the panel and connection brought out at 4mm. socket.



EL 157 - Charging & Discharging of Condenser : (RC Circuit) WITH 2 METER

Instrument Comprises of Dc regulated power supply, three resistance, capacitance mounted on the panel & the connection brought out at 4mm sockets one meter for measurement of



EL 158 - LCR Resonance Apparatus

Instrument Comprises of 3 resistance, 3 capacitors & 1 inductance connected inside & connection brought out at sockets. Two Ac moving coil meters to measure voltage & current.

Opp. Accessories : Function Generator



EL 159 - LCR Resonance Apparatus with two meters & built in sine wave oscillator

Instrument Comprises of Dc regulated power supply, three resistance, capacitance mounted on the panel & the connection brought out at 4mm sockets one meter for measurement of



EL 160 - LCR Impedance Circuit Apparatus

Instrument Comprises of Ac power supply 3-15 V AC voltage selectable using bandswitch, 2 AC moving coil meters to measure voltage & current, 3 resistance, 3 capacitors & 1 inductance connected inside & connection brought out at sockets.

EL 161 - Voltage Doubler and Tripler Circuit

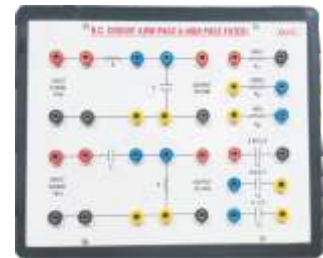
Instruments Comprises of AC power supply with out put selectable switch using band switch, 2 round meters, load resistance can be selected using band switch, circuit diagram for doubler & tripler engraved on front panel & connections of power supply, meters & components brought out at 4mm sockets.

EL 162 - Flashing & Quenching of Neon Apparatus

Instruments Comprises of high voltage Dc supply 4 capacitors connected behind the panel & one neon lamp.

EL 163 - RC Circuit (Transient Response) (Low Pass & High Pass Filters)

Circuit Diagram for low pass, high pass filter engraved three resistance, three capacitors are placed inside and connections brought out at



EL 164 - Clipping Circuit Apparatus

Instrument Comprises of two fix output Dc power supplies connected in series of diode for positive & negative clipping, circuit diagram is printed on the front panel, connections of input and output brought out at sockets.

EL 165 - Clamping Circuit Apparatus

Instrument Comprises of DC regulated Power Supply 0-3 V DC / 150 mA, Circuit Diagram is printed components placed inside the cabinet & connections brought out at sockets.

EL 166 - Clipping & Clamping Circuit Apparatus

Instrument Comprises of DC regulated power supply 0-3 V DC / 150 mA, Two fix output DC power supplies connected in series of diodes for positive & negative clipping, circuit diagram for clipping & clamping circuit is engraved on front panel components placed inside & connections brought out at 4mm sockets.



EL 167 - Study of KVL & KCL

Instruments Comprises of Dc regulated power supply, two round meters for voltage & current measurement, circuit diagram for KVL & KCL is engraved on front panel.



EL 168 - Resistance in Series

Instrument Comprises of two moving coil meters to measure voltage & current. Circuit Diagram for series connections printed on the panel & resistance mounted on the front panel on plastic board.



EL 169 - Resistance in Parallel

Instrument Comprises of two moving coil meters to measure voltage & current circuit diagram for parallel connections printed on the panel & resistance mounted on the front panel on plastic board.



EL 170 - Resistance in Series & Parallel

Instrument Comprises of two moving coil meters to measure voltage & current circuit diagram for series & parallel connections printed on the panel & resistance mounted on the front panel.



Experiment No. 1 : EMF of Two Primary Cell by Using a Potentiometer (What we need)

- Potentiometer 10 wire
- Regulated Power Supply 0-5V, 1A.
- Leclanche Cell (Electronic Version)
- Daniel Cell (Electronic Version)
- Galvanometer (30-0-30) MR 80 on stand

EL 171 - Ohm's Law Apparatus

Instrument Comprises of two moving coil meters to measure voltage & current, one wire wound potentiometer, circuit diagram printed on the panel & connections brought out at terminals for



EL 172 - Ohm's Law Apparatus with power supply : same as above EL-171

EL 172A - With Digital Meter

EL 173 - BH Curve Apparatus

Instrument Comprises of Ac power supply 3-15 V ac, output selectable using band switch with circuit diagram for BH curve is



EL 174 - Conversion of Galvanometer into a Voltmeter

Instrument Comprises of two moving coil meters to measure voltage & current circuit diagram for series & parallel connections printed on the panel & resistance mounted on the front panel.



EL 175 - Conversion of Galvano Meter into Ammeter

Instrument Comprises of two moving coil meters to measure voltage & current circuit diagram for series & parallel connections printed on the panel & resistance mounted on the front panel.



VERIFICATION OF NETWORK THEOREMS

The Network Theorem boards are supplied with Instruction Manual giving full details about the objects, apparatus required and procedure these prewired boards are supplied with detailed diagram engraved on the front pannel and components assembled on it. All boards

EL 176 - Verification of Thevenin's Theorem

Board consists of regulated power Supply, Two moving coil meters, circuit diagram printed on the front pannel & connections of supplies, meters & Resistances brought out at 4mm sockets.



EL 177 - Verification of Norton's Theorem

Board consist of Regulated power supply, Two moving coil meters, circuit diagram printed on the front panel & Connections of supplies, Meters & Resistances brought out at 4mm sockets.



EL 178 - Verification of Superposition Theorem

Board Consist of Two Regulated power supply, Two moving coil Meters, Circuit diagram printed on the front panel & Connections of supplies, Meter & Resistance brought out at 4mm sockets.



EL 179 - Verification of Maximum Power Transfer Theorem

Board Consists of Regulated power supply. Two moving coil meters a variable load Resistance, Circuit diagram printed on the front panel & connections of supplies, Meters & Resistances brought out



EL 180 - Verification of Network Theorems

To verify Thevenin's, Norton's, Superposition & Maximum Power Transfer Theorems on single board. Board consists of Regulated power supply, Two moving coil meters, circuit diagram printed on the panel & Resistances brought out at 4mm sockets.



EL 181 - Verification of Millmans Theorem

Board consists of Regulated power supply, two moving coil meters, circuit diagram printed on the front panel of connections of supplies meters & resistance brought out at 4mm Socket.



EL 182 - Verification of Tellegen's Theorem

Board consists of Regulated power supply, two moving coil meters, circuit diagram printed on the front panel of connections of supplies meters & resistance brought out at 4mm Socket.



DC REGULATED POWER SUPPLY

General Specification :

Input Specification

Input Voltage	: 230 V \pm 10% AC 50 Hz
Load Regulation	: \pm 0.2% for No Load to full load.
Line Regulation	: \pm 0.2% for No Load to full load.
Ripple	: Less than 5mV
Protection	: These are protected against over loading and short circuiting.

EL 183 - Solid State Power Supply

Output Voltage / Current

(a) 0-15V/1.0Amps	(b) 0-15V/2.0Amps
(c) 0-30V/1.0Amps	(d) 0-30V/2.0Amps
(e) 0-60V/1.0Amps	(f) 0-60V/2.0Amps
(g) 0-300V/100MA	



EL 183A - Solid state power supply with 2 digital meter



EL 186A - With Digital Meter

EL 187 - DC Regulated Power Supply for Tetrode/Pentode Valve Characteristics Apparatus

H.T 1 Voltage/Current	: 0-300V/30MA
H.T 2 Voltage/Current	: 0-150V/15MA
Bias Voltage/Current	: 0-25VDC/10MA
L.T Voltage/Current	: 6.3VAC/1Amp with five round meter.

EL 184 - Multi Output DC Regulated Power Supply

Specification :-

Input 230volts, +10% 50HZ.
Output 0-30v at 2Amp
0- \pm 15v at 500MA.
0-5v at 5Amp.

EL 188 - DC Regulated Power Supply for Milikan's Oil Drop Apparatus

Output Voltage/Current	: 0-300VDC/10MA
L.T Voltage/Current	: 6.3VAC/1Amp

EL 185 - DC Regulated Power Supply for Electro Forsis Apparatus. (solid state)

Output voltage 0-300VDC/100MA
Complete with two Analog meters.



EL 185A - With Digital Meter



EL 186 - DC Regulated Power Supply for Diode/Triode Value Characteristics

H.T Voltage/Current	: 0-300VDC/30MA
Bias Voltage/Curren	: 0-25VDC/10MA
L.T. Voltage/Current	: 6.3VAC/1Amp with three round meters

Experiment No. 2 : Compare EMT of Two Prinang Cell by using a Potentiometer (What we want)

- Potentiometer 10 wire
- Regulated Power Supply 0-5V, 1A.
- Lechlanche Cell 1.5V (Electronic Vergion)
- Daniel Cell 1.08V (Electronic Vergion)
- Resistance Box 2 Dial (x10, x100)
- Galvanometer (30-0-30) MR 80 on stand

AC/DC POWER SUPPLIES

EL 189 - High Tension AC / DC Power Supply

H.T Output Voltage : 0-500VAC/DC Output 500mA
 L.T Voltage : 2.5V, 6.3V & 12.0V AC/2Amps
 Bias Voltage : 0-100V DC/10mA
 with two meters to measure H.T Voltage & Bias

EL 190 - Low Tension AC/DC Power Supply 0-25V AC/10A, 0-20V DC/10A

with One AC / DC meter to measure Voltage, selectable using

EL 191 - .. do ..

Same as above EL-189 but protected against overload using built in electronic circuit.

EL 192 - DC Source 0-12V DC/10Amps (Suitable for Kelvin bridge)

with smooth DC Output Voltage & two meters to measure output voltage & Current.

EL 193 - Dual Tracking IC Regulated Power Supply

It has two power supplies mounted on a single chassis

(a) 0±15V 2Amps	1Amps	(b) 0 ± 1 5 V
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EL 193A - Dual Tracking IC Regulated Power Supply with Digital Meter

(a) 0±15V (c) 0±30V	1Amps	(b) 0±15V (d) 0±30V	2Amps
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FIXED OUTPUT I.C. REGULATED POWER SUPPLY

EL 194 - FIXED OUTPUT I.C. REGULATED POWER SUPPLY

Load Regulation : Better than $\pm 0.1\%$ for no load to full load.
 Line Regulation : Better than $\pm 0.05\%$ for $\pm 10\%$ changes in mains.
 Protection : These are Protected against over loading and short. circuiting

(a) 5Volts or 6Volts	: 500mA	(b) 5Volts or 6Volts	1Amps
(c) 5Volts or 6Volts	: 2Amps	(d) 9Volts or 12Volts	500mA
(e) 9Volts or 12Volts	: 1Amps	(f) 9Volts or 12Volts	2Amps
(g) 15Volts or 18Volts	: 500mA	(h) 15Volts or 18Volts	1Amps
(i) 15Volts or 18Volts	: 2Amps		

EL 195 - DUAL POWER SUPPLIES (Without Meters)

(a) +5Volts and -5 Volts	: 500mA	(b) +5Volts and -5 Volts	1Amp
(c) +5Volts and -5 Volts	: 2Amps	(d) +12Volts and -12 Volts	500mA
(e) +12Volts and -12Volts	: 1Amps	(f) +12Volts and -12 Volts	2Amps

ELECTRONIC STANDARD CELL SUBSTITUTES

EL 196 - Weston Cadmium STD Cell Substitute 1.018V

EL 197 - Leclanche Cell Substitute 1.5V



EL 198 - Daniel Cell Substitute 1.08V



EL 199 - 2Volts 200mA For Potentiometer Expts.

GENERAL ELECTRONIC SECTION

EL 200 - e/m By Thompson Method (Bar Magnet)

The apparatus is designed to work on mains, with Built-in-Power Supply. It is provided with other accessories such as C.R.T wooden stand, Deflection magnetometer, pair of bar magnet. Very easy to handle and compact in size fully self contained.



EL 201 - e/m By Magnetron Valve Method

The apparatus is designed to work on mains, with Built-in-H.T. Power Supply. It is provided with other accessories such as

EL 202 - e/m By Helical Method

The apparatus is designed to work on main with built in power supply. It is provided with solenoid, cathode ray tube etc fully self



Experiment No. 3 : To determine the specific charge (e/m) of an electron using Thomson Method.

MEASURING INSTRUMENTS & EQUIPMENT

SIGNAL GENERATORS

EL 203 - Audio Frequency Function Generator

This is very useful and versatile Laboratory Instruments with three basic Sine, square & Triangular wave output, this is completely I.C. Based with frequency range from 1 Hz-100 KHz in five decade ranges amplitude 0-10 V in the step of 0.2 V, 2V & 10 V.



EL 204 - Audio Frequency Function Generator

This is very useful and versatile Laboratory Instruments with three basic Sine, square & Triangular wave output, this is completely I.C. Based with frequency range from 1 Hz-220 KHz in five decade ranges amplitude 0-20 V in the step of 0.2 V, 2V & 20 V.WITH



EL 205 - Function Generator

Having output Sine/Square/Triangular Wave forms freq. Range 0.1 Hz to 1 Mhz in 6 Ranges, output voltage 0-20v p/p.

EL 206 - Wide Range Sine/Square Oscillator

Frequency Range 1Hz to 500 KHz in 5 decade Steps, Output voltage 0-10 V in 5 steps with continuously variable control, distortion less than 0.5% in between 100 Hz to 100 KHz.

EL 207 - Function Generator

Having output Sine/Square/Triangular Wave forms freq. Range 0.1 Hz to 10 Mhz in 6 Ranges, output voltage 0-20v p/p.



EL 208 - Fixed Frequency Oscillator

Having Frequency, Output 200 Hz, 400 Hz, 1 KHz, 2KHz Sine Wave, Output 0-10 Continuously variable. (Note : Other frequency



EL 209 - Low Distortion Sine / Square Wave Oscillator

Frequency Range 10 Hz to 110 KHz in 5 decade. Range by Step Selection Accuracy $\pm 2\%$ Output voltage 0 -10 V Continuously

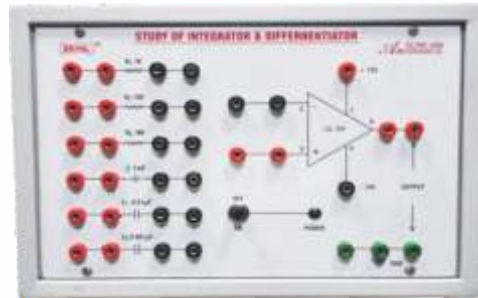
CHARACTERISTICS & APPLICATIONS OF OPERATIONAL AMPLIFIERS

EL 210 - Operational Amplifier as Inverting- Non Inverting, Adder Amplifier & Subtractor

Instrument Comprises of DC Regulated Power Supplies, Circuit diagram is printed on panel & different Resistance can be connected externally for various observation.



EL 214 - Study of Operational amplifiers as Diffrentiator & Integrator.



EL 211 - Study of Operational amplifier as Adder, Subtractor, Integrator and Differentiator

Instrument Comprises of two Dc regulated power supply 0-5V DC, $\pm 15V$ DC, one meters to measure input and output Voltage & Combination of resistance, Capacitors mounted on front panel.



EL 215 - Study of Operational amplifiers as Schmitt trigger.

EL 216 - Study of Operational amplifier as Sine to Square wave convertor.

EL 217 - Study of Operational Amplifier

Amplifier as Square to Triangular & Triangular to Square Wave

EL 218 - Study of Operational amplifiers as Clipping and Clamping circuit.

EL 219 - Study of Operational amplifier as Voltage Comparator

Instruments Comprises of $\pm 15 V$ DC Regulated power supply, one round meter, combination of resistances, zener diode & IC 741 connected inside & Connections brought out at sockets on

EL 220 - Study of Operational amplifier as V to I & I to V Convertor

Instrument Comprises of $\pm 15 V$ DC Regulated power supply, two round meters, Connections brought out at sockets on front

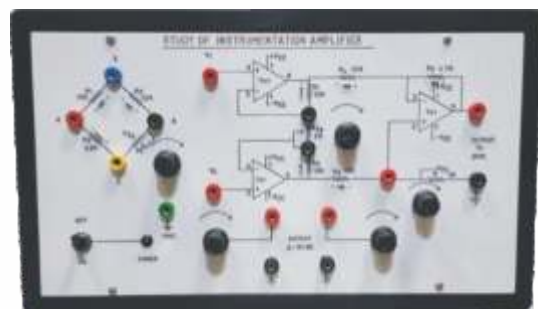
EL 212 - Application of Operational amplifiers

To study operational amplifier as Inverting, Non-Inverting, Summing, Difference, Integrator, Differentiator, Buffer, Sine to Square wave convertor & square to Triangular Wave Convertor



EL 221 - Study of Instrumentation Amplifier

Instrument Comprises of one $\pm 15 V$ DC Regulated power supply, two DC regulated short circuit and over load protected Continuously variable power supply, Three IC 741 placed inside and Connections brought out at sockets.



EL 213 - Operational Amplifier Kit (Bread Board Mo

In this Kit to study more than 15 experiments based on characteristics and applications of operational amplifier. Instrument Comprises of Dc regulated power supplies, Sine, Square, Triangular wave outputs, one bread board. Complete with two dual

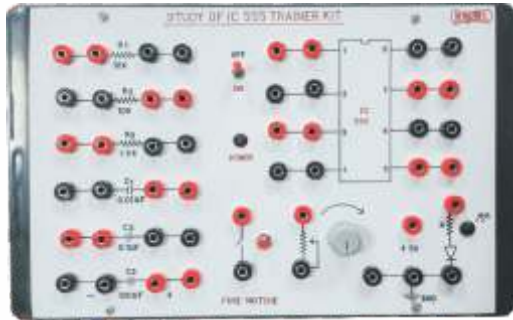
EL 222 - Study of Logrithemic Amplifier

Instrument Comprises of DC Regulated Short circuit and over load protected continuously variable power Supply, $\pm 15 V$ DC Regulated power supply, IC 741 & Diode 4007.

STUDY OF MULTIVIBRATOR IC 555

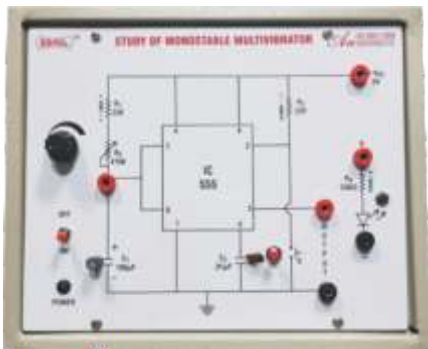
EL 223 - Study of IC-555

To assemble & Study, As table, Monostable, Bistable Multivibrators & V to F Converter. Instrument Comprises of DC Regulated power supply 5 V DC / 150 mA, IC 555 & various components Kept inside the Cabinet & Connections brought at 4mm sockets.



EL 224 - Monostable Multivibrator Using IC 555

To Study Monostable Multivibrator Using IC 555 Instrument Comprises of DC Regulated power supply 5 V DC / 150 mA, IC 555 & various components Kept inside the Cabinet & Connections



EL 225 - Monostable Multivibrator Using Transistors.

EL 226 - Astable Multivibrator Using IC 555.

To Study Astable Multivibrator Using IC 555 Instrument Comprises of DC Regulated power supply 5 V DC / 150 mA, IC 555 & various components Kept inside the Cabinet & Connections brought at 4mm



EL 227 - Astable Multivibrator Using Transistor.

EL 228 - Bistable Multivibrator Using IC 555.

To Study Bistable Multivibrator Using IC 555 Instrument Comprises of DC Regulated power supply 5 V DC / 150 mA, IC 555 & various components Kept inside the Cabinet & Connections brought at 4mm



EL 229 - Bistable Multivibrator Using Transistors.

Experiment No. 4 : To study Astable Multivibrator using IC-555.

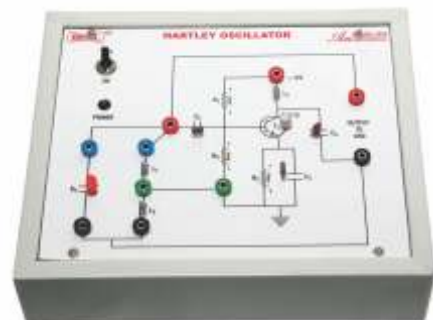
Experiment No. 5 : To study Bistable Multivibrator using IC-555.

Experiment No. 6 : To study Monostable Multivibrator using IC-555.

OSCILLATORS

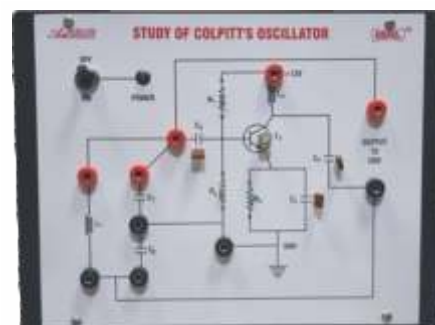
EL 230 - Hartley Oscillator

To Study Hartley Oscillator using transistor. Instrument Comprises of +12V/150mA DC power supply transistor BD115 & various components placed on panel and Connections brought out at



EL 231 - Colpitt Oscillator

To Study Colpitt Oscillator using transistor. Instrument Comprises of +12V/150mA DC power supply transistor BD115 & various components placed on panel and Connections brought out at



EL 232 - Hartley & Colpitt Oscillator

EL 233 - Phase Shift Oscillator

To Study Phase Shift Oscillator using transistor. Instrument Comprises of +12V/150mA DC power supply transistor BD115 & various components placed on panel and Connections brought out

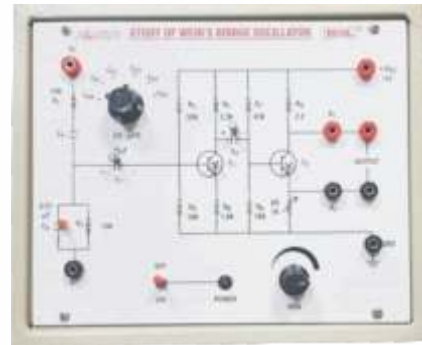


EL 234 - Wein Bridge Oscillator Using IC 741

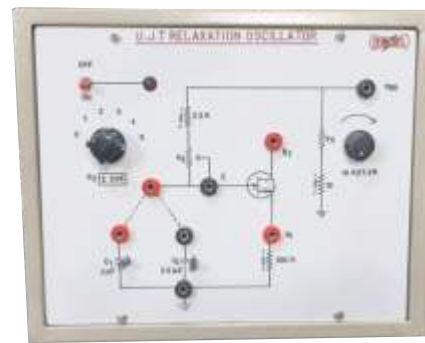
To Study Wein Bridge Oscillator using IC 741. Instrument using $\pm 15V$ DC power supply IC 741 & various components placed inside the cabinet of Connections brought out at socket.



EL 234A - Wein Bridge Oscillator Using Transistor



EL 235 - Relaxation Oscillator Using UJT.



AMPLIFIERS

EL 236 - Study of Transistor Amplifier

To Study Frequency Response, Input Impedance, Output Impedance of Common base, Common Emitter & Common

EL 237 - FET Common Source Amplifier

EL 238 - Common Collector (Emitter Follower) Transistor Amplifier

EL 239 - Common base Transistor Amplifier

EL 240 - Common Emitter / RC Coupled Transistor Amplifier



EL 241 - Two Stage RC Coupled Amplifier



EL 242 - Biasing Techniques of Transistor

EL 243 - To Study Magnetic field of solenoid



ANALOG MEASURING INSTRUMENTS

EL 244 - FET Volt - Ohm Meter (V.T.V.M)

This is an electronic instrument for quick and precise measurement of DC & AC Voltages as well as resistance. There are seven ranges in each parameters which makes it ideal for a Laboratory Workshops



EL 245 - PUSH PULL AMPLIFIER



DIGITAL TRAINING BOARDS

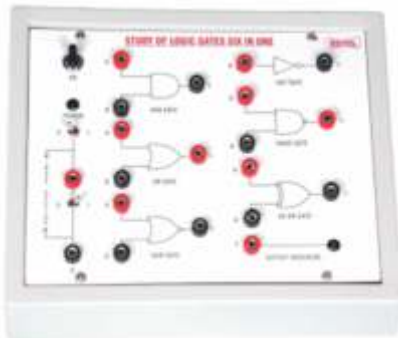
Digital Electronic Training Board have been developed with a view of Organise a basic Training Schedule. All the Kits Comprises of DC Regulated Power Supply, 5 V DC/150 mA, Required no. of Logic Input, Output Indicator, Sockets are provided to make the connection.

EL 246 - Basic Logic Gates (7 in 1) - Digital Training Board

To study and verify the truth table for TIL AND, NAND, OR, NOR, NOT, EX-OR, EX-NOR Gate

EL 247 - Basic Logic Gates (6 in - 1)

To study and verify the truth table for TTL AND, NAND OR, NOR, NOT & EX-OR gate



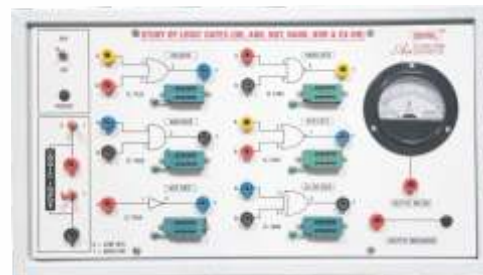
EL 248 - Basic Logic Gates (6 in - 1) WITH METER

To study and verify the truth table for TTL AND, NAND OR, NOR, NOT & EX-OR gate



EL 249 - Basic Logic Gates (6 in - 1) WITH METER & 6 ZIP SOCKET

To study and verify the truth table for TTL AND, NAND OR, NOR, NOT &



EL 250 - Verify truth table for TTL AND, NOT & NAND Gates

To Study and Verify truth table for TTL AND, NOT & NAND

EL 251 - Verify truth table for TTL OR, NOT & NOR Gates

Study & Verify truth table for TTL OR, NOT & NOR Gates .

EL 252 - Basic Logic Gates Using Discreat Components (5 in 1)

To study & verify the truth table for DTL AND, NAND, OR, NOR &

EL 253 - Verify truth table of DTL OR Gate.

EL 254 - Verify Truth Table of DTL NOT GATE.

EL 255 - Verify truth table of DTL NOT Gate.

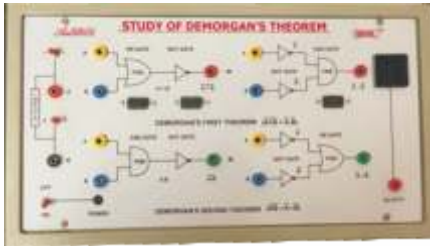
EL 256 - Verify truth table of DTL AND & OR Gate

EL 257 - Verify truth table of DTL NAND Gate.

EL 258 - Verify truth table of DTL NOR Gate.

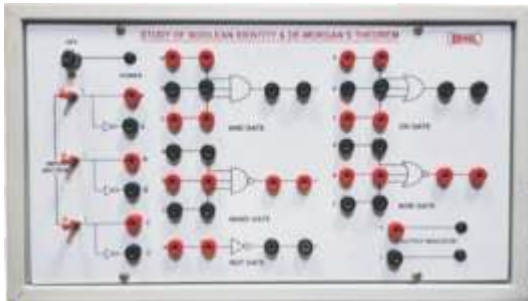
EL 259 - Verification of Demorgan's theorems

To verify truth table of Demorgan 1st & 2nd Theorem.



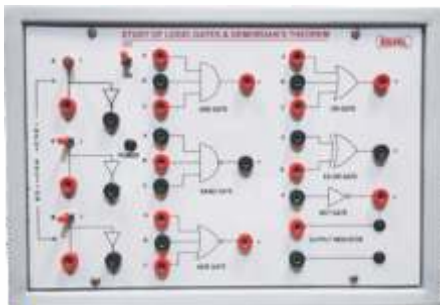
EL 260 - Verification of Boolean Identities & Demorgan's theorems

To verify truth table of 3 input AND gate, OR gate, NAND gate, NOR gate, single input NOT gates, Boolean expressions & Demorgan's



EL 261 - Verification of Logic Gates & Demorgans Theorems using TTL Logic Gates.

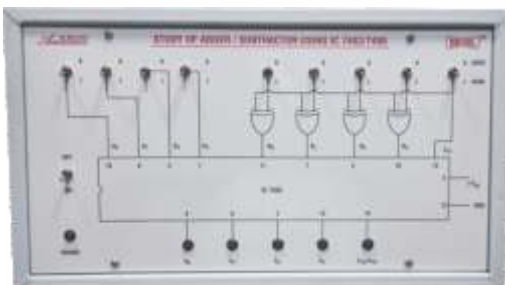
To verify truth table of 3 input AND gate, OR gate, NAND gate, NOR gate, two input Ex-OR gate, single input NOT gates and Demorgan's Theorems.



EL 262 - Verification of truth table of Logic Gates using Nand & NOR Gates.

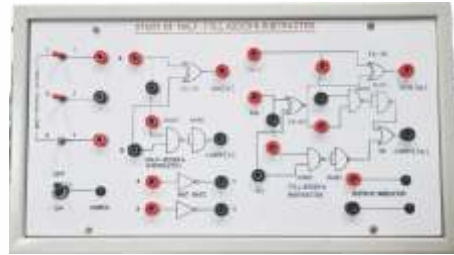
To verify truth table of AND gate, OR gate, NAND gate, NOR gate & NOT gate using NAND & NOR gates.

EL 263 - Study of 4 Bit Adder & Subtractor (using IC 7483)



EL 264 - Verify Adders & Subtractors using OR, Ex-OR, AND & NOT Gates.

To verify truth table of Digital Half Adder, Half Subtractor, Full Adder & Full Subtractor using OR, AND, EX-OR & NOT Gates.



EL 265 - Digital Trainer to verify Half Adder

Using OR, Ex-OR & AND gates

EL 266 - Digital Trainer to verify Half Subtractor

Using OR, Ex-OR & AND gates

EL 267 - Digital Trainer to verify Full Adder

Using OR, Ex-OR & AND gates

EL 268 - Digital Trainer to verify Full Subtractor

Using OR, Ex-OR & AND gates

EL 269 - Digital Trainer to verify Adders & Subtractor using NAND gates.

To verify truth table of Digital Half Adder, Half Subtractor, Full Adder & Full Subtractor using NAND gates.

EL 270 - Digital trainer to study and verify truth table of flip-flops.

To study and verify truth table of 'RS', 'D' Type, 'T' Type, 'JK' & 'JK' Master Slave Flip Flops using TTL IC'.

EL 271 - Digital trainer to study R.S., D-Type, JK & T Type Flip Flops

To study and verify truth table of 'R- S', 'D' Type, 'T' Type & 'JK' Flip Flops using NAND gates.



EL 272 - Verify tables of RS & D-Type Flip Flops using NAND & NOT Gates.

To verify truth table of 'RS' & 'D' Type Flip Flops using NAND gates

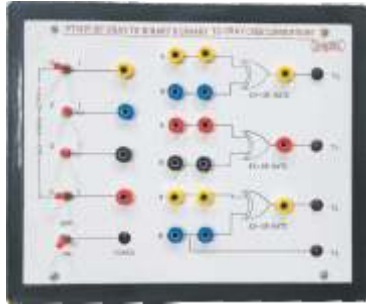
EL 273 - Study & verify truth tables of 'JK' & 'T' type flip flops using Nand gates.

To verify truth table of 'JK' & 'T' Type Flip Flops using NAND gates

EL 274 - Study & verify truth tables of JK & JK Master Slave Flip-Flops

To verify truth table of 'JK' & 'JK' Master Slave Flip Flops using IC 7472 & 7476.

EL 275 - 4 Bit Binary to Gray Code Convertor.



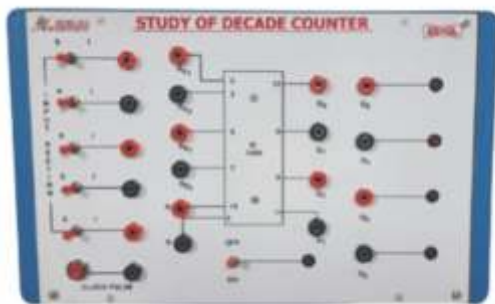
EL 276 - 4 Bit Gray to Binary code Convertor.

EL 277 - Study of 4 Bit Ripple Counter (forward & reverse)

To verify truth table of 4 Bit Forward & Reverse Counters using 4 JK Flip Flops.

EL 278 - Study of 4 Bit Ripple Counter (forward, reverse & modulo)

EL 279 - Study of Decade counter using 7490



EL 280 - Study of 4 Bit BCD Counter/Decimal to Binary Encoder

To convert Decimal input to Binary output using IC 7490.

EL 281 - Study of 4 Bit BCD Counter/ Decimal to Binary Encoder using Nand Gates.

To convert Decimal input to Binary output using NAND gate.

EL 282 - Study of 4 Bit Up Down Counter.

To study & verify truth table of 4 bit Up & Down Counter using IC



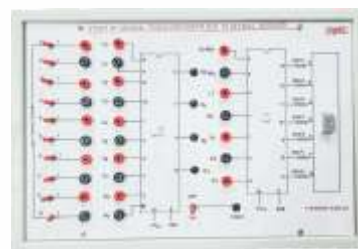
EL 283 - Study of Left, right & shift register.

To study & verify truth table of Left, Right Shift Register using IC



EL 284 - Study of Encoder, decoder circuits

To study Decimal to BCD Encoder & BCD to 7 segment Decoder.



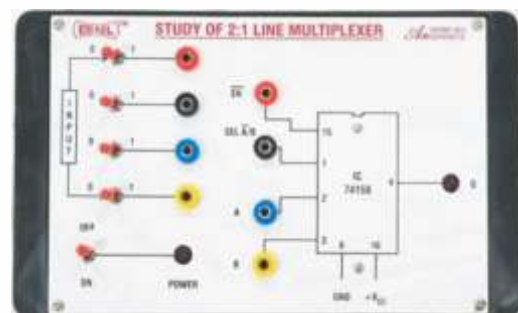
EL 284A - Study of BCD TO 7 Segment decoder

To study BCD to 7 segment Decoder. Using IC 7441



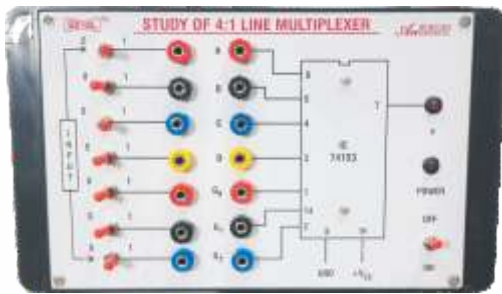
EL 285 - Study of 2-1 line multiplexer (using IC 74158)

To Study of 2-1 line multiplexer using IC 74158.



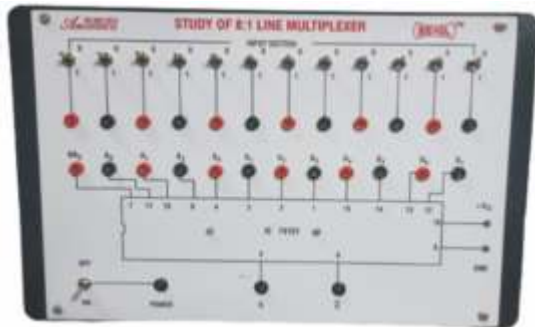
EL 286 - Study of 4-1 line multiplexer

To Study of 4-1 line multiplexer Using IC 74153.



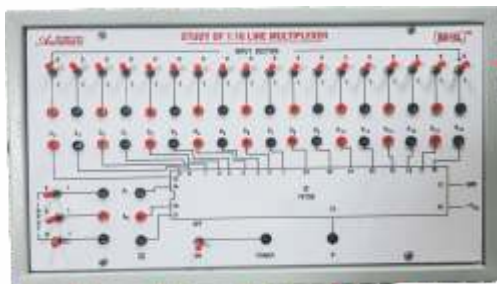
EL 287 - Study of 8-1 Multiplexer using IC 74151

To Study of 8-1 line multiplexer Using IC 74151.



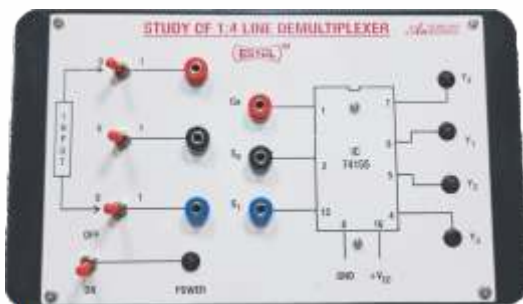
EL 288 - Study of 16-1 Multiplexer (Using IC 74150)

To Study of 16-1 line multiplexer Using IC 74150.



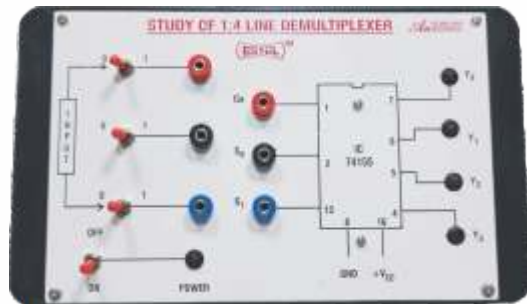
EL 289 - Study of 1-2 Line Demultiplexer using IC74155

To Study of 1-2 Line Demultiplexer using IC74155



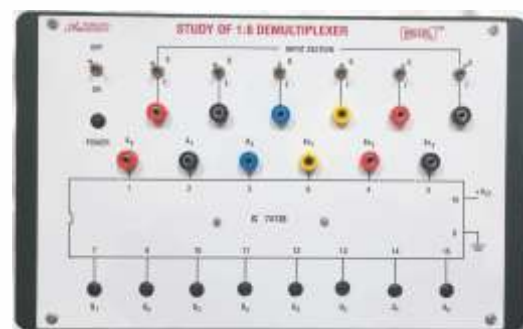
EL 290 - Study of 1-4 Line Demultiplexer USING IC 74155

To Study of 1-4 Line Demultiplexer USING IC 74155



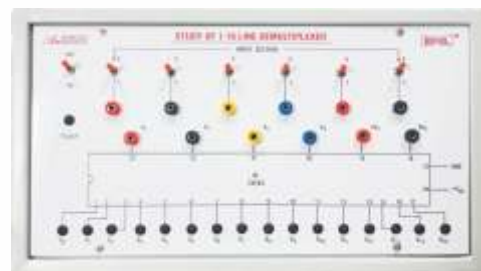
EL 291 - Study of 1-8 Line Demultiplexer (Using IC 74138)

To Study of 1-8 Line Demultiplexer Using IC 74138.



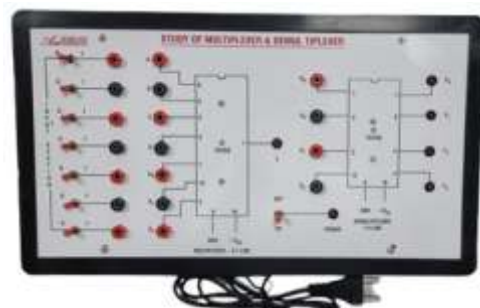
EL 292 - Study of 1-16 Line Demultiplexer (Using IC 74154)

To Study of 1-16 Line Demultiplexer Using IC 74154



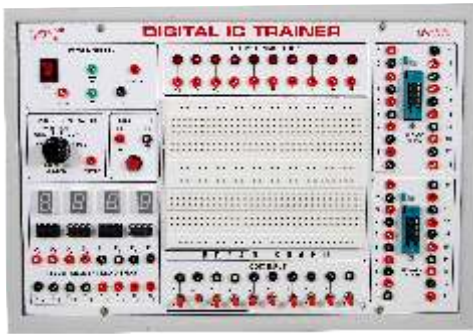
EL 293 - Study of Multiplexer / Demultiplexer combine

To Study Multiplexer / Demultiplexer Using IC



EL 294 - Study of Ram Circuit.

EL 295 - Digital IC Trainer (Bread Board Model)



1. Study and verify Truth tables of Logic Gates.
2. Verification of Boolean identities & Demorgan's theorems.
3. Study and verify truth tables of Digital Adders & Subtractors.
4. Study of Flip-Flops and verification of their truth tables.
5. Study of Counters, Shift Registers and Verification of their truth tables.
6. Study of Encoders, Decoders and Verification of their truth tables.

EL 296 - Logic gate Circuit Trainer

To verify truth table of TTL Logic gates, Boolean Expressions, De-Morgan's Theorem, Adders, Subtractor, Flip-Flop, Counters, Shift Registers, Encoders, Decoders, Multiplexers & De-Multiplexers

EL 297 - Analog to Digital Convertor/ Digital to analog convertor using R-2R network

To study Analog to Digital and Digital to Analog convertors using R-2R network & Successive Approximation Method.



EL 298 - Digital to Analog Convertor using R-2 R Network

To study Digital to Analog convertor using R-2R network.

EL 299 - AIRTH MATIC LOGIC UNIT (ALU)



Experiment No. 7 : To study Analog to Digital & Digital to Analog convertor using R-2R, Network Ladder.

COMPONENT DEVELOPMENT SYSTEMS

EL 300 - Bread Board System Model

Bread board System is a "6 in 1" System. It provides Regulated Power Supply and input signals.

- | | |
|-------|---|
| (A) | DC Power Supplies : It has been three IC-Regulated power Supplies :- |
| (i) | 0 V to + 30 V / 250mA (Variable) |
| (ii) | + 5V / 1A (Fixed) (for digital ICs) |
| | For energising NPN, PNP transistors, op-amps & linear Ics |
| (iii) | + 12V - 0--12V (Fixed) (for digital ICs) |
| (B) | AC Power Supply : It has centre tapped (9-0-9) V power transformer to conduct half wave, full wave bridge rectifiers and voltage multipliers. |
| (C) | Sine/Square wave Signal Generator : It has two signal sources (i.e.) Sine wave and Square wave. It is intended primarily to test and measure audio equipment parameters. The Sine / Square generator is completely, on IC Version and generates frequencies from 1HZ to 100 KHZ in 5 decade ranges. |
| (1) | AMPLITUDE CONTROL - Amplitude Varies from (0-10V) peak to Peak. |
| (2) | FUNCTION SELECTOR - To select either Sine Wave or Square Wave. |
| (d) | CLOCK Generator |
| | It has TTL Compatible Clock Generator of Exactly 1HZ enagising frequency counters. |
| (e) | POTENTIOMETERS |
| | Like 1K, 47K, 100K are provided. |
| (f) | BREADBOARD SYSTEM |
| | Trainer is provided with two bread boards to construct various circuits with the |

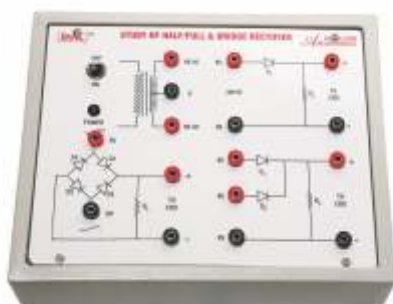


EL 301 - Bread Board System

Instrument Comprises of DC power Supply ± 12 V, ± 5 V & two bread



EL 302 - Half/Full & Bridge Rectifier using Semi Conductor Diode without meter



EL 303 - Half/Full & Bridge Rectifier using Semi Conductor Diode with 2 meters



Experiment No. 8 :

- To study the magnetic field produced by a current carrying using a search coil.
- Find the value of permeability μ of air.

What We Need

- Solenoid with layer of disc winding.
- Pick up search coil having rev. thousand turns.
- Step down transformer - 240/2A.
- Rheostat 50ohms/2A.
- AC millivoltmeter (0-100mv)
- AC Ammeter 0-2.5A.

ACTIVE & PASSIVE FILTER CIRCUITS (STUDY OF FREQUENCY RESPONSE)

Circuit Diagram for all filters is printed, Components kept inside the cabinet, connections of important points brought out at sockets. To perform experiment these instruments required.

Audio Frequency Function Generator as Optional Accessories

EL 304 - Study of 'T' type Passive Low pass, High pass, Band Pass & Band stop filters

EL 305 - Study of 'T' type passive low pass filter.

EL 306 - Study of 'T' type passive band pass filter.

EL 307 - Study of 'T' type passive high pass filter.

EL 308 - Study of 'T' type passive constant K High Pass filter.

EL 309 - Study of M-derived 'T' type Passive low pass filter.

EL 310 - Study of M-derived 'T' type Passive high pass filter.

EL 311 - Study of 'p' type passive Low pass, High pass, Band pass & Band stop filter.

EL 312 - Study of 'p' type passive Low pass filter.

EL 313 - Study of 'p' type passive Band pass filter.

EL 314 - Study of 'p' type passive High pass filter.

EL 315 - Study of Active Filters using Operational Amplifier.

(Low Pass, IInd Order, Low Pass & High Pass Filter)

INDUCTANCES

EL 316 - Inductances : Fixed :

These are quite useful at audio frequencies. The coil upto 100 mH are air cored and above 100 mH, the coils are wound cores. Housed in nicely polished teak wood/metal box with engraved bakelite top panel. Accuracy $\pm 2\%$.

a)	100 mH to 1000 mH (Any single Value)
b)	1 mH to 10 mH (Any single Value)
c)	100 mH to 1 H (Any single Value)
d)	10 mH to 100 mH (Any single Value)

DECADE INDUCTANCE BOX

These are variable Inductance units for use in filter and tuned circuits and housed in polished teak wood/metal box.

EL 317 - Single Dial

a)	0.1 mH Steps	total	1 mH
b)	1 mH Steps	total	10 mH
c)	10 mH Steps	total	100 mH
d)	100 mH Steps	total	1 H
e)	1 H Steps	total	10 H

EL 318 - Two Dial

a)	0.1 and 1 mH Steps	total	11 mH
b)	1 and 10 mH Steps	total	110 mH
c)	10 and 100 mH Steps	total	1100 mH
d)	100 mH and 1 H Steps	total	11 H

EL 319 - Three Dial

a)	.1, 1 and 10 mH Steps	total	111 mH
b)	1, 10 and 100 mH Steps	total	1110 mH
c)	10, 100 mH and 1 H Steps	total	111 H



EL 320 - Four Dial

a)	0.1, 1, 10 and 100 mH Steps	total	1.11 mH
b)	1, 10, 100 mH and 1 H Steps	total	11.11 mH



EL 321 - Five Dial

a)	0.1, 1, 10, 100 mH and 1 H Steps	total	1.11 H
b)	1, 10, 100 mH and 10 H Steps	total	111.11 mH

Note : Any other value of decade can be supplied on request.

CONDENSERS

EL 322 - Condensers : Fixed

Fixed. A single condenser housed in steel tough bakelite case with lock type terminal at top. maximum working 400 volts.

a)	.0001 mfd to .005 mfd	(Any single Value)
b)	.01 mfd. to .05 mfd	(Any single Value)
c)	1 mfd (working voltage 250V)	
d)	2 mfd (working voltage 250V)	

DECADE CONDENSER BOXES DIAL PATTERN

High Quality Mica, Paper, Polyester and Metal films capacitors are used in the Decade Boxes. The capacitors are mounted on High grade Board switches which are fixed on Bakelite panel mounted on metal box. The working voltage of the capacitors is 250

EL 323 - Single Dial-Range

a)	.0001 mfd. Steps	total capacity	.001 mfd
b)	.001 mfd. Steps	total capacity	.01 mfd
c)	.01 mfd. Steps	total capacity	.1 mfd
d)	.1 mfd. Steps	total capacity	1 mfd
e)	1 mfd. Steps	total capacity	10 mfd



EL 324 - Two Dials - Range

a)	.0001, and .001 mfd. Steps	total capacity	.011 mfd
b)	.001 and .01 mfd. Steps	total capacity	.11 mfd
c)	.01 and .1 mfd. Steps	total capacity	1.1 mfd
d)	.1 and 1 mfd. Steps	total capacity	11 mfd



EL 325 - Three Dials - Range

a)	.0001, .001 and .01 mfd. Steps	total capacity	.111 mfd
b)	.001, .01 and .1 mfd. Steps	total capacity	1.11 mfd
c)	.01, .1 and 1 mfd. Steps	total capacity	11.1 mfd

EL 326 - Four Dials - Range

a)	.0001, .001, .01 and .1 mfd. Steps	total capacity	1.111 mfd
b)	.001, .01, .1 and 1 mfd. Steps	total capacity	11.11 mfd



EL 327 - Five Dials - Range

a)	.0001, .001, .01, .1 and 1 mfd. steps	total capacity	11.111 mfd
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EL 328 - DC moving coil meters (Model MO-65/ MR-80)

'A' grade meter of overall size of 82mm dia (Model MO-65/ MR-80) is mounted on a suitable desk stand . Some common ranges are listed below.

Description:-

a)	0-1, 1.5, 2.5, 3, 5, 10 Amp
b)	10, 25, 50, 100, 250, 300, 500mA
c)	3V, 5V
d)	10V, 25V, 50V
e)	100, 300, 500, 600V



EL 329 - AC moving coil meters (Model MO-65/ MR-80)

'A' grade meter of overall size of 82mm dia (Model MO-65/ MR-80) is mounted on a suitable desk stand .Supplied with stand. Some common ranges are listed below.

Description:-

a)	0-1, 1.5, 2.5, 3, 5, 10 Amp
b)	10, 25, 50, 100, 250, 300, 500mA
c)	3V, 5V
d)	10V, 25V, 50V

EL 330 - Double scale meter (Model MO-65/ MR-80)

The conventional 'A' grade round panel meter of overall size of 82mm dia (Model MO-65/ MR-80) is mounted on a suitable desk stand with 3 terminal. One terminal is common and the other two provide two different ranges. Supplied with stand. Some common ranges are listed below.

Description:-

a)	1.5/3, 7.5/15, 15/30, 30/60, 1.5/30V
b)	10/100, 25/250, 50/500, 100/1000 mA
c)	2.5/5, 5/10, 10/20 Amp
d)	50uA/25mA, 60uA/15mA

EL 331 - DC Galvanometer meter (Model MO-65/ MR-80) without stand

Galvanometer of Model MO-65/ MR-80, the movement is the same superior quality as used in Voltmeter & Ammeter. The black bakelite case is likewise similar in size and shape. dial reading 30-0-30/50-0-50.

Description:-

a)	20uA/division
b)	10uA/division



EL 332 - DC Galvanometer /Ammeter /Voltmeter (Model MR-100) without stand

It is widely used because it is very compact, economical and user friendly, with dreading 30-0-30 or 50-0-50 (available with different sensitivities).

The portability rugged construction , large clear scale & economically priced galvanometer is ideal for students experiment. Its sensitivity of 20uA/div. is particularly suitable for slide wire bridges, potentiometer & experiment on induced e.m f galvanometer with different sensitivities are listed in the table.

Sensitivity

a)	20uA/division
----	---------------



EL 333 - Faradays Laws

Students can perform two different experiments of Faraday's law by using the selector switch. How induced emf changes by the moving a magnet in/out of a coil with the galvanometer and the second is with LED's. Kit is provided with a coil of thin copper wire, LED's, bar magnet and deluxe model meter MR-87 on



EL 334 - Battery Cell Tester

3-0-3 Volts or 15-0-15 volts. A very useful instrument for instant Battery checking.



EL 335 - Demonstration Meter : Vertical Type

Standard size movement with all parts visible, fitted on a C.P. Vertical teak wood stand, with all sides glass and acrylic transparent sheet on the front.

- a) Galvanometer : 30-0-30
- b) Voltmeter : 0-3 volts
- c) Ammeter : 0-1.5 amps

EL 336 - Demonstration Meter : Horizontal type

Brand new assembled meter fitted on a thick base with non breakable transparent acrylic top and with all sides Glass. Overall dimensions 5½"×4½"×2½".

- a) Galvanometer : 30-0-30 Scale
- b) Voltmeter : 0-3 volts
- c) Ammeter : 0-1.5 amps

EL 337 - 'D' Arsonal Galvanometer

Mirror and Scale form. The coil is of 200 ohms resistance. The coil can be raised, lowered or set to zero by adjusting screw at the top and a lever is provided on the back to clamp the coil

EL 338 - Ballistic Galvanometer

For measurement of small quantities of electrical charge. Reflecting mirror type open model. The moving coil is suspended by a phosphorous bronze strip, which carries automatically true concave mirror. The coil can be raised or lowered or set to zero by adjusting knurled knob at the top. A knob at the back is provided for clamping and releasing the coils. A top high resistance is provided to make the galvanometer periodic, if desired. Levelling



Resistance coil	Period	Sensitivity
100 Ohms	10-12 sec.	280 mm
500 Ohms	12-15 sec.	400 mm

EL 339 - Ballistic Galvanometer

As at S.No. 338 "OSAW" type, a more sensitive and superior quality and with more time period.

Resistance coil	Period	Sensitivity
100 Ohms	10-12 sec.	220 mm
500 Ohms	12-15 sec.	480 mm

EL 340 - Lamp and Scale Outfit

Suitable for use with above reflecting Galvanometers.

- (i) Fitted with transformer and low voltage bulb to work on AC mains.
- (ii) 220 volts AC/DC main operated.

EL 341 - Spot Reflecting Galvanometer

A self reflecting Galvanometer in tough bakelite body and to work on 220 V AC or 6 volts DC

- a) Coil Res. 125 ohms & sensitivity 0.05 to 0.1 micro amps per mm.



EL 342 - Taut Suspension Galvanometer

Pointer type. Low coil resistance of 20 ohms and sensitivity 1 micro

EL 343 - Digital Meter

Digital L.E.D Panel Meter 3½ digit on stand.

- i) Voltmeter DC 0-200mV, 0-2V, 0-20V, 0-200V
- ii) Ammeter DC 0-20mA, 0-200mA, 0-2A, 0-20A
- iii) Voltmeter AC 0-200mV, 0-2V, 0-20V, 0-200V
- iv) Ammeter AC 0-20mA, 0-200mA, 0-2A



EL 343A - Digital Meter

Digital L.C.D Panel Meter 3½ digit on stand.



Experiment No. 9 : To find the Resistance of a Galvanometer by Post Office Box

What we need :

- Post office of 3 Ratio
- Sensitive Galvanometer 2Ga/Div.
- Variable Power Suppl 0-5V/1Amp.
- Resistance box plug type 5000A.

POST OFFICE BOXES-PLUG TYPE

EL 344 - P.O. Boxes Plug Type : Educational Quality

- (a) 3ratio
- (b) 4 ratio

EL 345 - P.O.Boxes :Superior Quality

Rectangular brass block. Most suitable for colleges and higher institutions.

- (a) 3 ratio



EL 346 - P.O. Boxes: Dial Type

5 dials, superior quality. One dial giving 5 ratios of 0.1, 1, 10, 100 and 1000 Ohms and 4 decade dials of 1, 10, 10, 1000 ohms with meter.

- (a) Constantan Coils Accuracy 0.1%
- (b) Manganin Coils Accuracy 0.05 %



EL 347 - P.O. Boxes: Dial Type:

6 dials, as above with 4 decade dials and 2 ratio dials to give ratios of , 0.01, 0.1, 1, 10, 100 and 1000 Ohms with meter.

- (a) Constantan Coils : Accuracy 0.1%

DIAL TYPE RESISTANCE BOXES

EL 348 - Single Dial

Range Total Resistance

- a) Tenths 1
- b) Units 10
- c) Tens 100
- d) Hundreds 1000
- e) Thousands 10000



EL 349 - Two Dial

Range Total Resistance

- a) Tenths and Units 11
- b) Units and tens 110
- c) Tens and Hundreds 1100
- d) Hundreds and thousand 11000



EL 350 - Three Dials

Range Total Resistance

- a) Tenths, Units and tens 111
- b) Units, tens and hundreds 1110
- c) Tens, Hundreds and thousands 11100



EL 351 - Four Dials

Range Total Resistance

- a) Tenths, Units and tens & hundreds 1111
- b) Units, tens and hundreds 11110



EL 352 Five Dials

- a) Tenths, Units and tens & hundreds & thousands. 11111
For 0.01 and 10,000 Ohms dial - Extra



RESISTANCE BOXES PLUG TYPE

EL 353 - Resistance Boxes

Pye type or Gambrel type. Educational quality. Accuracy : Constantan Coils 0.2% and Maganin coils 0.1%.

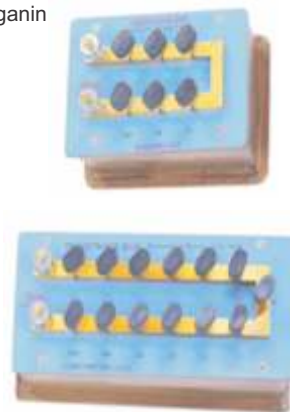
Range of ohms	No. of Coils	Total Resistance	
a) .1 to .5	& 1 to 5	4	1
b) .1 to 1	& 1 to 10	5	2
c) .1 to 5	& 1 to 50	8	11
d) .1 to 10	& 1 to 100	9	21
e) .1 to 50	& 1 to 500	12	111
f) .1 to 100	& 1 to 1000	13	2110
g) .1 to 500	& 1 to 5000	16	11110
h) .1 to 1000	& 1 to 10000	17	21110



EL 354 - Resistance Boxes

Superior quality: Most Suitable for Degree Colleges. Accuracy : Constantan Coils 1% and Manganin

Range of ohms	No. of Coils	Total Resistance	
a) .01 to .1		5	2
b) .01 to .5		8	1.1
c) .01 to 1		9	2.1
d) .1 to 1	& 1 to 10	5	2
e) .1 to 5	& 1 to 50	8	11
f) .1 to 10	& 1 to 100	9	210
g) .1 to 50	& 1 to 500	12	1110
h) .1 to 100	& 1 to 1000	13	2110
i) .1 to 500	& 1 to 5000	16	11110
j) .1 to 1000	& 1 to 10000	17	21110



RESISTANCE BOXES DIAL TYPE

EL 355 - Resistance Box Dial Type

ACCURACY 1% made with Metal film Resistance

(a)	Single Dial
(b)	Two Dial
(c)	Three Dial
(d)	Four Dial
(e)	Five Dial

Please mention the Value of decade while Sending the Order.



RESISTANCE COILS

EL 356 - Resistance Coils

a)	In bakelite case
b)	Transparent case (Parco type)



EL 357 - Precision Resistance Standard

Range (a) Allmn. case (b) Brass Case
.01 Ohms to 1000 Ohms (any Value)



RESISTANCE BRIDGE ELECTRICAL

EL 358 - Industrial Kelvin Double Bridge

A very useful instrument for accurate measurement of low resistance such as shunts and specific resistances, determinations. The bridge comprises of variable standard resistance, five multiplying ratios and galvo key. The standard resistance consist of 10 steps ($10 \times .01$) ohms and a circular slide wire divided into 200 equal parts. The resistance of slide wire is 0.02 ohms. Provision is made for the correction of the zero of the bridge. The multiplying ratios are $\times 100$, $\times 10$, $\times 1 \times 0.1$ and $\times 0.01$. The total range is 2 micro ohms to 11 ohms. All the coils are made of



EL 359 - Conductivity Attachment :

For use with above Kelvin Bridges.

EL 360 - Platinum Resistance Thermometer

For use with above C&G bridges. Enclosed in a corning glass tube 30 cm long and 2 cm dia meter fully insulated. Two Platinum leads, two COMPENSATING leads are brought on binding posts. Resistance approximately 2.8 ohms and fundamental interval 1 ohm, Range 0-500C. The terminal are marked CL & PL to represent compen sating and platinum leads. Complete in velvet case, with



EL 361 - Kohlraush Conductivity Bridge

Superior quality with silver plated dial and rotary scale. Maganin

EL 362 - Induction Coils:

For use with Kohlraush conductivity bridges.

EL 363 - Portable Wheat Stone Bridge

This instrument gives an accurate measurement of resistance and also locates faults in cables by adopting the murray and varley loop circuit test. Complete with Galvanometer. The instrument is provided with another switch controlling the sensitivity or short circuiting the Galvanometer. Arrangements are provided to use an extra galvo or high source voltage. Ration arms of the bridge are capable of selecting and multiplying factors of .001, .01, .1, 10, 100 and 1000 for conductive resistance measurements and for Varley loops sets and capable of selecting multiplying factors of 10, 100, 1000 for Murray test. Coils of Manganin wire, Accuracy of



EL 364 - Raleigh's Self Induction Bridge

For measurement of self inductance of a coil.



EL 365 - Deasauty's Bridge

For comparison of capacity of conductors. Made with metal film resistance of 1%



EL 366 - Anderson Bridge

For measurement of inductance in terms of capacity and resistance. Coils are made from Constantan wire. Accuracy 0.5%.



EL 367 - Schering Bridge

For measurement of capcitanace made with metal film resistance of 1% accuracy.



EL 368 - Maxwell Bridge

For measurement of capcitanace made with metal film resistance of 1% accuracy.



EL 369 - Wein's Bridge

For measurement of capacitance. Made with metal film resistance of 1% accuracy.



EL 370 - Owen's Bridge

For measurement of capacitance made with metal film resistance of 1% accuracy.



EL 371 - Carey foster bridge



EL 372 - Head Phone :



RHEOSTAT SLIDE WIRE (OPEN TYPE)

EL 373 - 4.3 cm Tube Dia-wound on Porcelain Pipe with Eureka wire Rheostat in single tube.

Tube Length		6	8	10	12	14	16	18	20	22	24 "
Amp.		Resistance in Ohms (Per Tube)									
a)	8	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5
b)	6.5	3	4.5	6	7.5	9	10.5	12	13.5	15	16.5
c)	5	4.5	6.5	9	11	13	15	18	20	22	24
d)	4.2	8	12	16	20	24	28	32	36	40	44
e)	3.3	11	16	22	27	33	38	44	50	55	61
Tube Length		6	8	10	12	14	16	18	20	22	24"
f)	2.8	15	22	30	37	45	52	60	67	75	85
g)	2.3	23	34	46	58	70	81	92	103	114	125
h)	1.8	37	55	75	92	110	128	146	166	185	205
i)	1.6	50	75	100	125	150	175	200	225	250	275
j)	1.4	64	96	128	160	190	220	255	290	325	360
k)	1.2	90	135	180	225	270	315	355	400	445	490
l)	1	115	175	235	290	350	405	460	515	570	625
m)	0.8	160	240	320	400	480	560	640	720	800	880
n)	0.6	270	410	540	670	800	930	1070	1200	1330	1450
o)	0.5	400	600	800	1000	1200	1400	1600	1800	2000	2200
p)	0.4	660	975	1300	1625	1960	2275	2640	2950	3250	3565
q)	0.3	1150	1700	2250	2850	3400	3950	4550	5150	5750	6350



EL 374 - 5.6 cms Tube Dia- Porcelain Pipe - Wound with Eureka Wire. Rheostats in single tube

Tube length		6	8	10	12	14	16	18	20 inch	
Amp.		Resistance in Ohms (Per Tube)								
a)		8	2	3	4.5	5.5	7	8	9.5	10.5
b)		6.5	3.5	5.5	7.5	9	11	13	15	17
c)		5.8	5.5	8	11	14	17	20	23	26
d)		5.5	8	11	14	17	20	23	26	30
e)		4.2	10	15	20	25	30	35	40	45
f)		3.3	14	20	27	34	42	50	58	65
g)		2.8	19	29	38	48	57	66	75	85
h)		2.3	26	41	56	70	85	100	115	130
i)		1.8	47	70	93	115	140	162	185	210
j)		1.6	60	95	125	160	190	225	255	290
k)		1.4	80	120	160	200	240	280	320	360
l)		1.2	115	170	225	280	385	390	445	500
m)		1	150	225	300	375	450	525	600	675
n)		0.8	200	300	400	500	600	700	800	900
o)		0.6	345	510	675	840	1000	1165	1385	1500
p)		0.5	500	750	1000	1250	1500	1800	2050	2300
q)		0.4	850	1250	1650	2070	2500	2900	3350	3750
r)		0.3	1350	2100	2860	3600	4350	5100	5900	6750

a) upto 30 cms Rheostat add an extra cost

b) upto 60 cms Rheostat add an extra cost

EL 375 - 5.6 cms Tube Dia- Grooved/Space winding with Kantha Nichromes wire Rheostats. Single tube continuous Rating

Tube length		6	8	10	12	14	16	18	20 inch	
Amp.		Resistance in Ohms (Per Tube)								
a)		12	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5
b)		10	2	3	4.5	5.5	6.5	8	10	12
c)		8	4	6	8	10	12	14	16	18
d)		6	6	9	12	15	18	21	24	27
e)		5.5	8	10	15	20	26	34	40	50
f)		5	10	15	20	26	34	40	50	58
g)		4.1	14	26	38	50	60	70	80	90
h)		3.7	20	30	45	60	80	100	115	130
i)		3	40	50	60	70	90	110	130	150
j)		2.5	45	55	75	95	120	150	170	190
k)		2	50	70	100	130	160	190	220	250
l)		1.5	70	100	160	220	285	345	405	470
m)		1.2	100	175	235	300	360	415	470	530
n)		1	200	300	400	530	650	760	880	1000
o)		0.8	250	325	535	690	800	930	1050	1150
p)		0.5	650	850	1100	1400	1700	2000	2300	2600
q)		0.3	1000	2100	3400	4700	5800	6800	8000	9000



EL 376 - Lead Screw Rheostats

In these Rheostats the guide rod is threaded and moves with a lead screw. This enables extremely fine adjustments.

- a) Up to 30 cms. Rheostat add an extra cost.
- b) Upto 60 cms. Rheostats add an extra cost.

EL 377 - Carbon Contact Rheostats

In these Rheostats the slider carries a carbon contact, which make gentle and soft contact with the resistance wire at an extra cost.

EL 378 - Calibrated Rheostats

A square guide rod is provided on which the graduation is done. Values are marked at every 2.5 cms.

- a) Upto 30 cms. Rheostat add an extra cost
- b) Upto 60 cms. Rheostat add an extra cost.

RHEOSTAT (SPECIAL RANGE)

EL 379 - Rheostats :

Standard ranges which are used quite commonly offered at very

(a)	10 ohm	5.2 Amp	Single Tube
(b)	20 ohm	3.7 Amp	Single Tube
(c)	50 ohm	4.1 Amp	Single Tube
(d)	296 ohm	2.8 Amp	Double Tube
(e)	190 ohm	3.3 Amp	Double Tube



PLUGS KEYS AND SWITCHES

EL 380 - Plug Key :

Made of brass block of 9mm square, mounted on bakelite base.

(a)	1 way	(b)	2way
(c)	3 way	(d)	4 way round

EL 381 - Plug Key : Superior Quality :

Heavy brass block of 10.5 mm square.

(a)	1 way	(b)	2way
(c)	3 way	(d)	4 way round

EL 382 - Plug Key Commutator :

4 way circular with all brass parts on base.



EL 383 - Tapping Key :

- A) Single contact, brass strip, terminals and mounted on base.



EL 384 - Unknown Resistance



EL 385 - Charge and Discharge Key :

Brass strips with insulated knob and terminal and fitted on bakelite base, quick action with silver contact.



EL 386 - Releigh's Key :

For self induction, with all brass parts on bakelite

EL 387 - Carry Foster Key :

For quick reversal of connections, with ebonite

EL 388 - Carry Foster Key :

Same as above in superior quality with brass cups.

EL 389 - Commutator Box Type



EL 390 - Reversing Switch :

On bakelite base with brass parts fitting.

EL 391 - Reversing Switch :

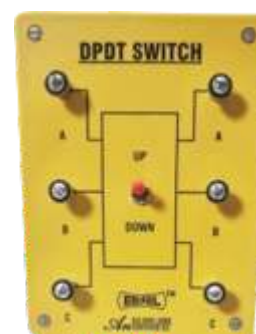
Superior quality with handle.

EL 392 - Knife Switch :

Single action type.

EL 393 - Double Pole Double Throw switch (D.P.D.T)

Fitted on plastic base.

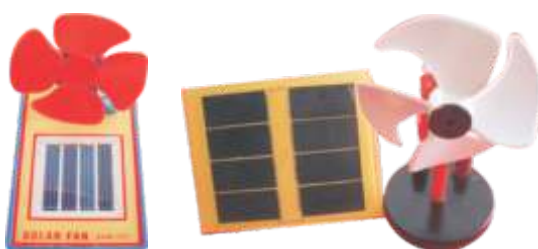


SOLAR EDUCATIONAL MODELS

EL 394 - Solar Energy Kit



EL 395 - Solar Fan



EL 396 - Solar Bulb

EL 397 - Solar Pump



EL 398 - Wind mill



TRAINING KITS FOR COMMUNICATION LAB

EL 399 - Study of Amplitude Modulation & Demodulation.

(Measurement of Amplitude Modulation Index (Depth of modulation), side band frequencies (upper side band & lower side band) and frequency of demodulated signal.)



EL 400 - Study of Amplitude modulation

EL 401 - Study of Amplitude Demodulation

EL 402 - Study of frequency/FSK Modulation & Demodulation

(Measurement of Amplitude Modulation Index (Depth of modulation), side band frequencies (upper side band & lower side band) and frequency of demodulated signal.)



EL 403 - Study of frequency modulation

(Measurement of frequency modulation index (Depth of

EL 404 - Study of Pulse Amplitude Modulation & Demodulation

(Measurement of Pulse Amplitude Modulation Index (Depth of modulation), and frequency demodulated signal.)



EL 405 - Study of Pulse Amplitude Modulation

EL 406 - Study of Pulse Amplitude Demodulation

EL 407 - Study of Pulse width Modulation & Demodulation

(Modulation of Carrier Signal in Pulse width Mode and Frequency of demodulated signal).

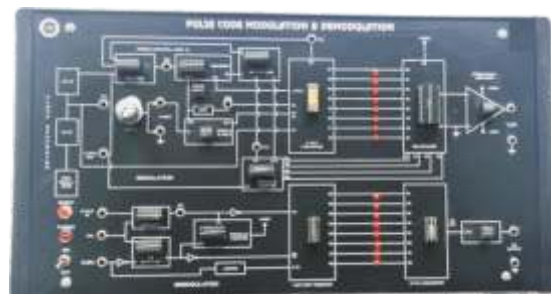


EL 408 - Study of Pulse Position Modulation & Demodulation

(Modulation of Carrier Signal in Pulse position Mode and Frequency of demodulated signal).



EL 409 - Study of Pulse Code Modulation & Demodulation



EL 410 - Study of Phase Modulation & demodulation



EL 411 - 8085 Microcontroller Trainer Kit with Inbuilt Power Supply



EL 412 - 8051 Microcontroller Trainer Kit With Inbuilt Power Supply



EL 413 - 8086 Microcontroller Trainer Kit With Inbuilt Power Supply



EL 414 - C.R.O (Cathode Ray Oscilloscope) 20Mhz



EL 415 - Fibre optic trainer kit



EL 416 - He Ne Lazer 2mv



EL 417 - Diode lazer 2mv with stand

EL 418 - Energy Band Gap using Four Probe Method

It consist of :-

1. Four probe arrangement for Ge. Crystal
2. Sample:- Ge Crystal Mounted with spring loaded connection
3. Oven upto 200 C
4. Thermometer (0-200C)
5. Constant Current Power Supply with Digital meter.



EL 419 - Hall Effect Experiment

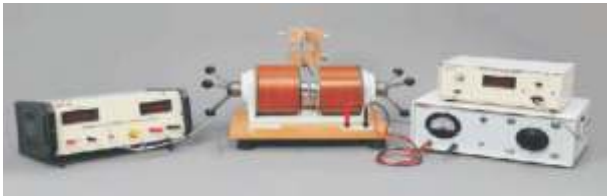
(A) Hall Probe: Contacts : Phosphor Bronze Adjustable Hall Voltage : 0.1-1 Volt /100mA/KG Thickness of Ge Crystal : Asperment on Sample Resistivity : $\sim 10\text{cm}$

(B) CONSTANT CURRENT POWER SUPPLY FOR HALL PROBE: Digital Millivoltmeter : 0-200mV, 0-20mA Accuracy : 0.1% of the reading 1 digit Load Regulation : 0.03% for no load to fullload. Impedance : 10hm Display : $3\frac{1}{2}$ digit 7 Segment LED (12.5mm) Height

(C). POWER SUPPLY FOR ELECTRO MAGNET : Standard Accessories :- 0- 6Amp, 60V, High Accuracy, High Stability, Allow fullscale long time operation, Voltage and current continuously variable within nominal value current continuously variable.

(D) ELECTROMAGNET : Low Cost Electromagnet Made of Soft Iron , Specially design for Hall Effect and other experiments, mounted on a Wooden Base for Stable performance, Pole pieces:- 50mm Diameter flat Field :- 7.5kG 10mm. air-gap Energising Coils:- Two coils each with total resistance of 9ohms.

(E) DIGITAL GAUSSMETER: Range : 0-2K Gauss & 0-20KGauss Resolution : 1 Gauss at 0-2KGauss Range Accuracy : 0.5% Display :



EL 420 - Stefans - Boltzman Constant Kit Using Black Body Radiation



Experiment :- 10

To study the Hall Effect in Semi Conductors and to determine Hall Voltage V_H , Hall Co-efficient R_H , the number of charge carries per unit volume n , the conductivity of the semi conductor samples, the carrier mobility μ and the hall angle.

What We Need :-

- Hall effect set-up along with the crystal.
- Electro magnet.
- Constant current digital Power Supply.
- Digital Gauss Meter

VERNIER CALIPER & METER SCALES

EL 421 - Meter Rule (Superior/ Good / Routine)

- One meter long
- Half meter long



EL 422 - Vernier Caliper

Steel chrome plated. Very for 12cm and the 10 part vernier reads to 0.1 mm. The English scale is graduated to $1/6$ $1/28$ inch for 5 inches and its 8-part vernier reads to inch with adjusting wheel and depth gauge, packed in card board box.



EL 423 - Vernier Caliper Stainless Steel

Same Cat No. EL-422, high quality made from stainless steel. Supplied in velvet case.

EL 424 - Vernier Caliper I.M.E. Type

Range 15cm and 6" with fine and clear graduation packed in beautiful lined case.



EL 425 - Vernier Caliper Demonstration Model 60cm

Made from Soft wood, smoothly operating, vernier caliper with large and clear figures and graduations, easily identified from a distance. The caliper is made from superior quality wood with plywood jaws. The scales align nicely, readings are accurate and instrument is convenient to handle. Graduation upto 60cm provided with aluminum channel for smooth movement of the jaw.

MICROMETER SCREW GAUGES

EL 426 - Micrometer Screw Gauge

This economical instrument is sufficiently accurate for beginners and for most elementary laboratory measurements. Superior quality, semi circular Welch pattern, dull nicked finish, oxidized threaded rod special type, individually packed in card board box.

a.	10x1mm	b.	15x1mm	c.	20x1mm
d.	25x1mm	e.	10x1/2mm	f.	15x1/2mm
g.	20x1/2mm	h.	25x1/2mm		



EL 427 - Micrometer Screw Gauge (Stainless Steel)

The barrel and yoke both are nickel plated, the rod is made from rust proof stainless steel.

a.	10x1mm	b.	15x1mm	c.	20x1mm
d.	25x1mm	e.	10x1/2mm	f.	15x1/2mm
g.	20x1/2mm	h.	25x1/2mm		



SPHEROMETER

EL 428 - Spherometer Disc Type

It consists of a brass disc 40mm in diameter and its circumference has 100 divisions. The vertical scale, with a range of 20mm, indicate the number of turns of the screw. The disc and scales are either lacquered or chrome plated, screw and legs are made of steel black brass painted.

a. 1/100



EL 430 - Spherometer Double Disc

Comprising circular metal table 50mm diameter with three accurately positioned black painted steel legs and ordinary steel screw thread working in a long adjustable brass bearing. A circular scale is carried on the thread and a vertical scale on the table, enabling accurate micrometer type readings to be taken.

a. 1/100



EL 429 - Spherometer Disc Type (Stainless Steel)

Same as above but screw and legs are made from rust proof stainless steel. and clear figures and graduations, easily identified from a distance.

STOP CLOCKS AND WATCHES

EL 431 - Stop Clock

Smith type, encased in a metal case with fly back action. At the right side of the case is stop and start lever, the operation of which enables a timer to be started and stopped as desired. On the other side of the case is a press lever which returns the hands to zero, after the mechanism has been stopped by means of a stop lever. A subsidiary dial recording 0 to 60 minutes is provided below the second



EL 432 - Stop Clock

Same as above but routine quality.



EL 433 - Stop Watch (1/10th of a second)

First quality precision made jeweled movement in attractive chromium plated case. The face of stop watch is clean, easy to read graduation and figures. This jeweled stop watch reads in 1/10th of a second and can be started, stopped and restarted by depressing

EL 434 - Stop Watch (1/5 of a second)

Same as above but stop watch reads 1/5th of a second.

EL 435 - Digital Stop Clock

To overcome the difficulties experienced in mechanical stop clock, Quartz controlled 3 1/2 digit stop clock. The START/STOP operation is by means of mini toggle switch and RESET is possible only in STOP mode to avoid accidental resetting while the clock's running workable on 22V A.C.



BALANCES

EL 436 - Physical Balance (7-Stone)

This is a basic general purpose balance. Capacity 2050 gram, sensitivity 1.2mg with 7-stone knife edge agates. The hangers have double hooks for upthrust experiments and pans are detachable finish is durable in golden color lacquer with nickel plated fittings and the balance is mounted on substantial sun mica wooden base provided with leveling screw. The whole balance is fitted in a teak



EL 437 - Chemical Balance

This balance has a lacquered brass beam engraved 50 scale divisions to each side. Each scale division representing 1/5 mg rider on the scale. The pillar is finished in lacquered with nickel plated fittings and detachable pans are suspended from double hooks, mounted in a sun mica wooden base with leveling screws. The whole balance is fitted in teak wood case, with front slider and two side doors.



EL 438 - Analytical Balance

Rapid weighing having short triangular beam, rider scale graduated into 100 divisions with 0 in the center, fine selected edges, vertical arrest, capacity 200gm, sensitiveness 1/10 mgm. Fitted in teak wood case with front slider and two side doors. Mounted on sun-mica base. Leveling screws are provided for best level.



EL 439 - Hydrostatic Balance

Brass beam, two long and one short pan, cap. 200gm on wooden base, sens. 2mg.

EL 440 - Triple Beam Balance

For direct readings with sliding weight for quick weighing with triple beam facilities. Its outstanding characteristic is its great convenience, due to the fact that the balancing weights are permanently secured to the beams. An adjusting screw is provided for leveling the beam which is enclosed in a metal guard to provide protection from the danger of bending or breaking.

Capacity:

a. 310gm	b. 610gm
c. 1110gm	d. 3110gm
e. 5110gm	



EL 441 - Triple Beam Balance Top Pan

The classic weighing instrument for class room instruction. These balances provide accurate results years after years. Weight anything liquid, solids and live animals. Spring loaded zero adjuster, stainless steel pan 150mm diameter.

Capacity:

a. 610x0.1gm	b. 2610x0.1gm
--------------	---------------

Set of supplementary masses can increase the capacity to 2610gm.

EL 442 - Double Pan Balance



EL 443 - Spring Balance Metric Polystyrene body

Flat form with zero adjustable device having anodized metal scale, metal parts richly plated in high impact polystyrene body. Suspension loop at top and load hook at the lower head. Individually packed in a beautiful cardboard box.

a. 50gm	b. 100gm	c. 250gm
---------	----------	----------



EL 444 - Spring Balance Flat Type Metal body

Flat type accurate with brass scale ring for suspension and hook for hanging weights.

a. 50gm	b. 100gm
c. 250gm	d. 500gm
e. 1000gm	f. 2000gm



EL 445 - Spring Balance Tubular

Aluminum body. Scale is made from self adhesive aluminum sticker. Suspension loop at top and load hook at the lower head.

Packed in a cardboard box.

a. 100gm	b. 250gm
c. 500gm	d. 1000gm
e. 2kg.	f. 5kg.
g. 10kg.	

EL 446 - Lever (Lettre) Balance (Dual type)

Combined 250gm and 1000gm.



WEIGHT BOXES AND ACCESSORIES

EL 447 - Analytical Weight Boxes (A Grade)

Brass C.P. Weights with brass forceps, in beautiful cabinet polished wooden box with superior packing, calibrated strictly within the error limit of tolerances permitted by N.P.L. India. Class A with certificate of actual values.

Capacity: 1mg to

a) 50gm	b) 100gm
c) 200gm	d) 500gm



EL 448 - Physical Weight Boxes

Superior quality having accurate brass weights in nicely polished wooden box. Complete with forceps and fraction weights.

Capacity: 1mg to

a) 50gm	b) 100gm
c) 200gm	d) 500gm



EL 449 - Physical Weight Boxes

Weights are made from cast iron. The all weights are C.P. But weights are not much accurate.

Capacity: 1mg to

a) 50gm	b) 100gm
c) 200gm	d) 500gm
e) 1000gm	



EL 450 - Physical Weight Boxes

Superior quality having most accurate cylindrical brass weights complete with forceps and fraction weights supplied in a superior quality cabinet polish wooden box

Capacity: 1mg to

a) 50gm	b) 100gm
c) 200gm	d) 500gm
e) 1000gm	



EL 451 - Physical Gram Weights Spare Brass C.P.

Capacity: 1mg to

a)	1gm	b)	2gms
c)	5gms	d)	10gms
e)	20gms	f)	50gms
g)	100gms	h)	200gms
i)	500gms.		

EL 452 - Analytical Gram Weights Spare Brass C.P.

Capacity: 1mg to

a)	1gm	b)	2gms
c)	5gms	d)	10gms
e)	20gms	f)	50gms
g)	100gms	h)	200gms
i)	500gms		



EL 453 - Fractional Weight Set

1mg to 500mg made from silver alloy, in plastic case



EL 454 - Rider Aluminum

For analytical balances specify 5mg or 10mg size.

SLOTTED WEIGHT

EL 455 - Slotted Weight Iron C.P.

Rust proof, set of five including hanger

a)	10x5gm	total	50gm
b)	20x5gm	total	100gm
c)	50x5gm	total	250gm
d)	100x5gm	total	500gm
e)	500x5gm	total	2500gm



EL 456 - Slotted Weight (Cast iron Painted)

Made from cast iron and painted. These sets of slotted weights particularly suitable for use with sonometers or applications where large load is required.

*These slotted weights are available in two quality

(i)	Simple Black Painted		
(ii)	Superior Hammertoe Painted.		
a)	250x5gm	total	1250gm
b)	500x5gm	total	2500gm



EL 457 - Slotted Weight Brass C.P.

These slotted weights are precisely turned from brass rods, carefully adjusted and chrome plated. The following described slotted weights are set of five.

a)	5x5gm	total	25gm
b)	10x5gm	total	50gm
c)	20x5gm	total	100gm
d)	50x5gm	total	250gm
e)	100x5gm	total	500gm



EL 458 - Slotted Weight Brass C.P.

Same as above but these are supplied set of ten.

a)	10x10gm	total	100gm
b)	20x10gm	total	200gm
c)	50x10gm	total	500gm
d)	100x10gm	total	1000gm



SPECIMEN FOR DENSITY & SPECIFIC GRAVITY

EL 459 - Metal Cubes

Set of six different metal. The set consists of one piece each of brass, aluminium, copper, zinc, iron and lead cubes.

Capacity :-

a) 10mm	b) 20mm
c) 25mm	d) 32mm



EL 460 - Pendulum Bob or Sphere (Set of Six)

The set consist one piece each of brass , aluminium, copper , zinc, iron and lead.



EL 461 - Pendulum Bob or Sphere (Spare)

With hook for suspension. Available in three different sizes and 6 different metals. The set consist one piece each of brass, aluminium, copper, zinc, iron & lead.

EL 462 - Spare Aluminium Blocks

Available different in size, aluminium metal block, rectangular in shape.

EL 463 - Air Pump (with Aluminum Plate)

This air pump is suitable for anumber of classroom demonstration single barrel made from steel pipe fitted on wooden base. The aluminium plate is provided with a stop clock, air inlet screw and a connection for rubber pressure tubing.

EL 464 - Bell Experiment Apparatus

For Demonstrating that sound can not be transmitted in a vacuum. It operates on 3 to 6 volt using either battery or a



EL 465 - Magdebur Hemisphere

To demonstrate pressure of the atmosphere to aluminium cups having dia either 62mm or 75mm are provided with handle and stop clock. Available in two size.



EL 466 - Pressure String (simple pascal law)

To show that pressure of liquid depend upon their height and surface of bottom of the columns. With glass vessel of 4 different shape mounted in metallic collars aluminium.



EL 467 - Boyle's law apparatus

Comprising two glass tubes, one closed at the top and other tube open. Their lower ends are drawn out and connected together by 1 meter of rubber tubing. Both tubes are mounted on sliding brackets which may be locked in any position on the metal supporting rods. Seasonal wood board 44" high carries a meter scale graduated from 0 to 100 cm fitted on heavy iron base with levelling screws. supplied without mercury and rubber tube.



EL 468 - Geometrical Models and figures

a	Wooden
b	Plastic



EL 469 - Drawing Board

- | | |
|----|---------------|
| a) | 12" x 18" 5/8 |
| b) | 23" x 16" 5/8 |



POTENTIOMETER (4 WIRES & 10 WIRES)

EL 470 - Potentiometer 4 wire:

Comprising four constantan wires of S.W.G 24 each one meter long, clamped under heavy brass strip. Each block is fitted with a heavy lock type brass terminal are mounted on a teak wood polished board & frame is made from best quality wood. The four wire are stretched along with meter scale.

- a) Supplied with pencil jockey and lead wire for connection.



EL 471 - Potentiometer 10 wire :

Comprising ten constantan wires of S.W.G 24 each one meter long, clamped under heavy brass strip. Each block is fitted with a heavy lock type brass terminal are mounted on a teak wood polished board & frame is made from best quality wood. The ten wire are stretched along with meter scale.

- a) Supplied with pencil jockey and lead wire for connection.
b) Supplied with Brass Spring sliding jockey one meter long plywood sumica top brass



METER BRIDGE OR WHEATSTONE BRIDGE

EL 472 - Meter Bridge or Wheatstone Bridge with Pencil Jockey

The four-gap bridge has large and heavy brass strip of mounted on a teak wood base of size 44"x4". Heavy nine nos brass terminals are provided to reduced the resistance to a minimum. The ends gaps are closed by removable brass bridging pieces which are held in position by the terminals. The 24 S.W.G Constantan wires stretched along the top of wooden meter scale and securely clamped to the brass end strips so that end errors are negligible.

- a) Supplied with pencil jockey & wire.
b) Supplied with seasonal wood board with sunmica top.



INDUCTION COILS, ANCHOR RING, SELF & MUTUAL INDUCTANCE COIL

EL 473 - Induction coils

This coil, specially designed for school use is suitable for vacuum tubes, eudiometer etc. It is wound with insulated copper wire, has tungsten contact and on/ off reversing switch commutator. Voltage tested condensers are fitted inside the teak polish wooden box. The top of the wooden box is provided with sunmica and relevant data engraved on the sunmica. Terminal are provided for H.T output and L.T input of the coil. Upto 50mm spark being obtained with 4 to 6 volt D.C input and spark from 50 to 100mm can be obtained by 6 to 12 volt D.C.

Length of spark:-

- | | |
|---------|----------|
| a) 5mm | b) 10mm |
| c) 15mm | d) 20mm |
| e) 25mm | f) 50mm |
| g) 75mm | h) 100mm |



EL 474 - Anchor Ring

This consist of a specimen of iron in a ring form wound with two uniformly spaced coil of wires. Soft iron ring of dia 75mm and cross sectional dia is 9mm. The primarywinding consist of 200 turns of insulated copper wire of proper gauge with binding post terminal and secondary winding consist of about 25 turns of fine wire.



EL 475 - Self and Mutual Inductance Coils

Has primary coil of 3000 turns and secondary coil of 1000, 2000 and 3000 turns.

EL 476 - Self and Metal Inductance coils

Has primary coil of 500 turns and secondary coil of 100, 250 and 500 turns with different tapings, mounted on woden 60 bins 25 mm



EL 477 - Solenoid

20 turns per cm length of size 50cm, mounted on base. Copper

EL 478 - Solenoid Inductor

A useful instrument for calibrating a BLASTIC GLAVANOMETER. The primary coil has 1000 turns and is about 100 cm long fitted on a wooden board. The secondary is in section with separate terminals for each section. Every section of the secondary has its own number of turns mark on the wooden board. Secondary coil has three tapings of 100,



Experiment No. 11 : To find the frequency of AC Mains using Electrical Vibrator intransverse & Longitudinal arrangements.

What we need :

- Electrical Vibrator
- Physical Weight Box
- Electrical Bulb



ELECTRICAL VIBRATOR

EL 479 - Electrical Vibrator

A Thin steel rod clamped of one end, passing through a solenoid and permanent magnet. The second end of the rod is connected to a cord stretched under tension. One feding AC current to the solenoid through a bulb. The steel rod start vibrating with frequency of AC main. Complete with pulley and pan.

TICKER TAPE TIMER

EL 480 - Ticker Tape Timer

It comprises of a spring mounted steel vibrator arm which carries a contact connected in series with a solenoid. The free end of vibrator carrier a making point which strikes the paper tape through a disc of carbon paper thus making the tapes once for each oscillation . it works on 12 volt, 500mA A.C power supply. Complete with one dozen round carbon papers and roll

DYNAMOS AND MOTORS

EL 481 - Dynamo Model

Model with driving wheel , with reversing switch & bulb.

- | | | | | | |
|----|----|----|----|----|------------|
| a) | AC | b) | DC | c) | A.C & D.C. |
|----|----|----|----|----|------------|



EL 482 - Electric Motor

Heavy pattern with Newton's colour disc, workable on 6V at 3



EL 483 - Demonstration motor & generator

One armature with permanent magnet.



Experiment No. 12 :

Field along the axis of the coil. To determine the M.F. at a point on the axis of a circular coil.

- Field along the axis of the coil.
- Reversing switch.
- 2 to 12V/3A Battery Eliminator.
- Rheostat.
- Ammeter 2Ampere & Connection Lead.

MAGNETISM

EL 484 - Alinco Bar Magnet

(North and South poles are permanently inscribed).



EL 485 - Alinco Horse Shoe Magnet

(These magnets will hold their force for a long time) Distance between the pole is 20 mm.

- | | |
|---------------|----------------|
| a) 50 mm (2") | b) 100 mm (4") |
|---------------|----------------|



EL 486 - Electromagnet

A coil is wound on each arm of a U shape bar of soft iron. The poles are 10mm in diameter and end are ground quite flat to make good magnetic contact with iron armature. It will operate on one or more dry cell.



EL 487 - Magnetic Compass (for laboratory use)

Case with a glass bottom and top. The needle is 12mm long and sufficiently sensitized to give excellent result.

- | | | |
|---------|---------|---------|
| a) 18mm | b) 25mm | c) 37mm |
| d) 50mm | e) 75mm | |



VIBRATION MAGNETOMETER, DIPCIRCLE & DEFLECTION MAGNETOMETER

EL 488 - Vibration Magnetometer

Consisting of a superior quality polish wooden box having sliding glass doors. The top of wooden box is slotted and carries a glass tube fitted with simple torsion head to support by means of a silk fibre, a strip holding magnet etc. Size 4"



EL 489 - Dip Circle

Heavy and sturdy construction, comprising an extra sensitive needle mounted on practically frictionless bearing and moving in vertical plane over an engine divided circular scale, enclosed in duco painted metal case, fitted with hardened steel pivot.

Specification:-

- a) Needle Brass b) Needle Meta c) Dip circle wooden



EL 490 - Deflection Magnetometer

A highly sensitive compass box is mounted of the centre of a non magnetic wooden base about one meter long, a metric scale extending outward from each side of the compass box for observing the position of the magnet. Supply with compass box.

- a) wooden b) metal



TANGENT GALVANOMETER

EL 491 - Tangent Galvanometer

It consist of a bakelite moulded ring 170mm dia, with three sets of winding either 2, 50, & 500 turn respectively with carefully insulated, connected to a heavy brass terminal.

- a) All brass parts are chrome plated.
b) Aluminium parts instead of brass part
c) Economy model



EL 492 - Helmholtz Galvanometer

It consist of two equal coaxial coils seperated by distance equal to the radius of the coil. Supplied with superior quality magnetic



EL 493 - Compass Box For Deflection Magnetometer or Tangent Galvanometer

For deflection magnetometer or tangent galvanometer Comprising a bakelite moulding case with aluminium dial graduated 0 - 90 four times . The magnet with aluminium pointer is provided of the centre on the jewel so as to move frictionless.

- a) With permanent magnet
b) Ordinary



STEWART & GEE'S APPARATUS

EL 494 - Stewart and Gee's Apparatus

It consist of a circular frame made from non magnetic silver aluminium alloy. An insulating copper wire wound on the frame. The end of the wires are connected to the terminal, which are fitted on the superior quality wooden board. Supplied with superior quality compass box.

- a) One Meter
b) Half Meter



Optional Accessories are also available :-

- Variable stabilized power supply
- Simple Rheostat
- Reversing switch
- Ammeter (2 Ampere) & Connecting leads

SOUND

EL 495 - Sonometer

comprising nicely wooden resonance box with brass fittings complete with two moveable bridges, pulley and three different wires but without weights (superior quality) (Teak wood)

- a) with aluminium fitting.
- b) with brass fittings



Slotted weight (500gm x 5) (for sonometer experiments)	:	Cat no. EL- 456
Spare Transformer for Sonometer experiments	:	(Capacity 6 V/2 Amps Appx) (Cat No. EL-112)
Spare Electromagnet for sonometer experiments	:	(Cat No. EL-486)

RIPPLE TANK

EL 496 - Ripple tank Apparatus

A specially designed versatile apparatus for the investigation of the wave properties such as wave propagation, reflection, refraction, diffraction and interference. Permit demonstration with an overhead projector or use as a free standing bench model, allowing investigation to be carried out directly. Comprises a rectangular plastic tank with clear bottom and sloped sides incorporating beach effect to eliminate unwanted reflections.



RESONANCE APPARATUS & VARIOUS TYPES OF TUNING FORK

EL 497 - Resonance Apparatus

A heavy stainless steel tube 1.10mm in length x 25mm dia is mounted next to a meter scale is fitted on a superior quality polished wooden board. Supplied without rubber tube.

- a) with thick Brass C.P. tube 1" and reservoir, fitted on nicely polished wooden back improved design, special quality.
- b) with Iron C.P. Pipe and brass reservoir.
- c) Economy Model.



EL 498 - Rubber Pad

(For striking the turning fork)



EL 499 - Wodden Hammer

(For striking the turning fork)



EL 500 - Tuning Forks (Set of 8)

(Ordinary Quality)



EL 501 - Turning Forks

Welch type large size, bright chromium plated, set of 8 in velvet



EL 502 - Tuning Forks

Welch type, massive, special quality tested very accurate, in superior velvet lined/ wooden case.



EL 503 - Loose Tuning Fork (Welch type)

(Any frequency 256, 288, 320, 341, 384, 426, 480 and



EL 504 - Electrical Maintained Tuning Fork

A steel fork mounted on heavy base.



EL 505 - Melde's Apparatus (OSAW Pattern)

This massive & powerful fork has a frequency of approximately 60 vibrations per sec & is ideal for producing standing waves, is mounted



EL 506 - Melde's Apparatus (INCO Pattern)

Specifications are same as Cat. No. EL-824 but on a sturdy streamlined base with provision for horizontal or vertical views.



Experiment No. 13 : To Determine Frequency of an Electrically maintained Tuning Fork.

- Melde's App.
- Battery Eliminator : 2 to 12V, 3A.
- Physical Weight Box : 200gm.
- Measuring Tape.

SPRING APPARATUS

EL 507 - Spiral Spring (Slinky)

For demonstrating the wave motion, this is a closely coiled iron spring, having ideal characteristics for demonstration wave motion.

EL 508 - Spring Constant Apparatus

Half meter scale with spring and pointer, fitted on painted cast iron base with steel C.P. Rod approx. 1m long. Without Slotted weight.

EL 509 - K. Constant Spring Apparatus

25mm dia and 20cm. long spring suspended in a checkout in a heavy metal stand. A pointer is provided in the spring which moves on graduated aluminum square pipe 2.5cm. for accurate reading. Supplied without weight.



LINEAR EXPANSION

EL 510 - Linear Expansion Horizontal (Brass Pipe)

The simple, rugged construction of this inexpensive apparatus has made it very widely used for elementary work. The apparatus consists of a heavy metallic base of size 50 x 10cm with four vertical pillars.



EL 511 - Linear Expansion vertical (Brass Pipe)

This complete apparatus consists of a nickel plated steam jacket containing one out of three test rods, a micrometer heavy support assembly to mount the steam jacket vertically, fitted with superior quality spherometer.

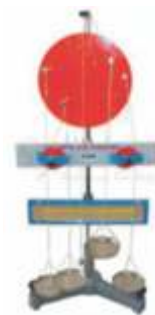
a) 1 meter

b) 1/2 meter



EL 512 - Law of moment apparatus

A well balanced machine turned aluminium disc rotating at about its axis and can be clamped on a tripod stand in vertical plane. Complete with horizontal graduated mirror scale and plumb lines.



EL 513 - Lee's Disc Apparatus

For determining the relative conductivity of thin layer of material, it consists of cylindrical brass slab of 11cm dia and 10.5mm thickness.



KUNDT'S TUBE

EL 514 - Kundt's Tube Deluxe Pattern

A glass tube 100cm long and 3.8cm in diameter is mounted in a 'Y' on a wooden base.



OVER HEAD PROJECTOR

EL 515 - Over Head Projector

A most modern compact, light weight and sturdy model with clear operative 240x240 mm. Provided with 24V /250W imported halogen lamp with transformer, focusing by rack and pinion, cooling fan with thermostatic control and high class optics with imported fresnel lens. Packed in sturdy card board box. Standard Accessories 10 meter cellophane roll, 3 grease pencils of different colours, scale and cleaning cloth.

EL 516 - Overhead projector

Same as above but supplied with twin bulb 24V/250 Watt.



POLARIMETERS

EL 517 - Student Polarimeter (Bizuartz)

A simple and sensitive polarimeter with imported polariser, analyser fitted with 61 quartz giving coloured distinction. Precisely graduated scale mounted as sturdy tripod stand with provision for height adjustment, complete with 200 mm tube and 12 mm thick storing cabinet.

Range of measurement	0 to 360°
Telescope magnification	5X, Vernier during 0.1°



EL 518 - Student Polarimeter

(Half shade) Range of measurement 0 to 360°

Optional Accessories:- (useful for EL- 517 & EL-518)

- a) Sodium light source complete with sodium lamp 35 watt/ 55

EL 519 - Abbe's Refractometer

The body of the instrument is fixed, with a leaning of 60. Correct refractive index & sugar percentage can be read directly in the field. It consist of abbe's double prism with the thermostat, compensator, telescope mirror, limb, graduated sector, Reading magnifier and radical arm which carries a vernier.



READING TELESCOPE

EL 520 - Reading Telescope (Simple Form)

College pattern focussing from one meter to initiating. Provided with high class optical combination and brass C.P. fittings, a nicely duco painted round cast iron with levelling screws. Supplied with scale and scale



EL 521 - Reading Telescope Standard

Same as above but provided with upward down motion, improved design for quick and better performance.



EL 522 - Advanced Reading Telescope

Fitted on nicely duco painted round cast iron heavy base with levelling screw. The telescope is provided with high class optical combination and brass C.P. fittings with UP and DOWN, to any fro motion. Complete with purpex scale.

- a) With cross line gratitude for better performance and durability.



EL 523 - Optical Lever

For measuring thickness of thin articles by optical method. Optical work 40mm dia plane mirror mounted on a metallic arc. The said arc mounted on brass metallic base having two fixed



EL 524 - Variable Rectangular slit (single)

Adjustment for resolving power of telescope



Experiment No. 14 :

To Determine the Specific Rotation of Sugar using Haurent's Half Shade Polarimeter.

- Polarimeter
- Sodium Light Source Complete with Sodium Lamp 35W, Transformer 35W, Wooden Box for Sodium Lamp.

SPECTROMETER

EL 525 - Advanced Spectrometer

(College Pattern) Brass parts, most superior quality designed to give maximum accuracy with dico painted body in beautiful strong cabinet.

6" 7"

- a) Brass Scale
- b) Stainless Steel Scale

Optional Accessories of spectrometer:-

- a) Eye piece with cross line gratitude



EL 526 - Advance Spectrometer (Deluxe Type)

Designed to give maximum accuracy protected circle of stainless steel. Vernier reading to 1 minute or 30 in the vertical plane for alignment adjustment. Highly recommended for precision work, complete in polished cabinet with look and key scale.

6" 7"

- a) Brass Scale
- b) Stainless Steel Scale



EL 527 - Spectrometer 6" (Economy Model)

TRAVELLING MICROSCOPE

EL 528 - Advanced Travelling Microscope

College grade, comprising 17 cm and 15 cm stainless steel scales, vernier reading to 0.01 mm, provided with high class optical combination and superior beautiful storing cabinet.



EL 529 - Advanced Travelling Microscope

(Deluxe model) College grade, comprising 22 cm and 15 cm stainless steel scales with high class optical combination and gun metal fittings with heavy base, nicely finished in metallic grey and black contrast housed in 12 mm thick beautiful storing cabinet.



EL 530 - Six Position Travelling Microscope

for use in various positions, travels 15 cm, vernier reading to 0.02 to 0.01 mm with stainless steel scale, bridge, type, suitable for Newton's ring experiment, with storing cabinet.



NEWTON RING APPARATUS

EL 531 - Newton's Ring Apparatus

A pair of glasses one plane and the other slightly convex of 50 mm dia in metal frame with three screws for applying pressure.



EL 532 - Newton Ring Microscope

(Compact form) with all the necessary arrangements for conducting Newton's Ring experiment. A standard microscope unit with 30x magnification and rotatable cross line complete with beautiful storing cabinet.



EL 533 - Air Wedge

It consists of two optical plain glass plates of same thickness and having same length, width.



Experiment No. 15 :

To Determine of the Wave Length of Sodium Light by Newton's Ring Microscope.

- Newton Ring Microscope.
- Sodium Bulb 35W with Transform & Wooden Box.
- Spherometer
- Spirit Level.

SODIUM AND MERCURY LIGHT SOURCES

EL 534 - Sodium Vapour Lamp Transformer Cat No. EL-113

- a) 35 Watt
- b) 55 Watt



EL 536 - Wooden Box for Sodium Vapour with Lamp

- a) Wooden Box for 35 Watt S.V. Lamp.
- b) Wooden Box for 55 Watt S.V. Lamp



EL 535 - Sodium Vapour Lamp

- a) 35 Watt S.V. Lamp.
- b) 55 Watt S.V. Lamp



EL 537 - Mercury Vapour Lamp Transformer

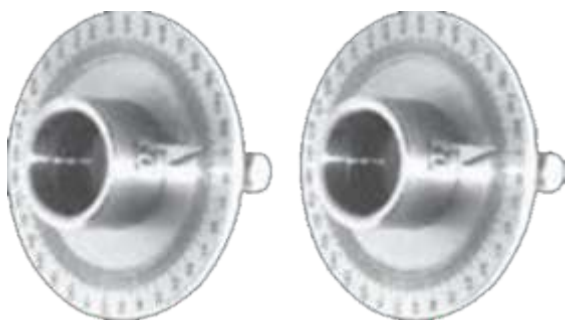
EL 538 - Mercury Vapour Lamp

EL 539 - Wooden Box For Mercury Vapour Lamp



ACCESSORIES FOR SPECTROMETER

EL 540 - Polarizer and Analyzer (Polaroid)



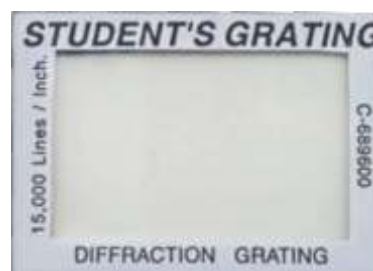
EL 543 - Hollow Glass prism



EL 541 - Single Slit for Diffraction Experiment



EL 544 - Diffraction grating (Indian)



EL 542 - Double Slit for Diffraction Experiment



EL 545 - Diffraction grating (Imported)



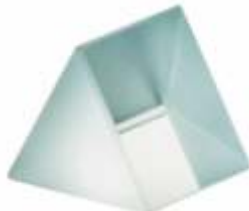
EL 546 - Prisms, Optically Worked for Spectrometer, Equilateral Two Face Polished

Height

a) 25mm x 25mm b) 32mm x 32mm



Crown Glass



Dense Flint Glass



Extra Dense Flint Glass



Double Extra Dense flint

EL 547 - Calite / Quartz Prism Equilateral



All sizes are available in all type of prism.

At the time of order kindly specify the quality

OPTICAL BENCHES

EL 548 - Optical Bench

school type 1 meter long with six accessories all wooden.



EL 549 - Optical Bench

Double rod (standard pattern) provided with 4 metal riders and 4 accessories. Two of the sliders have transverse motion and one rod is engraved in improved design.

1 meter 1.5 meter

- a) Both Steel C.P. Rods
- b) Both brass pipes instead shafting
- c) Both S.S. rods instead of steel rod.



ACCESSORIES FOR OPTICAL BENCH

EL 550 - Lens Holder 'V' Shaped Wooden

EL 551 - Ground Glass Screen in Wooden Frame

EL 552 - Wire Gauge Screen in Wooden Frame

EL 553 - Universal Lens Holder (Metallic) Without Stand Pye Type Heavy Pattern

EL 554 - Universal lens holder as Above but with Adjustable Stand

EL 555 - Parallax Pin Iron C.P. Dust Proof 1/4"x4"

EL 556 - Parallel Pin an Adjustable Stand Base 5/32

EL 557 - Parallel Pin on Stand is Adjusted 'A' Base Stand Supplied Either with 1/4" or 5/32 Pack

EL 558 - Candle Holder All Metal & Adjustable Stand

BI-PRISM ASSEMBLY

EL 559 - Bi-Prism Assembly

a)	Bi-prism holder	b)	Adjustable slit
c)	Micrometer eye piece	d)	Automatic lens holder
e)	Condensing Lens		



EL 560 - Bi-Prism Assembly with Optical Bench

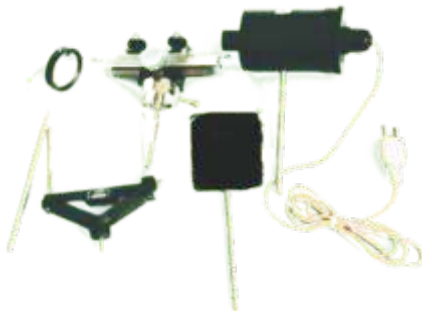
Comprising the undermentioned accessories, mounted on 1½ meter long optical bench covered with brass pipe inside shafting.



NODAL SLIDE ASSEMBLY

EL 561 - Nodal Slide Assembly

a)	Lamp holder
b)	Metal screen white, with cross slit
c)	Plane true table mounted mirror
d)	Lens assembly consisting of double lens holder with clamping amongst for performing nodal point experiment.



EL 562 - Nodal Slide Assembly with Optical Bench

Comprising the under mentioned accessories mounted a 1½ meter optical bench covered with brass pipe inside shafting.



EL 563 - Lummar Brodhum (LB) photometer Assembly

An experimental unit designed to work in degree science laboratory. The photometer assembly is assembled from the following standardized component.

SEXTANT

EL 564 - Sextant Standard Pattern

160 mm radius, designed to give maximum accuracy.



EL 565 - Stand For Sextant

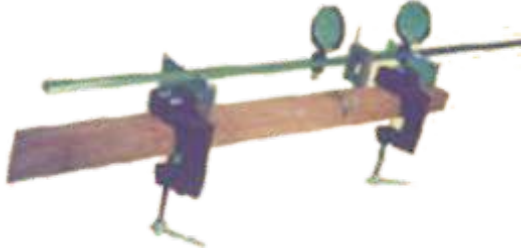
Sextant stand brass fitting.



MECHANICS

EL 566 - Bending of Beam Apparatus

Consisting of two G. Clamp with knife edge top. Comprising a metal chrome plated bar of 100cm length having width 25cm and thickness 4.5cm. Sharp knife edge with hanger is also provided which moves on metal bar. A spherometer fitted on a cats iron stand with electric contacts is also provided, supplied w/o weights.



EL 567 - Bending of Beam Apparatus Koenings Method

It consist of a brass beam 9mm square, one meter long, resting on the knife edges of two heavy table G-clamps. A sharp Knife edge with hanger rest on the beam. Two tilting type mirror (like optical lever) are also provided for this apparatus supplied w/o weight.



EL 568 - Y by Uniform & Non uniform bending

Consisting of two knife edges with heavy supporter, one meter scale with pin at the centre, two nos iron C.P slotted weight 50gm x



EL 569 - Cantilever Apparatus

A hook is provided to one end of steel C.P. bar having dimension 100x18x0.3cm. The whole metallic bar is marked with lines or holes. The Cantilever bar is held horizontally position.



COMPOUND KATER & BIFILAR PENDULMS

EL 570 - Simple Pendulum

This simple pendulum consists of a brass bob of 18mm diameter suspended by a metallic chain and fixed on moveable steel C.P. thin rod and can be locked at any position on stand.



EL 571 - Compound Pendulum

The pendulum is provided with two removable knife edges passing through any one of the holes. Complete with wall bracket & two removable knife edges.

A) Iron B) Brass C) S.S



EL 572 - Kater's Reversible Pendulum (Steel C.P)

It is of a compound pendulum constructed on the principle that center of oscillation and center of suspension are interchangeable. It consists of a steel rod of 120cm long and 1.0cm dia capable of two adjustable knife edges facing each other. Two metal weight (made of cast iron) of dimensions 7.5x3.75cm (length x diameter) and (3.5cm x 3.75) respectively can be made to slide along the length of a bar and can be clamped in any position. Two wooden weights can also slide along the bar. With the help of this apparatus one can find acceleration due to gravity at a place.

A) Steel B) Brass or S.S C) Iron

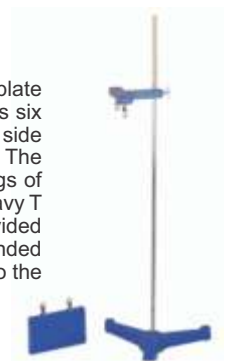


EL 573 - Stand for Kater's Reversible Pendulum or Compound Pendulum

This stand is suitable for all type of compound pendulum or Kater's pendulum listed above. Heavy type stand having approx. Height 52

EL 574 - Bifilar Pendulum

It consists of a heavy cast iron rectangular plate of dimensions 15x10x1.5cm. The plate has six holes, two holes on top, two holes on front side and two holes on the third side of the top. The plate is suspended by means of two strings of equal lengths from a rigid support i.e. a heavy T shaped clamp with two split chuck is provided on the heavy base. The plate is suspended freely, two strings will be equally inclined to the horizontal force of the plate.



TORSION

EL 575 - Universal Force Table

For experimentally verifying the laws of triangle, parallelogram and polygon of forces. Comprising of a circular 40cm diameter aluminium disc, graduated into 360 degree.



EL 576 - Torsion Pendulum

The torsion pendulum is an interesting example of simple harmonic motion, often overlooked by students.

a)	5" Brass Disc	b)	5" Iron Disc
c)	6" Aluminium Disc	d)	10" Aluminium Disc



EL 577 - Torsion Pendulum Vertical (Barton's App)

A steel frame mounted on a heavy cast iron base with levelling



EL 578 - Torsion Apparatus Horizontal

Two cast iron feet each with 3 through holes and grub securing screw, separating by two support rods approx 600mm long, one of which is graduated in cm and mm.

a)	2 1/2 meter	b)	1 meter two scale
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FLYWHEEL

EL 579 - Fly wheel

Comprising of carefully machined and balanced cast iron wheel of about 20cms in dia and 4.4cm thick, and steel spindle is supported on the ball bearings in strong iron brackets. The sides of wheel is smoothly red painted. The top of wheel is chrome plated and is marked with a thick red line. A pointer is fixed to one of the brackets. Diametric hole is drilled in the shaft to take a pin and cord. The base is provided with four holes so that the apparatus can be fixed to wall complete with cord and hook.

EL 580 - Inertia Disc

Consisting of a brass disc about 15cm diameter, 9 mm thick size with arrangement for clamping a asplit chuck. Supplied with wall



	WITHOUT COUNTER	WITH COUNTER
A) 8"		
B) 10"		
C) 12"		



EL 581 - Moment of inertia Table

It consist of an aluminium disc of approximately 6" dia with a groove. Supplied with four different shapes of masses(Rectangular, Square, Circular



ELASTICITY OF STRETCHING YOUNGS' MODULUS

EL 582 - Young's Modulus Apparatus (Iron Frame)

Dr. Searle's design, It is a famous instrument for determining the Young's modulus of a wire and is indispensable where most accurate measurements are desired. The instrument consists of two iron frame connected by a link. The frames are fitted with self centering chucks. An accurately graduated micrometer screw to read 0.1mm is fitted on frame. One end of a sensitive spirit level is pivoted to one of the frame, the other end rest on the points of a micrometer screw fitted in other frame. Complete with iron C.P. chucks, cast iron ceiling attachment and torsion weight but w/o



EL 583 - Young's Modulus Apparatus (Brass Frame Brass Fitting)

Same as above but all parts are of brass except torsion weight (i.e. rectangular frame, pin, vice, ceiling attachment screws, rings



EL 584 - Young's Modulus (Vernier Type)

Simple from but efficient. Consists of a brass scale 10cm long and vernier to read 1/10mm with V slide clamps guides for wire, ceiling attachment and torsion weight.



EL 585 - Hook's Law Apparatus

It consists of a support with mounted millimeter scale, a spiral spring, a hanger for weights. The scale is 15mm long, engraved on a plane mirror to permit parallax illumination by reflection and mounted with elevation adjustment on a support rod. The steel spring 1cm in diameter and 30mm long when unstretched is suspended from a hook above the scale. Weights are not included.



EL 586 - Maxwell Vibration Needle

It consist of a hollow cylindrical brass tube open at both ends provided with a small chuck in the middle of which is fixed a plane mirror.

- Graduated (all brass)
- Without graduated



EL 587 - Maxwell Vibration Needle Stand



EL 588 - Rigidity Apparatus (Searle's Pattern)

One can find the modulus of rigidity and Young's modulus for the material of a wire by Searle's method. The 30cm long wire under test is connected to two brass rods about 30cm long of their mid points by two screws fitted of the ends of the wire. The rods are suspended from hooks. Complete with three test wires with connecting screws.



EL 589 - Stand for Rigidity Apparatus

A specially designed stand for above rigidity apparatus.



EL 590 - Rigidity Apparatus (Dynamical Method)

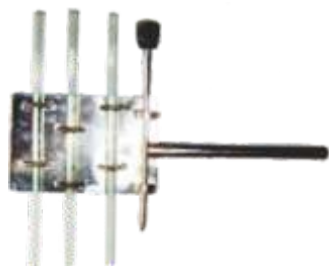
It consists of an iron rod having length 16" and diameter 1". The circular rod is graduated 15-0-15cm. The circular weight with thumb screw fits into the rod are provided.



SURFACE TENSION AND TERMINAL VELOCITY

EL 591 - Capillary Tube Clamp

The apparatus comprises a metal frame, on which four capillary tubes with different internal diameter are clamped with the help of small metal bracket.



EL 592 - Rising Table (slow Motion Stand)

A machine cast aluminium table having a stem can be lowered or raised to desired height and can be tightened with a thumb screw. In addition to coarse this movement fine adjustment is also provided by a flush in arrangement.



EL 593 - Capillary Tube Apparatus

It consist of rising table and capillary tube clamp three levelling screw of rising table are replaced by two levelling screw and one long rod to hold the capillary tube clamp.

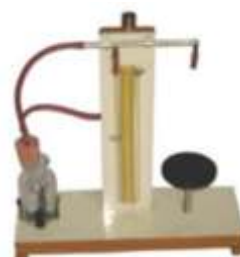


EL 594 - Quink's Surface Tension Apparatus

This method is usually used for the determination of surface tension of mercury it comprises a circular metallic plate with three levelling screw and sensitive spirit level.

EL 595 - Jaeger's Surface Tension Apparatus

This method is suitable for the purpose of studying the variation of surface tension with concentration of solution of common salt in water. Complete with manometer tube fitted on the stand, conical flask with side tube dropping funnel and a beaker.



EL 596 - Viscosity by stoke Method

This method is based on the application of stokes law to the fall of spheres through the liquid. With the help of this apparatus we can determine the viscosity of a transparent liquid.



INCLINED PLANE

EL 597 - Inclined Plane

This is most economical form of inclined plane consisting of 60x7.5cm board either with glass top or sunmica top, hinged to the base board (plane) can be set at any angle by clamping the wing cut.

Complete with graduated

a) Aluminum arc and iron N.P. Roller.



EL 598 - Inclined Plane (4 inch width)

For 10cm width plane please add extra.



EL 599 - Parallelogram of Force Apparatus Wall Type

For demonstrating the principles of parallelogram. The apparatus comprises a strong drawing board 45x30cm fitted with two hooks for fixing to a wall. The whole board is black painted. The board is supplied with two Z-Type pulley and 3 set of iron C.P. Slotted weight



EL 600 - Parallelogram of Force Apparatus Wooden Stand Type

This item is similar to the wall type but is intended for use in laboratories where wall space is limited. At thick plywood piece of thickness 12mm having dimension 45x30cm on a substantial wooden stand supplied with 2set of Z-pulley and 3set of (50x5gm) steel C.P.



EL 601 - Copper calorimeter (Wooden)

It Consists of a rectangular wood box fitted with thermometer holder and packed with felt thermal insulation. Supplied with copper stirrer but without thermometer.

It consists of copper vessel
Size: a) 3"x2" b) 4"x3"



EL 602 - Joule Calorimeter (3"x2")

It consists of copper vessel with outer vessel as a superior wood box fitted with bakelite lid with hole for thermometer and stirrer. Supplied w/o thermometer.

Size:

a) 3"x2"



EL 603 - Steam Boiler Copper

Cylindrical body with conical top and short neck for bung. Fitted with steam outlet tube riffled for rubber tubing.

a) 1 litre b) 2 litre c) 3 litre



EL 604 - Steam Heater, Copper

Comprising a cylindrical copper boiler of size 150mm x 100mm with an inclined brass heating chamber 25mm diameter, closed by sliding inner tube provided with bakelite top.



EL 605 - Hopes apparatus

Comprising a cylindrical vessel surrounded by an annular trough, in which is to be placed a amixture of ice and salt The respective temperature of the water at the top and bottom of inner cylindrical vesseare measured over a period as the water cools. supplied without thermometer.

a) G.I.Sheet b) Brass c) Copper



EL 606 - Hypsometer Copper

Comprising a copper boiling vessel with a steam jacked in a tube.



STANDARD MICROSCOPE

EL 607 - Student Microscope Model EL-2

Triple revolving nose-piece, heavy base, separate coarse and fine motion nobes having stopper for slide safety. Fitted with fixed sub stage 110x110 mm, illumination controlled by disc ciaphragm. Complete with optics and nicely packed in thermocole box along with duster.

Achromatic Objectives : 10 x

Huygenian Eye-Pieces : H10x or H15x



EL 608 - Student Microscope Model EL-3

Triple revolving nose-piece, heavy base, separate coarse and fine motion nobes having stopper for slide safety. Fitted with fixed sub stage 110x110 mm, illumination controlled by irisdiaphragm. Complete with optics and nicely packed in thermocole box along with duster.

Achromatic Objectives : 10 x and 45x

Huygenian Eye-Pieces : H10x or H15x



EL 609 - Junior Pathological Medical Microscope Model EL-8

Triple revolving nose-piece, heaving coarse adjustment by smooth rack and pinion and sensitive fine slow motion. In addition fixed sub stage 110x110 mm with N.A. 1.2 condenser moveable on with optics and nicely packed in Theromocode box along with dust cover and duster.

Achromatic Objectives : 10 x and 45x (SL)

Huygenian Eye-Pieces : H10x or H15x

Magnification : 100x to 675x



EL 610 - Advance Junior Pathological Microscope Model EL-9

A new advance Model of Junior Medical Microscope with Triple revolving nose-piece, heaving coarse adjustment by smooth rack and pinion and sensitive fine slow motion. In addition fixed sub stage 110x110 mm with N.A. 1.2 condenser moveable on smooth rack and pinion. And has an iris diaphragm, provided with slide safety stopper. Complete with optics and nicely packed in Thermocole box or wooden box along with dust cover and duster.

Achromatic Objectives : 10 x and 45x (SL)

Huygenian Eye-Pieces : H10x or H15x



EL 611 - Binocular Research Microscope Model EL-13

A rigid and heavy stand for perfect stability with observation tube inclined at 45° and rotatable in 360° with quadruple revolving nose piece. Having separate coarse and fine motion knobs. Fixed sub stage size 120x120 mm with precision mechanical stage for X and Y movement of slide with graduated scale and vernier. Sub stage abbe condenser N.A. 1.2 is moveable on smooth rack & pinion and has an iris diaphragm and swing out filter holder.

Achromatic Objectives : 10 x and 45x (SL), 100x(SL) oil immersion

Huygenian Eye-Pieces : H5x or H10x (any one) and H10x (Paired)

Magnification : 50x to 1500x

Nicely packed in wooden Cabinet box along with dust cover, duster and Guarantee card.



EL 612 - Dissecting Microscope Model EL-17

Heavy cast Iron base with brass pipe. Nicely packed in wooden box or thermocole box with duster. Eye piece 10x, 20 x Superior.



EL 613 - Advance Dissecting Microscope Model EL-18

With Bull Lense.

An elegant model with brass parts. Nicely packed in wooden box or thermocole box with duster.



GENERAL CHEMISTRY LABORATORY

EL 614 - Universal Clamp

Sheet made die pressed spring controlled cork lined jaws to hold upto 112mm to 50mm dia nut screw locked by spring powder



EL 614A - Brass Chrome Plate Iron Rods C.P

EL 615 - Burette Clamp

Die pressed sheet made of mild steel & power coated. To hold one

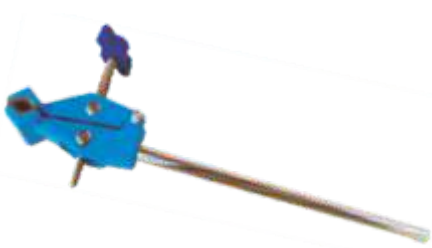


EL 615A - To hold one Burette to hold Two Burettes.



EL 616 - Burette Clamp

Made of al- alloy die casting capacity hold upto 50mm dia with 7" mild steel rod cork lined power coated finish.



EL 616A - Made of Brass Casting & Chrome Plated Heavy

EL 617 - Three Finger Clamp

Made of Al- Alloy die casting capacity hold upto 90mm dia provided M.S 7" rod chrome plated articles jaws are rubber covered finish power coated.



EL 617A - Same as above: Made of Brass Casting & Chrome Plated

EL 617B - Same as above: Heavy Quality 12" Rod

EL 618 - Four Finger Clamp

Made of Al- Alloy die casting capacity hold upto 90mm dia provided M.S 7" rod chrome plated cork lined finish powder coated.



EL 618A - Same as above: Made of Brass Casting & Chrome Plated

EL 618B - Same as above: Heavy Quality 12" Rod

EL 619 - Universal Clamp

Made of Al- Alloy die casting capacity hold upto 75mm dia provided M.S 7" rod chrome plated cork lined finish powder coated.



EL 619A - Same as above: Made of Brass Casting & Chrome Plated

EL 620 - Retort Clamp

Made of Al- Alloy die casting capacity hold upto 75mm dia provided M.S 7" rod chrome plated cork lined finish powder coated.



EL 620A - Same as above: Made of Brass Casting & Chrome Plated

EL 620B - Same as above : Hold upto 125mm Heavy M.S Rod 12"

EL 621 - Jumbo Clamp

Made of Al-alloy jaws are rubber sleeves hold from 60mm to 150mm dia articles mild steel rod length 12" x 3/8 chrome plated



EL 621A - Same as above :- Brass 12" x 3/8 Chrome Plated

EL 622 - Condenser Clamp

Moulded brass three finger jaws adjustable by two independent screw mild steel rod 12" x 3/8" chrome plated.



EL 622A - Made of aluminium casting chrome plated rod 12" x 3/8"

EL 623 - Boss head

Made of Al-alloy die casting with mild steel screw upto 13mm dia powder coated finish.



EL 623A - Made of Brass Casting Heavy Quality Hold upto 18mm dia Chrome Plated

EL 623B - Same as above 12mm

EL 624 - Boss head

Die pressed sheet made powder coated hold upto 16mm dia.

EL 625 - Boss Head

Made of cast iron hold upto 13mm dia T type screw powder coating.

Same as above :- hold upto 18mm dia rod.

Same as above :- Hold upto 25mm dia rod.

EL 626 - Retort stand

Made of cast iron powder mild steel rod chrome plated.

Size

Base	Rod	
6x4	18x3/8	
7x5	24x3/8	
8x5	24x3/8	
8x5	24x12mm	
8x5	24x12mm	1.300gm
9x6	30x12mm	
10x6	30x12mm	
10x8	30x12mm	
12x7	30x12mm	



EL 627 - Retort stand :- Bending type

Base	Rod
6x4	18x3/8
7x5	24x3/8
8x5	24x3/8
8x5	24x12mm
9x6	30x12mm
10x6	30x12mm
12x8	30x12mm



EL 628 - Tripod stand

Cast iron having black powder coated top zinc plated rod and plastic feet.



EL 629 - Tripod stand

Heavy cast iron round top black powder coated zinc plated rods and plastic feet.

Size	6"x5"	7"x5"	8"x5"	8"x6"
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EL 630 - Retort ring

Made of mild steel rod powder coated "T" type chrome plated screw.

Size	2"	2.5"	3"	4"	5"
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EL 631 - Bunsen Burner

with stop cock brass, heavy cast iron base brass pipe chrome plated, powder coated base.



EL 632 - Bunsen Burner

Cast iron base, brass pipe chrome plated screw type air regulator powder coated light base.



EL 633 - Bunsen Burner

Sheet made powder coated.



EL 634 - Gas Tap

Best quality all brass powder coated goli type stop cock

One way Two way
T h r e e w a y
Four way

EL 635 - Macker Burner

Made of brass pipe C.P. Heavy cast iron base powder coated height 180 mm approx top dia 25mm without stop cock.



EL 636A - Same above with stop cock

EL 637 - Macker Burner

EL 637A - same above height 160mm approx Top Dia 18 mm Without Stop Cock

EL 637B - Same above with Stop Cock

EL 638 - Beaker Tongs

Made of thick wire mild steel chrome plated 12" long.



EL 639 - Beaker tongs

Stainless steel 12 long

EL 640 - Furnace tong Stainless steel

12"	15"	18"	24"
-----	-----	-----	-----



EL 641 - Crucible Tongs

Size	6"	8"
Iron C.p.		
S. Steel		
Heavy Tongs S.S		

EL 642 - Cork Borer German

Type - All brass chrome plated			
Size	Set of 3	Set of 6	Set of 12
Best Quality			
Regular Quality			



EL 643 - Spatula

Made of stainless steel sheet heavy one end spoon and one end flat.



EL 643A - Micro Spatula

Made of stainless wire type spoon type.

Size	4"	6"	8"	10"	12"
------	----	----	----	-----	-----

EL 644 - Haffman's screw clip

12 mm Brass C.P

18 mm Brass C.P

25 mm Brass C.P



EL 645 - Ring and Ball

- a) 3/4" dia all brass best quality
- b) 1" dia all brass black wooden handle.



EL 646 - Spirit lamp S.S



Decade Boxes on Plastic Base



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NOTES



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