Order Code TP1 to TP3

1. Meter Rule, Superior Quality-Order Code - TP1
Double scale, both edges divided in millimeters figured centimeters, opposite direction reading facility. Made of superior quality, seasoned wood.

Order Code	Description
TP1A	One Meter Long
TP1B	Half Meter Long

2. Meter Rule, Good Quality-Order Code - TP2
Economy Model, without compromising on quality. Both edges are divided in centimeters & millimeters as above.

Order Code	Description
TP2A	One Meter Long
TP2B	Half Meter Long

3. Meter Rule, Routine Quality-Order Code - TP3
Routine quality made from soft wood

Order Code	Description
TP3A	One Meter Long
TP3B	Half Meter Long

4. Vernier Caliper, Steel C.P.-Order Code - TP5

Very superior quality steel chrome plated. The metric scale is graduated in millimeter for 12 cm and the 10-part Vernier reads is 0.1 mm. The English scale is graduated to 1/16 inch for 5 inches and its 8-part .
Vernier reads to 1/28 Inch with adjusting wheel and depth gauge. Elegantly packed in card board box, with detailed working manual.
Least Count 0.01 cm.

5. Vernier Caliper Stainless Steel-Order Code - TP6
Same as TP5 but made from high quality stainless steel, (Stainless steel calipers retain their appearance even after repeated use), Packed in velvet case.
Least Count 0.01cm.
Measuring range 125mm/5inch, Graduation 0.1mm/ 1/28inch

6. Vernier Caliper IME Type-Order Code - TP7

Steel chrome plated model. One side graduated in inches for 6 inch and other side graduated in millimeters for 15 cm and the 10-part Vernier reads to 0.1mm. The moveable jaw can be held at any positions on the scale by means of a spring constant. Fine adjustment can be made by means of a convenient thumb operated strip which is allowed to disengage for fast adjustment. Packed in velvet case.
Least Count 0.01 cm.

7. Vernier Caliper IME Type-Order Code - TP8

Same as TP7 with least count of 0.001cm. Supplied in velvet case. **Least Count 0.001 cm.**

8. Vernier Caliper IME TYPE-Order Code - TP9

Steel chrome plated. One side is graduated available in 3 sizes in inches & other in centimeters. Same as Cat. No. 7, but in sizes - 8" or 10" or 12". Specially designed for ITI & Polytechnique Colleges.

Order Code	Size	Count
TP9A	8"	0.01
TP9B	10"	0.01
TP9C	12"	0.01

9. Mirometer Screw Gauge-Order Code - TP12

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

Order Code	Size
TP12A	15 X 1mm
TP12B	20 X 1mm
TP12C	25 X 1mm
TP12D	15 X 1/2mm
TP12E	20 X 1/2mm
TP12F	25 X 1/2mm

Note: Specifications are subject to change.

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10. Micrometer Screw Gauge (Stainless Steel)-
Order Code - TP13

The barrel and yoke are both nickel plated and the rod is made from rust proof stainless steel. Individually packed in a beautiful cardboard box with detailed working manual.

Order Code	Size
TP13A	15 X 1mm
TP13B	20 X 1mm
TP13C	25 X 1mm
TP13D	15 X 1/2mm
TP13E	20 X 1/2mm
TP13F	25 X 1/2mm

11. Micrometer-Moor and Wright Type-
Order Code - TP14

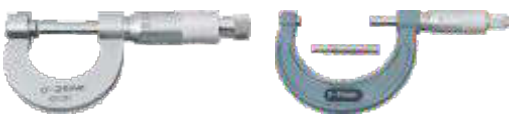
25 mm model for the quality conscious. The screw are of hardened stainless steel with ground threads and locking arrangements. Packed in velvet lined case.

Order Code	Size
TP14A	25 X 1mm
TP14B	25 X 1/2mm

12. Demonstration Micrometer Model-
Order Code - TP15

This big sized demo-model is very effective in teaching large groups of students. The original model was designed and perfected by the physics department of Modern High School, Cicero, Illinois, where it is a valuable teaching aid. Approx. Length = 8", made from aluminium, back spray painted.

13. Micrometer Screw Gauge for Engineering-
Order Code - TP16



These special Micrometers are designed for ITI, Polytechniques, Engineering College Students & for Industries. The Barrel & Yoke both are nickle plated & the rod is made from steel nickle plated.

Note: Specifications are subject to change.

Order Code	Size (mm)	Size (Inch)
TP16A	0-25	0-1
TP16B	25-50	1-2
TP16C	50-75	2-3
TP16D	75-100	3-4
TP16E	100-125	4-5

14. Spherometer - Disc Type-Order Code - TP18

It consists of a small metal frame, supported by three legs fixed at the corners of an equilateral triangle. A screw of fine pitch passes through the centre of the metal frame. The screw forms the fourth leg. The main scale (or pitch scale) is marked on a metal strip fixed at right angles to the frame. This scale is marked in millimeters with zero mark at the centre (10-0-10mm). A circular scale is fixed to the screw head.

It carries a circular scale divided into 100 equal parts. (In some cases it is divided into 50 equal parts). The edge of the circular scale is very close to the metal strip and the metal strip is used also as a reference line for taking the circular scale reading. The disc & scales are brass lacquered & legs are made of steel black painted.

Order Code	Description
TP18A	1/100
TP18B	1/200

15. Spherometer - Disc Type (Stainless Steel)-
Order Code - TP19

Same as TP18 but screw and legs are made from rust proof stainless steel.

Order Code	Description
TP19A	1/100
TP19B	1/200

16. Spherometer - Double Disc-Order Code - TP20

It comprises of a 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 the user to take accurate micrometer type readings.

17. Spherometer Demonstration Model-
Order Code - TP21

Extra large size with a circular aluminum disc of about 6cm diameter divided into 100 equal parts. Vertical scale

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is of aluminium black

Order Code	Description
TP21A	1/100
TP21B	1/200

18. Spherometer Demonstration Model-
Order Code - TP22

Extra large size with a circular aluminum disc of about 6cm diameter divided into 100 equal parts. Vertical scale is of aluminium black painted with reading 10-0-10 mm.

19. Ticker Tape Timer- Order Code - TP24

It comprises of a spring mounted steel vibrator arm which carries a contact connected in series with a solenoid. The free end of the vibrator carries a marking point which strikes the papertapethrough a disc of carbon paper, thus making the tapes once for each oscillation. It works on 6-9 volt, lAmp. A.C. power supply. The instrument is mounted upon a thick bakelite base and 4 mm brass socket terminals are provided for electrical connection. Complete with one dozen round carbon papers and roll of paper strip alongwith AC power supply of 6V to 9V, 1A.

20. Stop Clock- Order Code - TP26

Smith type, encased in a metal case with fly-back action. At the right side of the case is the 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 hand.

Least Count : 1 second

21. Stop Watch (1/10th of a second)-
Order Code - TP28

This is first quality, precision made jeweled movement watch in attractive chromium plated case. The face of the stop watch is transparent for easy reading of graduations and figures. It has an arrangement for the 'start' and 'stop' of the watch. There is a lever at the top of the body when this lever is pressed for the first time, the watch starts, when the same lever is pressed for the second time, the watch stops. Athird press on the lever brings the watch to zero reading. This stop watch reads 1/10th of a second.

Least Count : 0.1 second

22. Digital Stop Clock-Order Code - TP29

To overcome the difficulties experienced in mechanical stop clocks, BESTO has introduced Quartz controlled 3'/2 digit stop clock. The START/STOP operation is by means of a mini toggle switch and RESET by a push button. RESET is possible only in STOP mode to avoid accidental resetting while the clock is running.

Specifications :-

Range	:	999.90sec.
Resolution	:	0.1 sec.
Accuracy	:	± 0.1 % (Quartz controlled)
Display	:	12.5mm Bright seven segment display
Working Voltage	:	230 volts A.C. ±10%
Reset	:	By push Button
Least Count	:	1second

A Quartz crystal controls an electronic oscillator by its own natured frequency. The current from quartz controls oscillator works on the quartz crystal bob which has higher accuracy & precision.

23. Collision Ball-Order Code - TP30

Demonstrates that for every action, there is an equal & opposite reaction. Lift & drop one ball to see one ball pop out from the other side. Lift two balls & ball pop out. Leave this popular toy on your desk for a school year of enjoyment & learning.

For demonstrating the collision of ball including 6 balls hung on an iron frame & Stand.

Note: Specifications are subject to change.

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24. Simple Pendulum-Order Code - TP31

Our Simple Pendulum consists of a brass bob of 1" diameter suspended by I To determine the flexible and weightless time period of a stitchingthread. The 2nd end Simple Pendulum for of thread is tied to the rigid its different length (I) support. Supplied with heavy a n d acceleration due metallic base alongwith rod & to gravity special clamp.

A Simple Pendulum becomes a good time indicator and as such can be used a time measuring device.

Time Period T of a Simple Pendulum for length l is given by

$T=2\pi\sqrt{\frac{l}{g}}$ or $g=4\pi^2\frac{l}{T^2}$

25. 'g' by Free Fall Method-Order Code - TP32

It has an electronic timer unit on which there are four 4 mm sockets, two for gates and another two for solenoid and a toggle switch for release and catch the ball.

The other unit consists of heavy retort stand. The said retort stand carries two base boards. Out of them, one is solenoid holding base of size 149x97x113 mm providing with two banana sockets of 4mm. When the toggle switch is on 'Catch' position, the current is flowing in solenoid and it produces magnetic field and a steel ball make a attraction towards it. Another base connected to retort stand is of steel base on which the ball is dropped having base of size 115x60x2 mm. As well as switch is positioned on release, their, breaking the contact between solenoid and ball is dropped on steel plate and there is some time displayed on the timer. Supplied with steel ball of 12 mm & 18 mm diameter.

For the measurement of the time of fall of a steel ball to determine the value of 'g'

26. Physical Balance (7-Stone)-Order Code - TP35

Basic general purpose balance. The hangers have double hooks for up thrust experiments and detachable pans. apacity 200 grams, sensitivity 2 mg with 7-stone knife edge agates. Durable finish in golden colour lacquer with nickel plated fittings. The balance is mounted on a sturdy sunmica wooden base complete with leveling screw. The whole balance is housed in a teak wood show case with panel doors. Supplied without weights.

Specifications:

Knife Edges : Agate
Bearings : Agate
Capacity : 200g
Sensitivity : 2mg
Pans : Stainless Steel, Diameter 100mm
Overall Dimensions : 420x240x380mm

27. Physical Balance (3-Stone)-Order Code - TP36

Same as TP35 but fitted with 3-stone knife edge agates, sensitivity 5 milligram, other specifications are same.
Supplied without weights.

Specifications:

Knife Edges : Agate
Bearings : Agate
Capacity : 200g
Sensitivity : 5mg
Pans : Stainless Steel, Diameter 100mm
Overall Dimensions : 420x240x380mm

28. Chemical Balance-Order Code - TP37

This balance has a lacquered brass beam engraved 50 scale divisions to each side. Each scale division represents 1/5mg rider on the scale. The pillar is finished in lacquered with nickel plated fittings and detachable pans which are suspended from double hooks. Mounted on a sunmica wooden base with levelling screws and housed in teak wood case, with front slider and panel doors. (Supplied w/o weights).

Specifications:

Knife Edges : Agate
Bearings : Agate
Capacity : 200g
Sensitivity : 0.2mg
Pans : Inverse Stainless Steel, Diameter 70mm
Overall Dimensions : 420x240x380mm

29. Analytical Balance-Order Code - TP38

Best for rapid weighing, has a short triangular beam, rider scale graduated into 100 divisions with 0 at the center, fine selected edges, vertical arrest. Capacity 200gm, sensitiveness 1/10 milligram. Housed in teak wood case

Note: Specifications are subject to change.

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with slider and two panel doors. Mounted on sun-mica base with levelling screws.
(Supplied wlo weights)

Specifications:
Knife Edges : Agate
Bearings : Agate
Capacity : 200g
Sensitivity : 0.1mg
Pans : Inverse Stainless Steel, Diameter 70mm
Overall Dimensions : 420x240x380mm

30. Spring Balance Rectangular-
Order Code - TP43

Flat form with zero and adjustable device with 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.

Order Code	Cpacity
TP43A	50 gms.
TP43B	100 gms.
TP43C	250 gms.
TP43D	500 gms.
TP43E	1000 gms.

31. Spring Balance Tubular-Order Code - TP44
Colour coded spring Balances for both force & mass measurement. Individually calibrated dual scale spring Balances has zero adjustment device with stainless steel suspension loop and load hook

Order Code	Cpacity
TP44A	1N/100g(Brown)
TP44B	2.5N/250g(Blue)
TP44C	5N/500g(Green)
TP44D	10N/1kg(Ivory)
TP44E	20N/2kg(Red)
TP44F	30N/3kg(White)

32. Double Beam Balance-Order Code - TP45
Two Pan Balance for accurate & rapid weighing upto 2000g when used with supplementary masses. The balance has centre indicating sliding masses to weigh upto 210g.

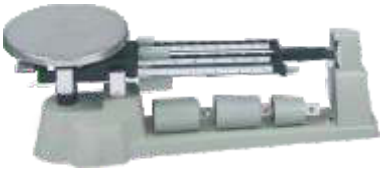
Spring loaded zero adjust compensator & magnetic damping are provided. Stainless steel pan of 150mm diameter.
Beams 0-200gx10g., 0-10g x0.1g.

Note: Specifications are subject to change.

33. Accessories for Double Beam Balance-
Order Code - TP46

i. **Set of additional masses** : 1Kg., 500g, 200g & 100g. Made of M.S.
ii. **Support rod** : for under weighingfacility.
iii. **Un-calibrated tare beam** : Capacity 200g.

34. Triple Beam Balance-Order Code - TP47



A single pan, low form balance that has three notched beams with centre indicating sliding masses with total weighing capacity 610g. The capacity can be extended to 2610g with supplementary masses. Spring loaded zero adjust compensator & magnetic damping are provided. Stainless steel pan of 150mm diameter.
Beams 0-500gx100g., 0-100g x10g., 0-10g x0.1g.

35. Accessories for Triple Beam Balance-
Order Code - TP48

i. Set of additional masses : these additional masses increase the range of triple beam balance upto 2610g capacity.
ii. Support rod : for under weighingfacility
iii. Un-calibrated tare beam : Capacity 200g.

36. Analytical Weight Boxes Brass Wt (B Grade)-
Order Code - TP54

Velvet lined box with brass forceps & Brass C.P. Weight. 'B' Grade within the error limit of tolerance permitted by N.P.L. India, good quality Polish Box.

Order Code	Cpacity
TP54A	1gm to 100gms
TP54B	1gm to 200gms

37. Analytical Weight Boxes Brass Wt (A Grade)-
Order Code - TP55

Class 'A' Brass Weights in superior quality teak wood box with sun-mica top. In this weight box, we provide our Test Certificate issued after testing all weights on our own precision Electronic Balance. Supplied with Test Certificate.

Order Code	Cpacity
TP55A	1gm to 100gms
TP55B	1gm to 200gms

38. Analytical Weight Boxes Brass Wt (B Grade)-
Order Code - TP56

'B' grade, Brass nickle plated masses and a box of

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fractional weight all nicely arranged in a tough plastic box, capacity 100gm.

39. Analytical Weight Boxes 5.5. Wt (A Grade)-
Order Code - TP57

Weights are made from stainless steel non-magnetic corrosion resisting quality. These are used for precision work and have good stability due to their corrosion resisting properties. Weights are arranged in velvet lined case of teak wood with sun-mica top (Class 'A') Supplied with Test Certificate.

Order Code	Cpacity
TP57A	1 gm to 100gms
TP57B	1 gm to 200gms

40. Spare Analytical Gram Weights Brass C. P.-
Order Code - TP58

Order Code	Cpacity
TP58A	1 gm
TP58B	2 gms
TP58C	5gms
TP58D	10gms
TP58E	20 gms
TP58F	50 gms
TP58G	100gms

41. Fractional Weight Set Analytical-
Order Code - TP59

These are good quality aluminum weights from 1 mg to 500 mg with duplicate of 2.20 and 200 mg. a total of 12 weights in set. They are calibrated strictly within the error limit of tolerance permitted by N.P.L. India. Quality Class 'B'. These weights are supplied in a beautiful rour plastic case.

42. Analytical Weight Box - lg to 500g-
Order Code - TP60

Special Analytical Weights, set of 12 pieces in a heavy wooden storage box. 1x1 g, 2x2g, lx5g, 1x10g, 2x20g, 1x50g, lx100g, 2x200g, lx500g.

Note: Specifications are subject to change.

43. Physical Weight Boxes (Brass C.P.)-
Order Code - TP62

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

Order Code	Cpacity
TP62A	100gms
TP62B	200gms

44. Physical Weights Boxes-
Order Code - TP64

(Cylindrical Weights, Brass C.P.) Superior quality having most accurate cylindrical brass weights, complete with forceps and fraction weights, supplied in a superior quality, teak polish wooden box.

Order Code	Cpacity
TP64A	100gms
TP64B	200gms

45. Spare Physical Gram Weights Brass C.P.-
Order Code - TP65

Order Code	Cpacity
TP65A	1 gm
TP65B	2 gms
TP65C	5gms
TP65D	10gms
TP65E	20 gms
TP65F	50 gms
TP65G	100gms

46. Slotted Weight Iron C.P. Rust proof (set of five)-Order Code - TP75
Slotted weights from TP75(a-d) are chrome plated, whereas TP75 (e) slotted weight 500g x5 is black powder coated.

Order Code	Cpacity
TP75A	10 gm x 5
TP75B	20 gm x 5
TP75C	50 gm x 5
TP75D	100 gm x 5
TP75E	500 gm x 5

75C 75D TP75E

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47. Slotted Weight (Iron Black Painted)-
Order Code - TP76

Made from cast iron, black painted. These sets of slotted weights are particularly suitable for use with Sonometers or in such applications where large load is required. Capacity 500gmsx5

48. Slotted Weight Brass C.P-Order Code - TP78

These slotted weights are precisely turned from brass rods, carefully adjusted Theseslotted weights are supplied either in chrome plated or in brass polish finish.

Orde Code	Capacity
TP78A	5gm X 5
TP78B	10gm X 5
TP78C	20gm X 5
TP78D	50gm X 5
TP78E	100gm X 5
TP78F	50gm X 10
TP78G	100gm X 10

49. Overflow Vessel(G.I. Sheet)-
Order Code - TP90

G.I Sheet hammer-tone finish, the top edge is flared to add strength.
Used for experiments in density & specific gravity, Archimedes Principles etc.

50. Overflow Vessel (Plastic)-Order Code - TP92

Polypropylene body, unbreakable, non corrosive white colour and has a spout to drain out overflowing liquids, used in laboratory for measuring displacement of liquids

51. Bucket and Cylinder-Order Code - TP93

Used to demonstrate the Archimedes's Principle. The Cylinder has a suspension hook at one end. All brass pipes with length 50mm (2").
Bucket & Cylinder demonstrates that a body submerged in water looses weight equal to its own volume of water.

52.Specific Gravity Bottle (Borosil Glass)-
Order Code - TP93

Spherical pattern, the volume of the bottle is accurately adjusted at 27°C to the value etched on the surface. The bottle and capillary stopper are numbered for identification made from Borosilicate glass.

With Borosilicate Glass Stopper		With Teflon Stopper	
Orde Code	**Capacity**	**Orde Code**	**Capacity**
TP93A	25 cc	TP93D	25 cc
TP93B	50 cc	TP93E	50 cc
TP93C	100 cc	TP93F	100 cc

Excellent for determination of Specific Gravity of liquids.

53. Nicholson's Hydrometer-Order Code - TP96

For Solid and liquid density experiments. It consists of a hollow metal cylinder, upper loading pan and bucket suspended of the bottom for stability and to hold the specimen, when immersed. Made from brass sheet.

Orde Code	Capacity
TP96A	Medium
TP96B	Large

54. Hydrometer Universal-Order Code - TP97

Direct reading relative density hydrometers with shot loaded bulbs and parallel graduated stems. All glasses, ranges from 60°F, 0.700 to 2.000x0.10.

55. Hare's Apparatus-Order Code - TP100

For comparing the densities of liquids by measuring the heights of two columns of liquid produced by applying suction to the short center limb. Comprising three limbed glass tube mounted on polished wooden stand with meter scale 45 cm long with '0' at the bottom. The Scale is divided in centimeters and millimeters. Supplied without rubber tube and pinch cock.

56. U-Tube Apparatus-Order Code - TP102

For use as a manometer. It consists of a superior quality wooden stand fitted with wooden meter scale which is 0 to 45 cm from the bottom. Provided with small metal strips for supporting U-tube.

57.Spare Hare's Tube-Order Code - TP104

Unmounted & ungraduated borosilicate glass tube with a third short limb for connecting a suction tube.

58.Spare U-Tube-Order Code - TP105

For use as a manometer. This is an unmounted & ungraduated Borosilicate glass U-tube.

59. Metal Cylinders-Order Code - TP110

These cylinders are often used in exercises with Vernier and micrometer calipers as well as for density and specific gravity measurement. The

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ends are carefullyturned and surfaces are smooth. Set of six different elements in cylindrical form for density in electrical and thermal experiments. The set consists of one piece each of brass, aluminum, copper, zinc, iron and lead solid cylinders.

Orde Code	Capacity (mm)
TP110A	25 X 12
TP110B	37 X 12
TP110C	50 X 12

60. Metal Cubes-Order Code - TP111

These metal blocks are intended for use as sinkers or for specific gravity measurements.

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

These metal blocks are provided either as such shown in the picture or with suspension at top or with a hole for thermometer depending upon the requirement.

Orde Code	Capacity (mm)
TP111A	10
TP111B	20
TP111C	25
TP111D	32

61. Pendulum Bobs or Spheres (Set of six)-
Order Code - TP112

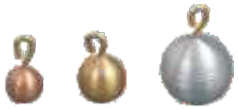
Comprising a solid turned different metals Available in three different sizes:

sphere with a small hook for suspension. Set of six different metals. The set consists one piece each of brass, aluminum, copper, zinc, iron, and lead.

Orde Code	Capacity (mm)
TP112A	12
TP112B	18
TP112C	25

62. Pendulum Bobs or Spheres (Spare)-
Order Code - TP113

With hook for suspension. Available in three different sizes and 6 different metals.



Orde Code	Nature of metal	(I) 12mm	(ii) 12mm	(iii) 25mm
TP113A	12			
TP113B	18			
TP113C	25			

63. Spare Aluminium Blocks-Order Code - TP114

Aluminium Meatal Blocks for density determinations available different in size, Aluminium metal block, rectangular in shape. Supplied with hook.

Orde Code	Size (cm)
TP114A	2 X 2 X 3
TP114B	2 X 3 X 4

64. Air Pump (with Aluminum Plate)-
Order Code - TP115

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

Orde Code	Size (cm)
TP115A	12.5
TP115B	15.0

65. Bell Experiment Apparatus-
Order Code - TP116

For demonstrating that sound cannot be transmitted in a vacuum. It consists of a 2 litre bell jar with a rubber stopper fitted with binding posts and connectors from which an electric bell is suspended. It operates on 3 to 6 volts, using either battery or a transformer.

66. A Portable Diaphragm Type Vacuum Pump cum Air Compressor, Oil Free, Light Weight-
Order Code - TP117

Orde Code	Max flow ltr./Min.	Max. Vacuum (in Hg.)	Max Press (PSIG)	Motor H.P.
TP117A	15	22″	25	1/20
TP117B	15	27″	35	1/16
TP117C	45	22″	40	1/8
TP117D	45	27″	60	1/4

67. Magdebur Hemisphere-Order Code - TP118

To demonstrate the pressure of the atmosphere. Two concave aluminum cups having diameter either 62mm or 75 mm are provided with handle and stop cock.

Note: Specifications are subject to change.

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Near Bombay Hospital, Vidhani Circle, Jaipur-302022, Rajasthan, India,
Tel: +91-141-2771791 / 2771792; Email: info@tesca.in, tesca.technologies@gmail.com
Website: www.tescaglobal.com

68. Fluid Pressure Apparatus (Spouting Cylinder)-Order Code - TP119

To demonstrate that pressure increases with depth. Sheet metal cylinder 400 x 68 mm diameter with three equal size offices art different heights down on side.

69. Pressure String (Simple Pascal Law)-Order Code - TP123

For showing that pressure is transmitted equally in all directions. It consists of a hollow metal brass ball 5 cm in diameter with small holes along one circumference and a branch tube with piston. When held with the holes in a horizontal plane and piston is pushed in, water will stream out at the same distance from each hole.

70. Water Level Apparatus-Order Code - TP124

For showing that the level of the liquid in communicating tubes is the same regardless of their shapes. It consists of four differently shaped glass tubes connected at the bottom, mounted on a bakelite/plastic stand.

71. Boyle's Law Apparatus-Order Code - TP125

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. Seasoned wood board approximately 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.

72. Boyle's Law Tube-Order Code - TP126

Set of Two, ordinary glass tube

73. Boyle's Law Burette-Order Code - TP127

Borosilicate glass 25cc with stopcock.

74. Mercury-Order Code - TP128

Highly purified mercury is required for use with Boyle's Law Apparatus. Packed in leak proof Polythelene bottles. Capacity 500 gms.

75. Rubber Tubing-Order Code - TP129

Extra Soft Quality. Approx. Bore 6mm, Wall thickness 1.5mm. Coil of 10 meters.

76. Geometrical Models and Figures-Order Code - TP130

They include all principles of geometrical solids and figures discussed in elementary mathematics and physics are included. 16 different solids made of smoothly finished hardwood, medium sized, approximate size of each figure is 5 cm. All are supplied in a sliding box.

77. Drawing Board-Order Code - TP183

12"x 18"x 5/8 superior quality soft

78. Drawing Board-Order Code - TP184

23"x 16"x 5/8 superior quality soft wood.

79. Complete Math Lab Kit-Order Code - TP201

BM-1 Dummy Clock (Wooden) : To teach time from 00.00 to 24 Hrs

BM-3A Counting Abacus (1-10)(Wooden)

BM-5 Student Abacus (Wooden)

BM-6 Game of Place Value (Wooden)

BM-7 Geo board-square (Wooden) : To teach different Geometrical shapes with the help of Rubber Bands

BM-8 Geo Board-Circle Wooden : To teach different Geometrical Shapes with the help of Rubber band with Circular Protractor Printed in the centre for: Ring of Circle Theorems : Angle in a circle, Angle in a semi circle, Angle in segment, Centre angle properties, Angle subtended in the same segment

BM-10B Geometry Box (Plastic) : To Draw & Teach Geometrical Concepts on Black Board

BM-11 Geometrical Solids (Wooden) : Set of 12 Three Dimensional (Wooden) Shapes available in different sizes:
a) 5x10cm Yellow
b) 15x30 cms Coloured

BM-12 Transparent Geometrical Shapes Set of 10 (Acrylic) Geometrical Shapes to show Inner Area Slant Height & Vertical Height

BM-13 Polyhedron &Their Nets :Set of 11 (Acrylic)

BM-14 Conic Section (Wooden): Set of 4 cones showing :
HyperbolaParabola

Note: Specifications are subject to change.

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EllipseCircle

BM-15 Cylinder cut in 8 parts (Wooden)
Bm-16 Derivation of Value of Pie (Wooden)
BM-17 Circle Fraction Disk : Showing different fractions of Circle
BM-18 Fraction of Circle (Wooden)
BM-19 Fractions of Square (Wooden)
BM-20 Fractions of Triangle (Wooden)
BM-21 Add & Count Rods (Wooden): Set comprising 32 pcs. of different size of rod and counting 1-10 is printed on the rod. This will help the child to count, learn numbers 1-10 and addition &subtraction
BM-24 Numbers Flash cards 1-20
BM-25 Shapes Board Big (Wooden)
BM-28 Shapes Sorter Moulds Plastic Geometrical moulds to make different shapes with the help of clay
BM-30 Time teaching Stamps (Wooden) : Rubber Set of 15 BM-32 Volume Relationship Set Crystal Plastic
- Hemi Sphere
- Sphere
- Cone
- Cube
- 2 Cylinders
- Frustum

All 4 inches height & 4 inches diameter to calculate & prove the relationship between the volumes

BM-34 Set of Volumetric Cups Plastic
BM-38 Kitchen Balance Plastic
BM-41 Meter Scale Steel
BM-42 Half Meter Scale Steel BM-45 Measuring Tape 3m
BM-48 Ranging Rod Metal to perform Height & Distance Experiments at the ground level
BM-50 Cross Staff Metal to draw perpendicular lines in the ground
BM-51 Optical Square Metal to draw parallel lines in the ground
BM-62 Probability Kit
a. Dice-Set of 2 pcs
b. Playing Cards
c. Set of Pearls :Set of 400 marbles
BM-63 Efficiency in Packing
BM-67 Geometry Kit (ACRYLIC)
BM-68 Perpendicular Line segment is The Shortest (ACRYLIC) BM-71B Graph Roll-up Chart 100x135cms
BM-72 Magnetic Graph Co-ordinate Board with marker pen (ACRYLIC)
BM-76 Pythagoras Theorem : (ACRYLIC) 50 pcs by arranging small square piecesto make side square
BM-77 Working Model of Pythagoras Theorem (Wooden)
BM-79 Triangle Kit (Group Activity set of 5 kits): (ACRYLIC) To teach congruency of triangle, classification by their angle and sides.
BM-80 Ratio of Area of Similar Triangles : (ACRYLIC) To verify the result that ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.
BM-81 Octant-3D (ACRYLIC)
BM-82 Identity Set-1 (ACRYLIC)
BM-83 Identity Set-II (ACRYLIC)
BM-84 Identity Set-111 (Wooden)
BM-85 Mensuration Kit (ACRYLIC)
a. Area of Parallelogram
b. Area of Triangle-set of 3
c. Area of Rhombus
d. Area of Trapezium
e. Mid point Theorem
f. Properties of Parallelogram
g. Quadrilateral formed by mid point of a quadrilateral
h. Algebraic Identities (Set of cubes)
i. Area of Circle (Wooden)

Note: Specifications are subject to change.

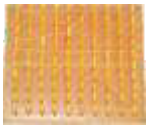
80. Dummy Clock (Wooden)-Order Code - TP202
To teach time from 00.00 to 24 Hrs (BM-1)

81. Counting Abacus-Order Code - TP203
(1-10)(Wooden) (BM-3A)

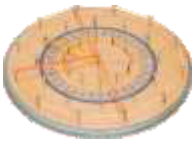
82.Student Abacus (Wooden) (BM-5)-
Order Code - TP205

83.Game of Place Value (Wooden) (BM-6)-
Order Code - TP206

84.Geo board-square (Wooden)-
Order Code - TP207
To teach different Geometrical shapes with the help of Rubber Bands (BM-7)



85.Geo Board-Circle (Wooden)-
Order Code - TP208
To teach different Geometrical Shapes with the help of Rubber band with Circular Protractor Printed in the centre for : Ring of Circle Theorems: Angle in a circle, Angle in a semi circle, Angle in segment, Centre angle properties, Angle subtended in the same segment (BM-8)



86. Geometry Box (Plastic)-
Order Code - TP210
To Draw & Teach Geometrical Concepts on Black Board (BM-10) B

87. Geometrical Solids (Wooden)-
Order Code - TP211
Set of 12 : Three Dimensional (Wooden) Shapes available in different sizes:

Orde Code	Description
TP211A	5x10cm Yellow (BM-11) A
TP211B	15x30 cms Colour -ed (BM-11) D

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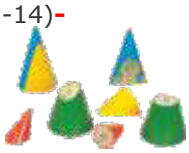
88. Transparent Geometrical Shapes-
Order Code - TP212
Set of 10 (Acrylic) Geometrical Shapes to show Inner Area, Slant Height & Vertical Height (BM-12)

89. Polyhedron &Their Nets-
Order Code - TP213
3Set of 11 Acrylic (BM-13)

90. Conic Section (Wooden) (BM-14)**-**
Order Code - TP214
Set of 4 cones showing :
Hyperbola Parabola
Ellipse circle



91. Cylinder cut in 8 parts (Wooden)(BM-15)**-**
Order Code - TP215

92. Derivation of Value of Pie (Wooden) (BM-16)**-**
Order Code - TP216

93.Circle Fraction Disk-Order Code - TP217
Showing different fractions of Circle (BM-17)

94. Fraction of Circle (Wooden) (BM-18)**-**
Order Code - TP218

95. Fractions of Square (Wooden) (BM-19)**-**
Order Code - TP**219**

96. Fractions of Triangle (Wooden) (BM-20)**-**
Order Code - TP220

97. Add & Count Rods (Wooden) (BM-21)**-**
Order Code - TP221
Set comprising 32 pcs. of different size of rod and counting 1-10 is printed on the rod. This will help the child to count, learn numbers 1-10 and addition & subtraction

98. Numbers Flash cards 1-20 (BM-24)**-**
Order Code - TP224

99. Shapes Board Big (Wooden) (BM-25)**-**
Order Code - TP225

100. Shapes Sorter Moulds-Order Code - TP228
Plastic Geometrical moulds to make different shapes with the help of clay (BM-28)

101. Time teaching Stamps (Wooden)-
Order Code - TP230
Rubber Set of 15) (BM-30)

Note: Specifications are subject to change.

102. Volume Relationship Set Crystal Plastic
(BM-32)**Order Code - TP232**

- Hemi Sphere
- Sphere
- Cone
- Cube
- 2 Cylinders
- Frustum

All 4 inches height & 4 inches diameter to calculate & prove the relationship between the volumes

103. Set of Volumetric Cups Plastic (BM-34)**-**
Order Code - TP234

104. Kitchen Balance Plastic (BM-38)**-**
Order Code - TP238

105. Meter Scale Steel (BM-41)**-**
Order Code - TP241

106. Half Meter Scale Steel (BM-42)**-**
Order Code - TP242

107. Measuring Tape 3m (BM-45)**-**
Order Code - TP245

108. Ranging Rod Metal-Order Code - TP248
Ranging Rod Metal to perform Height & Distance Experiments at the ground level (BM-48)

109. Cross Staff Metal-Order Code - TP250
Cross Staff Metal to draw perpendicular lines in the ground (BM-50)

110. Optical Square Metal-Order Code - TP251
Optical Square Metal to draw parallel lines in the ground (BM-51)

111. Probability Kit (BM-62)**-Order Code - TP262**
A.Dice-Set of 2 pcs
B.Playing Cards
C.Set of Pearls : Set of 400 marbles

112. Efficiency in Packing (BM -63)**-**
Order Code - TP263

113. Geometry Kit (ACRYLIC) (BM-67)**-**
Order Code - TP267

114. Perpendicular Line segment is the shortest-
Order Code - TP268

(ACRYLIC) (BM-68)

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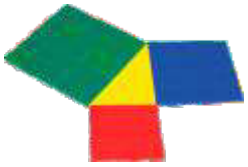
115. Graph Roll-up Chart 100x135cms (BM-71B)-
Order Code - TP271

116. Magnetic Graph Co-ordinate Board-
Order Code - TP272
with marker pen (ACRYLIC) (BM-72)

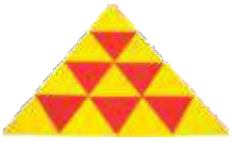
117. Pythagoras Theorem-
Order Code - TP276
(ACRYLIC) 50 pcs by arranging small square pieces to make side square (BM-76)



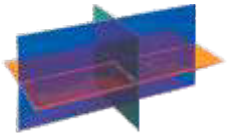
118. Working Model of Pythagoras Theorem (Wooden) (BM-77)-**Order Code - TP277**

119. Triangle Kit (Group Activity set of 5 kits)-
Order Code - TP279
(ACRYLIC) To teach congruency of triangle, classification by their angle and sides. (BM-79)

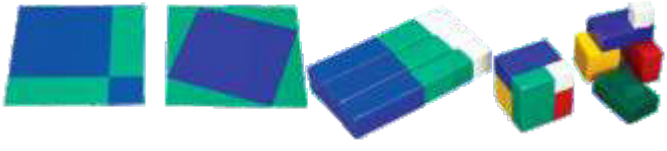
120. Ratio of Area of Similar Triangles-
Order Code - TP280
(ACRYLIC) To verify the result that ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides. (BM-80)



121. Octant-3D (ACRYLIC) (BM-81)-
Order Code - TP281

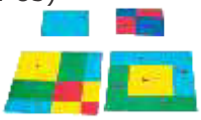


122. Identity Set-I (ACRYLIC) (BM-82)-
Order Code - TP282



$(a-b)^2$ $(a+b)^2$ Pythagores Thoerem $X^3+Y^3+Z^3$ $(a+b)^3$

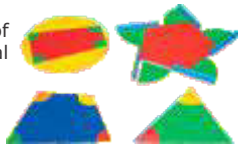
123. Identity Set-II (ACRYLIC) (BM-83)-
Order Code - TP283



Note: Specifications are subject to change.

124. Identity Set-Ill (Wooden) (BM-84)-
Order Code - TP284

Angle property of cyclic quadrilateral



Exterior angle of regular polygon

125. Mensuration Kit (ACRYLIC) (BM-85)-
Order Code - TP285

a.Area of Parallelogram
b.Area of Triangle-set of 3
c.Area of Rhombus
d.Area of Trapezium
e.Mid point Theorem
f.Properties of Parallelogram
g.Quadrilateral formed by mid point of a quadrilateral
h.Algebraic Identities (Set of cubes)
i.Area of Circle (Wooden)

126. Round Panel Meter D.C.- 'A' Grade (Without Stand)-Order Code - TP301

- Overall size of the bakelite panel is about 82 mm dia with dial of about 57 mm dia.
- Scale length is about 47 mm +2 mm.
- Accuracy ±1.5% F.S.D. with anti parallax mirror but without desk stand.

Order Code	Type	Common Ranges
TP301A	D.C. Ammeter	1,1.5,2.5,3,5Amps.
TP301B	D.C. Ammeter	10,15Amps.
TP301C	D.C. Ammeter	20,25,30Amps.
TP301D	D.C. Milliammeter	1,5,10,50,100,250,500, 750,1000mA
TP301E	D.C. microammeter	0-25,0-50,0-100,0-250,0-300,0-500,0-1000mA
TP301F	D.C. Voltmeter	3,5,10,50,100,250,300 Volts
TP301G	D.C. Millivoltmeter	25,50,100,250,500mV

127. Round Panel Meter D.C.- 'B' Grade (without stand)-Order Code - TP302

These BESTO Meters were developed by our Engineers for frequently use by students and for other applications where a rugged low-cost instrument of moderate precision was needed.
Specifications are same as TP301 but Accuracy ±2.5% of full scale deflection 'B' grade with anti-parallex mirror,

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but without desk stand.

Order Code	Type	Common Ranges
TP302A	D.C. Ammeter	1,1.5,2.5,3,5Amps.
TP302B	D.C. Ammeter	10,15Amps.
TP302C	D.C. Milliammeter	1,5,10,50,100,250,300, 500,750mA.
TP302D	D.C. Voltmeter	3,5,10,25,50,100,250, 300Volts

128. Meter Desk Stand-
Order Code - TP303

All ABS moulded (unbreakable) in conveniently inclined face fitted with two heavy lock type terminals and heavy Lead wires. From Bottom side it is closed with unbreakable plastic plate.

129. Double Scale Meter-Order Code - TP304

The conventional 'A' grade round panel meter of overall size of 85mm dia is mounted on a suitable desk-stand described under TP303 with 3 terminals. One terminal is common and the other two provide two different ranges. Supplied with stand. Some common ranges are listed below :

Order Code	Description
TP304A	1.5/3,7.5/15,15/30,30/60,1.5/30
TP304B	10/100,25/250,50/500,100/100mA
TP304C	2.5/5,5/10,10/20Amp.
TP304D	50mA/25mA, 60mA/15mA,
TP304E	250mA/2.5mA

130. A.C. Moving Coil Meter-Order Code - TP306

'A' grade panel meter of overall size 82mm dia mounted in beautiful deluxe desk stand, hand calibrated accuracy 1.5% F.S.D.

Order Code	Description
TP306A	0-1,1.5,2.5,3,5,10Amp.
TP306B	10,25,50,100,250,300,500mA
TP306C	30V,50V
TP306D	10V,25V,50V
TP306E	100,300,500,600V
TP306F	100,300,500,750mA

Note: Specifications are subject to change.

131. D.C. Galvanometer 'A' Grade without stand-
Order Code - TP310

Galvanometer of the movement is the same superior quality as used in Tesca D.C. Voltmeters & Ammeters. The black bakelite case is likewise similar in size and shape. Accuracy 1.5% of full scale. Supplied without stand. Dial reading 30-0-30.

Order Code	Sensitivity
TP310A	20mA/Division
TP310B	10mA/Division
TP310C	5mA/Division
TP310D	2mA/Division
TP310E	1mA/Division

132. D.C. Galvanometer 'B' Grade without stand-
Order Code - TP311

Specifications are same as TP310 but accuracy 2.5% of full scale deflections, Supplied without desk stand. Dial reading 30-0-30.
Supplied with antiparallex mirror

133. D.C. Galvanometer 'B' Grade without stand-
Order Code - TP312

Same as described under TP303

134. Rectangular Panel Meter (without stand)-
Order Code - TP320

Special Features :

- Housed in ABS non-breakable case with clear transparent high impact acrylic front cover. (Stand not included)
- Fitted at front with zero adjuster.
- Knife edge pointer with anti parallax mirror for accurate readings.
- The slanting front of meter inclines the scale of 45° permitting it to be read with equal ease from eye level also.

Technical Data:

- Scale Length :95 x 65mm
- Accuracy:Class Index 1.5%
- Acrylic Meters may be subjected to wide variations in temperature or remain in the circuit continuously without seriously affecting the accuracy.
- All acrylic meters are manufactured and calibrated in a modern air-conditioned and state-of-the-art plant which has been designed and built specially for this work. These meters are guaranteed to perform satisfactorily. All our meters are provided with anti-parallax mirror but without desk stand.

Some of the common available D.C. ranges are listed below :-

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With Clear Transparent Acrylic Front Cover
Voltmeters, Millivoltmeters, Ammeters, Milliammeters, Micrometers, Galvanometers

Order Code	Type	Common Ranges
TP320A	D.C. Ammeter	1,1.5,2.5,3,5Amps.
TP320B	D.C. Ammeter	10,15Amps.
TP320C	D.C. Ammeter	20,25,30Amps.
TP320D	D.C. Milliammeter	1,5,10,50,100,250,500, 750,1000mA
TP320E	D.C. microammeter	0-25 or 0-30,0-50,0-100,0-250 or 300,500 or 1000mA
TP320F	D.C. Voltmeter	3,5,10,25,50,100,250, 300 Volts
TP320G	D.C. Millivoltmeter	0-25,50,100,250,500, 750mV

135. D.C. Galvanometer (without stand)-
Order Code - TP321

It is widely used because it is verycompact, economical and user friendly, with dial reading 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 20pA/div. is particularly suitable for slide wire bridges, potentiometers & experiments on induced e.m.f. Galvanometer with different sensitivities are listed in the table. Supplied without stand.

Order Code	Sensitivity
TP321A	20mA/Division
TP321B	10mA/Division
TP321C	5mA/Division
TP321D	2mA/Division
TP321E	1mA/Division

136.Meter Desk Stand Meter-Order Code - TP322

Meter Desk stand for non breakable stand moulded from first quality ABS heavy type, fitted with very fine quality (highly insulated) locked type terminals. Extra ordinary superior quality.

137.A.C.Rectangular Panel Mester (With Stand)-
Order Code - TP323

The almost universal use of Alternating Current (A.C.) in electric power transmission and consumption suggests that more time should be devoted to teaching the principles of A.C. in elementary physics. Student interest quickens when the practical advantage of A.0 are shown. BESTO A.C. Acrylic meters (MR-100 Model) have been designed specifically for teaching and are especially suitable for use by students. These are economical, ruggedly constructed, have ample precision and are available in all commonly needed ranges. All our A.C. Rectangular panel meters are provided with stands.
Some of the common ranges available are:

Note: Specifications are subject to change.

Order Code	Common Range
TP323A	0-250,300,500mA or 0-1,1.5,2.5,3,5,10A
TP323B	1-100m Amp(any one single range
TP323C	3V or 5V
TP323D	10V,25V,50V
TP323E	100,300,500,600V
TP323F	100,300,500,750mA

138. Ohms Meter-Order Code - TP328

'BESTO' Ohm Meter is designed for measuring the resistance in electronics circuits.

The MR-100 model meter is used for ohm meter. The chasis is made from thick steel sheet with Aluminium top. The dry battery cell is fixed to chassis from the bottom side with the help of perspex sheet. The dry cell can easily be replaced by removing two steel screws.
This is basically of two types :

Order Code	Description
TP328A	Series Type 0-25 ohm
TP328B	Series Type 0-2000 ohm

139. Digital Micro-Ohm Meter-Order Code - TP329

Order Code	Description
TP329A	Range 1mW19.99Win 5 decimal ranges.
TP329B	Range 1mW to 19.99 KW in 8 decimal ranges.
TP329C	Range 1mW to 19.999 KW in 8 decimal ranges.

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140. Faradays Laws-Order Code - TP330

Student can perform two different experiments of Faradays Law by using the selector switch. How induced emf is 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 stand.

141. Digital Meter (D.C. or A.C.) (Mounted in non-breakable ABS Cabinet)-Order Code - TP335

Display : 3'A digit, 12.5mm height, 7 Segment LED type
Auto Polarity Resolution : 1 in ±1999 counts
Over Range Indication : Available 3 least significant digits, gets blanked in over-range condition.
Stand : Mounted in a beautiful ABS unbreakable cabinet.
Power Supply : Built in mains operated power supply workable on 230VAC ±10%VAc, 50Hz.

Some of the common ranges available are:

Order Code	(i) D. C. Voltage	(ii) D.C Current	(iii) A.C. Voltage	(iv) A.C Current
TP335A	0-199.9mV	0-199.9µA	0-199.9mV	0-199.9µA
TP335B	0-1.999V	0-1.999mA	0-1.999V	0-1.999mA
TP335C	0-19.99V	0-19.99mA	0-19.99V	0-19.99mA
TP335D	0-199.9V	0-199.9mA	0-199.9V	0-199.9mA
TP335E	0-999.9V	0-1.999A	0-999.9V	0-1.999A
TP335F	–	0-19.99A	–	0-19.99A

142. Digital Meter (D.C. & A.C. combined) (Mounted in non-breakable ABS Cabinet)-Order Code - TP336

Same as TP335, but in this Digital Meter we are having both choices - A.C. range as well as D.C. range with the help toggle switch. Rest specifications are same as per TP335.

Some of the common ranges available are:

Order Code	(i) A.C. / D.C Voltmeter	(ii) A.C. / D.C Current
TP336A	0-199.9mV	0-199.9mV
TP336B	0-1.999V	0-1.999mA
TP336C	0-19.99V	0-19.99mA
TP336D	0-199.9V	0-199.9mA
TP336E	0-999.9V	0-1.999A
TP336F	-	0-19.99A

Note: Specifications are subject to change.

143. Economical Digital Meter-Order Code - TP337

3% Digit LCD, 9Volt Battery operated having following ranges.

D.C. Volts	199.9mV	1.999V	19.99V	199.9V	1000V
D.C. Amps	1.999mA	19.99mA	199.9mA	1.999A	19.99A

144. Moving Coil Portable Meter (DC)-Order Code - TP340

MOVING COIL METERS D.C. SINGLE RANGE : Choice of any range

Order Code	Name	Range
TP340A	DC Voltmeter/ Millivoltmeter	50, 100, 250, 500mV, 1,5,10,25,50,100,250, 500V
TP340B	DC Ammeter/ Milliammeter/ Microammeter	50,100,250,500mA, 1,10,50,100mA, 1,5,10,25A
TP340C	Double Range	Any 2 Ranges in Volt/Amps. Ratio of 1:2
TP3340D	Triple Range	Any 3 Ranges in Volt/Amps. Ratio of 1:2:4 Accuracy : 1% F.S.D.

145. Moving Coil Portable Meter (AC)-Order Code - TP341

TP341A - Add extra in Volts ranges from 5V to 500V
TP341B - Add extra in Amps. Range from 50mA to 10A
Accuracy: ± 1% F.S.D.

146. Moving Coil Portable Meter (AC /DC)-Order Code - TP342

Order Code	Name	Range
TP342A	AV/DC Voltmeter	1,5,10,25,50,100, 250, 500V
TP342B	AC/DC Ammeter/ Milliammeter	500mA, 1,2.5,5,10,25A

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Order Code	Name	Range
TP342C	Double Range	Any 2 Ranges in Volt/Amps. Ratio of 1:2
TP342D	Triple Range	Any 3 Ranges in Volt/Amps. Ratio of 1:2:4 Accuracy :¸ 1% F.S.D.

147. Single Phase, Single Element-
Order Code - TP343
Choice of any Single Current range of 0.5A, 1A, 2.5A, 5A & 10A. Choice of any Voltage Range of 50V, 100V, 125V, 250V & 500V.

148. Single Phase, Single Element-
Order Code - TP344
Choice of any Single Current range of 0.5A, 1A, 2.5A, & 10A. But Choice of Dual Voltage Ranges : 50/100V, 100/200V & 200/400V & 250/500V.

149. Single Phase, Single Element -
Order Code - TP345
Choice of Dual Current Range of 0.5/1A, 1/2A, 2.5/5A, 5/10A and choice of Dual voltage Ranges : 50/100V, 125/250V & 250/500V.

150. Single Phase, Single Element-
Order Code - TP346
Choice of dual current ranges of : 0.5A/1A, 1A/2A, 2.5A/5A, 5A/10A & 10A/20A. But
Choice of triple voltage ranges : 75/150/300V & 150/300/600V.

151.Element, For 3 Phase 3 Wire Balance & Unbalance Load-Order Code - TP347
Choice of Current 1A or 5A
Choice of Voltage 110V & 440V

152. Elements, For 3 Phase 4 Wire Balance & Unbalance Load-Order Code - TP348
Choice of Current 1A or 5A
Choice of Voltage110V & 440V

153. Frequency Meter Principle: Moving Iron/mc With Transducer-Order Code - TP350
Rated Voltage : 115V/230V/440V (Single Phase)
Frequency Range : 45-50-55 Hz, 40-56-60 Hz
Test Voltage : 2000 Volts A.C.

154. Spot Reflecting Galvanometer-
Order Code - TP421

Applications:'TESCA' Spot Galvanometer finds extensive use as a D.C. null detector in wheat stone bridges and potentiometers.
Mains feed: It is a 'mains' operated instrument but can operate on a 6 volt battery also. There is provision to operate this instrument can be operated on both as well as main supply 220 volts, 50Hz or 6 Volt Capacity.
Light Source: The light Source is 6 Volt and 0.3Amp bulb giving a bright spot on the scale.
Construction : The galvanometer has built in lamp and scale arrangement and housed in a bakelite case. The highly sensitive moving coil system is suspended in a taut band manner in a uniform field of permanent magnet.
Scale : The scale is 150mm long and is marked for both centre and end zero use.
Zero Adjustment : The spot of light can be set at any point on the scale with the help of zero adjusting knob.
Sensitivity Control : The sensitivity is controlled by a 2-pole, 6 way switch. The switch Positions are D, 1/10, 1/100, 1/1000 and s/c
Working Voltage : 220 VAC
Time Period: 2 seconds

Technical Data
Dimensions: 220x 225x 132 mm (Approx.)

Order Code	Galvano-meter Resistance in ohms	Critical Damping Resistance	Sensitivity Voltage
TP421A	100 ohms	1000 ohms	0.04 to 0.05 mA per mm deflection
TP421B	600 ohms	7000 ohms	0.04 mA per mm deflection

155. Ballistic Galvanometer (Improved Pattern)-
Order Code - TP424
Incorporates the following features.

- These galvanometer are rigid in construction, beautiful in design and easy to operate, with large periodictime.
- Large moment of Inertia of the moving part of the galvanometer.
- Deflection closely proportional tothe electric charge.
- Tesca Ballistic Galvanometers undergo strict laboratory check before dispatch and are suitable for direct deflection measurements which are closely proportional tothe current.
- These galvanometers can be used both as PERIODIC as well as APERIODIC instruments.
- An arrangement is provided in the instrument to make it APERIODIC by introducing a suitable resistance in parallel with the moving coil system.
- Zero adjusting and locking devices are provided. The Phosphor-bronze suspension strip prevents shifting of zero.
- The moving coil carries a specially polished front

Note: Specifications are subject to change.

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silvering concave mirror of 100cm. focal length, suitable for use with Tesca Lamp and Scale Arrangement.

Order Code	Description
TP424A	Galvanometer Resistance 100 Ohms and Time period A pproximate 10-12 Seconds.
TP424B	Galvanometer Resistance 500 ohms and Time period Approximate 10-12 Seconds.

156. Lamp and Scale Arrangement-
Order Code - TP436

It is based on 'GRIFFEN' Pattern which is highly suitable for reflecting 'TESCA' Ballistic Galvanometers. It consists of a heavy steel cabinet made from S. W.G. 20 sheet of size 6" x 4" x 3'A" with printed Aluminum panel on the top. In this steel cabinet, a step down transformer of 6 volts, 3.5 Amps is enclosed, which is suitable forthe lamp house.
The lamp house is made from Aluminum-Silver Alloys, machined and finished in a pleasing Duco paint. It is fitted with a special 6 Volts 20 Watt bulb which is connected to the transformer with a special male-female detachable plug.
The lamp house is fitted with a rack and pinion arrangement for focusing. A double convex lens made from imported glass of 18mm diameter of 4" focal length is used in it for better results.
The lamp house can slide up and down along the vertical rod fixed on a detachable box. The inclination of the lamp can be adjusted in vertical plane.
Bright light through the convex lens falls on the concave mirror of the 'TESCA' Ballistic Galvanometer and forms a bright spot on the translucent Perspex scale fitted in a special bracket above the lamp house which is divided into 25-0¬25 cm. and 0 to 50cm.

157. Lamp and Scale (Workable on main)-
Order Code - TP438

Suitable for use with Reflecting Galvanometer with rack and pinion arrangement workable on 220 volts A.c./D.0 complete with scale and its attachment plug and cord.

158. Capacitance Substitution Box-
Order Code - TP439

Comprising 12 non-polarised capacitors ranging from 100pF to 0.4711F (470pF) using standard preferred values, in step ratios of approximately 1:2 Selection is by means of a rotary switch and external connection is via a pair of 4mm sockets. All capacitors are of ± 2% tolerance, 250V D.C.
Working with values as follows:
100pF, .001pF, .0022pF, .0047p.F, .01pF, .022p.F, .033pF, .047pF, .22pF, .33g, .47p.F.

159. Cell Holder-Order Code - TP440

Single Cell Holder with 4 mm sockets, plastic moulded so a cell can be inserted only in a correct way.

160. Variable Stabilized Power Supply-
Order Code - TP441

Specially designed for Ballistic Galvanometer Experiments. Stabilized Power Supply variable 0-2V & Current Capacity 100mA. Supplied with proper leads.

161. Plug Key (With Brass block of 9 mm)-
Order Code - TP490

With Brass blocks of 9 mm rectangular in shape with all brass terminals and screws.

Order Code		Size
TP490A	:	1 Way
TP490B	:	2 Way
TP490C	:	3 Way

162. Plug Key (With Brass block of 10.5mm)-
Order Code - TP491

Thick brass block of 10.5mm fitted on heavy bakelite base provided with all brass terminals and screws.

Order Code		Size
TP491A	:	1 Way
TP491B	:	2 Way
TP491C	:	3 Way

163. Plug Key (With Brass block of 12 mm)-
Order Code - TP492

Same as above but with brass block of 12mm thick mounted on a heavy bakelite base provided with all brass terminals.

Order Code		Size
TP491A	:	1 Way
TP491B	:	2 Way
TP491C	:	3 Way

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164. Plug Key Commutator 4 Ways Circular-Order Code - TP494

Thick brass block are mounted on thick bakelite plate. The plugs and lugs are thoroughly interlaped for perfect locking. Terminals are provided on each segment with extra heavy blocks.

165. Reversing Key Commutator M.I.P. Type-Order Code - TP496

The four segments of gun metal are mounted on a bakelite base. The multi brush sweeping contacts move over either segment with a handle. Brass terminals are provided for the four segments and on the contact block.

166. Pohl's Commutator-Order Code - TP498

Used in experiments on hysteresis. The thick brass sheet contact arms and the joining strips are fitted on bakelite base. Operation of the contact arm is done with a bakelite handle. The terminals are provided on the sides of the square base. Max current 5 amp. Supplied without mercury.

167. Charge and Discharge Key-Order Code - TP499

Used for Charging and Discharging of a capacitor. Nickel plated brass strips and pillars are used. Three terminals for connection fitted on a thick bakelite plate.

Contact Resistance : 2 milli ohm approx. Max.
Current : 5 Amps.
Dimensions LxBxH : 150x100x80

168.Raleigh's Key-Order Code - TP500

Fitted on thick bakelite base with all brass parts.

169. Tapping Key (Single Contact)-Order Code - TP501

Brass Strip (Nickel plated) with insulated knob and terminals mounted on a bakelite plate of high insulation.

170. Tapping Key (Double Contact)-Order Code - TP502

Two Brass strips (Nickle plated) & four terminals mounted on a bakelite plate on high insulation.

171. D.P. D.T. Switch-Order Code - TP508

Machine moulded switch fitted on wooden base with brass terminals. This is a five ampere double pole double throw knife switch wire to reverse the current when the handle is thrown from one side to the other.

172. Water Voltameter-Order Code - TP512

Cup shaped with brass fittings and two graduated test tubes. The glass vessel is mounted on a sturdy wooden base fitted with brass terminals and Eureka wire electrodes. Supplied with brass metal test tube holder and graduated tubes.

173. Hoffman's Voltameter-Order Code - TP515

For demonstrating decomposition of water. This design is preferred for work of best precision. Platinum electrodes are used for electrolysis of water. The electrodes are mounted with rubber stoppers for insertion in the open ends of the voltmeter limbs. The glass unit has two connected limbs, integral with reservoir tube and funnel shaped bulb, with a stop clock at the top of each limb. Supplied with suitable metallic stand, helps to prevent accidental breakage. Glass parts are made from corning glass. Refer to Experiment No.16

174. Copper Voltameter-Order Code - TP516

It demonstrates the principle of electroplating. It consists of three copper plates suspended from a moulded bakelite cover & placed on plastic jar. The two outer plates called "LOSS PLATES" are connected to one binding post on top and the inner "GAIN PLATE" is connected to the other binding post. All plates are firmly held in position when clamped and are easily inserted or removed. Chemicals are not included. Supplied in Plastic jar.

175. Electric Non-Electric Apparatus-Order Code - TP518

Fitted with two carbon rods, a LED and two terminals for D.C. Power Supply. Supplied w/o solution & supply. Designed exactly as per Maharasthra syllabus.

176. Daniel Cell-Order Code - TP522

This cell is steady & reliable and may be used as open or close circuit works. It consists of a zinc rod immersed in a very dilute solution of sulphuric acid in an empty porous

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pot which in turn, is immersed in copper sulphate solution. This cell consists of copper sulphate solution. This cell consist of copper pot of approx. Size 5½" x 3½". Chemicals are not included (only copper pot Daniel cell of Size 5½" x 3½", empty porous pot and zinc rod is provided.)

177. Spare Copper Pot for Daniel Cell-
Order Code - TP524
Size : 5½" x 3½"
This cell is widely used for student experiment on the characteristics of Voltaic Cell. It has an emf of 1.O8 V.

178. Leclanche Cell-Order Code - TP525
Because of its higher e.m.f. (1.5V) and lower internal resistance, this cell will deliver a stronger current for short period of time compared to the Daniel Cell. It consists of a plastic container 95 x 95 x 150 mm Length x Width x height. The rim is shaped to accommodate the cathode a zinc rod with terminal. (A carbon anode with terminal is sealed in a filled porous pot containing the depolarizer). Supplied with plastic container, filled porous pot & zinc rod.
Supplied without ammonium chloride electrolyte.
Leclanche cell is having large emf 1.5V, hence it is used in the circuit where intermittent large current is required.

179. Daniel Cell Substitute-
Order Code - TP526
This is an electronic Daniel Cell works on 230V AC and gives regulated output of 1.08V.

180. Leclanche Cell Substitute-
Order Code - TP527
This is an electronic Leclanche Cell works on 230V AC and gives regulated output of 1.5V

181. Zinc Plate with Terminal-
Order Code - TP528
For use with simple cell. Approx size 150 x 50 x 0.5mm fitted with brass terminals.

182. Copper Plate with Terminal-
Order Code - TP529
For use with simple cell. Approx size 150 x 50 x 0.6mm fitted with brass terminals.

183. Zinc Rod with terminal-
Order Code - TP530
For use with either Daniel Cell or Leclanche Cell. Size 140mm long, fitted with brass terminal.
Diameter
Order Code : Size
TP530A : 9mm
TP530B : 12mm

Note: Specifications are subject to change.

184. Carbon Rod-Order Code - TP531
TP531A : 150mm x 15mm (length x dia) Fitted with brass terminal
TP531B : 75mm x 15mm (length x dia) Fitted with brass terminal

185. Porous Pot Empty-
Order Code - TP532
For use with Daniel Cell. Empty porous pot approx. size 150mm x 50mm

186. Porous Pot Charged-Order Code - TP533
For use with the Lechlanche cell. Charged Porous Pot consists of Carbon anode with terminals is sealed in a filled porous pot containing the depolarizer.

187. Resistance Coil Round Bakelite Type-
Order Code - TP550
Comprising a non-inductivity wounded coil of double silk covered constantan wire and enclosed in a circular moulded bakelite case. Two brass terminals are provided and the value of each coil is clearly marked on the top of the case. The Coil is adjusted to accuracy within +0.1%. _Any range from 0.lohms to 120ohms.

188. Resistance Coil-Order Code - TP551
A range of resistance units based on a high stability metal film
They offer improved accuracy and are less expensive than traditional resistance coils. Accuracy 1%.

Ohm	Max.V	Max.I
1	1.0	1.0
2	1.4	0.7
5	2.2	0.4
10	3.0	0.3
20	4.4	0.2
50	7.0	0.14
100	100	0.10
200	14.0	0.07
500	22.0	0.04
1000	30.0	0.03

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189. Resistance Coil with Short Circuiting Device- Order Code - TP552

Suitable for insertion in circuits with standard cell or as a high resistance for use in series with sensitive galvanometer. Comprising a carbon resistance of high value adjusted with double silk covered constantan wire to the actual value marked on the panel. The said adjusted coil is housed in a plastic case with a rectangular thick bakelite top, having brass block short circuiting plug. Two brass terminals are provided and the panel is clearly engraved with the resistance value.

Order Code	Range
TP552A	1K, 2K, 5K
TP552B	10K, 15K

190. Standard Resistance-Order Code - TP557

These resistances incorporate the latest design and can carry comparatively large currents without being heated. The resistances are immersed in moisture free and non-corrosive oil contained in metal vessels. Manganin coils are used which are thoroughly aged. Silver soldered connections are used. Standard resistances of 0.1, 0.01 and 0.001 ohm are provided with 4 terminals while those of 1,10,100,1000 ohms are provided with 2 terminals only.

Order Code	Resistance (in ohms)	Max. Current (in Amp.)	Accuracy (in %)
TP557A	0.001	10	0.05
TP557B	0.01	10	0.05
TP557C	0.1	5	0.05
TP557D	1	3	0.01
TP557E	10	1	0.005
TP557F	100	0.5	0.005
TP557G	1000	0.2	0.005

191.Standard Resistance Box- Order Code - TP558

Used as reference standard to be used with Kelvin or Million Meg-Ohmmeter.

192. Resistance in Series & Parallel Board- Order Code - TP559

It is a simple board to show the children how connection in series and connection in parallel works. Without Supply.

193. Ohms Law Apparatus-Order Code - TP563

It consists of one voltmeter of 10 volt, one milliammeter of 250mA. Two 4mm socket terminals are provided for the connection of unknown resistance & another two terminals for D.C. Supply. An on/off switch and a potentiometer of 25 ohms, 3 Watt is also provided. The whole system is enclosed in a superior quality metal box. Supplied with four different carbon resistances and without D.C. supply.

194. Ohms Law Apparatus with built-in D.C. Power Supply-Order Code - TP564

Specifications are same as above but we use 5V and 500mA meters instead of 10V and 250mA as stated above. A small D.C. battery eliminator of 6V, 500mA is built-in, in Ohms Law Apparatus. We need not to use D.C. Supply or D.C. Battery from outside. Supplied with four different carbon resistances.

195. Resistance in Series-Order Code - TP567

The unit consists of 2 meters - one Voltmeter of 10y & another Milliammeter of 150 mA. Three resistance R„ R, & R, (of the order of 50 ohms each). Connected in series. Voltmeter 10V is mounted in box with their independent sockets. Milliammeter of 150mA is connected in series with all the three resistances & external input terminals. Built in DC regulated power supply of 10V, 500mA.

196. Resistance in Parallel-Order Code - TP568

The unit consists of 2 meters - one Voltmeter of 10V & another Milliammeter of 200 mA. Three resistance R„ R2 & R, (of the order of 150ohms each). Connected in parallel. Voltmeter 10V is mounted in box with their independent sockets. Milliammter of 200mA is connected with all the three resistances & external input terminals. Built in DC regulated power supply of 10V, 500mA.

197.Higher Range Rheostat for Electrical Engineering Lab-Order Code - TP676

Specifications are same as given on page 35, the only difference is that imported bare Eureka Wire is replaced with Kanthal wire (having high stability and strength) is wound on a thick wall porcelain/cement pipe having a deeply grooved outer surface to provide air conducts for

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convection cooling. Contact with Kanthal resistance wire is made by two copper brushes having large contact area to give smooth current control and very little wear. The slider moves the full length of the Rheostat, moves rapid with ease. Different types of Higher Range Rheostat please refer to the table.

Order Code	Amp.	Ohms	Size	Tubes range
TP676A	1.2	500	16"x2¼	Single Tube
TP676B	1.6	360	22"x2¼	Single Tube
TP676C	5.0	50	14"x2¼	Double Tube
TP676D	5.0	100	18"x2¼	Double Tube
TP676E	5.0	150	24"x2¼	Double Tube
TP676F	10	20	18"x2¼	Double Tube
TP676G	1.7	600	18"x2¼	Double Tube

198.Wire wound Potentiometer/Simple Rheostat-
Order Code - TP677

A wire wound potentiometer rated @ 3 watt is fitted inside a moulded plasticOhmsWattage casing with a knob at the top for varying the resistance. Three 4 mm sockets mounted at the top provided for potential dividing arrangement as well calibration clearly printed on the cover plate along side knobs. Supplied with suitable leads.

Order Code	Ohms	Wattage
TP677A	50	3 Watts
TP677B	100	3 Watts
TP677C	250	3 Watts
TP677D	500	3 Watts
TP677E	1000	3 Watts
TP677F	10000	3 Watts

199. Variac Single Phase/ Three Phase-
Order Code - TP680

Specifications :

Construction : Enclosed in a thick metal box, has air vents for cooling. The voltage can be adjusted and is indicated by a knob and dial on the top.

Termination : Mains input via main cable. Output via insulated 4mm socket terminals as well as 3 pin 15 Amp. Socket.

Indication : An On/Off indicator is provided.

Overload Protection : Slow blow fuse in output line.

Output Volts : 0-240 (Line voltage connection)
0-270 V (Over voltage connection)

The item is supplied with different current capacities as per requirement in hand. Output voltage 0-270V remains the same in each case. Other specifications areas described above.

Order Code	Current Capacity	Phase
TP680A	2 Amp.	Single Phase
TP680B	4 Amp.	Single Phase
TP680C	6 Amp.	Single Phase
TP680D	8 Amp.	Single Phase
TP680E	10 Amp.	Single Phase
TP680F	15 Amp.	Single Phase
TP680G	4 Amp.	Three Phase
TP680H	8 Amp.	Three Phase
TP680I	10 Amp.	Three Phase
TP680J	15 Amp.	Three Phase

200. Loading Rheostat Bank -Single Phase 250V AC -50Hz-Order Code - TP684
CONSTRUCTION DATA :

TESCA Rheostats are wound on high grade porcelain tubes with low temperature. Nickel-Copper or Nickel-Chrome wire windings are terminated into inverted screw terminals. All the resistances are housed in a sheet metal box of sturdy angle iron frame and covered with perforated sheet. The unit is all sides ventilated to maintain free cooling.

TROLLEY:

The unit is mounted on four castor wheels for easy transportation in the laboratory. The live section of the unit is completely insulated from the body to avoid electric shock during operation. A thick bakelite panel is mounted on the front side of trolley. All the components (controlling switch, selector switches, fuses and terminals etc.) Are fitted on the front panel. The trolley (unit) is treated with premier and non corrosive heat resistant paint.

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LOADING RHEOSTATS SINGLE PHASE 250V AC-50Hz

Order Code	Max. Watt in KW	Max. Load Current	No. of Step		
			250W	500W	1000W
TP684A	2.5	10A	10	–	–
TP684B	5.0	20A	4	8	–
TP684C	6.0	25A	2	3	4
TP684D	7.5	30A	2	2	6
TP684E	10.0	40A	2	1	9

201. Loading Rheostat Bank - Three Phase 415V AC -50Hz-Order Code - TP685

Star connected & 4 wire system

Order Code	Max. Watt in KW Max. Load		Current (A) per Phase	No. of Steps / Phase	
	Per Phase	Total System		250W	500W
TP685A	1.0	3.0	4.15	4	–
TP685B	1.7	5.1	7.00	1	3
TP685C	2.0	6.0	8.30	2	3
TP685D	2.5	7.5	10.50	2	4
TP685E	3.5	10.5	14.50	2	6
TP685F	5.0	15.0	21.0	4	8

202. Lamp Load : Single Phase, 240v Ac, 50Hz-Order Code - TP686

TP686A : Loading Capacity 4KW, Trolley type without lamps having step of 200 watt each

TP686B : Loading Capacity 6KW, Trolley type without lamps having step of 200 watt each

203. Lamp Load : Three Phase, 415V, Star connected & 4 Wire system-Order Code - TP687

TP687 : Loading Capacity 4.5KW,Trolley type Dissipiation per phase. 1.5KW, Seven steps of 200W each and one step 100W, without lamps

TP687 : Loading Capacity 6.0KW, Trolley type Dissipiation per phase 2KW, Ten steps of 200W each without lamps.

204. Loading Capacitor Bank-Order Code - TP689

These are used to improve the Power factor of an electrical system, resulting in more efficient utilisation of electrical energy.

Cabinet : A thick bakelite panel is mounted on the front side of Unit. All the components (Controlling switch, selector switches, fuses and terminals etc.) are fitted on the front panel. The live section of the unit is completely insulated from the body to avoid electric shock during operation. The unit is treated with premier and non corrosive powder coating.

LOADING CAPACITOR - Three Phase 440V AC 50HZ Delta Connection

Order Code	Max. Watt in KVAR		Max. Load Current (A) per Phase	No. of Steps	
	Per Phase	Total System		1KVAR	2KVAR
TP689A	2.3	7	9.8	7	–
TP689B	3.3	10	14.0	2	4
TP689C	5.0	15	21.0	1	7

205. Loading Inductor Bank - Single Phase-Order Code - TP690

Construction Data : These are wound with dual coated H-class copper wire and silicon steel transformer grade lamination are used for minimum iron losses. Each inductor is vacuum impregnated treated with insulated varnish and oven baked for protection against moisture and prolonged used effects.

To provide rigidity & Durability, the loading inductors are designed with fixed steps. The fixed steps are precisely calibrated and provide accurate reactive loads.

Cabinet : A thick bakelite panel is mounted on the front side of unit. All the components (controlling switch, selector switches, fuses and terminals etc.)are fitted on the front panel. The live section of the unit is completely insulated from the body to avoid electric shock during operation. The unit is treated with premier and non corrosive powder coating.

LOADING INDUCTOR : Single Phase 240V AC 50Hz

Order Code	Max. Load Current in (A)	Max. Wattage in KVAR	No. of Fixed Steps			
			0.5A	1A	2A	3A
TP690A	5	1.2	2	4	-	–
TP690B	10	2.4	2	1	1	2
TP690C	15	3.6	2	1	2	3

206. Loading Inductor : Three Phase 415V AC 50Hz, Star Connected & 4 Wire System-Order Code - TP691

Order Code	Max. Load Current in (A)	Max. Wattage in KVAR		No. of Fixed Steps			
		Total System	Per Phase	0.5A	1A	2A	3A
TP691A	5	3.6	1.2	2	4	-	–
TP691B	10	7.2	2.4	2	1	1	2
TP691C	15	10.8	3.6	2	1	2	3

Note: Specifications are subject to change.

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207. Single Phase Isolation Transformer of rating 1KVA-Order Code - TP692

Primary Turns	:	0-132-229-264
Secondary Turns	:	0-132-229-264
Ratio	:	1:1
Type	:	Isolation Transformer
Bobbin Size	:	7 No. 3.5"
Bobbin Type	:	Nylon
Input / Output Voltage	:	230VAC

208. Measurement of Efficiency of Single Phase Transformer (Direct Loading)-Order Code - TP694

Technical Specifications.

- Two Nos. of Moving Coil Voltmeter of Range 300V AC of size 96*96mm provided with Input Terminals.
- Two Nos of Moving Coil Ammeter of Range 10A AC of size 96*96mm provided with Input Terminals.
- Two Nos. of Single Phase Wattmeter of Range 2KW of size 96*96mm provided with Input Terminals.
- One No of Miniature Circuit Breaker of Range 10Amps (MCB/ DP) Provided on the Input Side.
- Circuit Diagram Printed on Bakelite Sheet front panel with instrument connecting terminals.
- Panel board of portable wooden panel box is in Tappered shape for better view angle.
- Dimensions: 470 x 460 x 620 mm (L x B x H).
- Power Requirement: Single Phase 220V AC.

Standard Accessories

- Single phase Variac 10 Amps. TP680E
- Loading Rheostat 2.5 KW Single phase in 10 Steps of 250Watts Each TP684A.
- Single phase Isolation Transformer of Rating 1KVA TP692

209. Single Phase Transformer by Open Circuit and Short Circuit Test-Order Code - TP695

Technical Specifications.

- One No. of Moving Coil Voltmeter of Range 50V AC of Size 96*96mm Provided with Input Terminals.
- One No. of Moving Coil Voltmeter of Range 300V AC of Size 96*96mm Provided with Input Terminals.
- One No. of Moving Coil Ammeter of Range 1A AC of Size 96*96mm Provided with Input Terminals.
- One No. of Moving Coil Ammeter ofRange 10A AC of Size 96*96mm Provided with Input Terminals.
- One No. of Single Phase Wattmeter of Range 75 Watt of Size 96*96mm Provided with Input Terminals.
- One No. of Single Phase Wattmeter of Range 500 Watt of Size 96*96mm Provided with Input Terminals.
- One No. of Miniature Circuit Breaker of Range 10A, (MCB/DP) provided on the input side.
- Circuit Diagram Printed on Bakelite Sheet front panel with instrument connecting terminals.
- Panel board of portable wooden panel box is in Tappered shape for better view angle.
- Dimensions: 470x460x620mm (LxBxH)
- Power Requirement : Single Phase 220V AC
- Single point Patchcords of Size 2.5mm for Interconnections (Electrical) Instruction Manual

Standard Accessories :

- Single Phase Variac 10 Amps TP680E

210. Single Phase Energy Meter (Induction Type)-Order Code - TP696

Technical Specifications.

- One No of Moving Coil Voltmeter of Range 300V AC of Size 96*96mm Provided with InputTerminals.
- One No of Moving Coil Ammeter of Range 10A AC of Size 96*96mm Provided with Input Terminals.
- One No of Single Phase Wattmeter of range 2KW of Size 96*96mm Provided with Input Terminals.
- One No Induction type Single Phase Energy Meter of range 5¬10A 240V, 1200Rev/KWh.
- One No. of Miniature Circuit Breaker of Range 415V/ 63 Amps (MCB/ DP) Provided on the Input Side.
- Circuit Diagram printed on Bakelite Sheet front panel With Instruments Connecting Terminals.
- Panel board of portable wooden panel box is in Tappered shape for better view angle.
- Dimension: 470 x 460 x 620 mm (L x B x H)
- Power Requirement: Single Phase 230V AC.
- Single point Patchcords for Interconnections (Electrical).
- Stop Watch Digital & Instruction Manual
- Dimensions (mm): 460(L) x460(8) x635(H)

Standard Accessories

- Single phase Variac 10 Amps. TP680E
- Loading Rheostat 2.5KW Single phase in 10 Steps of 250Watts each TP684A

211. Sumpner's Test (Back To Back)Test on Single Phase Transformer-Order Code - TP697

Technical Specification

- Two Nos. of Moving Coil Voltmeter of Range 300VAC of size 96*96mm provided with Input Terminals.

Note: Specifications are subject to change.

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- One No. of Moving Coil Ammeter of Range 1A AC of size 96*96mm provided with Input Terminals.
- One No. of Moving Coil Ammeter of Range 10A AC of size 96*96mm provided with Input Terminals.
- Two Nos. of Single Phase Wattmeter of Range 500W of size96*96mm provided with Input Terminals.
- One No of Miniature Circuit Breaker of Range 16Amps (MCB/ DP) Provided on the Input Side.
- Circuit Diagram Printed on Bakelite Sheet front panel with instrument connectingterminals.
- Panel board of portable wooden panel box is in Tappered shape for better view angle.
- Dimensions : 470 x460 x 620 mm (Lx Bx H).
- Power Requirement :Single Phase 220VAC.
- Single point Patchcords for Interconnections (Electrical)
- Instruction Manual

Optional Accessories

- Single Phase Variac 10 Amps TP680E
- Single Phase Isolation Transformer 1KVA
- Thermometer 1000°C

212. Earth Resistance by fall of Potential Method- Order Code - TP698

Technical Specifications

- One No of Inbuilt power supply of range 0-12V DC/2 ampere.
- Two No. of Digital panel meter for voltage measurement of Range 0-20V.
- One No. of DPM for Current measurement of range 0-200 mA.
- Three No. of spoke' made of copper 10mm thick & 750mm long with high density polypropylene handle.
- Circuit Diagram on top panel arrangement is in wooden box having separate space for power & connecting wires
- Dimensions: 470 x 460 x 620 mm (Lx Bx H).
- Power Requirement: Single Phase 220VAC.

Standard Accessories

- Single point Patchcords for Interconnections (Electrical)
- Connecting Wires for Electrodes of Length 10Meter
- Earth Electrode of Copper 750mm Long & 10mm Thick with High Density Polypropylene Handle
- Instruction Manual

213. To Study Scott Connection of a Transformer - Order Code - TP699

- One No. of Moving Coil Ammeter of Range 0-10Amp. AC of size 96X96mm Provided with Input Terminals.
- Two No. of Moving Coil Voltmeters of Range 0-300V AC of size 96X96mm Provided with Input Terminals.
- One No. of Moving Coil Voltmeter of Range 0-500V AC of size 96X96mm Provided with InputTerminals.
- One No. of MCB rating DP-25Amp. Provided on the Input Side.
- Circuit Diagram Printed on Bakelite Sheet Front Panel.
- Panel Board of Portable Wooden Panel Box. Is in Tapered Shape for Better View Angle.
- Standard Accessories
- Variac 10 Amps Three Phase 680I
- Transformer 1KVA/230/230VAC With Tappings at 50%

214. Calibration of Wattmeter by DC Potentiometer-Order Code - TP700

Technical Specifications

- In built power supplies 0-12V DC /1A, 0-75V DC/200mA, 0¬3V DC/200mA and 1V DC/ 200mA. For current source, voltage source, working current source and as standard cell respectively.
- Two number of Digital Panel Meter for current measurement i.e. Al and A2.
- One number of Digital Panel Meter forvoltage
- measurement i.e. V.
- One number of Digital Panel Meter for galvanometer purpose i.e. G.
- Circuit diagram on front panel with input and output sockets.
- Voltage ratio box of range 300/150/30/15/1.5 with ratio 1:5.
- DC slide wire potentiometer of 10 wire, TP932.
- AC/ DC Wattmeter of range 0-37.5Watts.

Standard Accessories

- Singlepoint (4mm) Patchcords for Interconnections.
- Patchcords (4mm) Banana Plug & otherside Open.
- Voltage Ratio Box of range 300/ 150/ 30/ 15/ 1.5 with ratio 1:5.
- Potentiometer Ten wire with sunmica base.
- AC/ DC Wattmeter of Range 0-37.5 Watts
- Rheostat of Range 0-20 Ohms/ 1Amp.
- 3 Pin Power Cord (Mains Cord)

715. To Perform Block Rotor Test of Three Phase Induction Motor-Order Code - TP702

Technical Specifications

- Three Nos. of Moving Coil Ammeters of Range 5A AC of size 96*96mm Provided with Input Terminals.
- One No of Moving Coil Voltmeter of Range 500V AC of size 96*96mm provided with Input Terminals.
- Two Nos. of Single Phase Wattmeter of Range 2KW of size 96*96mm Provided with Input Terminals.

Note: Specifications are subject to change.

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- One No of Direct Online Air Break Starter Suitable up to 5HP Three Phase.
- One No of Miniature Circuit Breaker of Range 400V/ 16Amps provided on the Input Side.
- Circuit Diagram printed on Bakelite Sheet front panel with instruments connectingterminal.
- Panel board of portable wooden panel box is in Tappered shape for better view angle.
- Dimension: 470 x 460 x 620 mm (Lx B x H).
- Power Requirement:Three Phase 415VAC.

Standard Accessories
- Three Phase Variac 10 Amps. TP680I
- Three Phase Induction Motor 3HP with Loading Arrangement.

Features of 1-phase induction motor
- Type :Induction Type
- Input Voltage:415VAC
- Output Terminals: Six
- Amperes: Four
- Frequency: 50 Hz
- RPM:1500
- Operated: Star/ Delta
- Mechanical Load:50 Kg
- Digital Tachometer (Contact Type & Photo Type)
- Instruction Manual.

216. Transformer 1KVA-Order Code - TP703

Technical Specifications
- Output rating 1KVA
- Input voltage single phase 230/115VAC,50Hz Tapping at 50% & 86.6%
- Air cooled
- 4mm Terminal out for connections.
- Safety protected

217. Transformer 3KVA & 0.5KVA-
Order Code - TP705
Specifications are same as per Cat. No. 702

Order Code	Description
TP705A	3 KVA
TP705B	0.5 KVA

218. Solar Fan-Order Code - TP725
Working model in plastic base. When solar cell is placed in sunlight it converts solar energy into electrical energy, which in turn energises the motor and thus conversion of solar energy into electromechanical energy. This is a great introduction into the working and benefits of solar energy and it is a fun and educational project for the classroom.

219. Micro Solar Car-Order Code - TP726
No Batteries, No Plugs Just Power From The Sun! Easy to operate and fun to play. This micro wonder car uses 100% clean fuel technology powered by miniature solar cells. This little car zooms as soon as the sun shines on the solar panel, and slows down as solar panel angle changes and stopped when the sun is blocked. No assembly required.

220.Solar Energy kit-Order Code - TP727

This kit is to demonstrate the effect of solar energy and its ability to be converted into different form of energy like storage of energy, electrical energy, light energy, sound and electromechanical energy the gadgets provided can be operated with charged battery as well as directly with the solar panel also. Solar kit is provided with NI-CD cells (2) with holder, solar panel with lead, a motor fan, music chip, an LED and small voltmeter, all are fitted on base enclosed in wooden case.

221.Solar Water Pump-Order Code - TP728

This kit is to demonstrate that solar irrigation could become economical and increased use of such system might be anticipated in future. A mini water pump is powered by solar energy, (solar panel included) allowing you to run your pump all day long with no operating costs!(no battery required) The kit comes complete with two heads for a tranquilly beautiful water display up to 2-3ft high. The panels are adjustable to receive maximum sunlight.

222. Solar Water Heater-Order Code - TP729

Solar water heater is device used for heating water by using solar energy. When sun rays falls on to the black coated copper pipes, which are arranged in a box covered with a glass sheet and they absorb sunlight efficiently and the hot water from the pipe is collected in tank. Kit is provided with water tank, tank stand, funnel thermometer and solar water heater (plate collector).size collector approx 10x10x1 and water tank capacity approx 2.5Itr.

223.Solar Panels-Order Code - TP730
Safe & Simple-to-use encapsulated mini-panel. Create various experiments by exposing and positioning the panel to the energy source. All mini panels are tested

Note: Specifications are subject to change.

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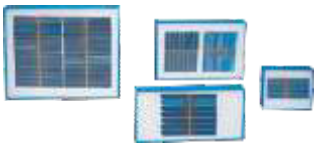

VOC (voltage open circuit), ISC (current short circuit), using one full sun condition PV panels can be joined together in series or parallel to produce higher voltages or ampearages.
Ranges volt range : 0.5v, 2v, 4v, 6v, 9v and 12v Current ranges : 50mA, 100mA, 200mA, 400mA

224.Solar Ni-Cd Cell Charger-Order Code - TP731

This simple, portable solar battery charger provides a convenient method to charge rechargeable Ni-Cd batteries while learning about solar cells. This silicon solar cells are connected together in series, and each battery is protected with a blocking diode so that electricity flows only from the cells to the battery. A simple and safe experiment would be to measure the battery voltage at various intervals during charging under a lamp or in the sun.

225.Solar Radio-Order Code - TP732

It demonstrates how solar energy can be converted into sound energy. Students learn that more the sun rays fall on panel more would be the output is given to the radio. This is a great introduction into the workings and benefits of solar energy and it is a fun and educational project for the classroom.

226. Solar Meter-Order Code - TP733

Instrument is used to measure the power density of sunlight. Moving coil DC meter housed in non-breakable ABS plastic case with calibrated scale expressed in mW/cm2 to show full sun intensity level and encapsulated with Solar cell.

227. Solar Bulb-Order Code - TP734

Working model in two parts wooden box. One part with solar cell and other is with bulb. When solar cell is placed in sunlight it converts solar energy into electrical energy and thus bulb glows.

228. Wind Mill kit-
Order Code - TP735

This kit is to demonstrate the generation of electric energy by a wind energy (kinetic energy) or generation of electricity by moving a coil in a magnet. When air strikes the generator blade, it turns the coil of small generator to produces electricity and lights up a LED and a connected voltmeter indicates the amount of current being produced by the generator.

Note: Specifications are subject to change.

229. Solar Domestic Circuit-Order Code - TP738

A complete demonstrative unit with schematic diagram that demonstrates how the energy can be saved using solar energy and also demonstrate that how connections / wiring is made in our houses. the unit is operating on low voltage Dc. All the components fuse, indicator, on/off switches, fan, bell, lamp are fitted on bakelite sheet. A knife switch is provided to changeover the Solar Panel voltage or DC (battery voltage).

Interesting Activities based on Electrical Theory

230. Domestic Electric Circuit-Order Code - TP739

A complete demonstrative unit with schematic diagram that demonstrates how connections/wiring is made in our houses and also demonstrate that how the energy can be saved using solar energy. The unit is operating on low voltage DC. All the components fuse, indicator, on/off switches, fan, bell, lamp and two DC moving coil meters are fitted on bakelite sheet. A knife switch is provided to changeover the Solar Panel voltage. (Optional if required)

231. Connection in Series & Parallel-
Order Code - TP740

- Two bulbs of 25W & 100W connected in parallel is mounted on a wooden base.
- Two bulbs of 25W & 100W connected in series is mounted on a wooden base.

When we switch on the parallel board, both bulb of 25W & 100W will glow according to their intensities, but when we switch on the series board, the 25W bulb will glow with greater intensity as compared to 100W bulb.

232. Principle of Wheatstone Bridge-
Order Code - TP741

To understand the principle of Wheatstone Bridge we have connected all the four bulbs to make a portable wheatstone bridge & at the balanced point we have given

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another bulb. When the bridge is balanced that is p/q = r/s, the centre bulb will not glow.

233. Resistance Box Plug Type (Constantan Coil)- Order Code - TP850

Precision quality consisting of 12mm (approx. 1/2") thick rectangular brass block, non inductive, double covered Eureka Constantan wire is wound on bakelite spool, enclosed in a teak wood box. Accuracy ±0.1%.

Order Code	Range	No. of Coils	No. of Plugs
TP850A	0.1-1W	5	6
TP850B	0.1-5W	8	9
TP850C	0.1-10W	9	10
TP850D	0.1-50W	12	13
TP850E	0.1-100W	13	14
TP850F	0.1-500W	16	17
TP850G	0.1-1000W	17	18
TP850H	1-10W	5	6
TP850I	1-50W	8	9
TP850J	1-100W	9	10
TP850K	1-500W	12	13
TP850L	1-1000W	13	14
TP850M	1-5000W	16	17
TP850N	1-10000W	17	18

234. Resistance Box Plug Type (Manganin Coil)- Order Code - TP852

Specifications are same as per Cat. No. 850 consisting of 12mm (approx. 1/2") thick rectangular brass block, resistance coils are made from doubled silk covered Manganin wire. Accuracy ±0.05%.

Order Code	Range	No. of Coils	No. of Plugs
TP852A	0.1-1W	5	6
TP852B	0.1-5W	8	9
TP852C	0.1-10W	9	10
TP852D	0.1-50W	12	13
TP852E	0.1-100W	13	14
TP852F	0.1-500W	16	17
TP852G	0.1-1000W	17	18
TP852H	1-10W	5	6
TP852I	1-50W	8	9
TP852J	1-100W	9	10
TP852K	1-500W	12	13
TP852L	1-1000W	13	14
TP852M	1-5000W	16	17
TP852N	1-10000W	17	18

Note: Specifications are subject to change.

235. Resistance Box : Dial Type (Constantan & Manganin)-Order Code - TP864 to TP898

General : Tesca Decade Resistance Boxes incorporate the latest design switches so as to ensure low contact resistance. The moving contacts are constructed from phosphor-bronze lamination to ensure long life and repeatability of results. Eleven position switches are employed.

Panel : An insulating panel of bakelite enclosed in an elegantly polished teak wood box.

Resistance Coil: Resistance Coils are non-inductively wound, properly varnished and aged for permanence of values over a long period. Imported double silk covered manganin or constantan wire is used in Grade A and Grade B resistance boxes separately. Manganin has a negligible temperature coefficient against copper.

Accuracy : Accuracy is brought within the field ±0.05% to ±0.1% for constantan coils (B Grade) and ± 0.02% to ±0.05%for manganin coils (A Grade)

Contact Resistance : Contact Resistance per decade is of the order of 0.0015 ohm.

Range (CONSTANTAN COIL) Accuracy +0.05% to 0.1%	
Ord Cod	**Ranges**
TP864	Single Dia10.0152to 0.152
TP865	Single Dia10.152 to 152
TP866	Single Dial 152 to 1052
TP867	Single Dial 1052 to loon
TP868	Single Dial 1005-2 to 10000
TP869	Single Dial 100052 to 1000052
TP870	Double Dial (0.01x10 & 0.1x10)ohms
TP871	Double Dial (0.1x10 & 1x10)ohms
TP872	Double Dial (1x10 &10x10)ohms
TP873	Double Dial (10x10 & 100x10)ohms
TP874	Three Dial having 0.01, 0.1 & 152 decades
TP875	Three Dial having 0.1, 1 & 1052 decades
TP876	Three Dial having 1,10& 10052 decades
TP877	Four Dial having 0.1, 1, 10 & 10052 decades
TP878	Four Dial having 1,10,100, 100052 decades

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TP879	Five Dial having 0.1, 1,10,100 & 100052 decades
TP880	Five Dial having 1,10,100, 1000 & 1000052 decades
TP880	Range (MANGANIN COIL) Accuracy +0.02% to 0.05%
TP882	Single Dial 0.0152 to 0.152
TP883	Single Dial 0.1Q to 152
TP884	Single Dial 152 to 100
TP885	Single Dial 1052 to 10052
TP886	Single Dial 10052 to 100052
TP887	Single Dial 1000Q to 1000052
TP888	Double Dial (0.01x10 & 0.1x10)ohms
TP889	Double Dial (0.1x10 &1x10)ohms
TP890	Double Dial (1x10 & 10x10)ohms
TP891	Double Dial (10x10 & 100x10) ohms
TP892	Three Dial having 0.01, 0.1 & 152 decades
TP893	Three Dial having 0.1, 1 &nil decades
TP894	Three Dial having 1,10 & 10052 decades
TP895	Four Dial having 0.1, 1,10 & 10052 decades
TP896	Four Dial having 1,10,100, 100052 decades
TP897	Five Dial having 0.1, 1,10,100 & loan decades
TP898	Five Dial having 1,10, 100, 1000 & 1000052 decades

236. Resistance Substitution Box-

Order Code - TP900

Comprising12 radio type resistances using standard preferred values covering the range 100 ohms to 470 kilo-ohms. In the steps ratio of 1:2 approx. Selection is by means of rotary switch & external connection is via 4mm socket.
Supplied with suitable leads.

Order Code	Resistance	Tolerance
TP900A	100 ohms	¸ 10%
TP900B	220 ohms	¸ 10%
TP900C	470 ohms	¸ 10%
TP900D	1 Kilo-ohms	¸ 10%
TP900E	2.2Kilo-ohms	¸ 10%
TP900F	4.7Kilo-ohms	¸ 10%
TP900G	10Kilo-ohms	¸ 10%
TP900H	22Kilo-ohms	¸ 10%
TP900I	47Kilo-ohms	¸ 10%
TP900J	100Kilo-ohms	¸ 10%
TP900K	220Kilo-ohms	¸ 10%
TP900L	470Kilo-ohms	¸ 10%

Note: Specifications are subject to change.

237. Economical Resistance Box : Dial Type-

Order Code - TP901



Theses unit employs high stability metal film resistance element having superior characteristics to traditional wire wound coils. Its equally suitable for AC or DC use. The individual decade are series connected in two dials, Three dials & four dials. We use high stability 1% carbon metal film resistance.

Order Code	Dials	Ranges
TP901A	1 Dial	0.1x10, or 1x10 or 10x10 or 100x10 (choice of any single range)
TP901B	2 Dials	0.1x10, 1x10 or 1x10, 10x10 or 10x10, 100x10 or 100x10, 1000x10 ohms (choice of any one single range)
TP901C	3 Dials	0.1x10, 1x10, 10x10 or 1x10 10x10, 100x10 or 10x10, 100x10, 1000x10 (choice of any one single range)
TP901D	4 Dials	0.1x10, 1x10, 10x10, 100x10 or 1x10, 10x10, 100x10, 1000x10 (choice of any single range)

238.Post Office Box - 6 dials (Manganin Coil)-

Order Code - TP905

With 6-decades, four series dials for resistance 1, 10, 100 & 1000 ohms and 2-ratio dials. Two terminals are provided for using the series dials as on ordinary dial type resistance box. The galvanometer and battery key are fitted with contacts. Range of measurement is 0.001ohms to 1, 11, 10000ohms. Coils are non-inductively wound with manganin wire. Accuracy + 0.2% to 0.05%A grade.

239. Spare Sensitive Galvanometer-

Order Code - TP906

Please add extra for sensitive Galvanometer having sensitivity of 20uA per division in the above P.O. Box.

240. Standard Cell (Electronic Version)-

Order Code - TP908

Design for use Standard , Stable, Voltage Reference Source in applications such as standardization of Potentiometers, Instruments, calibrations, temperature & Voltage measurements & pH testing etc.

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Housed in a small steel cabinet giving e.m.f of 1.0816 volts accurate between 10°C to 40°C temperature.

Features for TP910 to TP918

The 3-Ratio P.O. Box has sixteen non-inductively would coils 1, 2,2, 5, 10, 20, 20, 50, 100, 200, 200, 500, 1000, 2000, 2000, 5000 ohms and two proportional arms each with coils of 10, 100, 1000 ohms.

The 4-Ratio P.O. Box has sixteen coils as above and two proportional arms each with coils of 1, 10, 100 and 1000 ohms.

Also incorporates infinity gap.

TP910 to TP918

Heavy, superior quality double brass terminals are provided and panel is clearly engraved with the nominal resistance values.

Two spring keys having good contact for battery and galvanometer is also provided.

The whole system is contained in a superior quality teak wood box.

Resistance between 0.1 and 1111000 ohms can be accurately measured using a DC Battery.

241 .P.O. Box 3- Ratio (Constantan Coil)-
Order Code - TP910

Consisting of 12mm thick rectangular brass block, coils are wound with constantan coil having Accuracy with ±0.1%. Other specifications are same as above.

242. P.O. Box 4-Ratio(Constantan Coil)-
Order Code - TP911

Consisting of 12mm thick rectangular brass blocks Constantan coil. Accuracy +0.1%. Other specifications are same as above.

243. P.O. Box 3- Ratio (Managanin Coil)-
Order Code - TP912

Consisting of 12mm thick rectangular brass blocks and coils, wound with manganin coil having accuracy within 10.05% Other specifications are same as above.

244. P.O. Box 4- Ratio (Manganin Coil)-
Order Code - TP913

Consisting of 12mm thick rectangular brass block Manganin coil, Accuracy within 10.05%, other specifications are same as above.

245. P.O. Box 3- Ratio (Constantan Coil)-
Order Code - TP915

Consisting of 14mm thick rectangular brass blocks and coils, are wound with constantan coil having accuracy within ±0.1% Other specifications are same as above.

w 916. P.O. Box 4- Ratio (Constantan Coil)

Same as Cat. No. 915, but with 4 -ratio of P.O. Box

246. P.O. Box 3- Ratio (Manganin Coil)-
Order Code - TP917

Note: Specifications are subject to change.

Specifications are same as described above in both columns 14mm thick, rectangular brass blocks and accuracy±0.02%to .005%

247.P.O. Box 4-Ratio (Manganin Coil)-
Order Code - TP918

Same as TP917 but with 4-Ratio of P.O. Box

248. Potentiometer 4-Wire with Pencil Jockey-
Order Code - TP926

Comprising four constantan wires of 24 SWG, one meter long, clamped under heavy Brass strips of SWG 18 and fitted by screws in such a manner so that it is easily replaceable and has negligible 'END ERRORS'. Each block is fitted with a heavy lock type brass terminal which is mounted on an 18mm thick ply wooden board with mica on top. The four wires are stretched along the both ends of two full meter scales.

Overall dimension: 1.12m x 100mm x 50mm high including terminals. Supplied complete with Pencil Jockey along with lead for connections & detailed working manual.

249. Potentiometer 4-wire with Spring Type Press Jockey-Order Code - TP927

Other specifications are same as per Cat. No. 926. Pencil Jockey is replaced by spring type brass sliding jockey. This Potentiometer is also provided with pulley arrangement system to tight the wires. The jockey moulded from brass alloy, sliding over the metallic rod provides maximum smooth movement. The jockey consist of four single sharp pencil springs loaded contacts are given separately. An overlapping Perspex pointer helps in reading the raised scale.

250. Potentiometer 10-wire with Pencil Jockey-
Order Code - TP932

Mounted on a polished 18mm thick ply wooden board with teak wood colour sunmica on top, with 10 wires of SWG 24 connected in series, clamped under heavy Brass strips of SWG 18 and fitted by screws in such a manner so that it is easily replaceable and has negligible 'END ERRORS'. Overall dimension: 1.15mm x 175mmx5Omm high including terminals. Supplied with pencil jockey along with lead for connections & detailed working manual.

This compact & inexpensive potentiometer is ideal for introducing students to the methods and techniques of e.m.f. Measurement.

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251. Potentiometer: 10-wire With Spring Type Press Jockey-Order Code - TP935

Specifications are same as that of TP932. Pencil jockey is replaced by heavy brass N.P. spring type sliding jockey. Jockey slides on the metal rod within the due marks for scale reading. The jockey has ten sharp pencil-points, spring loaded contacts which can be used separately. The sliding contact key makes spring contact at any desired position. The design of the jockey permits high accuracy of reading and convenient position setting. This Potentiometer is also supplied with pulley arrangement system to tight the wires. The 'L' shaped end connections are given on the strips which adjust both ends forfaulty '0' and end settings.

252.Potentiometer 1M, Single wire-
Order Code - TP938

Comprising a 0.56 mm constantan wire stretched along a meter scale subdivided into millimeters and centimeters, clamped to stout, plated brass end plates. the terminating strips are provided with heavy duty brass terminals & the whole is mounted on 18mm laminated board. Supplied with pencil jockey & lead.

253.Stabilized Power Supply (Variable 0-5V, 1A)-
Order Code - TP939

Specially designed for all Tesca potentiometer experiments. Variable from 0-5 V at 1A, Solid state regulated power supply. Supplied with leads.

254. Potentiometer - Dial Pattern-
Order Code - TP940

This compact and inexpensive potentiometer is ideal for introducing students to the method and techniques of e.m.f. measurement. The design is simple and accurate measurements can be done with it. There are either 10 or 14 or 22 coils arranged on a rotary dial plus a linear slide wire 50cm long and subdivided into 500 equal parts. Terminals for battery, galvanometer and test circuits are provided on the panel. A thick knife edge jockey is provided to make contact on the slide wire.
Supplied with range switch of 0.1 & 1.

Order Code	Description
TP940A	Potentiometer Dial Pattern with 10 coils.
TP940B	Potentiometer Dial Pattern with 14 coils.
TP940C	Potentiometer Dial Pattern with 22 coils.

Addition of Range Switch 0.1, 1 in Dial pattern potentiometers of Cat. No. 940 to make it more precise instrument.

255. Crompton Potentiometer-
Order Code - TP949

Voltage Dials :
1st Dial 6x250mV = 1500mV
2nd Dial 500 divisions(slide wire) = 250mV
Total = 1750mV

- Each Slide wire division is equal to 1/2 millivolt or 500 microvolts.
- Coarse and fine rheostats are provided. Terminals for 2 volts battery, Galvanometer, standard cell are provided on the panel.
- Current is of the order of 125 m A.

This potentiometer is supplied with a self standardization circuit built in, which renders standardization dependent on setting of voltage dials.

256. Volt Ratio Box-Order Code - TP951

For extending the range of crompton Potentiometer, provided with a number of tapping points giving multiples of 1.5V.

Ranges : 1.5, 15, 30, 150, 300,750V.
Resistance : 37,500 ohms.
Accuracy : ±0.02%

257. Volt Ratio Box-Order Code - TP952

Same as above.

Ranges : 1.5, 15, 30, 150, 300 V.
Resistance : 15,000 ohms.
Accuracy : ±0.02%

258. Electronic Unit for Calibration of Voltmeter & Ammeter-Order Code - TP955

This unit consist of falling parts:-

- 1st DPM is for Voltmeter measurement (V)
- 2nd DPM is current measurement (A,)
- 3rd DPM for Galvanometer purpose(G)
- In built power supplies, 0-12V DC/1A.
- In Built standard cell.
- Circuit Diagram on the Front Panel with input & Output sockets.
- A Bunch of connecting leads.

This compact Electronic Unit is very useful for standardisation of DC Potentiometer, Calibration of Voltmeter & Ammeter using DC Potentiometer.

259. Meter Bridge or Wheatstone Bridge With Pencil Jockey-Order Code - TP963

The four-gap bridge has a large and heavy copper strip of (SWG No. 18) mounted on a heavy 3/4" thick laminated base of size 45" x 4" x 3/4". Nine

Note: Specifications are subject to change.

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heavy Brass terminals lock type are provided to reduce the resistance to a minimum. The ends gaps are closed by removable Copper Binding pieces which are held in position by theterminals. The 24 SWG constantan wire is stretched along the top of wooden meter scale and securely clamped to the Brass end strips so that end errors are negligible.Supplied complete with pencil jockey along with lead for connections. Includes detail working manual. Overall dimensions: 1.12m x 100mm x 50mm, including terminals.

260. Meter Bridge or Wheatstone Bridge with Spring Type Jockey-Order Code - TP964

Other specifications are same as that of TP963. Pencil Jockey is replaced by superior quality spring type Brass Sliding Jockey, which moves on a metal rod. The brass strips are fitted on a laminated board of size "x5"x3/4". Includes detail working manual.

261. Spare Pencil Jockey-Order Code - TP965

Ideal for Wheatstone Bridge and all types of Tesca Potentiometers, bakelite moulded handle, brass plated contact and with a locating notch. A heavy lock type brass plated terminal is provided for connection with Lead. The shape of the jockey is large (different from the one available in the market) and easyto handle. Supplied without lead.

262. Spare Lead-Order Code - TP966

To connect pencil jockey with potentiometer and Wheatstone Bridge, a heavy wire lead of length 1.5 meter with U-shape brass clips connected at both the ends of the wire is provided.

263. Fixed Voltage Stabilized Power Supply-Order Code - TP968

2V, 200mA, Fixed Voltage stabilized power supply. Excellent qualityfor all types of Meter Bridge experiments.

264. Dial Type resistance box (Two dial economy model)-Order Code - TP969

This type of Decade Resistance Box is particularly good for use with Wheatstone Bridges. It consists of high stability . Carbon metal film resistance of 1 Watt having accuracy of +1%.

Order Code	Description
TP9696A	0.1 x 10, 1 x 10 ohms
TP969B	1 x 10, 10 x 10 ohms
TP969C	10 x 10, 100 x 10 ohms

265. Temperature Co-efficient Resistance Coil-Order Code - TP971

It is for determining temperature co-efficient resistance of copper, comprising a coil of fine enameled copper wire of about 7-10 ohms resistance, wound non-conductively on an insulating frame and connected to thick copper wire fitted with terminals.The coil is enclosed in a glass tube of borosilicate glass to contain paraffin oil. The rubber stopper is drilled for a thermometer. Tube size approx. 100mm x25mm dia

266. Portable Wheatstone Bridge-Order Code - TP975

This Bridge is fully portable with a built in sensitive Galvanometer and a dry battery.

Series Arm: There are 4 decades of 10x1, 10x10, 10x100 and 10x1000 ohms

Range Multipliers: A single rotary switch furnishes 7 range multipliers of X1000, X100, X10, X1, X0.1, X0.01 and X0.001.

Range of measurement : 0.001 ohm & 11.1 mega ohm.

Battery: A built-in dry battery of 4.5 volts. There is a provision for using external battery for measuring high resistances.

Galvanometer: Galvanometer of Model MO 65 with sensitivity 10 microamperes/div. is used.

Push Buttons: Two push buttons for battery and galvanometer are provided.

Accuracy: Both series and ratio coils are adjusted to an accuracy of better than 0.05%.

Overall Accuracy of measurements is better than ±0.1%.

Order Code	Coil	Accuracy
TP975A	Constantan Coil	Accuracy±0.1%.
TP975B	Manganin Coil	Accuracy±0.02%.

This bridge is extremely useful for resistance measurements with a fair degree of precision.

267. Portable Wheatstone Bridge (Modified) with Varley & Murray Loop Test-Order Code - TP976

- This bridge is exactly same as TP975 except for additional facility of Murray and Varley loop test for location of faults in cables. The bridge is also suitable for resistance measurements.
- For resistance measurements and varley loop test, there are 7 multiplying factors of x1000, x100, x10, x1, x0.1, x0.01 and 0.001.
- For Murray loop tests, 3 additional multiplying factors of 10M, 100M and 1000M are provided.
- Special switching arrangement has been provided to carry out conductance tests, Varley loop test and Murray loop test.
- Rest of the features like series arm, battery, galvanometer, push buttons are same as in TP975.

Note: Specifications are subject to change.

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Constantan CoilAccuracy±0.1%.

Order Code	Coil	Accuracy
TP976A	Constantan Coil	Accuracy±0.1%.
TP976B	Manganin Coil	Accuracy±0.02%.

NOTE: Also called electrical fault localises or line tester

268. Portable Wheatstone Bridge (Economical Model)-Order Code - TP977

Specification of this Portable Wheatstone Bridge is equivalent to TP975 except resistance dials are made of 1% metal film, carbon resistance instead of Constantan or Manganin Coil.
Rest all the features like series arm (4 decades), range multipliers (7 ranges), Battery, Push Buttons & Galvanometers are exactly same as in TP975
Accuracy : 1.25%

269. Kohlrausch Conductivity Bridge- Order Code - TP980

- A circular slide wire is calibrated from 0.01 to 10 ohms A rotary dial furnishes six multipliers of 0.1, 1, 10, 100 & 1000 & 10000.
- Range of measurement is 0.01 to 100 K Ohm
- Terminals for supply and head phone/detectors are provided on the panel. A detector key is also provided. The position of slider is adjusted to the position of minimum sound or position of minimum A.C. signals.
- Accuracy of coils ±0.1%
- Accuracy of measurement ±1% at mid scale &±2% overall.

270. Induction Coil-Order Code - TP981

For use with Kohlrausch Conducting Bridge.

271. Hamburger Coil (Conductivity Coil)- Order Code - TP982

Hamburger Coil with platinum electrode for use with Kohlrausch Conductivity bridge, Dip Type.

Note: Specifications are subject to change.

272. Head Phone-Order Code - TP984

Flexible type, with high resistance receivers, fully adjustable according to head-size.

273. Rayleigh Self Inductance Bridge- Order Code - TP988

The ratio arm is in two dials of 1, 10, 100 and 1000 ohm each. The resistance arm is in three dials having decade of 0.1, 1 and 10. A slide having 0.17ohm resistance is connected in series with unknown L. The slide wire is calibrated into 170 equal parts for easy calculation. A special double key is fitted to bridge. The key is internally connected with terminal for connecting battery and Galvanometer. The bridge can also be used as an Wheatstone bridge.

274. Industrial Kelvin Double Bridge- Order Code - TP990

Standard Resistance : There are 10 coils of .01 ohm each arranged on a rotary dial 500 sub-divisions is equal to .00002ohms on the normal range.
Multiplying Ratios : A single rotary switch furnishes 5 multiplying ratios of x100, x10, x1, x.01 and 0.1.
Range of Measurement : The bridge has a range of 2 micro ohm to 11 ohm.
Panel : A bakelite panel enclosed in a teak wood box is used. Separate current and potential terminals, battery and galvanometer terminals, push buttons for battery and galvanometer are provided on the panel.
Max. Current : 10A intermittently & 5 A continuously.
Accuracy : ±0.5% current 5 Amps upto 10Am ps
Coils : Managanin Coils are used.
This bridge is very suitable for the use of wires & cable manufacturers. It is being extensively used for finding the resistance of transformer winding, contact resistance of relays etc.

275. Adjustable Heavy Duty D.C. Current Source- Order Code - TP991

The unit is mains operated and can deliver a continuously adjustable D.C. Current of 0-10Amp maximum.
The unit consist of a variac, a step down transformer, a bridge rectifier, filter circuit and an ammeter of 0-10Ato read current.
Two heavy brass terminals are provided for output.
Input Voltage :230voltsA.C. Mains 50c/s

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D.C. Output : Approximate 0-10V, Continuously adjusted to give a variable current of 0-10Amp depending upon external load.

276. Conductivity attachment-Order Code - TP992

It is an arrangement to hold specimens in the form of wires, rods strip etc. Separate current & potential terminals are provided. Distance between potential point is 50cm. It can hold specimen of any size between 'A" dia rod to 42 S.W.G. Wires.

277. Portable Kelvin Double Bridge-
Order Code - TP993

Potable Kelvin Bridge is used to measure the unknown value of resistance. It can measure from 0.00001E2 to 110E2. The instrument has following inbuilt parts :-

Ratio Dial : The instrument consist of one Ratio dial having multiplying range of 100, 10, 1 & 0.01.

Main Dial : The instrument consist of a Resistance dial having a table resistance of 1E2 divided into 10 equal step of 0.1E2

Circular Scale : A circular scale in series with main dial is provided on the panel. Having a table Resistance of 0.1 ohm divided into 100 equal steps of 0.001E2

Galvanometer : Inbuilt galvanometer is fitted with in the instrument Terminal g1 & g2 are provided for connecting external Galvanometer-A selector switch is provided to select either inbuilt or external Galvanometer.

Press key : A double point press key is provided within the panel to bring galvanometer & battery into the circuit

Terminals : Four terminals C1, P1, C2, P2 are provided for connecting to four terminals unknown resistance coil, where C1, C2 are current terminal P1, P2 are potential terminals. C1, P1 is one pair of terminal and C2, P2 is another pair of terminal.

Battery : Inbuilt supply is provided with in the instrument

278. Special Water Bath-Order Code - TP994

Hot (water, mustard oil or Silicon oil) is essential to most electrical & electronic Instruments. Supplied with 100 ml Borosilicate Glass Beaker to place in Brass Reservoir in the special water bath. Whenever hot water or oil is required that can be heated by pouring water or oil in the said beaker. Very useful for so many experiments in the electrical sections.

Note: Specifications are subject to change.

279. Thermocouple Copper Constantan-
Order Code - TP995

Copper Constantan mounted on a superior quality bakelite strip. With two terminals & mounted on stand.

280. Steam Boiler with heating Element-
Order Code - TP996

Steam boiler of 2 to 3 Litre capacity fitted with heating Element suitable for use with Callendar's & Griffith's Bridge.

281. Callender & Griffith's Bridge-
Order Code - TP997

Three in one - Carry's Foster Bridge, Potentiometer & Callender & Griffith's Bridge.

It is an improvement over the potentiometer. The 50cm long slide wire of lohm resistance is calibrated into 100 equal parts. 14 coils are arranged in series in dialsfrom each being of 1 ohm resistance terminals arranged for appropriate working of different instruments. Jockeyslides on brass rod.

Accuracy : + 0.05%

282. Callender & Griffith's Bridge (New Type)-
Order Code - TP998

The instrument consist of following parts fitted in a teak wood case.

Rotary Dial : A Rotary Dial of x1r is provided on the pannel having a total Res. of 10r.

Circular Scale : A slide wire Arrangement of 1r ohm is provided on the panne! having a scale with center zero divide int 100 equal parts.

Four terminal : Two pairs Terminal C1 and P1 are Provided on the pannel for connecting. C1 & P1 Terminal of Platinum Res. Thermometer.

Two pair of Terminal one for Battery and one for galvanometer is provided on the pannel.

One press key is provided to bring Battery into circuit.

283. Platinum Resistance Thermometer-
Order Code - TP999

This thermometer comprises a length of fine platinum wire of about 2.8 ohms resistance wound non

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inductively on a mica frame & soldered to stout copper leads. A pair of compensating leads are provided. All four leads being connected to terminals mounted on a suitably engraved insulating panel which is joined to the mica resistance frame by cork mount on to which is fitted a stainless tube. Since connections are soft soldered, this resistance thermometer is suitable for temperature work. Packed in velvet lined case.

284. Anderson Bridge for Self Inductance- Order Code - TP1001

Anderson Bridge is used to measure unknown value of Inductance. The instrument has following inbuilt parts fitted in a Teak Wood case.
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connections.
Unknown value : Four unknown values are supplied with instrument.
DC-Supply : 5V DC supply are provided on the board for making DC balance.
R_1: Three decade dial of x1, x10 and x100 ohms.
M: Three decade dial of x10, x100 and x1000 ohm
C : Decade dial of x 0.01 mfd.
R_2 R_3 R_4 : Fixed 1Kohm.
To determine the value of self Inductance by Anderson's Bridge with the help of digital detector.

285. De-Sauty's Bridge-Order Code - TP1002

This bridge is used to measure the unknown value of capacitance. The instrument has following in built parts fitted in teakwood case.
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display.
Unknown value : Five unknown values are provided on the board selected by a Rotary switch.
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connection.
Note: Specifications are subject to change.

R_1, R_2 : Two decade dial of x10 & x100 ohms.
C_2 : Decade dial of x0.1mfd.

286. Wein's Series Resistance Bridge- Order Code - TP1005

The wein's bridge is used to measure the unknown value of capacity.
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display (optional - sometime Digital null detector is replaced by small speaker).
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connection.
Unknown value : Five unknown values are provided on the panel selected by a Rotary Switch.
R_2 : Two decade dial of x10, and x 100 are provided on the panel.
R_1, R_3 and R_4 : Decade dial of x100 is provided on the panel.

287. Wein's Bridge Frequency Measurement- Order Code - TP1006

This bridge has been designed to calculate the unknown value of frequency of Bridge Oscillator.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display (optional - sometime Digital null detector is replaced by small speaker).
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connection.
C_1, C_2 : Decade dial of 0.1mfd.
R_3 : Ratio Dial of 1, 10, 100 & 1000
R_4 : Ratio Dial of 2, 20, 200 & 2000
R_1 R_2 : Are mechanically coupled x10, x100, x1000 ohms.

288. Maxwell's Inductance Bridge- Order Code - TP1007

Maxwell's Bridge is used to measure the unknown value of Inductance. The instrument has following inbuilt parts fitted in teakwood case.
AC Source : The Bridge consist of

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sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connections.
Unknown Value : Four unknown values are supplied with instrument.
R_4, R_3 : Two Decade dial of x10 and x100 ohms.
L_2: Decade dial of x10 mH
R_2: Decade dial of x1 ohm.

289. Maxwell's Inductance Capacitance Bridge- Order Code - TP1008

By this Bridge the inductance is measured in terms of Standard Capacitance. The instrument has following parts :
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connections.
Unknown Value : Four unknown value are supplied with instrument.
R_2, R_3 :_Fixed 1K ohms.
R_1: Decade dial of x1, x10, x100 ohms.
R_4: Decade dial of x10, x100, x1000 ohms.
C_4: Decade dial of x0.01 mfd

290. Owen's Bridge-Order Code - TP1009

Owen's Bridge is used to measure the Unknown value of Inductance. The instrument has following inbuilt parts fitted in a Teak Wood Case.
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connections.
R_3 : Decade dial of X10, x100 and x1000 ohms.
C_3, C_4: Decade dial of x0.1 mfd.
Note: Specifications are subject to change.

R_2: Decade dial of x100 ohms.
R_1: Internally fixed 1000 ohms.

291. Hay's Bridge-Order Code - TP1010

Hay's bridge is used to measure the unknown value of Inductance. The instrument has following inbuilt parts fitted in a Teak wood case.
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connections.
Unknown value : 4 unknown value are supplied with instrument.
R_2, R_3 : Three decade dial of x10, x100 and x1000 ohms
C: Decade dial of x0.1mfd.
R_4: Fixed resistance of 100 ohms

292. Schering Bridge-Order Code - TP1011

Schering Bridge is used to measure the unknown value of Capacitance. The instrument has following inbuilt parts fitted in Teak Wood Case.
AC Source : The Bridge consist of sine wave signal of 1KHZ. The Amplitude of AC switch indicating lamp is provided on the bakelite board. Two sockets are provided for the output of AC signals.
Detector : For detecting small AC signals in the output, Null Detector is in-built with digital display
Circuit Diagram : The circuit layout on the board is quite spread out to facilitate convenient working & clear understanding. 4mm socket are provided for making connections.
Unknown value : Five unknown value are provided on the board selected by a Rotary switch.
R_1 R_2 : Ratio Dial having step of 1, 10, 100 and 1000 Ohms.
r : Decade dial of x1 ohms.
C_1 : Two Decade dial of x0.001 mfd & x0.01mfd.
C_2 : Internally fixed of value 0.001mfd.

293. Bridge Oscillator (Solid State)- Order Code - TP1012

Using operational amplifier, Wein Bridge oscillator for better stability. It provides pure sine wave 0-10 volt R.M.S. continuously variable output,

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giving fixed frequency 1KHz.This bridge oscillator is used in almost all the four arm bridges.

294. Bridge Oscillator (3 Frequencies)-
Order Code - TP1013

this Bridge Oscillator is used to find unknown frequency or in 4 arm bridges, having three frequencies of 400Hz, 1KHz & 3 Khz.

295. Null Detector-Order Code - TP1014

The Null Detector comprises a solid state amplifier having output stage with meter Indication. The instrument is supplied in metal cabinet with Duco Paint & Aluminium front panel. The said detector has been designed for use with AC Bridges (replaceable of headphone).

296. Fixed Condenser Boxes-
Order Code - TP1015

High quality silver mica, paper polyester and metal film condenser are mounted on the Plastic plate fitted in a steel turf Non ABS Plastic. Two 4 mm socket terminals are provided.

Working voltage 250 V for 0.01 mfd to 2 mfd capacitors and we use pa per polyester capacitors uptothis range.

Working voltage 350 Vfor 5 mfd to 40 mfd capacitors and we use electrolytic capacitors up to this range.

Order Code	Range
TP1015A	0.01 TO 0.1mfd (any one range)
TP1015B	0.2 to 0.5 mfd (any one range)
TP1015C	1 mfd
TP1015D	2mfd
TP1015E	5mfd
TP1015F	10mfd
TP1015G	20mfd
TP1015H	40mfd
TP1015I	60 mfd

297. Single Dial Condenser Box -
Order Code - TP1016

Tesca Decade Condenser Boxes are constructed from high quality silver mica, polyester and metal film capacitor (working voltage 250V) of extremely low power factor. The capacitors are mounted on a 4 pole 11 position high grade band switches, which are arranged on a bakelite panel and enclosed in a teakwood box.

Note: Specifications are subject to change.

Order Code	Range
TP1016A	10 X 0.001 mfd
TP1016B	10 X 0.01 mfd
TP1016C	10 X 0.1 mfd
TP1016D	10 X 1 mfd

298. Two Dial Condenser Box-
Order Code - TP1017

Tesca Decade Condenser Boxes are constructed from high quality silver mica, polyester and metal film capacitor (working voltage 250V) of extremely low power factor. The capacitors are mounted on a 4 pole 11 position high grade band switches, which are arranged on a bakelite panel and enclosed in a teakwood box.

Order Code	Range
TP1017A	10 X 0.001 mfd & 10 X 0.01 mfd
TP1017B	10 X 0.01 mfd & 10 X 0.1 mfd
TP1017C	10 X 0.1 mfd & 10 X 1 mfd

299. Three Dial Condenser Box-
Order Code - TP1018

Tesca Decade Condenser Boxes are constructed from high quality silver mica, polyester and metal film capacitor (working voltage 250V) of extremely low power factor. The capacitors are mounted on a 4 pole 11 position high grade band switches, which are arranged on a bakelite panel and enclosed in a teakwood box.

Order Code	Range
TP1018A	10 X 0.001 mfd, 10 X 0.01 mfd & 10 X 0.1 mfd
TP1018B	10 X 0.01 mfd, 10 X 0.1 & 10 X 1 mfd

300. Four Dial Condenser Box-
Order Code - TP1019

Tesca Decade Condenser Boxes are constructed from high quality silver mica, polyester and metal film capacitor (working voltage 250V) of extremely low power factor. The capacitors are mounted on a 4 pole 11 position high grade band switches, which are arranged on a bakelite panel and enclosed in a teakwood box.

Ranges : 10x0.001, 10x0.01, 10x0.1, 10x1 mfd

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301. Dielectric Constant Apparatus (Solid & Liquid)-Order Code - TP1020

It consists of following parts.
- RF Generator (9-10MHz Approx.)
- Micro Ammeter (Range 0-50mA)
- Potentiometer for sensitivity selection
- Fixed Capacity (Metal)
- Variable Gang Capacitor
- Socket for test capacitor & variable
- Capacitor brought out at front panel
- One solid bakelite plate to be insert in gap of test capacitors.

302.Fixed Inductance Boxes -

Order Code - TP1021

The air cored inductance coils are fitted in a steel turf bakelite case, elegantly finished. The frequency response is 1000 cycles/sec. Accuracy ±2.5%.

Order Code	Range
TP1021A	100 micro Henry to 1000 micro Henry
TP1021B	1 milli Henry to 1000 milli Henry
TP1021C	1000 milli Henry to 1500 milli

303. Single Dial Inductance Box-

Order Code - TP1022

The air cored inductance coils are fitted in a steel turf bakelite case, elegantly finished. The frequency response is 1000 cycles/sec. Accuracy ±2.5%.

Order Code	Range
TP1022A	100 micro Henry to 1000 micro Henry
TP1022B	1 milli Henry to 10 milli Henry
TP1022C	10 milli Henry to 100 milli Henry
TP1022D	100 milli Henry to 1000 milli Henry
TP1022E	1 Henry to 10 Henry

304. Two Dial Inductance Box-

Order Code - TP1023

The air cored inductance coils are fitted in a steel turf bakelite case, elegantly finished. The frequency response is 1000 cycles/sec. Accuracy ±2.5%.

Order Code	Range
TP1023A	100 micro Henry to 10 milli Henry
TP1023B	1 milli Henry to 100 milli Henry
TP1023C	10 milli Henry to 1000 milli Henry
TP1023D	100 milli Henry to 10 Henry

305. Three Dial Inductance Box-

Order Code - TP1024

The air cored inductance coils are fitted in a steel turf bakelite case, elegantly finished. The frequency response is 1000 cycles/sec. Accuracy ±2.5%.

Order Code	Range
TP1024A	100 micro Henry to 100 milli Henry
TP1024B	1 milli Henry to 1000 milli Henry
TP1024C	10 milli Henry to 100 Henry

306. Four Dial Inductance Box-

Order Code - TP1025

Order Code	Range
TP1025A	100 micro Henry to 1 Henry
TP1025B	1 milli Henry to 10 Henry

307. Five Dial Inductance Box -

Order Code - TP1026

Range : 100 Micro Henry to 1 Henry

308. Induction Coils-Order Code - TP1028

This coil, specially designed for school use is suitable for vacuum tubes and audiometers etc. It is wound with insulated copper wire, has tungsten contacts and on/off reversing switch as communicator. 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.
Terminals are provided for H.T. output and L.T. input of the coil. Up to 50 mm spark is obtained with 4 to 6 volt D.C. input .

Order Code	Length of Spark
TP1028A	5 mm
TP1028B	10 mm
TP1028C	15 mm
TP1028D	20 mm
TP1028E	25 mm
TP1028F	50 mm

309. Anchor Ring-Order Code - TP1030

This consists of a specimen of iron in a ring form would with two uniformlyspaced coils of wires. Soft iron ring is of dia. 75mm and cross sectional dia. is 9mm. The primary winding consists of 200 turns of insulated copper wire of proper gauge with binding post terminals and secondary winding consists of about 25 turns of fine wire.

310. Self and Mutual Inductance Coils-

Order Code - TP1031

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

Note: Specifications are subject to change.

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311. Self and Mutual Inductance Coils-
Order Code - TP1032
Has primary coil of 500 turns and secondary coil of 100, 250 and 500 turns with different tappings, mounted on wooden bobbins 25mm diameter per pair.

312. Self and Mutual Inductance Coils-
Order Code - TP1033
Coils are mounted on wooden bobbin of 25cm diameter. Primary having 500 turns and secondary also 500 turns per pair.

313. Induced Current Apparatus-
Order Code - TP1035
It has the bulb in secondary and make and break arrangement in primary to show the phenomenon of self and mutual induction and principle of induction coil, workable on 6 volts.

314. Electrical Vibrator-
Order Code - TP1038
A thin steel rod (called vibrator) is clamped at one end and passes through a small solenoid. The rod is slightly flattened at the free end and a hole is drilled in it so that a string can be tied through it. The solenoid is connected to A.C. mains through a suitable lamp resistance. A permanent horse shoe magnet is mounted on the base board and a steel rod passes between them. The thin rod is magnetized longitudinally. The solenoid and a horse shoe shaped magnet cause it to vibrate with the frequency of A.C. supply. The length of the vibrator is adjusted until its natural frequency corresponds with that of the supply. The whole unit is mounted on a polished wooden base, complete with pulley, pan and cord.

315. Alnico Bar Magnet-Order Code - TP1053
An excellent pair of Alnico Bar Magnets that are exceedingly strong for their size and will resist demagnetizing conditions. North and South poles are permanently inscribed.

Order Code	Size
TP1053A	37 mm
TP1053B	50 mm
TP1053C	75 mm
TP1053D	100 mm

316. Alnico Horse Shoe Magnet -
Order Code - TP1054
Highly effective when high magnetic strength is required. These magnets will hold their force for a long time. Distance between the poles is 20mm.

Order Code	Size
TP1054A	50 mm
TP1054B	75 mm
TP1054C	100 mm

317. Extra Strength Alnico Bar Magnet-
Order Code - TP1055
A large Alnico Bar Magnet has a high magnetic force & bigger in size as compared to TP1053

Order Code	Size
TP1055A	50 mm
TP1055B	75 mm

318. Electromagnet-Order Code - TP1056
A coil is wound on each arm of a U shape bar of soft iron. The poles are 10mm in diameter and ends are ground flat to make good magnetic contact with iron armature. It will operate on one or more dry cells.

Order Code	Size
TP1056A	3″
TP1056B	4″

319. Electromagnet-Order Code - TP1057
Demonstrates how electric current can be used to generate very strong magnetic fields. This two-part. dissectible electromagnet comprises a core and a yoke, with their mating surfaces precisely machined to very close tolerances. The core has a cylindrical coil wound with enameled copper wire on annular insulated bobbin, with both ends of winding terminating in crocodile clips. Back of the core has a cell holder that can be connected to coil using crocodile clips. Both core and yoke provided with steel eye-bolts. Generates tremendous lifting power.

320. Magnetic Needle Stand-
Order Code - TP1058
For Magnetic Needles, with Aluminium Base & Aluminium Rod of 6mm dia is mounted on the base. The Aluminium pillar supports a steel di needle. Supply without needle.

321. Magnetic Needles-Order Code - TP1059
Specially made highly magnetized with accurate brass center with low friction.

Order Code	Size
TP1059A	75 mm
TP1059B	100 mm

Note: Specifications are subject to change.

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322. Small Magnetic Compass (20mm Dia)-
Order Code - TP1060

Very inexpensive magnetic compass specially suited for tracing the magnetic fields of bar magnet. Each compass has a polished aluminum case and a mounted glass top.

323. Magnetic Compass-Order Code - TP1062
An excellent compass for general laboratory use. The dial shows cardinal points. The needle is well balanced and is mounted in an aluminum case with glass top.

Order Code	Size in mm	Size in Inch
TP1062A	50 mm	2″
TP1062B	75 mm	3″
TP1062C	100 mm	4″

324. Vibration Magnetometer-
Order Code - TP1069

Consisting of a superior quality polish wooden box slotted, and carries a glass tube fitted with simple torsion head to support, by means of a silk fibre, a strip holding magnet etc. Complete with one bar magnet and one brass bar. All metal parts are of magnet and one brass bar. All metal parts are manufactured from superior quality brass alloy. Size : 4"

325. Dip Circle-Order Code - TP1072

Precision type. Designed for accurate and consistent readings. The important features of this instrument is the provision of fixed collars on the bearings screws which make the needle removal and replacement easy.

Specifications

Needle: Accurately balanced, this strongly magnetizes needle is 90 mm long with hard ended steel pivots working in a agate cup bearing.

Inclination Scale: Silvered brass 105 mm diameter, graduated 0-90°- 0-90°x1°

Horizontal Scale: Silvered brass 125 mm diameter, graduated clock 0- 360°x 1° with a circular spirit level.

Case: Aluminum alloy 120mm diameter approximately with easily removed windows on both sides.

Base: Heavy aluminum tripod base with three adjustable brass levelling screws.

326. Deflection Magnetometer (Premium Quality)-Order Code - TP1073

The magnetic movements of a bar magnet can be compared quantitatively and the relative field intensities at various distance from a bar magnetometer.

Note: Specifications are subject to change.

A highly sensitive compass box (with a permanent magnet) is mounted at the center 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 tested. The compass direction is indicated in degrees. It consists of 18 mm thick laminated board (both side sunmica) with dimensions 40" x 5" with aluminum cup at the center for holding compass box. Supplied with permanent magnetic compass box (described under Cat. No. 1080) but without magnet.

327. Tangent Galvanometer-
Order Code - TP1076

It consists of a bakelite moulded ring 170 mm dia., with three sets of winding either 2, 50 and 500 turns or 2,5 and 50 turns (depending upon the requirement) respectively, carefully insulted, connected to heavy brass terminals. The number of turns is clearly marked between the terminals.

The ring is mounted on a pivoted round bakelite base which rotates on an aluminum tripod base fitted with three brass leveling screws. The high sensitive compass box (with permanent magnet) is mounted on a substantial brass pillar and is free to rotate upon it. The compass is 5" in dia. and has a scale graduated to single degrees. Overall height is app. 9". All brass parts are chrome plated.

328. Tangent Galvanometer (Precision Type)-
Order Code - TP1077

The horizontal component of earth's magnetic fields can be measured with good precision using this sophisticated instrument. Same as above but with heavy aluminum base fitted with three heavy type of brass leveling screws. Brass terminals are replaced by heavy superior quality 4 mm socket terminals.

The leveling screws and brass cup is lacquered in golden colour. The heavy tripod aluminum base is finished with superior quality Duco paint. Supplied with highly sensitive compass box with permanent magnet.

329. Tangent Galvanometer Economy Model-
Order Code - TP1078

Same as TP1076 but with aluminium cup and aluminium terminals respectively. Brass leveling screws are replaced by bakelite leveling screws.

Supplied with 5" ordinary compass box of TP1079.

330. Compass Box-Order Code - TP1079

(For deflection magnetometer or tangent galvanometer)

Compressing a bakelite moulding case with white aluminum dial graduated 0-90° four times. The magnet with

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aluminum pointer is pivoted at the jewel so as to move friction less.

331. Compass Box (Permanent Magnet)-
Order Code - TP1080

(For deflection magnetometer or tangent galvanometer). Compressing as thick bakelite moulded case of 125 mm dia. with black aluminum dial graduated 0-90°rour times, anti parallax mirror slot. The special permanent magnet (small in size) and a light maximum damping) supported on a steel pivot by jewel bearing sets. The permanent magnet is designed in such a way so that it has maximum magnetic fields strength.

332. Stabilized Power Supply (Variable 0-5V, 1A)-
Order Code - TP1081

Specially designed for all Tesca Tangent Galvanometer & Stewart's Gee Apparatus Experiments. Variable from 0-5 V at 1A, Solid state regulated power supply. Supplied with leads.

333. Digital Balance-Order Code - TP1082

Capacity : 600 gm Accuracy : 100 mgm with Adapter

334 Stewart & Gee's Apparatus-
Order Code - TP1084

It consists of a circular frame made from non- magnetic silver aluminum alloy. An insulating copper wire is wound on the frame. The ends of the wires are connected to the terminals which are fitted on the superior quality wooden board. A rectangular frame (made from anodized aluminum rods) is supported on wooden board. The anodized aluminum rods are graduated up to 50 cm on both sides.
Superior quality permanent magnet compass box moves on a platform (made from aluminum-silver alloy). This platform moves on the rectangularframe along the axis of the coil. Supplied with a superior quality compass box
.

335. Field along the axis of the coil apparatus-
Order Code - TP1085

- Consists of bakelite circular coil with 20,30 & 50 turns.
- Centre zero wooden scale.
- Complete unit is made from superior quality teak wood except circular coil.
- Coil slides on the base.
- Supplied with permanent magnetic compass box

Principle:

336. Helmholtz Galvanometer-
Order Code - TP1087

it consists of two equal coaxial coils (parallel to each other) separated by a distance equal to the radius of the coils. The permanent magnetic compass is pivoted on the brass cup in the midway between them and in the same direction. The coils increase the uniformity of the
fields in the middle and thus make it more sensitive. Supplied with a superior quality permanent Magnetic Compass box.

337. Magnetic Field Apparatus-
Order Code - TP1090

To demonstrate the production of magnetic field by current flowing in a solenoid.
A small wooden table supports a bakelite ring with three coils of enamelled copper wire of 5, 10, and 15 turns respectively connected to the termina Is at the edge of the base.

338. Oersted's Law Apparatus-
Order Code - TP1091

To show the effect of electric current on a magnet. Comprises a cobalt steel magnetic needle, about 75mm long, with agate bearing supported on pivot mounted on insulated pillar on base and surrounded by a rectangular frame of non magnetic metal strip. Frame fitted with terminals for electrical connections. Passing the current through non magnetic frame causes magnetic needle to deflect as per Oersted's Law.

339. Magnetizing and Demagnetizing coil-Order Code - TP1092

Low voltage, suitable for magnetizing and demagnetizing ordinary magnets, iron bars, strips etc. Comprises a solenoid wound with insulated copper wire and mounted on a base, complete with switch and 4mm terminals.
Solenoid-250mm long x 35mm internal diameter
Operating Voltage- 12VAC or DC at 6A
Magnetizing by AC or DC
Demagnetizing by AC only

Note: Specifications are subject to change.

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340. Van-de Graaf Generator - Hand Driven-
Order Code - TP1095

Hand operated, mounted on base. For the generation of electric charge, useful in electrostatics and for studying various phenomena associated with electric charge. Comprises a near spherical dome supported on top of an insulated, clear Perspex pillar on the base. A removable flat rubber belt rotates through rollers mounted at both the ends of Perspex pillar. Lower roller shaft has a pulley driven by a hand operated crank through rubber belt.

The continuous rotation of the flat rubber belt results in the accumulation of charge on the dome, until electrical breakdown of air surrounding the sphere occurs. With sufficient charge build up on the dome, bringing the earthed dischar ge sphere sufficiently close to it results in the transfer of charge from dome to ground in the form of electric spark. Earthing terminal provided on the base. Supplied with discharge sphere, mounted on a long insulated handle.

341. Van-de Graaf Generator - Motor Driven, Small-
Order Code - TP1096

Useful for electrostatics experiments, where continuous source of high voltage is needed. A motor driven assembly encased in a sturdy metal box. The motor driven lower roller rotates the upper roller assembly located on top of the insulated Perspex pipe through a removable flat rubber belt. The continuous rotation of rubber belt results in accumulation of charge on the one piece near spherical metallic dome, charge being transferred continuously from rubber belt through charge collecting combs. Specially designed dome, with smooth and polished surface free of any surface imperfections, and without any sharp corner or edge to minimize charge leakage.

The motor operates on AC mains 220-240V, 50/60Hz, fused input through a 3-Core mains cable. Provided with indicator type ON/OFF switch. On bringing earthed discharge sphere, sufficiently close to the charged dome, transfer of charge from dome to the ground takes place in the form of electric spark jumping from dome to the discharge sphere. Under favourable conditions, it can develop electric potential upto 200kV, with a spark of upto 70mm length. 4mm socket terminal provided at the bottom for earthing and another 4mm insert on top of the dome for charge transfer or attaching accessories. Provides for necessary adjustment in all the critical components. Supplied complete with discharge sphere, mounted on a long insulated handle.

This 25 cms sphere is supported on a lucite column with a cast iron base. Includes cabeling for connection to Van-de Graaf generator or to ground.

342. Gold Leaf Electroscope- Order Code - TP1098

Rectangular sheet metal case mounted in insulated base and provided with removable front and back sliding glass panels, one clear and other ground, respectively. Removable disc electrode mounted at the top through a moulded plastic bush insulating the disc electrode from the metal body to prevent charge leakage. The plastic bush has a plated metal blade on the underside for fixing the gold leaf. Case fitted with terminal at the side for earthing. Removable clear front slides up to allow insertion of ionizing material in chamber and fixing of leaves, when needed. A clear acrylic circular scale inside the chamber, graduated 0-90°, facilitates the comparison of charge by means of deflection. Supplied complete with one pair of leaves.

343. Gold Leaf Electroscope - Flask Type-
Order Code - TP1099

Comprises a glass conical flask, sealed at the top with holed rubber stopper. A metal rod supports a disc terminal at the top of rubber stopper and a pair of foil leaves suspended inside.

344. Earth Inductor- Order Code - TP1101

This is an improved form comprising a coil of different number of turns (500, 1000, 2000 or 5000 turns) of 36 SWG copper wire wound on an aluminum metal ring (150 mm dia.) A stop limiting rotation to 180° of the ring is provided with the help of the spring. The cradle supporting the coil of cast non-magnetic alloy 200 x 210 x 115 mm high may be placed either on its base or side so that the axis of rotation of the coil is either horizontal or vertical . Terminals for connections are mounted on the cradle supporting blocks.

Order Code	No. of Turns
TP1101A	1000
TP1101B	2000
TP1101C	5000

345. Solenoid Inductor- Order Code - TP1102

A useful instrument for calibrating a ballistic galvanometer. 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 marked on the wooden board. Secondarycoil has three tapings of 100,250 and 500 turns.

Note: Specifications are subject to change.

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346. Search Coil-Order Code - TP1103
For the determination of the Flux density in an air gap. This coil is wound on a mounted bakelite ring, wound with insulated wire, this coil has resistance of 25 ohms approx. Resistance 25 ohms, turns 100, mean dia 10mm.

347. Sonometer (Teak Wood, Brass fitting)-Order Code - TP1108
Comprising a teak wood resonance box 1140x125x100 mm length x width x height with meter scales one meter long subdivided in millimeters.

One each brass and steel wires of S.W.G. 26 and 24 respectively, attached to a fixed bridge and tensioned by fine adjustment pegs:two moveable bridges, pulley and fixed screwto enable a third wire to be fixed for tensioning by weights. Wooden resonance box is made from superiorqualityteakwood and all metal partsare of brass.

348. Sonometer (Teak Wood, Aluminum fitting)-Order Code - TP1109
Other specifications are same as that of Cat. No. 1108, only brass parts are replaced with aluminum parts.

349. Slotted Weight-Order Code - TP1110
For use with above type of sonometers, capacity 500gm x 5, iron, black painted.

350. Slotted Weight (Iron powder coated)-Order Code - TP1111
Manufactured from 50mm diameter, iron rod & thisof slotted weight is very much accurate than the above type.
500gm x5 powder coated

351. Electromagnet and Transformer for Sonometer-Order Code - TP1112
These items are used to determine the frequency of A.C. mains by sonometer method. This apparatus consists of a suitable electromagnet with step down transformer of fixed voltages 6V & 8V and has a current capacity 2A. When this attachment is supported over a Sonometer and connected to a source of alternating current, the wire vibrates continuously. By adjusting the tension and the bridge position maximum resonance can be obtained. Supplied without Sonometer and without stand for holding the electromagnet.

352. Spare Electromagnet-Order Code - TP1113
Only Electromagnet for Sonometer experiment without step down transformer and without stand.

353. Stand for Electromagnet-Order Code - TP1114
Consists of retort stand of 7" x 5" x 10" x 3/8" along with suitable burette clamp. A suitable rubber cork with hole his provided to hold the electromagnet in a vertical direction. Supplied without electromagnet.

354. Wave Motion Apparatus (24-Pulleys)-Order Code - TP1116
It consists of 24 aluminum discs supporting a series of iron nickel rods. On revolving the handle the motion is transmitted successively from one rod to the next, appearing as a wave travelling to the top and back. The movement of the waves can be observed. All metal parts are fitted on a superior quality polished wooden board.

355. Wave Motion Apparatus (18-Pulleys)-Order Code - TP1117
Same as above, smaller in size, has 18 aluminum discs instead of 24

356. Reflection of Sound Apparatus- Order Code - TP1118
For proving that angles of incidence and reflection are equal for any setting. A protector (actual 'D') is screen printed on a superior quality laminated board. It consists of two independent arms containing 12" long stainless steel pipes. One arm is set at any arbitrary angle and other is adjusted till one listens to the maximum sound. At the position of maximum sound to angles will be equal as indicating by the 'D' reading.

357. Ripple Tank Apparatus-Order Code - TP1120
A specially designed versatile apparatus for the investigation of the wave properties, such as wave propagation, reflection, refraction, diffraction and interference. Permits demonstration with an overhead projector or use as a free standing bench model, allowing investigations to be carried out directly. Comprises a rectangular plastic tank with clear bottom and sloped sides incorporating beach effect to eliminate unwanted reflections. The tank has four detachable legs mounted at its underside at the corners with a hole in the clear tray for water drainage. One end of the tank has clamps for supporting lamp holder with a pair of clamps on each side for mounting rippler support rods. Rippler assembly comprises of a rectangular plastic rod with series of holes suitable for mounting

Note: Specifications are subject to change.

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spherical dippers and a low voltage DC motor having eccentric cam attached to its shaft to produce oscillatory motion. Supplied complete with following accessories: Illuminant Assembly Set of 4 barriers a pair of bigger L-shaped (75x25mm) and a pair of smaller L-shaped barrier (25x25mm) 1 Curved Barrier, 2.5cm high, with uniform radius of curvature 1 Hand Stroboscope 1 Convex Lens 1 Concave Lens 1 Rectangular Block 2 Spherical Dippers Spare Elastic Cords for suspending rippler assembly.

358. Ripple Tank Controller Simple-
Order Code - TP1121
This unit provides fully independent, continuously variable DC output of 6V through a pair of colour coded 4mm sockets, for the ripple tank motor, along with a fixed Ac output through a pair of 4mm sockets, rated as 220Volts to operate the illuminant. The motor output are short circuit protected &the input to complete unit isfuse protected. Supplied with a detachable 1.5m mains lead

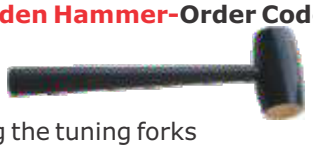
359. Resonance Apparatus (Stainless Steel Pipe of 1" dia.)-Order Code - TP1123

A heavy Stainless steel tube 1.10 mm in length x 25 mm dia. is mounted next to a meter scale. The Stainless Steel pipe and meter scale is fitted on a superior quality polished wooden board. The lower end of the Stainless Steel pipe is sealed into a metal cup having a side tube connected by rubber tubing to a brass reservoir, also mounted on the support rod but with elevation adjustment. The length of the resonance column may easily be determined by measuring the distance between zero stop and the closed end of the tube with the meter rule. Supplied

360. Resonance Apparatus, all Metallic (Brass Pipe)-Order Code - TP1125
An economical model similar in specifications to TP 1123, consists of brass pipe and brass reservoir.

361. Rubber Pad-Order Code - TP1127
For striking the tuning fork.

362. Wooden Hammer-Order Code - TP1128



For striking the tuning forks

363. Rubber Hammer-Order Code - TP1129

For striking the tuning forks

Note: Specifications are subject to change.

364. Tuning Fork aluminium-Order Code - TP1131

Most accurately calibrated set of 8 forks made from tone aluminium alloy, nicely finished and anodized for long lasting finish and accuracy. Packed in Plastic box.

365. Tuning Fork (Welch Type in aluminium alloy)-Order Code - TP1132

Same as TP1131, but larger in size, equivalent to Welch Type in aluminium alloy. Packed in plastic box.

366. Tuning Fork (WELCH Type, Light Weight)-Order Code - TP1134

These medium weight, WELCH type forks, are intended for student use and for general experiment work.
They are often selected for student use and preferred for laboratory standards and for applications requiring longer duration of vibrations. The frequency in vibration per second and scale letters are pressed into the metal at the base of each fork. Supplied in a superior quality wooden box.

367. Tuning Fork (WELCH Type Heavy Weight)-Order Code - TP1135

Because of large cross sectional area, the heavy type forks have greater frequency, stability and vibrate longer than smaller forks.

368. Loose Tuning Fork (WELCH Type, Light Weight)-Order Code - TP1136
Any one loose tuning fork out of 8 forks having frequency 256, 288, 320, 341,384,426, 480, and 512 Hz..

369. Loose Tuning Fork (WELCH Type, Heavy Weight)-Order Code - TP1137
Any one loose tuning fork out of 8 forks having frequency 256, 288, 320, 341,384,426, 480,and 512 Hz.

370. Melde's Apparatus (OSAW Pattern)-Order Code - TP1147

This massive and powerful fork which has a frequency of approximately 60 vibrations per sec., is ideal for producing standing waves and is mounted on a heavy cast iron base.
An electromagnet is arranged between the prongs of the fork without touching it. A small spring type strip is attached to the one of the prongs. A screw just makes a contact with this strip. Supplied with scale pan, bench clamp with pulley but without weights.

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371. Melde's Apparatus (INCO Pattern)-
Order Code - TP1148

Other specifications are same as per TP.1147 but on a sturdy streamlined base with provision for horizontal or vertical experiments (Transverse as well as Longitudinal arrangements).

372.Spiral Spring-Order Code - TP1150
For demonstration of wave motion. This is a closely coiled iron spring, having ideal characteristics for demonstration of wave motion.

373.K Constant Spring App-Order Code - TP1151

If one end of a long flat spiral spring is fixed and the lower end is pulled by a short jerk and released, longitudinal waves are produced.
The apparatus consists of a spiral spring about 25mm diameter and 10cm length. The upper end of the spring is suspended from a chucknut and the lower end is provided with a small pointer which moves over a vertical wooden meter scale. The lower end is also provided with hook for carrying weights. All this setup is
provided on a heavy metal base, supplied with weights.

374.Elongation of Spring App-
Order Code - TP1152

A spiral spring of 15mm diameter and 10cm is firmly attached to a rigid clamp of a stand at its upper and with the help of a chucknut. A slotted weight (50x5 gm set) is attached to its lower end. A pointer is fixed in horizontal position at the lower end of the spring just above the hanger. A half meter scale is fixed vertically in the same stand. It is kept in front of the pointer such that the tip of the pointer moves just over the scale without touching it. Supplied with 50 x 5gm slotted weight.

375.Kundt's Tube Deluxe Pattern-
Order Code - TP1155

A glass tube 100 cm long and 3.8cm in diameter is mounted in a 'V' on a metal base. A rod about 60 cm long is held firmly at its mid point in a sturdy clamp at one end of the base. One end of the rod has a metal disc attached to it and projects into the glass tube. The other end of the tube is closed by a close fitting piston mounted on the base such that its position in the tube is adjustable through 20cm. app. The 'V' supporting the tube may be adjusted vertically and laterally until the metal disc will not touch the glass. Coiled spring attached to the 'V holds the glass tube in position.

376.Demonstration Transformer-
Order Code - TP1165

A large scale transformer, ideal for classroom. The coils are fitted with intermediary outputs providing many transformation ratios.
Consisting of : One magnetic circuits made up of highly permeable U-shaped metal sheeting which can be closed via two clamps with tightening screws. Section : 40x4Omm. Length : 150mm. Height : 170mm
One coil of 6000 turns, 350ohms, 1max : 0.2A, Intermediary 2000 turns output.
One coil of 600 turns, 1max : 2.5A, mainly used to create the transformer primary. Provided with power supply cable.
One coil of 1200 turns, 12.5ohms, 1max : 1.25A, fitted with intermediary 400 and 800 turns output.
One coil of 72- turns, 1max : 12A has Intermediary 6, 30, 54 and 66 turns output.

377.Coils for Demonstration Transformer-
Order Code - TP1166

Wound on rectangular insulating bobbins, overall height 73 mm. These coils are wired to a panel mounting. The earth pin is wired to the front panel and 4mm socket. all connections are completely surrounded by the panel housing. A separate mains connector with moulded plug is supplied with each coil.

Order Code	No. of Turns
TP1166A	50
TP1166B	100
TP1166C	200
TP1166D	500
TP1166E	1000
TP1166F	2000

378.Demonstration Transformer-
Order Code - TP1167

For demonstrating the basic principle of operation of the transformers. Comprises a W-shaped laminated iron core mounted on base with a vertical bolt on its each side for clamping laminated 1-core or armature at its top. Also included are a set of three coils - one mains primary coil 240V AC, 50HZ, 2400 turns and two interchangeable secondary coils, 65 and 130 turns each giving outputs of about 6 and 12V respectively at a maximum current rating of 2A, with number of turns and current/voltage rating marked on each coil. Mains coil provided with a 2 core captive mains cable for input, while each secondary coil has a pair of 4mm socket terminals for output. Coils wound on insulated plastic

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bobbin having hollow rectangular cross-section to exactly fit middle arm of the core with negligible flux leakage.

379.Student Polarimeter (Laurent's Half Shade) SPH - 8-Order Code - TP1531

Specially designed for easy to use, moderately priced, for colleges and research laboratories. Ideal for determining the specific rotation of optically active substances. Our Polarimeters are now extensively used in industrial laboratories as well. A corning glass tube is enclosed in a circular aluminum tube with top door for access and exclusion of external light. The circular scale is attached near the analyzer and the range of measurement is 0-360°. A movable Vernier on the scale enables reading of optical rotation to 60 seconds. Worm and gears combine rough and fine adjustment, provided with Half Wave Mica Plate giving three parts field for easy setting, adjustable half shadow angles. This instrument can be used on monochromatic light only. When light passes through a polarized sheet and then through the solution, the emerging light is observed through rotatable polarized lens, analyzer which is used as eyepiece. The angle of light is rotated and read directly on the circular scale. Supplied on the adjustment stand, Packed in cardboard box with working manual.

380.Student Polarimeter (Bi - Quartz) SPB-9- Order Code - TP1532

Same as Cat. No. 1531, fitted with Bi-Quartz in place of mica, giving colored distinction, accuracy check

381.Research Polarimeter RSP-10B- Order Code - TP1533

(Research Model Half Shade for 200mm tube)
Sensitive rotating half shade device Having angular and sugar scale from 0° to 360° and +130° to —30° I.S.S. Sub divided into 0.10 micrometer drum enable to read upto 0.05° by estimate workable for use with polarimeter tube 200mm.
Analyser :GlansThompson Prism.
Arrangement for 35W sodium lamp light source, input 220V+10% VAC Borosil glass tube 200 mm Plywood storage cabinet, instruction manual, dust cover supplied

382.Research Polarimeter RSP - 20B- Order Code - TP1534

(Research Model Half Shade for 400mm tube)
Range Of measurement +30°to-30°
Vernier Accuracy 0.1° (I.s.s)
Telescopic Magnification 4.5X
Least Count 0.05°
Analyser : Glans Thompson Prisms Polariser and half shade Prism System
Polarrising Aperture 6mm
Light Source Arrangement for 35 Watt Sodium Vapaur Lamp

Light Source Input Tube Borosil Glass Tube 400mm cut type 220V, 10%VAC
Cabient Plywood Storage Cabinet

383. Spare Polarimeter Tubes- Order Code - TP1535

TP1535A : With bulb in the center, 200 mm in velvet lined case.

TP1535B : With Cup in the center, 200 mm in velvet lined case.

384.Astronomical and Terrestrial Telescope Combined-Order Code - TP1536

A high class telescope for school students for all-around purpose. It is light and easy to manipulate and has a high magnifying power. Overall length of Astronomical Telescope is 85 cm, fitted with high class achromatic objective of dia 45 mm, focal length 18" inches. Its high magnifying power that provides extremely sharp images. The telescope is provided with an extra erector tube which can be screwed into the main tube after removing the eyepiece and this Astronomical Telescopes is used as a Terrestrial Telescopes. Complete with velvet lined case. Superior quality with high class achromatic objective .

TP1536A : Superior quality with high class achromatic Objectives
TP1536A : Regular Quality

A high class telescope of superior quality for beginners & school students for all-round observations.

385.Cathetometer L-Shaped-Order Code - TP1537

An instrument of great stability for quick, accurate handling. Life time stainless steel scales verniers and fine achromatic optics that make this a precision

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instrument of universal choice for normal experiments and for researches.
The instrument is designed for use in the vertical and horizontal planes. The vertical guide bar is made of gun-metal and is of a special type. It rotates on ball centres having bearings and can be clamped in any position. The cast iron frame which support the vertical guide bar, is fitted with levelling screws. Range either 50 cm or 100 cm erector tube which can be screwed

Measuring Range : 0 to 50cm or 0 to 100cm
Length of scale : 103mm
Magnification of Telescope : 10X
Visual Distance : 100cm to infinity
Graduation : 0.5mm in division

Order Code	Description
TP1537A	50 cm long graduated bar
TP1537B	100 cm long graduated bar

386.Vertical Reading Microscope-
Order Code - TP1538

The Tesca Vertical Reading Microscope consists of a microscope with rack focussing adjustment, mounted horizontally on an adjustable vertical column. The stereotyped design of the vertical column moving through 15cm by rack & pinion is now replaced by a superior quality vertical pillar carrying the scale with the entire 15cm vertical lift by smooth rack & pinion, moving inside a heavy vertical column carrying the brass vernier. Vernier spring is loaded for precise opposition to the scale. Aguide slot and key ensure up & down movement in the same plane.
The stainless steel scale & vernier is machine divided to accuracy within ±0.01% or better.
The horizontal microscope tube is mounted on the vertical column and is adjustable by smooth rack & pinion, through twin-knobs on both sides. The microscope moves on the machined inter ground guides.

387. Abbe's Refractometer-
Order Code - TP1539

The body of the instrument is fixed, with a leaning of 60'. Correct Refractive Index and Sugar Percentage can be read directly in the field. It consists of Abbe's Double Prisms with the Thermostat, Compensator, Telescope Mirror, Limb, Graduated Sector, Reading Magnifier and Radical Arm which carriers a Vernier. Abbe's Double prisms leaves a narrow space (about 0.1 mm) between the adjoining faces of the prisms. Compensator consists of the Amici Prisms which serve for reading the line of Ach. Separation.
The instrument is also ideal for practical demonstration and experiments in chemistry & Physics Laboratories of schools, college and Universities.

Note: Specifications are subject to change.

Technical Data

Measuring (Reflection index) : ND. 1.3000 to 1.7000
Measuring Accurace : ±0.001 by direct reading,
: ±0.0001 by estmation
Sugar %age in solutation : 0 to 95%(±0.5%)

388. Hand Refractometer-Order Code - TP1540

With accuracy 2%, Built in Amid prism and special light reflection system for colour elimination to obtain sharp critical boundary line and optimum contrast.

Order Code	Ranges
TP1540A	0 to 32%
TP1540B	28 to 62%
TP1540B	58 to 92%

389. Babinet Compensator-Order Code - TP1541

The instrument consists of two - round scales. One with index and the other with vernier. The first scale (index scale) is for tuning the analyser into the azymuth. The Second scale (Vernier Scale) is for measuring the degree of orientation of a wedge box.
The Wedge Box contains two wedges cut in mutually perpendicular direction of optics axis in quartz. The long wedge is movable by means of a micrometer drum, with the help of which accurate reading of the movement is taken. Micrometer screw minimum reading 0.001cm. (i.e. Least count)

390. Reading Telescope, Simple Form-
Order Code - TP1542

This is a good general purpose laboratory instrument. It employs an achromatic objective of 25 mm aperture and 17.5cm focal length. The telescope is mounted on a sturdy stand with 'A" steel C.P. rod, focus by smooth rack and pinion, 10X Ramsden eyepieces are used. Supplied with scale and scale holder. Suitable for Compound Pendulum experiment.
The sensitive focussing adjustment and wide range of working distance make this telescope a useful laboratory instrument.

391. Reading Telescope, College Pattern-
Order Code - TP1543

The superior quality achromatic objective has an aperture of 25mm and focal length of 17.5cm. It contains a fine quality 10 x Ramsden eyepiece and 90° Cross Line Graticule. The working distance is adjustable by rack and pinion and the lens has focus from One meter to

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infinity. The carriage of the telescope (with up and down motion, improved design, college pattern) tube is fitted with vertical movement by a fine micrometer screw. Focussing arrangement is given by rack and pinion. Complete on a heavy metallic stand having pillar of 18" length ofl5mm diameter. Both tubes of telescopes are of brass metal. Supplied with scale and scale holder with detailed working manual.

392. Advanced Reading Telescope-
Order Code - TP1544

Achromatic object glass focal length of 17.5cm and 25mm clear aperture. 10 x Ramsden eyepiece & focussing by rack and pinion (with up and down to and fro motion) Range from 1000mm to infinity. Carriage for telescope with adjustable ring to stop adrupt falling, fitted with adjustable screws for precise vertical and horizontal positioning. Scale and scale holder are provided with the stand. 25mm dia steel pillar, 450 mm long fitted on a heavy cast iron base with three Built on trust levelling screws.
Both tubes of the telescopes are of brass. Supplied with scale and scale holder and fitted with cross line graticule.

393. Optical Lever-Order Code - TP1545

For measuring the thickness of thin articles by optical method. Optical work 40mm dia plain mirror mounted on a metallic arc. The arc is mounted on a aluminium metallic base with two fixed legs and one levelling screw.

394. Spare Scale and scale Holder for Reading Telescope-Order Code - TP1546

Life time machine dived Perspex scale divided in millimeters to 25 - 0 - 25 cm horizontally and 0 -50 cm vertically. Provided with scale holder. Suitable for reading telescope of either TP1542 & TP1543.

395. Variable Rectangular Slit-
Order Code - TP1547

Adjustment for Resolving Power of Telescope. S.S adjustable slit with unilateral jaws movement through a micrometer head.

396. Spare 10x Ramsden Eyepiece-
Order Code - TP1548

Superior quality 10x Ramsden eyepiece. Suitable for all Tesca reading

397. Spare 10x Ramsden Eyepiece with cross line graticule-Order Code - TP1549

Superior quality 10x Ramsden eyepiece. with cross line graticule built inside along with Brass Holder and Eye Piece.

398. Metal Box to find resolving power-
Order Code - TP1550

It consist of metallic box with two narrow slit. The spacing between these two slits are very very small of few mm. The metal box is fitted with electrical fitting for ordinary bulb. When the bulb glows, the slits are illuminated and one can resolve two narrow slits through reading telescope.

399. Intermediate Travelling Microscope-
Order Code - TP1565

The travelling microscope consists of a cast iron base with machined vee-top surface and is fitted with 3 levelling screws, one being fixed. The microscope can travel horizontally 18cm and vertically 15cm with the help of slides. The slow motion knobs are provided for taking accurate readings. Vernier readings 0.01mm. The Microscope tube consists of an eyepiece 10X with 50mm or 75 mm objective, for holding objects horizontal stage, made of milky cenolite sheet provided on the base packed in beautiful wooden box.

400. Advanced Travelling Microscope (TM-11)-
Order Code - TP1566

It is an instrument for the measurement of small lengths e.g. the diameter of Newton's rings and narrow tubes etc. It consists of a compound Microscope mounted vertically or horizontally on a right metal frame so that it can be moved in a direction at right angles to its axis by means of a screw.
The displacement of microscope is measured with verniers which moves with the microscope along a scale fixed to the instrument.
Specifications :
Base: Properly painted heavy cast iron base, with two levelling screws. Top surface is machined for smooth sliding of a carriage having clamping screws for locking.
Horizontal Scale: The horizontal scale fitted in the bed of the machine divided on a lifetime stainless steel to a length of 0 to 20 cm in 0.5mm division.
Vertical Scale: The vertical scale fitted on the vertical pillar is also machine divided on a lifetime stainless steel to a length of 14cm graduated in 0.5mm division.
Verniers: Horizontal and vertical verniers, are provided. (Both are 50 divisions, such that 50 vernier scale division coincide with 49 main scale division).
Sliding Carriage: Sliding carriage slides along vertical metal bar of special design which is fitted on the horizontal carriage with slide on the top of the base. Fine motions screws are provided for fine adjustment both for horizontal and vertical movements.

Note: Specifications are subject to change.

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The Slow Motion Guide Bar: The horizontal fine motion range is especially increased to app. 3cm for convenience. In taking measurements within this range, in one operation of the slow motion screw, without recourse to sliding adjustment of the carriage (The movement has obvious advantage for fine measurements falling with this extended range.) Vertical fine motion range is approx. 2.5cm.
Microscopes: Microscopes fitted on a vertical carriage can be clamped in vertical or horizontal or vertical plane of the Microscope. Eye piece is of Ramsden type and fitted with fine cross line graticule. Objective achromatic with a working distance of 50mm or 75mm approximately, focusing can be done by rack & pinion.
Objective and Eye Piece: Consisting of 10 x Ramsden eye piece and 2" or 3" focal length objective from highest quality optical glass.
The instrument is finished in the latest polychromatic finish with chrome plated brass parts. Supplied in a superior quality wooden box along with dust cover & instruction manual.

401. Advanced Travelling Microscopes with Square Pillar & special drum type verniers-
Order Code - TP1567

Salient Features

- The vertical square brass pillar is mounted on a traversing carriage that moves along the horizontal stainless steel scale and has a swing-out magnifierfor readingthe vernier.
- Precision lapped vertical and horizontal carriages with fine movements, free from lateral shift or chattering. Travels horizontally 165mm, vertically 120mm
- Square brass pillar, in which inlaid Measured to 0.01mm.
- Cross line graticule is provided in the eyepiece.
- Special Feature : Horizontal & Vertical verniers, in both case, drum types vernier are provided for Direct Reading (Easy Reading).

402. Advanced Travelling Microscope (Deluxe Model, TC-13, XYZ Motion)-Order Code - TP1568

For certain measurements it is more convenient to provide sliding motion to the microscope tube across the stage, in addition to all other usual movements. (This microscope is very useful in Newton's ring experiment and graph reading etc.) A sliding carriage is fitted on the top carriage which moves at right angle to the horizontal motion by means of rack and pinion. This motion is also graduated in millimeters with a vernier reading of 0.1mm. Supplied in a superior quality wooden box.

403. Six Position Vernier Microscope (X & Z Motion)-Order Code - TP1570

Microscope : Mounted on a travelling carriage fitted with 10x Ramsden eye piece, cross-line graticule, Achromatic object 75mm working distance, focussing by rack & pinion.
Scale : Graduated in half millimeters on inlaid strip of nickel silver, vernier attached, Microscope traverse, 16.5 cm.
Base : Heavy cast iron, top nicely machined, travelling carriage slides on the top, which can be clamped in any position. Fine motion screw for finer adjustment. Complete with case.
Motion : Special design measure object in X as well as in Z direction.

404. Newton's Ring Apparatus-
Order Code - TP1571

Comprising a small wooden frame of size 5"x3"x3" with a matt blackened inside and provided with a glass plate 4" x 3" x 1/8 mm mounted at an angle of 45° to reflect the light downwards on to a Plano-convex lens of 50mm diameter having 100 cm focal length which rests on a plain glass plate 3" x 3" x 3/8 on the base of the box.

405. Newton's Ring Apparatus-
Order Code - TP1572

Interference fringes are clearly seen when the apparatus is viewed in sunlight, fluorescent light or monochromatic light. The glass plate and convex lens are held in a heavy aluminum frame having three adjusting screws. The frame is 9 cm in diameter and aperture is 5 cm.

406. Newton's Ring Microscope-
Order Code - TP1573

A standard Microscope unit having 30x magnification is provided with a rotatable cross line and the eye piece can be focused as per individual's requirement. The whole microscope tube unit can be raised or lowered and can be clamped in any desired position. The focusing of the microscope unit is done by rack and pinion arrangement.
The longitudinal movement of the microscope saddle for the purpose of the Rings is done by rotating the drum. The 26 mm movement can be read by scale and on the divided drum

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to 0.001 cm.
Newton's Ring set consisting of the optical flat glass and one Plano-convex Lens (50mm radius) arranged inside a metal case resting over the stage of the instrument which can be adjusted for the alignment of the measuring line. An adjustable reflector plate in the required direction is fitted on to the side of the set. The condenser lens is provided in front of the reflector.

407. Air Wedge-Order Code - TP1574

Consisting of two optically plain glass plate of same thickness and having same length and width, resting on a black wooden piece..

408.Co-ordinate Measuring Microscope CM-21- Order Code - TP1575

The Tesca Co-ordinate Measuring Microscope (CM-21) is characterised by carefully lapped micrometer screws and nuts provided with compensating spring device to eliminate back-lash and to minimise its development after prolonged use.
The linear carriage, carried on a rugged and aged cast frame, is provided with Micrometric motion through its entire 20cms. Range, read to 0.0001 cm directly on the Micrometric head. Micrometric heads are made of gun metal. A compensating spring device minimises development of back-lash after constant use over a long period. The machined opposing surfaces of the carriage and the frame and interground to give an oil smooth movement free from any lateral shift.
The cross carriage is carried on the linear slide and has a range of 10cms. Read directly to 0.0001 cm on the micrometer head.
The lifetime stainless scales are precision machine divided on the latest machines to give maximum accuracy. Micrometer drum heads are of large dia divided to read directly to 0.0001 cm.
The microscopetube is provided with rack and pinion focusing and is fitted with finest achromatic optics. The instrument is supplied with 3" objective and 10x Ramsden eyepiece with cross line graticule. Supplied in wooden box but W/O any accessories.

409. Accessories for Co-ordinate Measuring Microscope-Order Code - TP1576

Complete set of accessories consist of following items

Order Code	Description
TP1576A	Special Metal Box
TP1576B	One Glass Plate of 10" x 2"
TP1576C	Two sets of iron slotted wts. 50gms x 5
TP1576D	One set each of Newton ring lens set & optical flat
TP1576E	Wooden bench for placing co-ordinate microscope

410. Intermediate Spectrometer (6" S.S. Scale)- Order Code - TP1577

For Introductory class work

- A Basic measuring instrument for quantitative spectroscopy experiments, this instrument is mounted on a stable cast iron base with attached collimator and a rotating telescope platform and graduated circle.
- A 2.4cm. Diameter achromatic optical system with a 10x Ramsden eyepiece & cross line graticule.
- An 8 cm. Diameter prism/grating Table, fully adjustable with prism &grating
- holders and engraved ring pattern. Protected Circle15.0 cm with S.S. Scale.
- Vernier reading 1 minute. Supplied in a wooden case with 2" Brass spirit level.

411. Advanced Spectrometer (5" or 6" S.S. Scale)-Order Code - TP1578

Our Advance Student Spectrometer is a solidly - constructed instrument, thoughtfully provided with features and accessories that assist students in making precise measurement of spectral lines or prism angle.
High Quality, large aperture optics produce sharp spectral images, while precision machining allows for precise rotation and accurate measurement.
Resolution to 1 minute of an Arc.
The 125mm or 150mm diameter, precision engraved degree plate is complemented by 2 precision engraved verniers, one on each side of instrument for convenient

Order Code	Size
TP1578A	5"
TP1578B	6"

Collimator:
Focal Length :178 mm
Aperture : 25 mm (adjustable by pinion & rack), adjustable rectangular slit.

Note: Specifications are subject to change.

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Telescope:
Focal Length :178 mm,
Aperture : 25 mm (adjustable by pinion & rack), fitted with 10x Ramsden eyepiece with cross line graticule.

Eyepiece:
Ramsden x10 fitted with cross wire.

Fixation Stand :
Located on the plate, it enables you to precisely position the prism & diffraction grating. Supplied in wooden case. Reading minute : 1min. or 30 sec.

412.Advanced Spectrometer Deluxe Type 6"- Order Code - TP1585

Specifications are same as per TP1578, only fine adjustment to the telescope and collimator tubes are provided laterally as well as vertically. This system is manufactured in 6"spectrometers only and provided with stainless steel scale.
- Size 6" (150mm).
- Vernier reading 1 minute.
- Collimator fitted with 6mm long circular slit

413. Advanced Spectrometer (7")- Order Code - TP1587

The specification is similar to TP1578. Tesca 7" spectrometer is designed to meet the demands of a standard instrument for degree colleges and in technical labs.
Lifetime 178mm stainless steel scale and verniers, calibrated on the latest dividing machines to give maximum accuracy.
In our 7" spectrometer we provide special circular slit to the collimator. The slit of the collimator is from close grained stainless steel and slit jaws are finished and ground with the utmost care and optically tested for the accuracy of the edges. The two jaws are operated by a knurled ring and moves symmetrically from the centre and remain parallel at all openings. Supplied in a superior quality wooden box. Vernier reading 1 minute. We are also providing up & down motion to collimator as well as to telescope.

414. Advanced Spectrometer Deluxe Type 7"- Order Code - TP1588

Same as TP1587 but with an improvement that the telescope and collimator are held in support rigidly and in perfect alignment. Vertical adjusting screws are provided to both the telescope and collimator. Clamping devices are provided to lock the telescope and collimator after adjustment i.e. fine adjustment to the telescope & collimator tubes are provided laterally as well as vertically.

415. Spectrometers with Fine Vernier Reading- Order Code - TP1589

All types of spectrometers described under TP1578, TP1585, TP1587 & TP1588 are supplied with fine vernier readings for more accurate results.

Order Code	Size
TP1589A	For vernier reading to 20 sec. add
TP1589B	For vernier reading to 30 sec. add
TP1589C	For micrometer scale add extra

416. High Grade Research Spectrometer 10" Deluxe Type-Order Code - TP1592

- Specially designed to meet the demands for a precision instrument for use in the Universities and Technical Laboratories.
- A versatile spectrometer for moderate precision
- Well suited for research labs.
- The cone bearings are of selected material and the upper and lower parts of the arms are turned and ground in one operation giving the most accurate alignment. Clamps for telescope and prism table are designed so that no strain cones on the cone bearings from clamping, thus avoiding any disturbance of the axial alignment.
- Scale 10" from lifetime brass scale, divided on the latest dividing machines. Accuracy of calibration within ±0.01%. Adjustment is provided to verniers for very fine opposition to the scale. The slit jaws are from stainless steel finely ground and the jaw movement is free of any spring action ensuring perfect parallelism at all openings.
- Finest achromatic objectives are used. Large aperture (32mm)
- Fine adjustment to the telescope and collimator tubes are provided laterally as well as vertically.
- Clamping devices are provided to lock the telescope and collimator after adjustment.
- The instrument is finished in a pleasing and practical finish & collimator fitted with special circular slit.
- 10" with Brass Scale with vernier reading 10 seconds.

417. Ultrasonic Diffraction Unit Superior Model- Order Code - TP1597

Consists of the following instruments

TP1597A : High resolution Spectrometer of 10" Brass scale as per Cat. No. 1592 with vernier reading 10 seconds. Used for

Note: Specifications are subject to change.

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Ultrasonic Diffraction apparatus.

TP1597B : R.F. Oscillator of higher frequency (1MHz to 8MHz) Digital type.
TP1597C : Liquid Tank
TP1597D : Crystal with holder
TP1597E : White Kerosene Oil

418.Ultrasonic Interferometer-
Order Code - TP1598

(To measure Ultrasonic Velocity in Liquids & Solids)
It is simple in design, rugged and gives very accurate and reproducibly results.
Experiments may be performed over a wide range of temperature from +30°C to +80°C on all liquids except those which reacts with the plating of the cell and crystal.
There is no danger of any change, such as depolymerisation, due to ultrasonic effect since a very small ultrasonic energy is required.

TP1598A : Frequency 2MHz, Accuracy + 0.3%for liquids
TP1598B : Single Frequency for solids
TP1598C : For Liquids & Solids single frequency

419. Metallic Mount for Sodium Lamp-
Order Code - TP1600

This aluminium metal box is round in shape & mounted horizontally on a sturdy metal base. Box is provided with one slit fitted with iris diaphragm to control the intensity of light. Bulb holders & lead of finest quality are fitted in box to give you trouble free working for long life. This mount is suitable for 35W as well as 55W Lamp. Supplied without bulb &transformer.

420. Sodium Vapour Lamp Transformer-
Order Code - TP1602

High grade laminations are used to avoid losses. The box is made from a thick metallic sheet. An Anchor make piano type switch is provided for on/off operation and a1.6m, 3 core flying lead is provided for main connection and output is via a special Anchor make 3 Pin socket is provided to avoid shock due to the leakage of the current. This transformer is an Auto Leak type, giving a starting voltage 440 V which automatically reduces when the lamp has struck.

Order Code	Watts
TP1602A	35 Watts
TP1602B	55 Watts extra

Note: Specifications are subject to change.

421. Sodium Vapour Lamp-Order Code - TP1603

Either Philips or Osram make Sodium Vapour Lamp is supplied.
This low pressure Sodium Vapour lamp works better than 99% of the visible output, concentrated in 5889 & 5895°A Spectra lines.

Order Code	Watts
TP1603A	35W Sodium Vapour Lamp
TP1603B	55W Sodium Vapour Lamp

422. Wooden Box for Sodium Vapour Lamp-
Order Code - TP1604

The box is rectangular in shape and provided with slits on three sides equally spaced to enable three experiments to be performed simultaneously using one light source. Each slit is provided with a cover so that it can be closed when not required. Bulb holders of finest quality are fitted in wooden box with special cord.

Order Code	Watts
TP1604A	Wooden box for 35W S.V. Lamp
TP1604B	wooden box for 55W S.V. Lamp

423. Metal Stand for Mercury Lamp-
Order Code - TP1606

The Iron sheet box is round in shape & mounted vertically on a heavy cast metal stand. Only one slit is provided. Bulb holders & lead of finest quality are fitted in box to give you trouble free working for long life. Suitable for 80W lamp. Supplied without lamp &choke.

424. Mercury Vapour Lamp Transformer-
Order Code - TP1607

An 80 Watt choke of excellent quality is clamped on a heavy steel cabinet. An Anchor make piano type switch ad 5-pin socket is provided for on/off and output respectively.

425. Mercury Vapour Lamp-Order Code - TP1608

Philips make Mercury Vapour Lamp is supplied.
With a rated output of 80W, this source provides sufficient intensity for almost any experiment.
With a good light source, student can investigate energy
levels using a spectrometers.

426. Wooden Box for Mercury Vapour Lamp-
Order Code - TP1609

Specifications are same as per TP1604 but its size is slightly smaller than the size of wooden box for sodium vapour lamp. Suitable for 80W lamp.

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427. Spectral Tube Power Supply and Mount- Order Code - TP1611

This system is easy-to-use and inexpensive, with a variety of safety features that make it suitable for beginning labs. Mount any of the 8 different spectral tubes into the power supply and turn it on. The 26 cm long tubes are capillary-thin over the middle 10 cm, providing sharp, bright spectra.

Features

Student Safety: The tubes mount from the front of the supply and snap into moulded sockets that fully enclose the conductive ends. The all-metal case is electrically grounded.

Spectral Tube Safety: A current limiting transformer protects the tubes. A protective shield also helps safeguard the tubes, while blocking unwanted ambient light for clear viewing.

Power Requirements: 220 VAC, 50 Hz.

428. Spectral Tubes- Order Code - TP1612

Order Code	Tubes
TP1612A	Argon
TP1612B	Krypton
TP1612C	Carbon Dioxide
TP1612D	Mercury
TP1612E	Helium
TP1612F	Neon
TP1612G	Hydrogen
TP1612H	Water Vapor

429. LED Light Source- Order Code - TP1613

We have introduced new source of light. LED light source (in red colour). LED is housed in a special Aluminium case with 2 set of lenses. LED operates on a specially designed IC regulated power supply.

430. Neon Tube- Order Code - TP1615

Special Neon Tube which is different in shape from neon tube listed in TP1612. Designed for e/m by Zeeman effect.

431. EHT Generator- Order Code - TP1617

Designed for above Neon tube (TP1612F) only.

432. Hg Calibration Lamp- Order Code - TP1618

Useful for e/m by Zeeman effect with power supply.

433. Hydrogen Lamp- Order Code - TP1619

With power supply 410.2, 434, 486.1, 656.3mm Calibrated lines.

Note: Specifications are subject to change.

434. Compact Light Source- Order Code - TP1620

A very efficient 12 V 100W quartz iodine lamp mounted in a well ventilated metal housing. Apertures 19 mm diameter are provided on two adjacent sides so that the lamp may be used either as an intense horizontal 'line' source, or end-on as a powerful 'point' source.

The aperture not in use may be closed by a pivoted shutter equipped with a lock screw.

The lamp house is mounted on a rod 160mm longx10mm diameter for supporting from an ordinary laboratory stand.

Dimensions of lamp house 78x78x153mm.

Supplied complete with 1mm of twin cable.

435. Polarizer and Analyzer (Polaroid)- Order Code - TP1625

This apparatus consists of two identical units, each provided with Polaroid disc mounted in a rotatable mount, with aperture of 25mm. Both rotatable mounts have a lever to add rotation and a pointer which traverses a 75mm diameter brass silvered scale divided into 360°x1. The size is universal and can be fitted to any size of collimator and telescope.

To fit over the object end of telescope and colimator.

Polaroid Specifications

Thickness : 0.1 mm
Type : Nitrocellulose Polymer
Aperture : 25mm
Least Count : 1°

436. Single Slit for Diffraction Experiment- Order Code - TP1626

All metallic diffraction grating clamp type and is fitted on prism table of spectrometer for interference of light experiment. Supplied with or without rod.

437.Double Slit for Diffraction Experiment- Order Code - TP1627

All metallic diffraction grating clamp type and is fitted with two micrometers screw slides forming a double slit with fine edges in the centre of the vertical clamp holding device. Very superior quality. Supplied with or without rod.

438.Gauss Eye Piece- Order Code - TP1628

It is Ramsden eye piece with a plain glass plate held between lens and eye lens at an angle of 45°. This item replaces the normal spectrometer eye piece when aligning the instrument.

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439. Hollow Glass Prism-Order Code - TP1629

Made of ordinary glass plates properly cemented with optical cement.

Order Code	Size
TP1629A	38X38X38mm
TP1629B	50X50X50mm

440. Diffraction Grating-Order Code - TP1630

Hilger & Watt type size 38x50 mm. Approximately 15000 lines per inch for use in the standard holder in the spectrometer table.

441. Diffraction Grating (Imported)-
Order Code - TP1631

Chineese make. Approx. 15000 lines/inch

442. Direct Vision Spectroscope with Wave-Length Scale-Order Code - TP1632

A compact visible spectrometer which allows the direct reading of spectral length and employs a prism for dispersion. It is also useful for flame test of basic radicals (sodium, strontium, potassium, copper etc.) There is a single eyepiece and independent focussing tube for the graticule, which carries an index at 590mm, with D' marked right below the scale, (corresponding to the wave length of sodium light) can be calibrated to a known light source by adjustment of knurled screw. The amount of light admitted to the spectroscope can be regulated by a variable slit, adjusted by a knurled ring round the rating tube.

443. Spirit Level Brass-Order Code - TP1633

Order Code	Range
TP1633A	2" (50mm)
TP1633B	3" (75mm)
TP1633C	4" (100mm)

Various Type of Spectrometer Prisms for TP1635, TP1636 & TP1637

Order Code - TP1635 to TP1637

444. Prisms, Optically worked for Spectrometers, equilateral two face polished, 25x25mm height-
Order Code - TP1635

Order Code	Nature of Glass	R. I. Approx
TP1635A	Borosilicate Crown Glass	1.51
TP1635B	Dense Flint Glass	1.62
TP1635C	Extra Dense Flint Glass	1.65
TP1635D	Double Extra Dense Flint	1.71-1.74

445. Prisms, Optically worked for Spectrometers, equilateral two face polished, 32x32mm height-
Order Code - TP1636

Order Code	Nature of Glass	R. I. Approx
TP1636A	Borosilicate Crown Glass	1.51
TP1636B	Dense Flint Glass	1.62
TP1636C	Extra Dense Flint Glass	1.65
TP1636D	Double Extra Dense Flint	1.71-1.74

446. Prisms, Optically worked for Spectrometers, equilateral two face polished, 38x38mm height-
Order Code - TP1637

Order Code	Nature of Glass	R. I. Approx
TP1637A	Borosilicate Crown Glass	1.51
TP1637B	Dense Flint Glass	1.62
TP1637C	Extra Dense Flint Glass	1.65
TP1637D	Double Extra Dense Flint	1.71-1.74

447. Calite/ Quartz Prism Equilateral-
Order Code - TP1638

With optic axis parallel to refracting edge

Order Code	Size
TP1638A	12.5 X 12.5mm
TP1638B	18 X 18mm
TP1638C	25 X 25mm

448. Narrow angle Prism-Order Code - TP1639

Narrow Angle Prism optically worked made with white glass 32x32mm size.

Order Code	Angles
TP1639A	5 x 87.5 X 87.5, 10 X 85 X 85, 15 X 82.5 X 82.5.20 X 80 X 80
TP1639B	25 X 77.5 X 77.5, 30 X 75 X 75, 40 X 70 X 70, 30 X 60 X 90

Note: Specifications are subject to change.

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449. Spare 10x Ramsden Eyepiece-
Order Code - TP1640
Superior quality 10x Ramsden eyepiece, suitable for all Tesca reading telescopes, vernier microscopes and spectrometers.

450. Spare 10x Ramsden Eyepiece-
Order Code - TP1641
Superior quality 10x Ramsden eyepiece, with crossline graticule fitted inside the eyepiece.

451. Ramsden Eyepiece 10x with Holder-
Order Code - TP1642
Complete with Cross-wire graticule along with brass holder and eyepiece.

452. Grating Holder-
Order Code - TP1643
Spare Grating Holder suitable for all types of Tesca Spectrometer listed under TP1578, TP1585, TP1587, TP1588, TP1592. All brass black painted.

453. Prism Holder-Order Code - TP1644
Spare Prism Holder suitable for all types of Tesca Spectrometer listed under TP1578, TP1585, TP1587, TP1588, TP1592. All brass black painted.

454. Laser Spectrometer-
Order Code - TP1644.1

This is a advanced deluxe spectrometer of size 7" similar to TP1588. In said spectrometer, we have made arrangement for Diode laser & detector instead of telescope & collimator.
Diode laser is held in support rigidly & in perfect alinement atthe place of collimator. similarly output detector is held in support rigidly & in perfect alinement at the place of telescope. Vertical adjusting screws to aline the diode laser & detector. Supply with grating holder, grating, diode laser with power supply and output detector with digital meter.

455. High Grade Advance Spectrometer, 5"-
Order Code - TP1645

High Performance Instrument
Scale: 125 mm dia. divided 0 to 3600 x 0.5 degree readable with vernier to 1 minute of arc.
Collimator : Achromatic objective lens 175mm FL, clear aperture of 32mm. Rack and pinion focussing mechanism. Adjustable slit 6mm long. Mounted on a fixed pillar.
Telescope : Achromatic: Objective lens 175mm FL, clear aperture of 32mm. Rack and pinion focussing mechanism. Mounted on a movable arm with slow and fine motion.
Ramsden
Eyepiece : 15X magnification with
cross line glass graticule—
and in and outfocus adjustment.
Prism Table : 85mm diameter table is provided with three
leveling screws and is marked with lines to assist placement of prism.

Standard Accessories :1 Dense flint glass equilateral prism 32x32mm, 1 prism clamp for prisms up to 38mm high, 1 Diffraction grating holder, 1 Tommy bar for axis adjustment, 1 Wooden case.

456. High Grade Advance Spectrometer 7"-
Order Code - TP1646

- Suitable for more advanced work
- Heavy cast aluminium alloy structure
- Independent telescope & table movement
- Double ended verniers reading to 30 seconds of arc
- CNC turned spindle set and other components.

Specification
Scale:The 177 mm diameter circle is fixed and both the telescope and table are fitted with independent double ended verniers reading to 30 seconds of arc and have independent fine and coarse movements. While coarse adjustment is done by releasing the clamping screw and moving by hand, fine adjustment is made by engaging the clamping screw and moving thetangent screw.
Collimator:Mounted on a fixed pillar. At one end isfitted 32mm dia clear aperture, 175mm focus achromatic objective and at the other end a 6mm long unilaterally adjustable slit.
Telescope:Mounted on a movable pillar. At one end is fitted 32mm dia clear aperture 175mm focus achromatic objective and at the other end a 15X Ramsden eyepiece and a glass crossline graticule.
Both telescope and collimator have rack and pinion systems for focusing the objectives and means for levelling their optical axes and squaring them to the axis of rotation.
Prism Table: The 85mm diameter table is marked with lines to
assist positioning of the prism with respect to levelling screws and has interchangeable clamping units for the prism and diffraction grating.
Standard Accessories: 1 Dense flint glass prism, 1 Prism clamp, 1 Diffraction grating holder, 1 Magnifier glass, 1 Tommy bar for adjustment of optical axes, 1 Dust cove, 1 Wooden case.

Note: Specifications are subject to change.

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457. He-Ne Laser (Random/Unpolarised) Red-
Order Code - TP1650

Ideally suited for simple, clear & easily comprehensive assemblies for interference, diffraction and holography experiments. The laser is constructed is such a way that is safe to use under any circumstances. Laser tubes alongwith SMPS power supply are housed in thick powdered coated aluminium Box. From the hole, the laser beam comes out.

Operating Wavelength : 632.8nm (RED)
Beam Diameter : 0.8mm
Beam Divergence : < lmrad
Polarisation : random (unpolarised)
Mode : TEMoo
Output Power Stability : ±2.5%
Power Input : 220V AC± 10%, 50Hz
Min. Operating Life time: 15,000Hrs.
Shelf Life : 10 years

Order Code	Output power	Colour of Light	Polarisation
TP1650A	1mW	Red	Random
TP1650B	2mW	Red	Random
TP1650C	5mW	Red	Random
TP1650D	10mW	Red	Random

458. He-Ne Laser (Polarised) Red-
Order Code - TP1651

Same as TP1650 but with Linear Polarisation (polarised laser)

Order Code	Output power	Colour of Light	Polarisation
TP1651A	1mW	Red	Polarised
TP1651B	2mW	Red	Polarised
TP1651C	5mW	Red	Polarised
TP1651D	10mW	Red	Polarised

459. He-Ne Laser (Random/Unpolarised) Green-
Order Code - TP1652

Same as TP1650 but with Green Colour of light is coming out from the hole

Order Code	Output power	Colour of Light	Polarisation
TP1652A	1mW	Green	Unpolarised
TP1652B	2mW	Green	Unpolarised
TP1652C	5mW	Green	Unpolarised
TP1652D	10mW	Green	Unpolarised

Wavelength of Green Laser : 543.5nm

460. Mount for He-Ne Laser-
Order Code - TP1654

This rectangular stand (all metallic) is suitable for all types of He-Ne Laser described on the TP1650, TP1651 & TP1652. This upper black stand can be used on Optical bench as well as on the heavy base. This stand is used to align the He-Ne Lasers with other Optical components. It lets you remove & replace laser system quickly with confidence that it will still be centered exactly when you want it. Supplied with heavy base.
(Choice is yours, you want to use it either on Optical bench or heavy base)

461. Optical Bench for He-Ne Laser-
Order Code - TP1656

High quality precision bench suitable for more advanced work. This all Aluminium extruded from a hard aluminium alloy. These aluminium triangular optical bench are ideal for educational &general laboratory application.

Order Code	Size
TP1656A	0.5 meter long
TP1656B	1 meter long
TP1656C	1.5 meter long

462. Lens Mount-Order Code - TP1657

Lens is held in position by threaded rings inside a threaded bore of the device. Nylon washers which are provided with the mount can be used for the protection of the optics. Supplied with rod. Specifications

Construction : Aluminium alloy.
Finished : Black anodized.

Order Code	Optic Dia (Inch/mm)
TP1657A	1" (25mm)
TP1657B	2" (50mm)
TP1657C	3" (75mm)

1663. Screen-Order Code - TP1658

It is a thin aluminium plate with rod. Size 6"x 4".

464. Pin Holes-Order Code - TP1659

Mounted in circular ring with rod. Indian make.

Order Code	Size
TP1659A	50-100 Microns
TP1659B	100-250 Microns
TP1659C	250-500 Microns
TP1659D	Upto 1000 Microns

Please Note : Imported Pin Holes are also available from 1 to 1000 microns. Please ask for quotation.

465. Single Slit-Order Code - TP1660

All metallic supplied with rod, used for diffraction of laser light through Single slit.

466. Double Slit-Order Code - TP1661

All metallic supplied with rod, used for diffraction of laser light through Double slit.

Note: Specifications are subject to change.

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467. Grating Holder-Order Code - TP1662
Spare Grating Holder suitable for all types of grating used for laser experiments. Supplied with rod.

468. Laser Grating-Order Code - TP1663
Hilger & Watt type size 38x50mm approx. 100 or 300 or 500 lines per inch. Indian make.

469. Three-in-one Laser Grating-Order Code - TP1664


For demonstrating the principles of the diffraction grating and the way in which its properties are dependent upon the no. of lines per unit length. The gratings are 1001ines per inch, 300 lines per inch or 500 lines per inch respectively. All are mounted in one frame.

470. Different types of Grating & Slits for Laser Experiments-Order Code - TP1665

For investigation into effect of spacing & width of the slits on the interference pattern produced by single & multiple slits. Photographically reproduced & framed in 50x50mm plastic mount. Set of 13 slides

471. Laser Power Meter-Order Code - TP1666

Power measurement 200mW to 20mW through 3% digit laser power meter. Special quality photo detector (Semi conductor sensor) is provided. This photo detector is to be connected to the laser power meter. Battery operated as well as AC mains operated.

472. Diode Lasers (Green Colour) with Power Supply-Order Code - TP1670

In Diode Laser, the active medium is a semiconductor similar to that of a light-emitting diode. The most common and practical type of Laser diode is formed from a P-N Junction and powered by injected electric current.
Laser diode module consists of Laser diode fitted with a collimating lens in a metallic casing along with power supply. The laser module has 25mm diameter and 50mm length so that it can be held conveniently in kinematic or rigid mount. Collimating lens is aspheric and is anti-refelection coated. Fine tuned power supply assures a smooth switch on and hence long life for the diode.
Various models are available depending on the output power and wavelength.

Note: Specifications are subject to change.

Specification
Wavelength	:	532nm
Optical Power	:	3mW, 5mW, 10mWa)3mW
Operating Voltage	:	3Vb)5mW
Operating Current	:	<250mAc)10mW
Operating Temperature	:	15°C - 35°C
Storage Temperature	:	0°C -50°C
Spot Runs Range	:	500M
Spot Size	:	<6.5mm
Lifetime	:	>3000 hrs

Order Code	Optical Power	Operating Voltage
TP1670A	3mW	2.2-2.6V
TP1670B	5mW	2.2-2.6V
TP1670C	10mW	2.2-2.6V

473. Red Diode Laser with Power Supply-Order Code - TP1671

A compact, fully solid state instrument produces an intense beam of light at a wavelength 635-670nm for red colour. This semiconductor diode laser is mounted in a simple mount. Supplied completely with power supply. Operating voltage3V. Optical power 3-5mW.

474. Detector with Digital Meter-Order Code - TP1672

This detector is used to record the contrast variation at the fringe pattern.
Detector: Special Photo Diode usefor various laser experiments
In detector output measurement unit we are providing digital volt meter of three ranges 200 mV, 2V & 20V.

475. Basic Diode Laser Kit, Model BDL-75-Order Code - TP1675
It's a new product from Tesca, very easy to use and simple, most suitable for undergraduate course. The kit briefly covers the fundamentals of Light principle like diffraction, refraction, interference etc.
The kit is very handy to use, one can demonstrate all experiments in a Class room. Consist of Laser diode along other Optical Components, performed so many experiments given below:-

TP1675I : Laser light diffraction through transmission grating and calculate its grating pitch.


Order Code TP1675I

TP1675II : With the help of 13 gratings you can observe Laser Light diffraction through Single Slit, double Slit, & interference of Laser Light when it passes through wire

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mesh, observation of airy's pattern when passes through pin hole.

Order Code TP1675II

TP1675III : Observe fringe pattern, when laser light passes through Fresenel Bi-Prism.

Order Code TP1675III

TP1675IV : Stainless meter scale & CD along with special holder is also supplied, so that one can observe interference pattern when S.S Meter Scale & CD act as a reflection grating.

TP1675V : Observe fringe pattern, when laser light passes through right angled prism.

Order Code TP1675V

TP1675VI : Observe fringe pattern, when laser light passes through slab.

Order Code TP1675VI

We have shown some of common experiment in basic Diode Laser kits. It covers all the experiment listed above. it consist of aluminum extruded optical triangular type bench of one meter long of TP1656 with riders &sliders, grating holder, laser grating, grating set of 13 to observe 13 different type of fringes, microscopic plate, Fresnel Bi-prism, prism table for spectrometer, right angle prism, slab, stainless steel scale, CD & special arrangement to hold stainless steel scale/CD, pin hole etc.

All components used are of research quality and made from laboratory grade material for long life.

476. Standard Breadboard-Honeycomb-

Order Code - TP1678

Tesca is now offering high quality Honeycomb Breadboards in several standard sizes. Distance of the first raw of mounting holes from the edge is 37.5mm. Nylon cups are fixed under each tapped hole for the protection of the core.

Specifications

Top	:	2mm thick magnetic SS.
Bottom Skin	:	3mm Thick epoxy coated Aluminium
core	:	Honeycomb core made of 0.25 mm thick ferromagnetic steel sheet
Core cell size	:	6 sq. cm. (Approx)
Flatness of the top	:	+ 0.1mm over 300mmx 300mm area (non-cumulative error)
Mounting holes	:	Formed M6 tapped holes on top on 25mm grid.
Bonding	:	By custom semi-solid epoxy
Side walls	:	Compressed wooden particle boards to dampen acoustic vibrations.
Side wall finish	:	Black matfinish by mica layer.

Order Code	Size	Height (cm)
TP1678A	60X30cm (24"X12")	6
TP1678B	60X60cm (24"X24")	6
TP1678C	90X30cm (36"X12")	6
TP1678D	90X60cm (36"X24")	10
TP1678E	90X90cm (36"X36")	10
TP1678F	120X90cm (48"X36")	10
TP1678G	120X120cm (48"X48")	10

477. Analog Fiber Optic Transmission Demonstrator-Order Code - TP1679

Technical Specifications:

- In built IC Based DC regulated power supply +6VDC & 3VDC
- Pre amplifier stages consists of MIC (Microphone), Photodetector, Transistors(548) and biasing network of resistance and Capacitors.
- Power amplifier stages consists of impedence matching transformers (Driver Transformers), Transistors (8550) & biasing network of Resistance and Capacitors.
- Output section having LED's and speaker, Fiber optic cable for transmission of Signal
- Circuit diagram printed on Glass Expoxy PCB &different combination of Resistance &test points are brought out on front panel
- Glass Expoxy PCB used as front panel of 300mmx200mm & mounted on light
- Power requirement : 220VAC+ 10%, 50Hz • Weight : 3.0 kg Apprx. • Dimensions (mm): 330(L)x225(b)x 75(H) It consists of following items:-
- Optical Fiber Cable 2 nos(lmtr & 10mtrs Long with Connectors), MIC & speaker, Wooden assembly to hold Fiber cable, Graph paper, Power Chord, Patch Chords & Instructional manual

Note: Specifications are subject to change.

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478. Bending loss apparatus Model-BL-LK-
Order Code - TP1681

The bending loss apparatus is used to find the loss occurred in fiber when it is bent at different circular dimensions. Four different diameters i.e 6Smm,5Smm,45mm and 35mm are used to observe the losses. There are fiber holders to fix the fiber at the required position.

479. XYZ Translation stage Model TS-D-LK-
Order Code - TP1682

The purpose of this mount is to scan a distance of 25mm in X & Y stages are a photo detector. X & Y stages are micrometer driven while Z stage is lead screw adjusted. The stage is made in a such a way that pinhole photo detector as well as a way that pinhole photo detector as well as fiber chuck cab be fixed to Z stage for fine adjustment and scanning.

480. Laser Mount Model LM-LK-
Order Code - TP1683

Diode Laser is fixed in this mount using a grub screw. The mount is rotatable & the degree to which it is rotated can be measured. The height can be adjusted. There is a tilling arrangement in the mount to adjust and align the laser further.

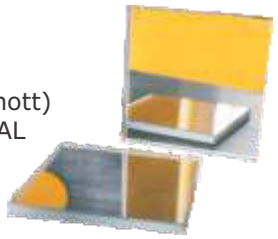
481. Beam Splitter Mount Model BM-LK-
Order Code - TP1684

This is used to hold the beam splitter. For most of the experiments, this mount has to be kept at an angle of 45 degree.

482. Beam splitter-Order Code - TP1685

Specifications:

Size	: 50x5Omm
Thickness	: 4 mm
Substrate	: N-Bk7 (schott)
Coating material	: Protected AL
Back coating	: SLAR
Ratio	: 50:50
Surface Flatness	: X/4



483. Monochromator-Order Code - TP1690

The monochromator consists of a diffraction grating (dispersing element), slits, and spherical mirrors. The light source emits a broad spectrum of radiation as represented by the multi-colored line from the lamp to the grating. The diffraction grating disperses light by diffraction different wavelength at different angles. The grating is positioned so that required wavelength of light passes through the exit slit and all other color are blocked. The required wavelength which should pass through the exit slit is selected by rotating the angle of the grating. The mirror and slit positions remain fixed.

Stepper motor along with micro processor controlled electronics is used to drive the grating. The motorized movement of grating helps to achieve fine resolution compared to manual control. Moreover selection of wavelength is much easier in automated system. Monochromator with computer interface are also available.

Design	:	multi port Czerny-Turner Mo
Grating type	:	plane Holographic Reflectior
Grating Size	:	50X50
Ruling/mm	:	1200
Focal Length of Collimating Mirror	:	259mm
Focal Length of Focusing Mirror	:	259mm
Size of the Mirror	:	70mm
Main Mirror	:	Spherical
Angle between Incident and Diffracted Beam	:	20°
Dispersion	:	2.3nm/mm
Max. Wave length	:	1300nm
Bandpass	:	0.16nmP5Omm slit width
Resolution	:	0.2nm

Monochromator are available with various port configuration.

Order Code	Description
TP1690A	Single I/P & O/P Port
TP1690B	Double I/P & O/P Port

484. Laser Raman Spectrometer-
Order Code - TP1695

Laser Raman Spectrometer is a useful instrument for the identification of wide range of substances in physic and chemistry laboratories. The procedure used in this case involves illuminating a sample with DPSS green laser and using a monochromator to examine the light scattered by the sample. It is a straight forward, non destructive technique requiring no sample preparation. This experimental spectrometer is specifically designed for studying Raman emissions in Ca, when high power laser beam is passed through the solution. The apparatus suites well for post graduate level laboratory experiments in physics. The set up consists of 40mW DPSS, 540 nm laser, collection optics, sample mounts, stages, monochromator and detector. The monochromator is PC controlled and motorized. The

Note: Specifications are subject to change.

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experiment is conducted by scanning the emission spectrum by monochromator and recording the intensity of each interested wavelength from the detector. The readings are plotted on a graph.

Key features include:-

Computer controlled, user friendly interface, capable of automatic recording of Raman spectra.
Monochromator system with high resolution and low stray light.
Diode pumped solid state laser is used as light source.
When a light beam emitted by a laser device passes trough external optic path and irradiates the sample, the scattered light enters the monochromator. When the grating in the monochromator is rotated, light signal passes through a slit and falls on a highly sensitive detector (PMT). The detector output is send to computer for further processing, while a spectrum curve is being displayed on monitor.

Specification

Wavelength Range	: 200-800nm (Monochromator)
Wavelength Accuracy	: ≤ 0.4nm
Wavelength Repeatability	: ≤ 0.2nm
Stray Light	: $\leq 10^{-3}$
Reciprocal of Linear Dispersion	: 2.7mm
Half-Width of Spectral line	: ≤ 0.2nm @ 586nm

MONOCHROMATOR

Relative Aperture Ratio	: D/F1/5.5
Optical Grating	: 1200 I/mm
Slit Width	: 0-2mm continuously adjustable.

485. Michelson Interferometer based on Model developed by Hi!ger & Watts (London)-

Order Code - TP1712

It is divided into two parts.

Supplied with Telescope of short Focal length to observe the fringes but supplied without any light source.

(1) Mechanical **(2) Optical**

Mechanical part consists of following items

- **Bed :** Bed is optically ground, Length 250mm
- **Lead Screw :** Lead screw is optically ground with its nut, length 200 mm Pitch 1 mm
- **Optical Mirror Mount :** Kinematic mirror mounts are to hold the mirror which be aligned in to orthogonal direction by means of screws provided at the rare of the mount.

Note: Specifications are subject to change.

- Optical Parts consist of the following items:
- Beam Splitter
- Compensating plate
  Size 45mmx 32mm x 8mm
  50mmx 35mm x 8mm

Beam splitter and compensating plates are covered from the same optically worked glass plate

Surface flatness	: l /10 (both faces)
Parallelism	: 5 arc sec.
Mirrors	: 2 nos.
Focal Length	: 25mm thickness 10mm
Front surface Coated	: Coating material : Al with SiO_2
L.C. of Instrument	: 10^{-4}mm

486. Sodium Light complete unit-

Order Code - TP1715

Generally this light source is used for above Michelson Interferometer. Supplied with sodium vapour lamp transformer 35 W, sodium vapour lamp 35W & heavy metal box for sodium vapour lamp with electrical I fitting.

487. Helium-Neon Laser with stand -

Order Code - TP1716

Imported Laser tubes along with SMPS Power Supply are housed in thick powdered coated aluminium box. From the hole the laser beam comes out. Supplied with rectangular holder & heavy base.

Order Code	Description
TP1716A	1mW (Random
TP1716B	2mW (Random

488. Diode Laser with Power Supply (Red colour)-

Order Code - TP1717

A compact, fully solid state instrument produces an intense beam of light at a wavelength 635-670nm for red colour. This semiconductor diode laser is mounted in a simple mount. Supplied completely with power supply.

Output power 3 - 5 mW

489. Michelson Interferometer (Bread Board Model) - Coherent Length of the Laser-

Order Code - TP1720

Diode laser source typically emits two or three frequencies. If the beam consists of two frequencies, each of these frequency makes an independent interference pattern. In the event that the two mirrors are precisely equal in distance from the beam splitter, the fringe pattern will be the same regardless of the frequency. In the path lengths are not equal, there will be a case of anti-

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coincidence where the bright line from one set of fringes in located at the dark line of the other. This results in complete disappearance or low contrast in the observed pattern.

List of instruments supplied in this kit

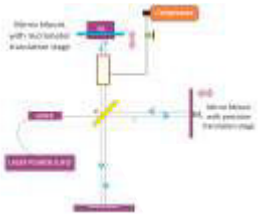
- Optical breadboard
- 5mW diode laser with power supply
- Kinematic laser mount
- Beam splitter with mount
- Mirror mount with micrometer translation stage
- Mirror mount with precision translation stage
- Cell holder with detector
- Detector photo transistor
- Output measurement unit (Range 111A-200mA)

Salient Features :

A detector is used to record the contrast variation at the fringe pattern.
All components used are of research quality and made from laboratory grade material for long life without corrosion. The components are assembled on a breadboard and protected from dust and airflow by a transparent cover.

490. Michelson Interferometer (Bread Board Model)-Order Code - TP1722

(To find Refractive index of gas/air)
Same as TP1720 but we can also study the change of refractive index of air with change in pressure & determine the refractive index of air.
It consists of list of items as per TP1720 in addition to this it also consists of compressor, pressure chamber, valve & pedestal air pump etc.



Experimental Arrangement for Michelson Interferometer

491. Michelson Interferometer Model SMI-25- Order Code - TP1725

This Model is mounted on a heavy iron base. It is most suitable for Educational Institution. Various Components are made from high precision machines, mounted on the aluminium base and the complete interferometer is mounted on a heavy cast iron base.
It consists of beam splitter and compensator Plates mounted in an aluminium housing. It is fitted on the aluminium base at 45° to two reflecting mirrors. All flat optics used have flatness of at least A./4 and are protected with a layer of silicon Monoxide coating.
Least Count 0.01mm. It also consist of reading telescope of magnification 3x, fitted with Ramsden eyepiece & cross line graticule. 20x objective with mount is also supplied with interferometer (in case of work with He-Ne Laser or Diode Laser).

492. Fabry Perot Interferometer Model SFP-26- Order Code - TP1726

It is specially useful for accurate measurements, comparison of wavelengths and examination of hyperfine structure of spectral lines. It is also used for measuring wavelength changes by application of magneticfield.
It consist of a partially coated mirror mounted in an alumminium housing. This module is placed in front of the moving mirror to set up the Fabry Perot Interferometer. Two adjustable screws are provided for making the two etalons parallel.
In built Telescope has a magnification of 3x and is fitted with a Ramsden eyepiece & a cross line graticule.

493. Fabry-Perot Interferometer Model FP-83- Order Code - TP1730

In Fabry-Perot interferometer, the distance between partially reflecting mirrors are varied by using coarse and fine translation stage driven by micrometers. One beam splitter is fixed and the other is mounted on the translation stage through a kinematic mount. The two axes kinematic mount is used to correct the parallelism between beam splitters.
Translation stages are fitted with micrometers for both coarse and fine movements in order to get precision measurements. All components and modules are mounted on rail and carriage system for easy adjustments. The optics and mechanics assembly is made out of corrosion free materials.

List of instruments supplied in this kit

- Optical rail.
- Diode Laser with Power supply
- Kinematic Laser mount with rail carriage
- Fabry-Perot Interferometer with rail carriage
- Lens with mount and rail carriage
- Translucent screen with rail carriage

Fabry-Perot Interferometers are widely used in telecommunictions, lasers and spectroscopy for controlling and measuring the wavelength of light. Fabry-Perot interferometers also form the most common type of optical cavity used in laser construction.

Note: Specifications are subject to change.

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494. Sagnac Interferometer-Order code - TP1732

The Sagnac effect manifests itself in an experiments setup called ring interferometry. A beam of light splits and the two beams are made to follow a trajectory in opposite directions. To act as ring, the trajectory must enclose an area. On return to the point of entry, the light is allowed exit to the apparatus in such a way that an interference pattern is obtained. The arrangement for Sagnac interferometer is as shown in the figure.

Sagnac interferometer employs modular in design and construction. Mirrors beam splitters and lasers along with mechanical mountings are supplied as individual modules which can be assembled on honeycomb breadboard.

The device consists of 800 mm x 600 mm honeycomb breadboard with a rigid and vibration resistant base for assembling the interferometer. Mirrors and beam splitters are held in precision kinematic mounts for fine alignments. Laser head is also held in a kinematic mount for fine tuning the direction of the laser beam.

Students gain hands on experience in optical instruments assembly by setting up the interferometer.

Sagnac effect is employed in current technology. One of the use is in inertial guidance system. Ring interferometers are extremely sensitive to rotations. In the Sagnac configuration, the position of the interference fringes is dependent on angular velocity of the setup. This dependence is caused by the rotation, effectively shortening the path length of one beam, while lengthening the other.

List of instruments supplied in this kit

- Optical breadboard
- 5mW Diode Laser with Power supply
- Kinematic Laser mount with carriage
- Metallic beam splitter with kinematic mount
- Front coated mirror with kinematic mount
- Convex lens with mount
-

495. Rayleigh Interferometer-

Order code - TP1735

For measurement of refractive index of liquids & gases. The interference fringes are magnified in the instrument to over 100times by means of a cylindrical lens of the eye-piece which provides horizontal magnification. The fringes produced are sharp at the normal distance of distinct vision.

It consists of following items :-

- Heavy metal platform
- Collimator with circular slit is fixed at one end.
- Telescope with cylindrical lens instead of Ramsden eyepiece isfitted on other side of the table.
- One metal box which is fitted in the front of the telescope consist of Razor Glass Plate inclined at an angle of 45 deg. This box also contains compensation plates. The whole system is connected to micrometer screw gaugeto record the readings.
- Plane parallel optical glass cellsfor liquids.
- Pair of gas cells with plane parallel windows forthe measurement of refractive index of gases.
- Vacuum pump single stage having displacement of 32 litres per minute with manometer.

Supplied without sodium Lamp Unit.

496.Mach-Zehnder Interferometer Model MZ-37-

Order code - TP1737

This design concept followed in this device is similar to Sagnac interferometer. The device is assembled using modular building blocks on a rigid base. A honeycomb anti-vibration breadboard of size 800mm x 600mm is supplied as the base. Mirrors, beam splitter and diode laser along with their mounts are supplied as modular building blocks.

Interferometer is built by assembling the building blocks on the breadboard as per the desired optical layout. Optics and laser head are held using kinematic mounts with two axes fine adjustment for obtaining the interference fringes are done using kinematic mounts.

One of the simplest experiments using the Mach-Zehnder interferometer is measurement of the index of refraction of air with an airtight test cell placed in one of its optical arms of the interferometer. No other factors such as convective airflow should be present which can generate optical path differences. The flexibility in fringe localization gives Mach-Zehnder interferometer one of the important advantage over other interferometers. Although many Mach-Zehnder interferometers use a rectangular arrangement, the parallelogram arrangements are also possible.

List of instruments supplied in this kit

- Optical breadboard
- 5mW diode laser with power supply
- Kinematic laser mount
- Metallic beam splitter with kinematic mount
- Front coated mirror with kinematic mount
- Gas cell with accessories
- Convex lens with mount
-

497.Speckle Pattern Interferometry-

Order code - TP1745

Speckle Pattern Interferometry (SPI) determines the difference between two small deformation states of the same inspected object. Speckle-pattern-ineterferometry shows a fringe pattern, which can be interpreted as contour lines of the same state of deformation. The distance between two fringes corresponds to half the laser wavelength. Therefore SPI allows sensitive and non-contact detection of defects.

Note: Specifications are subject to change.

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This instrument has been developed by ISRO Satellite center, Bangalore for NDT applications with Hollmarc Company. It makes use of speckle pattern interferometry along with CCD imaging techniques and image processing software for studying the static and dynamic conditions of the test objects.Hollmarc company has a technology transfer agreement with ISRO Satellite center for manufacturing and marketing this system with the permission of Hollmarc Company we have given this equipment in our catalogue.
The unit consists of opto-mechanical and optical components similar to those used for holography, assembled on a breadboard. He-Ne laser is used as light source. Instead of holographic plates, CCD camera is used for recording fringes.

498.Constant Deviation Spectrograph(C.D.S)- Order code - TP1785

(a) Collimating Tube : (Material : Brass Pipe) 0.D.: 50mm I.D. : 44mm for fitting collimating lens
It is provided with rack & pinion arrangement and slit. Slit is of circular type.
The jaws of the slit are optically ground.
It is provided with Holfmann's Diaphragm.

(b) Telescope Tube : (Material : Brass Pipe) O.D. : 50mm, I.D. : 44mm for fitting telescope lens
It is provided with rack & pinion arrangement for proper focussing of spectral lines.
Eyepiece; (Ramsden Type): magnification :10x
In eyepiece holder a conical pointer is fitted in the focal plane of eyepiece.

(c) Corrected achromatic doublet are fitted in the lens holders of collimator and telescopetube.
Doublet dia : 44mm, F.L. : 350mm (14").
The Collimator and telescope tubes are fitted in cast iron blocks which are mounted on a machined cast iron blocks which in turn are mounted on a machined cast iron plate.

(d) Suitable gap is provided between collimating lens and prism table to accommodate high resolving instrument like Fabry-Perot Etalon.

(e) Prism Table is fitted on the machined cast iron plate and actuated by tangent screw to provide smooth rotation of the C.D.S. prism placed on it.

(f) Prism table is covered with a box of a aluminium casting having two gates.
One gate allows light coming from collimator to enter into C.D.S. Prism
Another gate allows light to be collected by telescopic
objective after light being dispersed from C.D.S. prism.

(g) A calibrated drum (Calibration for visible region i.e. from 4000A°-7000A') is attached with the prism table assembly.
Accuracy of calibration + 5A°

(h) Machined cast iron plate with drum assembly is fitted over the head of a heavy cast iron base.
The base and machined cast iron plate are painted in a staple Grey colour.
Collimator, Telescope, Prism table, Drum assembly are painted black.

Note: Specifications are subject to change.

499.Constant Deviation Spectrograph prism- Order code - TP1786

Material optically Glass R.I. either m= 1.717 or m=1.78. Three faces of the prism are optically flat to surface finish l /10.
TP1786A : m= 1.717
TP1786B : m=1.78
(While placing order please specify the refractive index of the CDS prism.)

500.Quarter Size Plate Camera- Order code - TP1787

It is to take photographs of spectral lines. The quarter size camera is fitted in the place of telescope tube while taking photographs. The objective of the telescope is replaced by tele photo lens of the suitable focal length.

501. Packet of Films- Order code - TP1788

To take the photographs of the spectral lines, we are supplying imported films. Pack of 25 films.

502. Fabry-Perot Etalon- Order code - TP1789

The instrument is made in different sizes of spacers in silica. The mirrors are about 30 mm in dia & with clear aperture 25mm but other sizes can be manufactured if required by the customer specially. Both optically plane Glass plates are coated 50% each. Space between them is 3mm. It is used either with Mercury or Sodium Light.
Three screws are provided on the front face of the Fabry-Perot Etalon. With the help of these screws, one can adjust the position of the optically plane Glass plate.

503. Fabry-Perot Etalon- Order code - TP1790

Specifications are same as per Cat. No. 1789 but optically Glass plates are coated in the ratio 80% & 20% to be used with He-Ne Lasers.

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504. Edser Butler Plate- Order code - TP1791
Mounted in a housing and provided with means for production of different types of fringes. The clear space for fringes is about 30mms and the plates are heavily aluminised for increasing the resolving power of the instrument, employed for calibrating spectrometer.

505. Condensing Lens- Order code - TP1792
Condensing Lens with mount and stand.

506. Arc Power Supply- Order code - TP1793
This Power Supply is specially designed to spark the brass / copper/ iron rods. It is a D.C. Power Supply of 70V, 10A with Built-in variabletransformer, bridge rectifier & dimmerstat.

507. Arc Stand- Order code - TP1794
This stand holds either brass rods or copper rods or iron rods. When we use this stand with above power supply, we can observe either brass / copper/iron spectrum. Supplied with one pair of iron rods, copper rods and brass rods.

508. Micrometer Eyepiece- Order code - TP1795
Special Micrometer eyepiece to be used with CDS.

509. Monochromator- Order code - TP1796
Attachment to convert CDS into Monochromator.

510.Micrometer Slide Comparator-
Order code - TP1800

- For Direct measurements upto 50mm in steps of 0.01mm (0.001cm) on a large micrometer head.
- The reading microscope screw & drum head, and the stage are carried
- on a sturdy base so that these are normally inclined at an angle of 45 degree. The stage 7.5 x 15cm is fitted with spring clips.
- The micrometers slide moves along a lifeline stainless steel scale and the movements are read directly on a largely drum head to 0.01mm (or 0.001cm through a vernier attached to it). The micrometer screw & nut are specially aged & normalised to ensure uniformly accurate performance with passage of time. Total range of movement 50mms.
- The reading microscope is provided with rack and pinion focussing. Optics highly achromatic.
- An extra support leg is attached to the base to enable the whole instrument to be brought to a horizontal reading position.
- Substage mirror in gimbals for reflecting light.
- Complete in a wooden case.

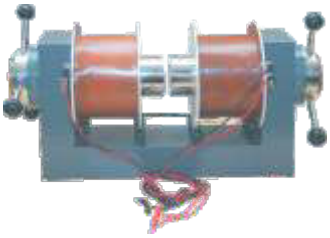
Note: Specifications are subject to change.

1802. Zeeman Effect- Order code - TP1802
The atomic energy levels, the transitions between these levels, and the associated spectral lines discussed to this point have implicitly assumed that there are no magnetic fields influencing the atom. If there are magnetic fields present, the atomic energy levels are split into a larger number of levels and the spectral lines are also split. This splitting is called the Zeeman Effect. It consists of following instruments :-

TP1802A : Constant Deviation Spectrograph as per TP1785

TP1802B : Constant Deviation Prism as per TP1786B. m=1.78

TP1802C : A Strong Electromagnet capable of producing field of $W.m^{-2}$ order approximately 15 Kgauss. at 10mm air gap is supplied.
The air gap is continuously variable with two way knob wheel screw adjusting system.



TP1802D : To operate the above electromagnet, a heavy duty power supply is supplied, smoothly adjustable from 0-3A per coil i.e. 6A

TP1802E : Specially designed Neon, Discharge Tubes.

TP1802F : High Voltage Discharge Tube Generator for above Discharge Tube.
TP1802G : Wooden Stand for holding Neon Discharge Tube.

TP1802H : Specially designed Fabry-Perot Etalon (different from TP1789/90) used before the CDS Prisms for obtaining interference spectra of split wavelength.
TP1802I : Micrometer Eyepiece as per TP1795
TP1802J : Digital Gaussmeter
TP1802K : Condensing Lens with mount, TP1792 Supplied without Quarter Size Plate Camera.

Optional Accessory :
- Quarter Size Plate camera
- Photo measuring microscope or
- Slide comparator

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512. Zeeman effect with CCD camera-
Order code - TP1803

- e/m zeeman effect apparatus with F- Petalon
- with CCD Camera.
- Nine significant zeeman splitting spectral lines can be observed.
- F-P clear aperture : Dia 40mm
- Bench with riders
- Electromagnet with power supply
- CCD Camera with CCTV Lens
- Quarter wave plate
- Hg lamp with power supply
- Fringe of quartz: Magnetic Induction : 0-13000 hs telescope.
- Green Filter, Lens etc.

513. Zeeman effect with CCD camera with computer interface-Order code - TP1804
Same as TP1803 but with capture interface along with Fringe capture & Analysis system

514. Fringe Capture & Analysis System-
Order code - TP1805

Specifications :

The sensitive device is a 3 cm long linear CCD consisting of 2048 pixels. Optical phenomena are displayed directly on the oscilloscope and/or a PC via the parallel port (no additional frame grabber required). CALIENS is used by teachers and students alike :

- To illustrate lectures (save and pint data plots)
- For short qualitative experiments (real time display)
- For long practical works (advanced functions on the PC)

Features :

- The optical head bearing the linear CCD (fits to regular holders)
- The control unitsfor both oscilloscope and PC outputs
- A specific PC software to manage a large range of advanced functions
- Through the PC interface you can work in any of the following modes :
- A real time mode to visualise time oscillating phenomena or to adjust to the experiment.
- A measurement mode to work on a frozen signal (with a large scale of measurementtools).
- Specific to experiment modes to work on spectrometry, interferometry, diffraction... On line help, most frequently used formulas, simulation are included in each of these specific modes.

Caliens Package

The CALIENS linear CCD camera includes :

- An AC/DC converter
- A complete set of documentation
- The acquisition and processing software
- The necessary cables and connectors
- A Box-case for transport and storage
- All the necessary accessories to keep your camera in a good working order
- Required Tools (you have to procure yourself)
- Minimum required PC :
- Pentium 120 MHz
- RAM - 16 Mo
- 5 Mo HDD free space
- Windows 95/98/NT/XP...

Note: Specifications are subject to change.

Image for TP1810 & TP1811

515. Optical Bench Double Rod Standard Pattern (One Meter Long)-Order code - TP1810
For advance research work, consists of two rods of different metals as per requirement in hand, supported by heavy cast iron feet, provided with 4 metal riders and 4 accessories. Two of the sliders have transverse motion and one rod is engraved in mms. Improved design, one meter long.

Order Code	Description
TP1810A	Having both steel C.P. rods
TP1810B	Having both brass pipes inside shafting.
TP1810C	Having both S.S. rods instead of steel rod.

516. Optical Bench Double Rod Standard Pattern (1% Meter Long)-Order code - TP1811
Specifications are same as per Cat. No. 1810 but the rods are supplied with 1% meter length.

Order Code	Description
TP1811A	Having both steel C.P. rods
TP1811B	Having both brass pipes inside shafting.
TP1811C	Having both S.S. rods instead of steel rod.

517. Precision Optical Bench OB-15 (1% Meter Long, extra-ordinary heavy pattern)-
Order code - TP1812

For accurate measurement of focal length of Lenses overall Length 1600mm, Scale length 1500mm (graduated in mms)

Order Code	Description
TP1812A	Having both steel C.P. rods
TP1812B	Having both brass pipes inside shafting.
TP1812C	Having both S.S. rods instead of steel rod.

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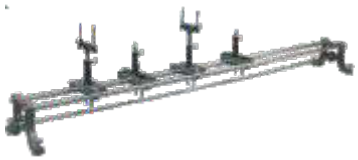
Specifications

Strong, inexpensive, made to standardized specifications with interchangeable parts, the Twin-Bar optical Benches have won wide popularity because of the excellence and robustness of their design. Provided with 3rd supporting rod.

The sliders are machined geometric fit on the tracks & are machined plane on the upper surface to ensure correct vertical fitting of the hollow pillars. Four sliders are provided as standard accessories to all our benches. Two of these are provided with fine cross-motion & two without cross motion. All the four sliders are fitted with hollow pillars of uniform specifications to take all types of Tesca bench accessories.

Image for TP1812 & TP1814



518. Precision Optical Bench OB-16 (One Meter Long)-Order code - TP1814

Specifications are same as per TP1812 but rods are of one meter long.

Order Code	Description
TP1814A	Having both steel C.P. rods
TP1814B	Having both brass pipes inside shafting.
TP1814C	Having both S.S. rods instead of steel rod.

519. Optical Bench - Triangular Rail Type- Order code - TP1816

- Triangular Profile
- Free Standing Optical Rail
- Light Weight Aluminium
- Positioning scale in millimeters
- Length upto 1/2, 1 & VA mtrs.

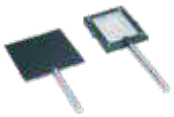
Optical benches are available in light weight, low cost Aluminium alloy. These benches are based on the widely used triangular rails. These light weight Aluminum rails are ideal for educational & general laboratory applications. They are supplied with a simple positioning & calibrated scales in millimeters attached to the side of the rail.

Order Code	Description
TP1816A	Half meter Long
TP1816B	One Meter Long
TP1816C	One & Half Meter Long

Note: Specifications are subject to change.

520. Corona Plate-Order code - TP1820

It consist of Black Brass Plate with small holes at equal distance from the centre of the Plate. Plate mounted in aluminium frame is supplied with rod. One glass Plate with rod is also supplied along with Brass plate.



521. Bi-Prism Assembly without optical Bench- Order code - TP1835

Fresnel Biprism set-up illustrates about the phenomenon of interference of light with the help of Bi-prism Expt., we can understand the concept of interference, image formation & the width of the fringes.

Consists of the following apparatus:

TP1835A : Biprism Holder: has the fine radial motion bya fine pitch screw.

TP1835B : Micrometer Eyepiece: Ramsden Eyepiece, 10x, is carried on a slider which moves along a micrometer screw. Accurately made. L.C.=0.01mm

TP1835C : Auto Action/Lens Holder: with automatic spring action for equal opening and closing of both sides.

TP1835D : Optical Slit: Optically true, precision ground stainless jaws, spring action for opening of jaws eliminated to ensure original accuracy even after prolonged use. Jaws open uniformly all along through a milled head. Jaw alignment tested for optical accuracy. Made for a lifetime of trouble-free use.

TP1835E : Condensing Lens : This lens is supplied with mount to condense the monochromatic Sodium Light.

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522. Bi-Prism Assembly complete with Optical Bench-Order code - TP1836

Fresnel Biprism setup illustrates about the phenomenon of interference of light. With the help of interference phenomenon, we can find the wavelength of monochromatic light source like sodium light in a very easy manner. Complete with optical bench of one meter long of TP1656 with 5 riders & Bi-prism assembly as per TP1835 and Fresnel Bi-prism of TP1837. Supplied without sodium lightsource.

523. Fresnel Bi-Prism-Order code - TP1837

Order Code	Size
TP1837A	30 X 40 mm
TP1837B	40 X 50 mm

524. Research Optical Bench- Order code - TP1838

The Bed is heavy cast iron with a strong control rib, throughly seasoned and aged before machining and grinding of its upper surfaces. Total length 180cm with a machined full length platform for the scale. The scale is from lifetime stainless steel fitted on its machined platform on the bed. Divided in mms to a length of 170cm. Accuracy of calibration ± 0.01%

The Carriages: Five carriages are provided to carrythe standard experiement accessories. Under surfaces of carriages are machine trueto fitthe machined bed surface, and these machined surfaces are then jointly inter ground to give perfectly smooth sliding surfaces. While inter ground tests are carried out to ensure elimination of lateral shift during slide movements. Stainless Steel verniers fitted to the carriages read the scale of .01cm. The Bi-prism carriage is also provided with fine cross motion read byvernierto 0.01cm. Clamping arrangement is provided.
The standard experimental accessories fitted to the carriage are:

(i) Optical Slit : Manupulation of jaw movement free from any spring control ensuring maintenance of original accuracy even after prolonged use. The following adjustments are provided for the slit And its carriage.
   a) Linear adjustment along the bed, read by vernier to 0.01cm.
   b) Fine vertical adjustment by slow motion screw.

(ii) Bi-prism Holder : Provided with following adjustment:
   a) Linear adjustment along the bed, read by vernier to .01cm
   b) Fine vertical adjustment by slow motion screw.
   c) Fine cross motion by micrometer screw read by Vernier to .01cm
   d) Quick radial motion along the horizontal axis
   e) Fine radial motion along the horizontal axis.

(iii) Micrometer Eye Piece: Provided with the following Adjustments
   a) Quick linear adjustment along the bed read by vernier to.01 cm
   b) Fine micrometer vertical adjustment
   c) Micrometer cross motion of the Eye piece along a 30-0-30 mm scale read on a micrometer head to .001 cm. Micrometer head fitted with anti backlash Device.

(iv) Auto Action Lens Holder : With automatic Spring action for equal opening and closing of both sides. Rest specifications of carriage are same as above.

v) Condensing lens with fifth rider is also supplied along with this bench.

(vi) Supplied with Bi-prism of 30x40mm

525. Nodal Slide Assembly-Order code - TP1840

Consists of the following items

TP1840A : Nodal Upright: Consists of a combination of Single & double lens holder on a mount rotating along the vertical axis.
The combination lens holders are adjustable in height, and the single & twin lens holders can either be moved together by rack & pinion or relative to each other by sliding. These motions can be read by individual pointers on a mm scale.

TP1840B : Mirror: Plain, inclinable with 3" steel C. P. Stem.

TP1840C : Optical Slit: With fine machined cross slit, one surface white & the other optical black, with 3" steel C.P. Stem.

TP1840D : Lamp House: an electric bulb is encased in a metal case with cord & pin. It works on 220VAC.

Note: Specifications are subject to change.

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526. Nodal Slide Assembly complete with Optical Bench-Order code - TP1841

Complete with optical bench as per TP1656B and Nodal Slide Assembly as per TP1840

527. Optic Trough-Order code - TP1842

It consists of acrylic rectangular trough with graduation from 0-58 cms. It consists of Lens holder (combination of single & double lens) mounted on one side of rectangular trough. A small screen with four wheels is also supplied with this instrument.

Two semi conductors diode laser are mounted in such a way, so that we get two parallel beams of red laser. Supplied with diode laser power supply & two set of lenses.

528. Lummar Brodhum Photometer Assembly-Order code - TP1844

An experiment unit designed for work in degree science laboratories. The Tesca Lummer Brodhun Photometer assembly is assembled from the following standardized components.

TP1844A : L.B. Photometer Head: A finely made instrument with the best imported optics and now with the latest system of rigid fixing of all optical components.

Light from two sources falls on either side of a uniform white opaque screen. Thus it is reflected by side reflectors (Optical prisms) and passes through the Lumner Brodhun cube. Observing the field through a telescope, the two light intensities are compared directly. The compact Photometer head is mounted in a swivel bracketto facilitate reversal of the slides.

TP1844B : Lamp House : 2 nos. On electric bulb is encased in a metal case with cord & pin, finished optical black.

529. L.B. Photometer Assembly complete with Optical Bench-Order code - TP1845

Complete with optical bench of one meter long of TP1656B with L.B.

Note: Specifications are subject to change.

530. Sextant standard pattern-Order code - TP1846

160mm radius, designed to give maximum accuracy. Made from a strip of stainless steel so inlaid in the circular arc as to be considered integrated with it.

531. Stand for Sextant-Order code - TP1847

Sextant stand brass fitting

532. Mirrors Concave or Convex (0.T.)-Order code - TP1850

Mirrors, highly slivered, optically true (spray painted at the back) with a beautiful ring on its outer surface

Order Code	Focal Length
TP1850A	50mm
TP1850B	60mm
TP1850C	75mm

533. Double Concave & Double Convex Lens-Order code - TP1851

Spherical Double Convex and Double Concave Lenses highly polished and well edged. Manufactured from plate Glass.

Lens Dia 50mm

Order Code	Focal Length	D/CX	D/CC
TP1851A	10 cm		
TP1851B	15 cm		
TP1851C	20 cm		
TP1851D	25-100 cm		

534. Double Concave & Double Convex Lens-Order code - TP1852

Lens Dia 60mm

Order Code	Focal Length	D/CX	D/CC
TP1852A	10 cm		
TP1852B	15 cm		
TP1852C	20, 25 cm		
TP1852D	30 cm		

535. Double Concave & Double Convex Lens-Order code - TP1853

Lens Dia 75mm

Order Code	Focal Length	D/CX	D/CC
TP1853A	10 cm		
TP1853B	15 cm		

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Order Code	Focal Length	D/CX	D/CC
TP1853C	20, 25 cm		
TP1853D	30 , 40 cm		
TP1853E	50, 100 cm		

536. Double Concave & Double Convex Lens-Order code - TP1854
Lens Dia 100mm

Order Code	Focal Length	D/CX	D/CC
TP1854A	10 cm		
TP1854B	15 cm		
TP1854C	20, 25 cm		
TP1854D	30 , 40 cm		
TP1854E	30 cm		
TP1854F	50, 100 cm		

537. Set of Six Lenses-Order code - TP1855
Set of six lenses, best quality in superior velvet lined cases. Diameter 50mm

538. Llyod's Mirror-Order code - TP1856
Superior Quality

539. Magnifiers Metalic-Order code - TP1857
Magnifiers metallic highly chromium plated

Order Code	Dia	Focal Length
TP1857A	40mm	10cm
TP1857B	50mm	20cm
TP1857C	60mm	20cm
TP1857D	75mm	20cm
TP1857E	100mm	15cm
TP1857F	125mm	30cm

540. Glass Slab-Order code - TP1859
Glass slab from Sheet Glass Bubble less, prepare from Belgium plate, highly polished sides, English glass.

Order Code	Size
TP1859A	75 X 50 X 12mm
TP1859B	75 X 50 X 18mm
TP1859C	100 X 50 X 18mm

541. Glass Slab-Order code - TP1860
From Indian Glass Moulded.

Order Code	Size
TP1860A	100 X 60 X 25mm
TP1860B	75 X 50 X 18mm

542. Glass Prism (1½")-Order code - TP1861
1½" (37mm) from Indian Glass moulded

543. Glass Prism (1½")-Order code - TP1862
As above. 'A' grade without bubble

544. Glass Prism (2")-Order code - TP1863
2" (50mm) from Indian Glass moulded Equilateral.

545. Glass Prism (2")-Order code - TP1864
Same as TP1759. 'A' grade without bubble Equilateral.

546. Liquid Lens Pointer-Order code - TP1865
As per Tamil Nadu Syllabus. It consist of 4" brass needle along with a ring to hold any suitable retort stand. Supplied without retort stand and lens

547. Newton (Colour Disc)-Order code - TP1867
Mounted on a metal stand with driving wheel, belt and handle. Export quality.

548. Pin-hole Camera-Order code - TP1868
Wooden Polished

549. Periscope-Order code - TP1869
Made from seasoned wood, superior quality

550. Mirror strip-Order code - TP1870
With copper back silvered

Order Code	Size
TP1870A	75 X 50mm
TP1870B	100 X 25mm

551. Bench Magnifier-Order code - TP1871
(Magnascope)

The magnifier is fitted with a precision lens of 150mm diameter and with an optical glass lens of 3x. It has maximum possible power for a lens of its size, consistent, with virtually no distrait or chromatic aberration.
It gives fatigue-free, stereo view equipped with round fluorescence tube (22Watt) which has shadow-less illumination. It is fitted on a universal stand fully adjustable vertically and horizontally, works on 220V A.C. Mains.

552. Ray Box-Order code - TP1872
A ventilated lamp house having an open front with extended sides finned externally for heat dissipation and vertical internal grooves to accommodate a slit plate and a cylindrical lens. It has a light source comprising a 12

Note: Specifications are subject to change.

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Volts lamps in a holder with 1 mtr of twin flex wire having banana plug. Complete with metal plate having single & triple slits and whitened on one side & black matt on the other side. Supplied without Cylindrical Lens 50 x 45 mm (FL+14D)

553. Ray Box with Cylindrical Lens-
Order code - TP1873

Same as TP1872, but supplied with Cylindrical Lens 50 x 45 mm (FL +14D).

554. Kit for Primary & Secondary Colours-
Order code - TP1875

It demonstrates that how the various colours are obtained by overlapping three primary colours of light. Kit is provided with three colour tubes - red, blue & green and adjustable movement that you can be easily moved up & down for overlapping of colours.

555. Holographic Kit-Order code - TP1900
Besto holographic kit is a professional set up for shooting holograms in academic and research institutions. The equipment includes vibration isolated table, opto - mechanical modules, optical components, sample silver halide plates, processing chemicals, etc. All components and modules used in the kit are of industrial quality and reliablity. By changing the laser source and recording plates, the equipment can be used for commercial hologram shooting as well.

(I) Creation of Transmission Grating
The experiment involves the creation of transmission grating Using holography on a silver halide plate. The grating pitch is governed by the angle between the two incident beams that hot on the plate. We provide all the optics, opto - mechanics, laser, holographic plates, developing chemicals, etc. To perform the experiment.
Our instruction manual contains experimental setups, principles, procedures, step-by-step instructions and required photographs for recording holograms.

(ii) Recording and Reconstruction of Transmission Holograms
The setup for the creation of reflection hologram is same as transmission hologram except the reference beam is lit from behind the plate. Controlling the beam ratio is very important in creating reflection holograms. We use variable beam splitter for the purpose. In the case of reflection hologram, a truly three-dimensional image can be seen near its surface. The hologram is illuminated by a "spot" white incandescent light, head at a specific angle and distance located on the viewer's side of the hologram.

(iii) Recording and Reconstruction of Reflection Holograms
To create a transmission hologram, laser beam is split into two. The beam reflected from the object is called object beam and the other one, a plane wave without any information, is called the reference beam. The exposure time varies from seconds to minutes depending on the object. Absolutely stable conditions are required during the exposure of the film. Variable beam splitters are provided to finely adjust the beam ratio.
To reconstruct the image, the plate is developed in the developer solution and is placed in its original position compared to the reference beam during its recording.

556. Battery Eliminators BED-71-
Order code - TP1919

Designed to be safe and reliable source of low voltage D.C., for use in class rooms. Allows teachers to conduct experiments requiring a variety of direct current voltages while avoiding the decreased characteristics of partially exhausted dry cell.
Comprising heavy duty transformer wound with copper wire with high lamination to avoid losses, selector switch and bridge rectifiers (consists of full wave silicon diode bridge rectifier) with jewel light and safety fuse. Output 2-12 V D.C.in steps of 2, 4, 6, 8, 10 & 12V.

Order Code	Description
TP1919A	Output 2 to 12 Volts D.C. at 1 Amp.
TP1919B	Output 2 to 12 Volts D.C. at 2 Amp.
TP1919C	Output 2 to 12 Volts D.C. at 3 Amp.
TP1919D	Output 2 to 12 Volts D.C. at 5 Amp.

557. Battery Eliminator BED-71-
Order code - TP1920
Same as above but output voltage from 1.5 to 12 volts in 6 steps like 1.5V, 3V, 4.5V, 6V, 9V, & 12V.
Available in two different current capacities.

Order Code	Description
TP1920A	Output 1.5 to 12 Volts D.C. at 1 Amp.
TP1920B	Output 1.5 to 12 Volts D.C. at 2 Amp.

558. Battery Eliminator A.C./D.C.-
Order code - TP1922

This versatile eliminator provides commonly used low voltage ranges of both alternating and direct current and has ample capacity for nearly all laboratory

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applications.
This unit contains a transformer with a variable voltage and a silicon diode bridge rectifier. Terminals for A.C. output are on one end and those for D.C. output at another end on the front panel. This battery eliminator can be used as a step down transformer also.

Order Code	Description
TP1922A	Output 2 to 12 Volts A.C /D.C. at 2 Amp.
TP1922B	Output 2 to 12 Volts A.C./D.C. at 3 Amp.

559. IC Regulated Battery Eliminator (stabilized)-Order code - TP1923

Permanent replacement for 1.5V dry cell battery. Designed to be safe and a reliable source of low D.C. voltage. Solid state circuitry offers protection against inadvertent short circuits common in learning situations.
The unit incorporates an electronic overload cut-off which overcomes the inherent disadvantage of thermal magnetic devices and fuses. Input 230 VA.C., output 1.5V to 12 Volts in steps of 1.5, 2, 3, 4, 4.5, 5, 6, 8, 9, 10,12V.

Order Code	Description
TP1923A	Output 1.5, 2, 3, 4, 4.5, 5, 6, 8, 9, 10, 12V D.C. at 2A
TP1923B	Output 1.5, 2, 3, 4, 4.5, 5, 6, 8, 9, 10, 12V D.C. at 3A

560. Fixed Voltage IC Regulated Power Supplies-Order code - TP1925

High quality, well filtered, giving smooth fixed D.C. Voltage. Ideal for running many training boards like operational amplifiers (Type-741). Integrated Circuit Timer (Type-555) and Integrated Circuit Regulator (Type-723).
Fully Protected against short circuit, overload and overheating condition. Compact, robust and light in weight. Supplied without meter.

Order Code	Description
TP1925A	5V or 6V at 1A
TP1925B	5V or 6V at 2A
TP1925C	9V or 12V at 1A
TP1925D	9V or 12V at 2A
TP1925E	15V or 18V at 1A
TP1925F	15V or 18V at 2A

561. Fixed Voltage IC Regulated Dual Power Supplies-Order code - TP1926

Specifications are same as per TP1925 except two Fixed Voltage Supplies are provided in this unit.

Order Code	Description
TP1926A	¸ 5V or ¸ 6V at 1A
TP1926B	¸ 5V or ¸ 6V at 2A
TP1926C	¸ 9V or ¸ 12V at 1A
TP1926D	¸ 9V or ¸ 12V at 2A
TP1926E	¸ 15V or ¸ 18V at 1A
TP1926F	¸ 15V or ¸ 18V at 2A

562. Regulated Power Supply, Model PS-12-Order code - TP1927

Application : General Purpose low cost laboratory power source ideally suited for analog and digital Ics

Output : For fixed voltage, viz +5V, -5V, +12V and -12V
Current : 300mA max. for each
Regulation : ±0.05% for no load to full load
Protection : Internally protected by over current and thermal shutdown.
Power Supply : 220V ±10%, 50 Hz

563. Training Board for the study of Power Supply (Solid-state)-Order code - TP1930

The setup consists of a step down transformer, rectifier circuit (can be used as a half wave or a full wave rectifier) a filter circuit (on inductance and two capacitors) — the arrangement can be used forthe study of various configuration of filters and a regulation circuit. The following studies can be carried out with this set-up

1. Study of rectification
   (a) Full wave rectification
   (b) Half wave rectification
2. Study of AC
   (a) Efficiency of various types (Ripples) Componentof filters -Ttype etc.
   (b) The effect of load
   (c) The effect of regulation
3. Regulation charac.
   (a) Effective load on regulation
   (b) The effect of change in mains voltage

Specifications :
Output : 0-12 volts
Max. Current : 200mA
Regulation : 1%

564. Analog Regulated Power Supply with two Analog Deluxe Meters-Order code - TP1931

Tesca power supplies has been designed and

Note: Specifications are subject to change.

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manufactured as per exact engineering standards using superior quality components, offering overload/short circuit protection. A heavy duty stabilized power supply is useful for labs and workshops. The unit has voltmeter, ampere meter, Pilot light, on-off switch, variable power control knob. Coarse and Fine motion knob and two terminals are provided for output with grounded 3-wire power cord with fuse protection.

Specifications:

Line Regulation : 0.01% 10% from no load to full Load

Metering : (MR-100 Deluxe Meter with acrylic cover)
Analog meter for simultaneous voltage and current reading.

Ripple and Noise : < lmV RMS for low voltage supplies.
< 2mV RMS for high voltage supplies.

Latest technology using ICs, overload and short circuit protected. The following types of stabilized power supplies are available with above specifications.

Order Code	Output Voltage	Output Current	Meters
TP1931A	0-15V	1A	2 Deluxe Meter
TP1931B	0-15V	2A	2 Deluxe Meter
TP1931C	0-15V	3A	2 Deluxe Meter
TP1931D	0-15V	5A	2 Deluxe Meter
TP1931E	0-32V	1A	2 Deluxe Meter
TP1931F	0-32V	2A	2 Deluxe Meter
TP1931G	0-30V	3A	2 Deluxe Meter
TP1931H	0-30V	5A	2 Deluxe Meter
TP1931I	0-30V	10A	2 Deluxe Meter

565. Dual Tracking Supplies-
Order code - TP1932

The dual Tracking Power Supplies house two regulated power supplies mounted on single chassis. Other specifications are identical to TP1931 power supplies. These types of supplies also have two deluxe meters to read output.

Order Code	Description
TP1932A	0 to ±15V - 1A with 2 Deluxe Meters
TP1932B	0 to ±15V - 2A with 2 Deluxe Meters
TP1931C	0 to ±30V - 1A with 2 Deluxe Meters
TP1931D	0 to ±30V - 2A with 2 Deluxe Meters

566. Digital Regulated Power Supply With 2 DPM (3% digit)-Order code - TP1935

Tesca Digital Power Supplies has been designed and manufactured as per exact engineering standards using best quality components, offering overload/short circuit protection. Line Regulation is 0.01%. +10% Line variation & load regulation is 0.05% from no load to full load. Our 3½ digit Digital Panel Meters are compact panel meters for digital display of electrical quantities. These power supplies are very useful for R&D laboratories,control establishments etc.panelmanufacturers,defence establishments etc.

Order Code	Output Voltage	Output Current	Meters
TP1935A	0-15V	1A	2 DPM (3½ digit)
TP1935B	0-15V	2A	2 DPM (3½ digit)
TP1935C	0-15V	3A	2 DPM (3½ digit)
TP1935D	0-15V	5A	2 DPM (3½ digit)
TP1935E	0-15V	10A	2 DPM (3½ digit)
TP1935F	0-30V	1A	2 DPM (3½ digit)
TP1935G	0-30V	2A	2 DPM (3½ digit)
TP1935H	0-30V	3A	2 DPM (3½ digit)
TP1935I	0-30V	5A	2 DPM (3½ digit)
TP1935J	0-30V	10A	2 DPM (3½ digit)

567. High Voltage Digital Power Supply Model EHT-11-Order code - TP1936

Application : EHT Source for photo multiplier tubes and other radiation detectors

Polarity : +ve or -ve as required

Output : 0-1500V continuously adjustable

Max. Current : 1mA

Stability : ±0.02% for + 10% mains variation

Regulation : ±0.05% for 0 to 1mA load

Display : 3½ digit, 7 segment LED

Protection : Fully protected against overload and short circuit by current limiting technique

Note: Specifications are subject to change.

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568. EHT Power Unit-Order Code - TP1937

Suitable for electrostatics experiments and for driving vacuum devices such as the Deflection e/m Tube. The adjustable 5kV output is fully isolated and a backlit, digital meter monitors the output, An independent earth terminal is provided which enables the negative or positive side of the output to be earthed. There is a mandatory requirement to limit output current to 3mA. This provides an EHT output appropriate for electrostatics experiments with a short-circuit current of 60p,A. An auxiliary output is provided to drive cathode heaters, etc. Fixed Power Supply of 6V AC at 2Amp. is also provided separately.

- Continuously variable, 0-5kV at a maximum
- current of 2mA.
- Second output with 50MQ safety
- Auxiliary output, 6V AC at 2Amp.
- Digital back-lit display indicating EHT output.

569. Low Voltage Digital Power Supply-Order Code - TP1938

- This Power supply is a versatile, high specification power unit appropriate for demonstration purposes and for use by students in advanced courses. Provides continuously variable, 0-25V A.C. or D.C. at maximum current of 8.5A. A.C. & D.C. output voltages & currents are displayed on a large separate LCD display. A second button enables current & voltage to be selected. An internal fan keeps temperatures down when running at full load. Protection is provided by slow-blow fuse on the primary.
- Output voltage variable by rotary control knob up to 25V
- Continuously rated output of 8.5A,
- A.C. or D.C.
- Internal fan for cool-running.
- Digital displays for voltage and current for both A.C. and D.C.
- Slow-blow fuse protection on the primary.

570.True RMS A.C. Millivoltmeter ACM-102-Order Code - TP1939

- Measures True RMS Voltage
- Accuracy 1%
- High Input Impedance
- High Stability
- Excellent Linearity

Specification

Voltage Range	:	20mV, 200mV, 2V & 20V
Frequency Range	:	10Hz to 200KHz
Input Impedance	:	1MG shunted by 25pf on all ranges
Accuracy	:	1% in the range 10Hz-100KHz, 2% in the range 100KHz- 200KHz
Display	:	3% digit, 7 segment LED with auto polarity and decimal indication
Power Supply	:	220V± 10%, 50Hz
Accessories	:	75cm shielded cable with a coaxial connector at one end and banana plugs on the other end.
Oscillator Output	:	0-300mV continuously variable
Frequency	:	1KHz (Sine) fixed

Note: Specifications are subject to change.

571. True RMS A.C. Millivoltmeter ACM-103-Order Code - TP1940

Same as Cat. No. 1939 but with additional feature of oscillator output 0-300mV continuously variable & having fixed frequency of 1KHz (Sine Wave).

572. Digital Gaussmeter DGM-102-Order Code - TP1941

- Measure down to 0.1 G
- Excellent Linearity
- Interchangeable Hall Probe

Specification

Range	:	0-2 KG & 0-20KG
Accuracy	:	± 0.5%
Temperature	:	Upto 50°C
Display	:	3½ digit, 7 segment LED DPM
Power Supply	:	220V ± 10%, 50Hz
Transducer/Detector	:	Hall Probe - In AS
Special Feature	:	Indicate the direction of the magnetic field

573. Digital Gaussmeter DGM-103-Order Code - TP1942

Same as TP1941 but with additional range of 0-40KG.

574. Digital Gaussmeter DGM-204-Order Code - TP1943

- Measure down to 0.1 G
- Excellent Linearity
- Interchangeable Hall Probe

Specification

Range	:	0-200 KG, 0-2KG, 0-20KG & 0-40KG
Accuracy	:	±0.5% range
Resolution	:	0.1ga uss at 200G range
Display	:	3% digit, 7 segment LED Display with auto polarity and overflow
Transducer	:	Hall Probe-In As
Special Feature	:	Indicate the direction of the magnetic field

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575. Electromagnet EMU-50- Order Code - TP1944

Specifications

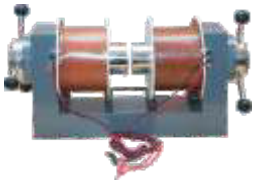
Field Intensity : 7.5Kg. at 10mm air-gap
Pole Pieces : 50mm diameter
Energising Coils : Two, each with a resistance **of about** 3ohms.
Powerrequirement : 0-30V DC, 4A, if coils are Connected in series.
Weight : Approx. 33 Kg.

576.Constant Power Supply DPS-50- Order Code - TP1945

Specifications

Current Range : Smoothly adjustable from 0-4A
Load Regulation : 0.1% for load variation from 0 to maximum.
Line Regulation : 0.1% for ± 10% mains Variation
Display : 3½ digit, 7 segment LED Display
Application : Specially Suitable for Electromagnet Model EMU-50

577. Electromagnet EMU-75-Order Code - TP1946



Field Intensity : 11Kg. At lOmm air-gap
Pole Pieces : 75mm diameter flat
Energising Coils : Two, each with a resistance of about 120.
Power Requirement : 0-90V DC, 3A, if coils are connected in series.
0-45V DC, 6A, if coils are Connected in parallel.
Weight : 81 Kg.

578.Constant Power Supply DPS-175- Order Code - TP1947

Current Range : Smoothly adjustable from 0-3A per coil i.e. 6A
Load Regulation : 0.1% for load variation from 0 to maximum.
Line Regulation : 0.1% for ± 10% mains variation
Display : 3½ digit, 7 segment LED Display
Application : Specially suitable for Electromagnet EMU-75

579. Digital Microvoltmeter-Order Code - TP1948

- Very low temperature drift
- Low DC input bias current-10pA
- Measures voltage down to 1mV
- Automatic polarity indicator

Specifications

Range : 1mV, 10mV, 100mV, 1V & 10Vwith 100% over-ranging
Resolution : 1mV
Accuracy : ±0.2%± 1 digit
Stability : Within ±1 digit
Input Impedance : > 1000M0 (10M0 on lOy range)
Display : 3½ digit, 7 segment LED with auto polarity and decimal indication
Power Supply : 220V± 10%, 50Hz

580. Digital Nanoammeter-Order Code - TP1949

- Measures voltage down to 100pA
- All solid state and IC design
- Accepts either polarity of input current.

Specifications

Range : 100nA, 1mA, 10mA, 100mA with 100% over-ranging
Resolution : 0.1nA
Accuracy : 0.2% for all ranges
Stability : Within ± 1 digit
Input Resistance : 25W, 2.5W, 0.25W, 0.025W
Display : 3½ digit, 7 segment LED (12.5mm height) with auto polarity and decimal indication
Input : Through amphenol connector
Power Supply : 220V ± 10%, 50Hz

581.Digital Picoammeter-Order Code - TP1950

Measures voltage down to 1pA
- All solid state and IC design
- Very low offset current

Specifications

Multiplier : X1, X10, $X10^2$, $X10^3$, $X10^4$, $X10^5$

Note: Specifications are subject to change.

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Resolution	:	1pA, 10pA, 100pA, 1nA, 10nA, 100nA
Accuracy	:	0.2% for all ranges
Stability	:	Within ± 1 digit
Input Resistance	:	2.5KW, 0.25KW, 25W, 0.25W, 0.025W
Display	:	3½ digit, 7 segment LED (12.5mm height) with auto polarity and decimal indication
Input	:	Through amphenol connector
Power Supply	:	220V ± 10%, 50Hz

582. Hall Effect Set-up, DHE-21- Order Code - TP1951

Consists of the following :

Hall Probe (Ge Crystal)

Material	:	Ge single crystal n or p-type
Resistivity	:	8-10 Wcm.
Contacts	:	Spring type (solid silver)
Zero-field potential	:	<1mV (adjustable)
Hall Voltage	:	35-60mV/10mA/KG

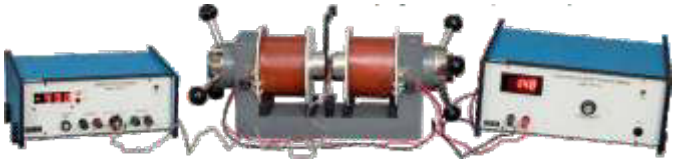
Digital Millivoltmeter

Range	:	0-200mV (Resolution 100mV)
Accuracy	:	±0.1% of reading ¸ 1 digit
Impedance	:	1 Mega ohm
Display	:	3½ digit, 7 Segment LED

Constant Current Generator

Currents	:	0-20mA (Resolution 10mA)
Display	:	3½ digit, 7 segment LED
Accuracy	:	0.25%; ±1 digit
Load	:	0.05% for no load to
Regulation	:	full load
Line	:	0.05% for +10% changes

583.Complete set of Hall Effect Experiment- Order Code - TP1952



The resistivity measurements of semiconductors cannot reveal whether one or two types of carriers are present; nor distinguish between them. However, this information can be obtained from Hall Coefficient measurement, which are also basic tools for the determination of carrier destiny and mobilities in conjuction with resistivity measurement.

The Hall effect experiment consists of the following :

a) Hall Effect Set-up along with Ge Crystal either p or n type as per TP1951.
b) Electromagnet as per TP1944
c) Constant Current Digital Power Supply as per TP1945
d) Digital Gaussmeter as per TP1941

584. Apparatus for the Measurement of Susceptibility of Paramagnetic Solution by Quinks's Tube Method-Order Code - TP1953

The force acts on any substance when it is placed in a inhomogeneous magnetic field. This force depends on the susceptibility x, of the material, i.e. on ratio of intensity of magnetisation to magnetising field (I/H).
Quantitatively it refers tothe extent of induced magnetisation in unit field. The force acting on a substance, either of repulsion or attraction, can be measured with the help of an accurate balance in case of solids (Gouy's Method) or with the measurement of rise in level in a narrow capillary in case of liquids.
From this measurement, the value of susceptibility can be calculated. The apparatus consists of the following:

a) Quincks's tube Quink Tube Stand
b) Sample: $MnSO_4$ H_2o
c) Electromagnet as per TP 1944
d) Constant Current Digital Power Supply as per TP1945
e) Digital Gaussmeter as per TP 1941
f) Travelling Microscope as per TP1566 /67.

585.Gouy's Method of Susceptibility Measurement of solids-Order Code - TP1954

In the Gouy method of susceptibility measurement, the solid sample in the form of a long cylinder (area of cross section A) is hung from the pan of a balance and is placed such that one end of the sample is between the pole-pieces of the magnet (field H) and the other one is outside the field. The force exerted on the sample by the in homogeneous magnetic field is obtained by measuring the apparent change (am) in the mass of the sample. The susceptibility x is given by x= 2amg/AH2.
If the sample is in the form of powder, it is filled in a long nonmagnetic tube which is then suspended from the pan of the balance. Appt. Consist of following

i) Scientific Balance, KSB-07

Capacity	:	200 gms
Sensitivity	:	1/10 mg. by vernier
Beam	:	Hard Bronze/Brass
Arrestment	:	Circular, failling away type
Air Damping	:	Very quick and positive, beam coming to rest in 2-3 sec
Chainomatic	:	A gold plated chain is suspended from

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the Device beam with its other and screwed on the rotating drum on which a scale graduated from 0 to 10 div each division representing 1 mg is installed. By the movement of this scale before a vernier, reading upto 1/10th mg is taken.

II) Sample in the form of a long rod:
Set of 4 samples, 2 each of Ebonite and Wood

iii) Constant Current Power Supply
As per TP1947

iv) Electromagnet, TP1946

Pole Pieces	:	75mm tappered to 25mm
Mag. Field	:	22KG at 5mm air gap
Energising Coils	:	Two of approx. 13 ohm each
Power	:	0-90VDC, 3A, for coils in series 0-45VDC, 6A, for coils in parallel

v) Gaussmeter
As per TP1941
The experiment is complete in all respect.

586. PID Controlled Oven-Order Code - TP1955

This is high quality temperature controlled oven suitable for testing of electronic components & study of temperature transducers etc. The oven has been designed for fast heating and cooling rated which enhances the effectiveness of the controller. While the basic design of the controller is around the PID configuration for its obvious advantages, wastage of power is avoided by using a Pulse Width Modulated (PMW) switch. This combination has the advantages of both on-off controller and linear PID controller. The result is a good stable and accurate temperature control.

Specification of the Oven

Temperature Range	:	Ambient to 200°C
Stability : Short Range	:	± 0.2°C. Long Range : +0.5°C
Measurement Accuracy	:	±0.5°C (typical)
Oven Dimensions	:	Heating Chamber Inner
Diameter	:	25mm, Height : 100mm
Sensor	:	RTD (A Class)
Display	:	3% digit, 7 segment LED (12.5mm)

587.Dielectric Constant & Curie Temp. of Ferro Electric Ceramics App-Order Code - TP1956
Des cription of the Experimental Set-up

1. **Probes Arrangement, DEA-01**
   It has two individually spring loaded probes. The probes arrangement is mounted in a suitable stand, which also holds the sample plate. To ensure the correct measurement of sample temperature, the RTD is embedded in the sample plate just below the sample. This stand also serves as the lid of temperature controlled oven.

   Proper leads are provided for connection to Capacitance Meter and Temperature Controller.
2. **DEC-Sample**
   Barium Titanate ($BaTiO_3$)
3. **Oven, DE0-01**
   This is a high quality temperature controlled oven. The oven has been designed for fast heating and cooling rates, which enhances the effectiveness of the controller.
4. **Main Unit**
   The Set-up consists of two units housed in the same cabinet.

(i) Oven Controller
Platinum RTD (A class) has been used for sensing the temperature. A Wheatstone bridge and an instrumentation amplifier are used for signal conditioning. Feedback circuit ensures offset and linearity trimming and a fast accurate control of the oven temperature.

Temp. Range	:	Ambient to 200°C
Display	:	3½ digit, 7 segment LED with auto polarity & decimal indication
Resolution	:	0.10C
Accuracy	:	+.50C (typical)
Stability	:	+0.20C
Power	:	150W

(ii) Digital Capacitance Meter
This is a compact direct reading Instrument for the measurement of capacitance of the sample.

Range	:	50-6000 pf
Resolution	:	1pf
Display	:	3½ digit, 7 seg

588.Dielectric Constant Kit for Solid Samples-Order Code - TP1957
It consists of following :
TP1957A : Main unit forthe measurement of Di-electric Constant for Solids at high temp. Upto 400°C
TP1957B : Sample PZT
TP1957C : Digital Capacitance Measurement Meter.
TP1957D : Dimmerstat 2 Amps
TP1957E : Digital temperature indicator.

589.Curie Temperature for Ferro-Electric Material -Order Code - TP1958
It consists of
TP1958A : Digital voltmeter (0-9.99 Vac)
TP1958B : Audio oscillator (1KHz)
TP1958C : Standard Capacitors (pf, nf)
Dielectric cell consists of two 1" dia.gold plated brass discs fitted in between the cell holder.
Furnace : PID Controlled (RT 25° C)Thermocouple

Note: Specifications are subject to change.

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589. Curie Temperature Kit for Ferro-Magnetic Material-Order Code - TP1959

Ferri-magnetic (or ferrites) materials are complex oxides of iron and other metals. Knowledge of the Curie temperature of ferri-magnetic materials is of particular interest to the Physicists and the Engineers.

The Unit enables one to trace the B-H loop (hysteresis) of a ferromagnetic specimen using a C.R.O. A measurement of the area of the loop leads to the evaluation of energy loss in the specimen. As the temperature of the sample is increased, the area of the loop decreases. At Curie temperature, the loop becomes a straight line, indicating zero loss.

Curie Temperature Kit consists of:

i) Main Unit
ii) Furnace
iii) Digital Thermometer with Thermocouple Probe
iv) Ferrite samples

590. Semi Conductor Diode Characteristics Apparatus (with four meters)-
Order Code - TP1960

With built in dual IC regulated power supplies, fitted with selected semi conductor diode OA-79 or its equivalent, mounted on the front panel. Four M0-65 meters with their separate terminals are provided on the front panel. 0-1.5V & 0-10mA meters are used for forward bias characteristics apparatus whereas for reverse bias characteristics apparatus 0¬35V and 0-50pA moving coil meters are used. Separate terminals for all the four meters, Semi conductor diode as well as for dual power supplies are provided on the front panel.

Supplied in a powder coated sheet metal box. High Quality aluminium panel is used for longer durability. Supplied with lead.

591. Semi Conductor Diode Characteristics Apparatus (with Two meters)-
Order Code - TP1961

This is a low price unit having two dual range meters instead of using three or four separate meters. One dual range voltmeter 1.5V/30V and another dual range meter of 500/10mA are used. Other specifications are same as that of TP1960.

592. Determination of Energy Gap in PN Junction Diode- Order Code - TP1962

Provided with two meters, power supply, PN junction diode & mini heating oven with thermometer for temp. measurement. Supplied with thermometer & leads.

Note: Specifications are subject to change.

593. Study of the energy band-gap and diffusion potential of P-N Junctions- Order Code - TP1963

The following studies can be carried out on any P-N Junction - Ge/Si rectifiers, LED's base emitter/collector - base Junction of transistors

- Reverse Saturation current Is
- Temperature Coefficient of Junction Voltage dV/dt
- Energy Band Gap VG,
- Junction Capacitance

Complete in all respect, including power supplies, temperature controlled Oven and digital meters for measurement of current, voltage and voltage and temperature.

Accessories required: CRO

594. Zener Diode V-I Characteristics Apparatus (Forward & Reverse)- Order Code - TP1964

Instrument comprises of DC Regulated Power Supply 0-10 VDC 10mA, two dual range MO 65 meters are used for voltage & current measurement, Zener Diode is mounted on the panel, connections of Supplies, Meters & Zener Diode brought out at 4mm terminal.

High quality aluminium panel used for longer durability, housed in sheet metal box.

595. Voltage Stabilization Characteristics of Zener diode with 2 meters-Order Code - TP1965

One continuously variable DC power supply of 0-30V. Two analog moving coil round voltmeter to measure Input & Output voltages are provided on the front panel. One series resistance & one zener diode of 8.2 V has been provided on front panel. Different type of load resistances selectable using band switch are also provided on the front panel.

High quality aluminium panel used for longer durability, High accuracy MO-65 Meters are used in this kit. Supplied with leads

596. Junction Diode (PN) & Zener Diode Trainer Digital Model (Combined)-Order Code - TP1966

Complete Kit (Digital) in all respects with the following built-in-components :-

- Built-in two Digital Panel Meters to read Voltmeter & Microammeter/Milliammeter readings (20V & 2000 mA /200mA)
- Solderless Breadboard of Size 3½"x2½" is also mounted on substantial Hylem backing plate.
- Contents of Kit :
- 1 Zener Diode 1Z5V6
- 1PN Junction Diode in 4007
- 1 Carbon Resistance of 270 ohm, 1 Watt.
- Spare plastic coated single Tinned copper wires (SWG

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No. 22) are provided for easy connection.
- Built-in variable stabilized power supply 3V and 15V

597. Junction Diode (PN) & Zener Diode Trainer Analog Model (Combined)-Order Code - TP1967

This kit comprises four MO-65 Meters of range 1V, 10V, 10mA & 20mA. Consists of two built-in stabilised Power Supplies of 1V & 10V, housed in a sheet metal box with bakelite panel

598. Transistor Characteristics Apparatus (Analog Version Combined Model)-Order Code - TP1968

This apparatus is used to verify the Input, Output & Transfer Characteristic of PNP & NPN transistors in common emitter as well as in common base mode. It is a complete unit provided with all components, regulated power supplies, meters etc. to perform the experiment.

Features:
- Two built in continuously variable regulated power supplies
- Four MO-65 moving coil type meters are provided to monitor voltage & current with their separate terminals for each meter.
- Rugged construction, compact unit provided with self explanatory USER'S Manual
- Special design of sheet metal box, gives maximum visibility for scale of meters.
- Supplied with high quality connecting leads.

599. PNP & NPN Transistor Characteristics App (Digital version Combined Model)-
Order Code - TP1969

Complete Kit (digital) in all respects with the following built-in components.
- Built-in two Digital Meters to read Voltage & Current (i.e 2V, 20V, 200mA & 200mA).
- Built-in variable stabilized power supplies 0-1V & 0-10V
- Banana sockets are provided for students to make connections themselves.
- Supplied with 10nos. safety leads with banana plugs.

600. FET Characteristics Apparatus-
Order Code - TP1970

The board consists of two IC regulated power supplies: 0-10y continuously variable D.C. stabilized power supply and 0-15V continuously variable D.C. stabilized power supply.
The two voltmeters 10y and 15V are used for the said power supplies. One 15mA moving coil meter is also provided on the front panel.
On/Off switch, jewel light and FET is mounted on the front panel. Supplied with leads &working manual.

601. UJT Charcteristics Apparatus & UJT as Relaxation Oscillator-Order Code - TP1972

Instrument comprises of two DC Regulated power supplies of 0-15V & 0-25V. Three analog meter are mounted on the front panel to measure voltage & current, UJT 2N 2646 mounted behind the panel & connections of supplies, meters, UJT are brought out on sockets.

Features :
- High quality aluminium panel used for longer durability, High accuracy Mo65 square meters are used in the kit.
- High quality computer power cord and patch cords used

602. To study the Hybrid Parameters of a Transistor.-Order Code - TP1973

The following studies can be carried out with this setup.
1. Study of H_{11} parameter (input impedance parameter)
2. Study of H_{22} parameter (output admittance parameter)
3. Study of H_{21} parameter (forward current transfer ratio)
4. Study of H_{12} parameter (reverse voltage feedback ratio)

The setup is provided with a built in power supply.

603. Photo Transistor Characteristics Apparatus-
Order Code - TP1974

Instrument comprises of DC Regulated Power Supply 0-3VDC/150mA, two Analog meters fo voltage & current measurement, connections of supplies & photo transistor brought out at 4mm sockets.
- Lamp holder with 60W bulb
- Wooden Plank

604. MOSFET Characteristics Apparatus-
Order Code - TP1975

Instrument comprises two DC regulated Power Supplies 0- 15VDc /150mA & 0-25 DC/150mA, three MO-65 for Voltage & Current measurement. One MOSFET No. TRF-840 mounted behind the panel, connection of supplies, meters & MOSFET brought out at 4mm sockets.

605. Diac Characteristic Apparatus-
Order Code - TP1976

Instrument comprises of DC Regulated Power Supply 0-50 VDC/150mA, two Analog meters for voltage & current measurement, one Diac mounted behind the panel, connections of Supplies & Diac are brought out at 4mm Sockets.

Features :
High quality aluminium panel used for longer durability, High accuracy Mo65 meters are used in the kit. High quality computer power cord and patch cords used.

Note: Specifications are subject to change.

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606. Triac Characteristics Apparatus-
Order Code - TP1977
Instrument comprises of Two DC Regulated Power Supplies 0- 15VDC/150mA & 0-5 VDC/150mA, three analog meters for voltage & current measurement, Triac mounted behind the panel, connections of Supplies & Triac are brought out at 4mm Sockets.

Features :
Are same as per TP1976

607. Opto Coupler Characteristics Apparatus-
Order Code - TP1978
In built of DC Regulated Power Supply of 5V DC, Square wave Function Generator 1Hz-200KHz, Photo Transistor (L14GIQ120) using for sensing. Two meter are (Ammeter 150mA & Voltmeter 10-0-10V DC) for Current & Voltage measurement. Circuit diagram printed on the front panel.

608. Class 'c' Amplifier-Order Code - TP1980
Instrument comprises of fixed output DC regulated Power Supply of 5V, circuit diagram printed, components mounted inside the cabinet & important connections are bought out on sockets

609. Darlington Pair Amplifier-
Order Code - TP1981
Instrument comprises of fixed output DC Regulated Power Supply of 12V. Transistor, Resistance and Capacitor are mounted on the front panel, Circuit Diagram is printed and connections of important points are brought out on 4mm

610. Transistor Amplifier Circuits (CB, CE & CC Modes)-Order Code - TP1982
Instrument Comprise of fixed output DC regulated Power Supply ¸ 12V, Circuit diagram is printed and components mounted on the front panel & connections of important points brought out on Sockets.

611. Audio Power Amplifier using IC TBA 810-
Order Code - TP1983
Instrument comprise of Fixed output DC Regulated Power supply of 6V IC TBA 810, Circuit diagram is printed and important connections are bought out on 4mm sockets.

612. FET Common Source Amplifier-
Order Code - TP1984
Instrument comprise of fixed output DC regulated Power Supply, Circuit diagram is printed, components mounted behind front panel & connections of important points brought out at 4mm Sockets.

613. Complementary Symmetry Amplifier-
Order Code - TP1985
Instrument comprises of fixed output DC Regulated Power. Supply of 12V, Circuit diagram is printed, Components mounted behind the front panel & connections of important points brought out at 4mm Sockets.

614. Class 'A' Amplifier Class A, B, AB & Push Pull Amplifier-Order Code - TP1986
Instrument comprises of fixed output DC Regulated Power Supply of 12V, Circuit diagram is printed, Components are mounted behind the front panel & connections of important points are brought out at 4 mm Sockets.

615. Biasing of Transistor in Class 'A' Amplifier-
Order Code - TP1984
Instrument comprises of two fixed output DC Regulated short circuit and overload protected Power Supply, One DC moving coil Round meter, three different values of RL and RE selectable using Bandswitch provided on front panel, circuit diagram is Printed & components mounted on the front panel.

616. Study of a Transistor Amplifier-
Order Code - TP1988
(RC Coupled) Cum Feedback Amplifier
The following studies can be carried out:

- Study of the basic circuit of a RC coupled amp.
- Frequency response of RC amplifier
- Effect of negative feedback on the gain and frequency response of the amplifier
- Effect of positive feedback on the gain and frequency response of the amplifier
- Verification of the condition of oscillation
- Study of different classes of amplifier

617. Step Down Transformer-
Order Code - TP1989
The step down transformer can be used to supply low voltage, useful for many applications in the lab. The unit consists of a step down transformer with different tappings for different voltages, selected by selector switch. The A.C. output is obtained on the two terminals given on the front panel.

Order Code	Description
TP1989A	Output 2-4-6-8-10-12V AC at 2 Amp.
TP1989B	Output 2-4-6-8-10-12V AC at 3 Amp.
TP1989C	Output 2-4-8-12-16-20V AC at 2 Amp.
TP1989D	Output 2-4-8-12-16-20V AC at 3 Amp.

Note: Specifications are subject to change.

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618. Resistivity of Semiconductor by Four Probe Determination of the Band-gap.-

Order Code - TP1994

The experiment consists of the following :-
(a) Four Probe Arrangement
(b) Oven (up to 200°C) with a power supply
(c) Sample :'Ge' Crystal
(d) Four Probe Setup, Model DFP -02

This unit consists of the following :

Constant Current Generator

Open Circuit Voltage:		18V
Current Range	:	0-20mA
Resolution	:	10mA
Accuracy	:	±0.25% of the reading ¸ digit
Load Regulation	:	0.03% for no load to full load.
Line Regulation	:	0.05% for ±10% of mains changes.

Multi Range Digital voltmeter

Range	:	XI (0-200mV) and X10 (0-2V)
Resolution	:	100mV at XI Range
Accuracy	:	±0.1%of reading ± 1 digit
Impedance	:	1 Mohm
Display	:	3% digit, 7 segment LED (12.5mm) height with auto polarity and decimal indication.
Power Supply	:	220V±10%50 Hz

619. Resistivity of Semiconductor by Four Probe Method at Different Temperatures and Determination of the Band-gap (Advance Model)-

Order Code - TP1995

Description of the experimental set-up

1. Probes Arrangement, FPA-03 : It has four individually spring loaded probes. The probes are collinear and equally spaced. The probes are mounted in a Teflon bush, which ensures a good electrical insulation between the probes. A teflon spacer near the tips is also provided to keep the probes at equal distance. The probe arrangement is mounted in a suitable stand, which also hold, the sample plate. To ensure the correct measurement of sample temperature, the RTD is embedded in the sample plate just below the sample. This stand also serves as the lid of the temperature controlled oven, Proper leads are provided for the current and voltage measurement.

2. DFP 03-Sample : Germanium crystal in the form of a chip.

3. Oven, FP0-03 : This is a high quality temperature controlled oven suitable for Four Probe Set-up. The oven has been designed for fast heating and cooling rates, which enhancesthe effectiveness of the controller.

4. Four Probe Set-up, DFP-03 : The set-up consists of three units housed in the same cabinet.

I. **Oven Controller**

Platinum RTD (A class) has been used for sensing the temperature. A wheatstone bridge and an instrumentation amplifier are used for signal conditioning. Feedback circuit ensures offset and linearity trimming and a fast accurate control of the oven temperature.

Temperature range	:	Ambient to 473k
Stability	:	±0.5k
Measurement	:	±1K (typical)
Oven	:	Specially designed for Four Probe Set-Up
Display	:	3½ digit, 7 segment LED with auto polarity and decimal indication

ii. Multi Range Digital Voltmeter

iii. Constant Current Generator

Specification of Multi Range Digital Voltmeter & Constant Current Generator is same as per TP1962.

620. Electron Spin Resonance Spectrometer-

Order Code - TP1996

In this method, use is made of the Zeeman interaction of the magnetic dipoles associated with the nucleus or the electron, when placed in an external magnetic field. Accordingly, they are identified as NMR (Nuclear Magnetic Resonance) or ESR (Electron Spin Resonance). This form of spectroscopy finds many applications in many diverse branches of Physics, Chemistry and Biology.

This set-up is designed, keeping in mind the basic objectives of a classroom experiment. The observation of ESR in low magnetic field and in a radio frequency makes this apparatus verysimple, inexpensive and within reach of every Post Graduate laboratory.

The Electron Spin Resonance experiment comes complete along
with following accessories:

1. Helmholtz coils with an attachment for the ESR-HC
2. ESR Sample : DPPH
3. R.F. Oscillator (10MHz to 19MHz)

Note: Specifications are subject to change.

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621. Franck-Hertz Experiment-
Order Code - TP1997

In 1914 Franck & Hertz experimentally proved that the energy transferred from electrons to atoms always has discreet values and the values obtained for energy levels are in agreement with spectroscopic results. Thus experimentally proving the Bhor's Model. It is a landmark experiment and can e performed in any college lab.

The experiment consists fo the following :-
- Argon filled tetrode
- Filament Power Supply
- 3.6-4.3 continuously variable
- Power Supply for VG_1K
- 1.3-5V continuously variable
- Power Supply for VG_2A
- 1.3-15V continuously variable
- Power Supply for VG_2K
- 0-95V continuously variable
- Saw tooth waveform for CRO display
- Scanning Voltage :0-80V
- Scanning Frequency : 115+20 Hz
- Multirange Digital Ammeter
- Display : 3½ digit, LED
- Range : 10^{-7}, 10^{-8} & 10^{-9A}
- The instrument can not only lead to a plot of the amplitude spectrum curve by means of point by point measurement, but also directly display the amplitude spectrum curve on the oscilloscope screen. This instrument can thus be used as classroom experiment as well as for demonstration to a group of students.

622. LED Characteristics Apparatus-
Order Code - TP2000

Instrument comprises of DC Regulated Power Supply 0-2.5 VDC/10mA, two round MO-65 meters for voltage & current measurement, LED's mounted on the front panel, connections of Supplies & LED brought out at 4mm Sockets/Terminals.
High quality bakelite panel is used for longer durability. High accuracy MO-65 Round Meters are used. Supplied with leads.

623. LDR Characteristics Apparatus-
Order Code - TP2001

Instrument comprises of DC Regulated Power Supply 0-10V/10mA, two Mo65 meters for voltage & current measurement, LDR mounted on the panel, connections of Supplies & LDR brought out at 4mm Sockets/ terminals.
High quality white bakelite panel is used for longer durability, High accuracy Mo65 round meters are used in the kit. Supplied with leads.

Standard Accessories :
- Lamp holder with Bulb.
- LDR mounted on Bakelite case.

624. Flashing & Quenching of Neon Bulb-
Order Code - TP2002

Instrument comprises of High voltage DC Power Supply 250VDC/30 mA, 3 Capacitors (Paper Type) connected Behind the front panel, can be selected using toggle switches & One Neon lamp mounted on the front panel.

625. SCR Characteristics Apparatus-
Order Code - TP2003

Instrument comprises of two DC Regulated Power Supply 0-2V & 0-20V, three MO-65 round meters 2V/20V, 10mA & 50mA for voltage & current measurement, SCR mounted behind the panel, connections of Supplies, Meters & SCR brought out at 4mm Sockets/Terminals.
High quality white bakelite panel is used for longer durability, High accuracy MO-65 Round Meters 2V/20V, 10mA & 50mA are used. Supplied with leads.

626. Thermister Characteristics Apparatus-
Order Code - TP2004

Instrument comprises of fixed DC Regulated Power Supply 5V One glass thermistor is kept in temperature controlled oven, Connections of Supply, Meter &Thermistor are brought out at 4mm Sockets/Terminals. One galvanometer of MO-65 meter is used.
High quality bakelite panel used for longer durability, Supplied with leads.

627. Conversion of Galvanometer into Voltmeter-
Order Code - TP2005

The unit consists of Mo65 Galvanometer of internal resistance of 100 ohms **(specially designed galvanometer)** & voltmeter 10V. Built in power supply of 10y along with two suitable resistances so that we can show how galvanometer is working asvoltmeter of 5V & 10y.

628. Conversion of Galvanometer into Ammeter-
Order Code - TP2006

The unit consist of Mo65 galvanometer of internal resistance 100 ohms (specially designed galvanometer) & milliammeter of 100mA. Built in power supply of 10V along with two suitable resistances so that one can see how galvanometer is working as milliammeter/ Ammeter of 50mA & 100mA.

629. Full Wave Rectifier-Order Code - TP2008

Provided with three meters of 20V AC, 20V DC & 100mA DC, Full wave rectifier with transformer with center tapped secondary and load resistor. The secondary terminals of the transformer connected to the p-regions of two pn junction diode. The centre tap is connected to the ground. The load resistance is connected across the common n-regions of the diode and the ground.

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630. Half wave, Full Wave & Bridge Rectifier-
Order Code - TP2009

The training board consists of centre tapped transformer along with inductance, resistance & capacitance (to be used in filter circuits).

631. Lissajous Figure Apparatus-
Order Code - TP2010

Fixed Output DC Regulated Power Supply of +15V. Builtin Sine Wave Oscillator of 1 kHz frequency. Capacitor & resistance are mounted behind the front panel selectable through SPDT switches with connections brought out on sockets. One potentiometer (S) is mounted on the front panel to change the phase difference. One operational amplifier IC 741 is placed inside the cabinet with connections brought out on sockets for 180°Phase Shift.

632. Measurement of High Resistance using Substitution Method-Order Code - TP2011

Continuously variable, Over load & short circuit protected DC regulated power supply of 0-8 Volts. One galvanometer 30-0-30 (Internal resistance G=2K) is mounted on the front panel. 100k to 1 M resistances selected through band switch with output on sockets are provided on the front panel. One potentiometer (resistance S=0-22K) with output on sockets is mounted on the front panel. Two unknown resistances X1 (200K) & X2 (470K) are also mounted on the front panel.

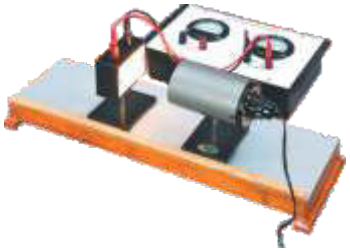
633. RC circuit as Low Pass & High Pass Filters-
Order Code - TP2012

Circuit diagram for low pass, High Pass Filter Printed, three set of Resistances and three set of capacitors are connected inside and connections are brought out at 4 mm Sockets/Terminals.

634. Tunnel Diode Ch. Appts.-
Order Code - TP2013

In built DC regulated Power Supply of 5 volts. Two 3½ digit digital panel meter for measuring the voltage across resistance & tunnel diode (Range 0-2V DC). Current control on the front panel. Tunnel Diode-IM 3717

635. Photo Cell Characteristics Apparatus-
Order Code - TP2015



Selenium Photo cell mounted in metal box. Supplied with light source with 60W lamp. Photo cell Kit with DC Microammeter of 1000mA & DC Millivoltmeter of 500mV mounted behind the panel, connections of Supplies, Meters are brought out on front panel.

636. Solar Cell Characteristics Apparatus-
Order Code - TP2016

One solar cell is mounted in a suitable suitable wooden box. Light source with 80 watt lamp is also enclosed in special metal box. Two analog meters are mounted on the front panel in a box. Supplied with built-in load resistances and suitable leads.

637. Planck's Constant Apparatus-
Order Code - TP2017

DC variable regulated Power Supply of 0-1VDC. Vacuum type Photocell mounted in wooden box having window for injecting light &also tofit the different types of filters. One wooden plank 30cm. long. Light source with 100W lamp & set of 3 filters. (Blue, green &Yellow)

638. Planck's Constant Apparatus-
Order Code - TP2020

The Apparatus consist of the following :

1.Photo Sensitive Device :Vacuum photo tube.
2.Light source : Halogen tungsten lamp 12V/35W
3.Colour Filters : 635mm. 570nm, 540nm, 500nm & 460nm.
4.Accelerating Voltage : Regulated Voltage Power Supply.
Output : +15V continuously variable through multi-turn pot
Display : 3½ digit 7-segment LED
Accuracy : +0.2%
5. Current Detecting Unit : Digital Nanoammeter
It is high stability low current measuring instrument
Range : 1000mA, 100mA, 10mA & 1mA with 100% over ranging facility
Resolution : 1nA at 1LtA range
Display : 3% digit 7-segment LED
Accuracy : +00.2%
6 Power Requirement : 220V +10%, 50Hz or 110V +10%, 60Hz as required.
7. Optical Bench : The light source can be moved along it to adjust distance between the light source and the phototube, scale length is 400mm. A tube is provided to install colour filter and a focus

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lens is fixed in the back end.
The set-up is complete in all respect, no additional accessory required.

639. Study of Planck's Constant by means of LED-

Order Code - TP2021

Several proposals to measure the Planck's Constant for didactical purposes, using the current-voltage (I-V) characteristics of a light emitting diode (LED) have been made quite regularly in the last few years. The physical interpretation however is not completely clear and this has raised many discussions, which have been published almost with same regularity as the proposals themselves.

$$I=I_0 \exp [-e(V_0-V)/ hkT]$$

Where, e is electronic charge, k is Boltzmann constant, T is absolute temperature and h is material constant which depends on the type of diode, the location of recombination region, etc.

1. Dependence of current (I) on temperature (T) at constant applied voltage (V)

The following facilities are built in for this

Current Meter

- A highly stable current source with 3% digit display.
- Range : 0-2mAwith resolution of 1mA
- **Oven. PCO-01**
- It is a small temperature controlled oven with built-in RTD sensor.
- Temperature adjustable from ambient to 338K
- Digital display of temperature
- High stability 1K

Variable Voltage Source (0-2V)

- A high stability voltage source with 3% digit display

2. Material Constant

To draw I-V characteristics of LED for determination of h, a variable voltage source and a current meter are provided with 3½ digit display.

3. The wavelength l of light emitted by LED

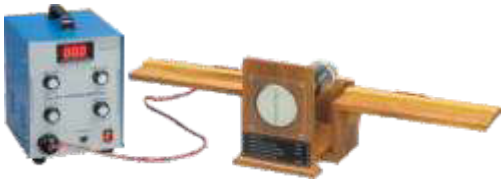
These are taken from LED datasheet or measured by a transmission grating, and are provided with the set of LED's.

640. elm by Thomson Method-

Order Code - TP2028

It consists of following :

a. High voltage Power Supply with One digital meter provided to measure the deflection voltage. Complete with separate intensity, focus and deflection controls.
b. CRT- 3BP1 mounted on teak wood frame
c. Graduated teak wood platform to place magnets at the height of deflection plates.
d. Two small magnets
e. Deflection magnetometer compass box Complete in all respects with working manual.



641. e/m by Short Solenoid Method (Magnetron Valve method)-

Order Code - TP2029

Kit Comprises of Low voltage DC Power Supply Unit with filament voltage & Solenoid current controls. Two meter are provided for Anode Voltage measurement. One Solenoid Unit mounted on Wooden stand & Valve is kept in the Solenoid pipe. Complete in all respect.

642. e/m by Helical's Method-

Order Code - TP2030

it Comprises of High Voltage Power Supply Unit with intensity, focus, X , Y deflection & Solenoid current controls. Two meters are provided in Power Supply to measure Acceleration Voltage & solenoid current. One Solenoid Unit Comprises Solenoid mounted on Wooden stand & CRT is kept in the solenoid pipe.

643. Measurement of Electron Charge to Mass Ratio (Based on Thomson's Method)-

Order Code - TP2031

Our arrangement for measuring e/m, the charge to mass ratio of the electron is a very simple set-up. It is based on Thomson's method. The e/m-tube is bulb-like and contains a filament, a cathode, a grid, a pair of deflection plates and an anode. The tube is filled with helium at a very low pressure. Some of the electrons emitted by the cathode collide with helium atoms which get excited and radiate visible light. The electron beam thus leaves a visible track in the tube and all manipulations on it can be seen. The tube is placed between a pair of fixed Helmholtz coils which produce a uniform and known magnetic field. The socket of the tube can be rotated so that the electron beam is at right angles to the magnetic field. The beam is deflected in a

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circular path of radius r depending on the accelerating potential V, the magnetic field B and the charge to mass ratio e/m. This circular path is visible and the diameter d can be measured and e/m obtained from the relation

$$e/m = 8V / B^2 d^2$$

This set-up can also be used to study the electron beam deflection for different directions of the magnetic field by varying the orientation of the e/m-tube.

Description of the Experimental Set-up

The central part of the set-up is the e/m-tube. This is energized by

1. Filament current supply,
2. Deflection plates voltage supply,
3. Continuously varia ble accelerating voltage supply to the anode.

The tube is mounted on a rotatable socket and is placed between a pair of Helmholtz coils. The tube can be rotated about a vertical axis, varying the orientation of the electron beam with respect to the Helmholtz coils. This allows magnetic deflection of the beam to be demonstrated. Circular, helical or undeflected paths can be seen. The direction of the current can be changed. The magnetizing current I and the accelerating voltage V are respectively measured by an ammeter and a voltmeter mounted on the front of the panel. The diameter of the electron beam path is measured by a detachable scale mounted in front of the bulb of the tube. This scale has a slider with a hollow tube (fitted with cross wires at its both ends) to fix the line of sight while making the measurements of the beam path diameter. Base of the unit contains the power supply that provides all the required potentials and the current to the Helmholtz coils. The entire apparatus is contained in a wooden case for convenient storage.

Specifications

Helmholtz coils of radii 14 cm Number of turns 160 on each coil Accelerating Voltage 0 250V Deflection plates voltage 50V 250V Operating Voltage 220VAC/ 50Hz Typical results obtained with the above set-up for variation of the diameter of the electron beam path with the accelerating voltage for a current of 1A to the Helmholtz coils are shown in the following graph. They lead to e/m equal to 1.77 1011 coul /kg.

644. Millman's Theorem-Order Code - TP2036

Instrument comprises of one fixed voltage 5V & another 1.2V to 10V, DC regulated power supply. Two moving coil analog meter My& 20mA are mounted on the front panel to measure voltage & current, circuit diagram is printed & important connections are brought out on sockets/terminals. Supplied with leads.

645. Thevinin's Theorem-Order Code - TP2037

Instrument comprises of Variable DC Regulated variable Power Supply of 1.2V to 10 V. Two moving coil meters of 10V & 10mA are provided to read voltage & current. Circuit diagram Printed on the front panel & connections of Supplies, Meters & Resistances are brought out at 4mm Sockets/Terminals. Supplied with leads.

646. Reciprocity Theorem-

Order Code - TP2038

Instrument comprises of Variable DC Regulated Power Supply of 1.2V to 10 V. Three moving coil meters 10V, 10mA & 20mA are provided to read voltage & current. Circuit diagram Printed on the front panel & connections of Supplies, Meters & Resistances are brought out at 4mm Sockets/Terminals. Supplied with leads.

647. Norton's Theorem-Order Code - TP2039

Instrument comprises of Variable DC Regulated Power Supply of 1.2V to 10V. Two moving coil meters 10V & 20mA are provided to read voltage & current. Circuit diagram Printed on the front panel & connections of Supplies, Meters & Resistances are brought out at 4mm Sockets/Terminals. Supplied with leads.

648. Maximum Power Transfer Theorem-

Order Code - TP2040

Instrument comprises of Variable DC Regulated Power Supply of 1.2V to 10 V. Two moving coil meters 20V & 30mA are provided to read voltage & current. Circuit diagram Printed on the front panel & connections of Supplies, Meters & Resistances are brought out at 4mm Sockets/Terminals. Supplied with leads.

649. Super Position Theorem-

Order Code - TP2041

Instrument comprises of Two fixed Voltage DC Power Supply of 5V & 9V. Two moving coil meters 10y & 10mA are provided to read voltage & current. Circuit diagram Printed on the front panel & connections of Supplies, Meters & Resistances are brought out at 4mm Sockets/Terminals. Supplied with leads.

650. Verification of Network Theorems (Combined Model with analog meters)-

Order Code - TP2042

Instrument comprises of 3 fixed output DC Regulated Power Supplies of 12V, 5V at 250mA current, 4 analog meters, Circuit diagram for all the 6 theorems printed on the front panel. Connections of Supplies, Meters, Resistances & Potentiometers are brought out at 2mm Sockets. Supplied with suitable leads.

651. Verification of Network Theorems (Combined Model with Digital meters)-

Order Code - TP2043

Same as TP2042 but supplied with 4 Digital Meters for more better results.

652. Verification of KCL & KVL (Kirchoff's law)-

Order Code - TP2044

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Instrument consists of DC regulated Power supply, two M065 moving coil meters for voltage & current measurement.
Combination of resistances are mounted on front panel.

653. Charging and dischargings of a condenser through resistance.-Order Code - TP2045

To study charging and discharging of a condenser. The apparatus is used to find the relationship between potential difference across a capacitor and the time taken during charging and discharging.
Complete with built in IC regulated power supply, workable on 230V A.C. Three resistances (having different values) are mounted with their separate terminals for different graph with the help of provided with digital meter & digital Stop clock.

654. Series & Parallel Resonance LCR Kit-

Order Code - TP2046
The apparatus consist of three resistances, one inductance and three capacitors with separate trminals for measurement of 'CI' Value, with two deluxe A.C. Moving coils meter for V & I. provided with connection leads.

655. LCR Impedance Apparatus-

Order Code - TP2047
Instrument comprises of AC Power supply 0-10 V AC selectable using band switch, two AC moving coil meters are used to measure voltage & current, three set of Resistances, three set of Capacitors & one Inductance connected inside & connections brought out at Socket/Terminals.

656. Elementary study of Logic Circuit Trainer-

Order Code - TP2051
Based on DTL (Discrete Components used) AND, OR, NOT Gates, provided with connection leads. Supplied without 5V Voltmeter.

657. Apparatus to study 'OR', 'AND', 'NOR', 'NAND', 'NOT' Gates (Five Gates)-

Order Code - TP2052
Stated gates built up using discrete components viz. resistances, transistors & diodes. Provided with built in power supply. NAND, NOT gates can be assembled using different combinations of OR, AND, NOR gate.

658. Digital Trainer Model DT-04-

Order Code - TP2053
Complete in all respects with following built-in components :

- Consists of fixed 5V power supply for IC.
- 2 No. Logic input switches
- 1 No. Logic output indicator
- A high quality solderless Breadboard of size 7" x 2½" with 840 tie points is mounted on the panel.
- Six Nos. IC's for AND, OR, NOT, NAND, NOR & EX-OR are fixed on full piece Bread Board
- Easy connectible wires are provided (plastic coated single tinned copper wire SWG No. 22)

659. Basic Logic Gates using TTL IC's 7 in 1-

Order Code - TP2055
Instrument comprises of 5V/150mA DC Regulated Power Supply for logic '1' logic '0'. TTL IC's for 'AND', 'OR', 'NOT', 'NAND', 'NOR', 'EX-OR' 'EX-NOR' gates. Components soldered on the back side of hylum sheet and front panel connections are brought out at sockets/terminals NOR, NAND, EX-NOR Gates can be assembled using different combinations.

660. Study of 5 Gates - AND, OR, NOT, NAND & NOR gate.-Order Code - TP2056

It consist of fix voltage power supply of 5 volts for IC's. Two number logic input switches and 1 number logic output indicator. All the above 5 gates are mounted on the panel with their respected 14 pin IC.
Every pin of each IC is connected to the socket with their respective pin numbers. Very useful kit to under stand the behaviors of each IC. For 5 number IC's we are having 70 numbers of sockets on the board. Supplied with leads & working manuals.

661. Verification of Boolean Identities Demorgan's Theorem-Order Code - TP2057

Instrument comprises of DC Regulated Power Supply 5V/150mA, 4SPDT switches provided for selecting logic '1' logic '0', 5 Red LED output indicators, circuit diagram printed for 4 'OR', 4 'AND' 4 'NOT' gates. 4 'NAND', 4 'NOR' & 4 'EX-OR' with their respective IC's are placed inside the cabinet. Connections are brought out at sockets/terminals

662. Verification of truth tables of Logic gates using NAND & NOR gates-Order Code - TP2058

Instrument comprises of DC Regulated Power Supply 5V/150mA, 2 logic '1' 2 logic '0' inputs are provided on sockets, 2 Red LED output indicators, circuit diagram printed for 4 'NAND' 4 'NOR' gates and their respective IC's placed inside the cabinet. Connections are brought out at sockets/terminals.

663. Study of 4 Bit Adder and Subtractor-

Order Code - TP2059
Instrument comprises of DC Regulated Power Supply 5V/150mA, 4 Logic inputs selectable using SPDT switches, 4 output LED indicators, circuit diagram of IC 7483 Printed on board. Connections are brought out at sockets/terminal on front panel.

664. Digital Trainer to Verify Adder and Subtractor using NAND Gates-

Order Code - TP2060
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA for logic inputs, 4 SPDT switches provided

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for selecting logic '1' logic '0', 3 NOT gates for providing compliments of the logic inputs, 2 Red LED output indicator, circuit diagram printed for 5 number three input 'NAND' gate with their respective IC's placed inside the cabinet. Connections are brought out at socket/terminals on the front panel

665. Digital Trainer to study verify truth tables of Flip Flops-Order Code - TP2061
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 4 logic inputs, (bounceless) logic '1' logic '0' selectable using SPDT switches, 1 Hz monoshot clock pulse, Two output indicators, Circuit diagram for 'D', 'T"RS', 'JK"JK Master Slave' flip-flops are Printed, their respective IC's placed inside the cabinet. Connections for inputs & outputs are brought out on the sockets, 1 NOT gate for converting 'RS' flip-flop to 'D' type flip-flop.

666. Study / verify Truth tables of 'RS"D' Type flip flops using NAND & NOT gates-
Order Code - TP2062
Instrument comprises of DC Regulated Power Supply 5VDC/150mA, 4 Logic '1' 4 Logic '0' inputs, 1 Hz monoshot clock pulse, Two output indicators, Circuit diagram for NAND & NOR Gates is Printed. Connections for inputs & outputs are brought out at the sockets/terminals

667. Study of 4 Bit Ripple Counter Forward Reverse & Module-Order Code - TP2066
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 1 Hz monoshot clock pulse, Two output indicators, Circuit diagram for 4 'JK' flip-flops & 4 input NAND gate are printed. Connections for inputs & outputs are brought out at sockets/terminals on front panel.

668. Study of 4 Bit BCD Counter/ Decimal to Binary Encoder using IC 7490-
Order Code - TP2068
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 1 Hz monoshot clock pulse, four output indicators, 7 segment display with decoder IC. Circuit diagram for IC 7490 Printed. Connections for various inputs and outputs are brought out at the sockets on the front panel.

669. Study of 4 Bit Up/Down Counter-
Order Code - TP2069
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 4 SPDT switches provided for selecting logic '1' logic '0' , 1 Hz monoshot clock pulse, four output indicators, Circuit diagram for IC 74193. Printed Connections for various inputs and outputs are brought out at the sockets, two switches for selecting up or down counting to reset the counter.

670. Study of Encoder, Decoder Circuits, Decimal to BCD Encoder & BCD to 7-segment Decoder.-
Order Code - TP2070
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 4 SPDT switches provided for selecting logic '1' logic '0', 1 Hz monoshot clock pulse, four output indicators, Circuit diagram for IC 7490, IC 7447, 7-segment display are printed. Connections for various inputs and outputs are brought out at the sockets on the front panel.

671. Study of One input/Four output Demultiplexer using IC 74155.-Order Code - TP2071
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 4 SPDT switches provided for selecting logic '1' logic '0', four output indicator, Circuit diagram for IC 74155 Printed. Connections for various inputs and outputs are brought out at the sockets on the front panel.

672. Study of Left, Right & Programmable Shift Register.-Order Code - TP2072
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 4 SPDT switches provided for selecting logic '1 logic '0', 1 Hz monoshot clock pulse, four output indicators, Circuit diagram for IC 7495 printed. Connections for various inputs and outputs are brought out at the sockets, two switches for serial input Mode control.

673. Study of 4-1 line four input / one output Multiplexer using IC 74153-Order Code - TP2073
Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 6 sockets for logic '1' logic '0' each, one output indicator. Circuit diagram for IC 74153 printed. Connections for various inputs and outputs are brought out at the sockets

674. Analog to Digital (A/D) Convertor-
Order Code - TP20674
Instrument comprises of DC Regulated Power Supplies 5 VDC/ 150mA, 0-10 VDC/150mA, +15 VDC/150mA, 1 Voltmeter, 4 SPDT switches provided for selecting logic '1' logic '0', one output indicator, Circuit diagram Printed on the front panel. Connections of various inputs and outputs are brought out at sockets.

675. Digital to Analog (D/A) Convertor using R-2R Network-Order Code - TP2075
Instrument comprises of DC Regulated Power Supplies 5 VDC/150mA, ±15 VDC/150mA, 1 Voltmeter, 4 SPDT switches provided for selecting logic '1' logic '0', one output indicator, Circuit diagram printed on the front panel. Connections of various inputs and outputs are brought out at sockets.

676. Digital to Analog (D/A) Convertor using Weighted Register Network-
Order Code - TP2076
Instrument comprises of DC Regulated Power Supplies 5 VDC/150mA, + 15 VDC/150mA, 1 voltmeter, 4 SPDT switches provided for selecting logic '1' logic '0', one

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output indicator, Circuit diagram for weighted resistor network inverting circuit using IC 741 printed on the front panel connections of various inputs output brought out at sockets.

677. Study of RAM Random Access Memory Circuit-Order Code - TP2077

Instrument comprises of DC Regulated Power Supply 5 VDC/150mA, 10 logic inputs selectable using SPDT switches, 4 LED output indicators, IC 7489 placed inside. Connections are brought out at sockets.

678. Study of 4 Bit Binary to Gray Code Convertor-Order Code - TP2078

Instrument comprises of DC Regulated Power Supply 5VDC /150mA 4 Logic inputs selectable using SPDT switches, 4 output LED indicators, Circuit diagram Printed, IC's placed inside connections brought out at sockets on the front panel.

679. Digital Training Board-Order Code - TP2079

To study and verify the truth table of

- TTL Logic gate
- Boolean Expression.
- Adders, Subtractors
- De-Morgan's Theorem
- Flip-Flops

680. Logic Gate circuit trainer/Digital Computer-II (Bread Board Model)-Order Code - TP2080

Instrument comprises of two DC regulated Power Supplies of 5 VDC/lAmp+15VDC/150mA, 10Logic inputs with LED indicators selectable using SPDT switches, 1Hz, monoshot clock pulses, Breadboard is mounted on front panel to perform various experiments, 10 logic output indicators, 3 seven segment display mounted on front panel.

681. Linear IC Trainer-Order Code - TP2085

Lucidly illustrated User's manual unravels analog electronics concepts through brief theoretical reviews followed by experiments, self test questions and exercises. Modularly designed Front Panel contains all commonly used components for doing at least 10 experiments.

It consists of specially designed brass sockets of 2mm inner diameter which are press fit by special techniques on bakelite panel. Specially designed patch cords (with spring action) of pin diameter 2mm are provided so that the students can make interconnections themselves and do various experiments.

Board Consist of following :

- DC Regulated Power Supplies
- Fix + 12V/ 250mA, Variable 0 to + 5 V/ 250 mA.
- Sine Wave Oscillator of 1 KHz at 0.5 V p-p is built-in.
- Functional diagram of IC 741 with input points is printed on board. Additional 8 pin IC Base with machine pins is provided for putting any other IC of your choice.
- Digital Voltmeter 0-20 V DC1 No.
- 3½ Digit, LCD Display, Mains operated.
- Assorted Values of Resistances-11 No.
- 100,1K, 3.3K, 5K, 10K, 22K & 100K ohms etc.
- Assorted Values of Capacitances - 3 No.
- 0.1,1 & 10uF
- Potentiometer 10 Koh m, Linear- 1 No.
- 2mm Interconnection Leads- 10 No.
- Toggle switch with selection of Input or Output V is provided.
- Comprehensive USER's Manual for doing at least 10 experiments on OP-AMP 741 is provided.

682. Digital IC Trainer-Order Code - TP2086

It consists of specially designed brass sockets of 2mm inner diameter which are press fit by special techniques on bakelite panel. Specially designed patchcords (with spring action) of pin diameter 2mm are provided so that the students can make interconnections themselves and varify the truth table as mentioned in User's Manual. Various experiments on logic gates, Flip-Flop &Counters can be done.

Board Consists of following :

- DC Regulated Power Supply 5 V/1 Amps.
- Special IC Base of 14 Pin for inserting any IC of 14 pins - 1 No.
- Special IC Base of 16 Pin for inserting any IC of 16 pins - 1 No.
- Logic Input Switches (Bounceless) - 8 No.
- LED Indicators (Buffered)- 10 No.
- Clock Generator (0.1, 1, 10 & 100 Hz) - 1 No.
- 7 Segment Display with Decoder IC 74471 No.
- 2mm Interconnection Leads.-10 No.
- 74 LS 08 (AND), 74 LS 32 (OR), 74 LS 04 (NOT), 74 LS 00 (NAND) 74 LS 02 (NOR) & 74 LS 86 (EX-OR)-1 No. 7474 (D Flip Flop 74LS76(JK Flip-Flop) & 7490 (Decade Counter) can be mounted on 14 or 16 pin IC Base.
- Comprehensive USER's Manual for doing experiments on Logic Gates, Flip-Flops & Decade Counter is provided.

683. Project Board-Order Code - TP2088

It consist of the one breadboard having two terminal strips & one distribution strips (having total 840 tie points) It consist of two fixed power supplies of 5 volt, 1 Amp and ±12 volt 250mA. Very useful project board upto higher secondary school students.

684. Discrete Component Trainer-Order Code - TP2090

Lucidly illustrated User's manual unravels analog

Note: Specifications are subject to change.

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electronics concepts through brief theoretical reviews followed by experiments, self test questions and exercises. Modularly designed Front Panel contains all commonly used discrete components.
It consists of specially designed brass sockets of 2mm inner diameter which are press fit by special techniques on bakelite panel. Specially designed patch cords (with spring action) of pin diameter 2mm are provided so that the student's can make interconnections themsleves and do various experiments.

It consists of following items on main panel :
- Power supply of +SV, +12V,-12V each of 250mA
- Silicon, Germanium diodes, Zeners.
- PNP & NPN Transistors, FET
- One speaker
- 12 different values & wattage of carbon film resistances.
- 12 assorted values of capacitors from 100PF to 1000uF.
- Integrated Circuit (IC) Base & IC 74LS00- 1 No. each
- LED, LDR, Photo diode, Solar Cell
- Logic Switches (4 No.) & LED indicators (4No.) etc.
- 2mm Interconnection Leads- 10 No.

685. Discrete Component Trainer-
Order Code - TP2091

Board showing different Active & Passive Components.
- Big Size Board of approx. 30"x24" with acrylic cover with locking facility &Wall mounting Type, have following specifications.
- Different Power Suppliers, Fix +5V/lA & + 12V/0.5 A & Variable 0 to +15V/250 mA are provided on front panel. Insulated Socket for 230VAC are also provided.
- Digital Meters, LCD Display for measurement of V, A & ohms. having multiple ranges in V, I & R.
- Different Transistors (12 No.), small & big, Power transistor with h_{EF} measurement facility by digital meter.
- PN Junction Diode (of 1A & 5A) Varactor, Schotty, Zener, Rectifier of 30 Amps. diode, Signal diode, 1 Photo diode, FET, UJT, SCR mounted on front panel.
- 20 Resistors of different watts, 15 different capacitors,
- 2 LED (Green), 2 LED (Red) 2 LED (Blue) 2 LED (Dual),
- 1 LDR, 1 Solar Cell, Traiac/Diac pair, 4 Potentiometers, 2 inductors, Relay, and transformer (PT, CT, etc.), 1 speaker are mounted on board.
- 4 different Switches, 2 IC Base with 5 different Ic's Fuse with holder, 7 segment with decoder lc's.
- Suitable Interconnection Leads, 2mm stackable - 20 No. & Comprehensive User's Manual is also provided.

Note: Specifications are subject to change.

686. Boltzman Constant Kit-Order Code - TP2095
The experimental kit provides the following facilities :
- A digital millivoltmeter (0-9.99 V) to measure the voltage across the diode.
- A highly stabilized power supply whose voltage can be varied in steps of 1 mV using a ten turn potentiometer.
- A digital current ammeter (0 -500 mA).
- Diodes: Silicon diodes &Germanium diodes.

687. Lattice Dynamics Kit-Order Code - TP2096
It consists of an Audio oscillator with amplitude control and facility to vary the frequency from 0.9 KHz to 90 KHz. It has built in power supply and output stage to match the impedance of simulated lattice.
Another part of Lattice Dynamic Kit consists of transmission line, which simulates one dimensional mono-atomic and diatomic lattices. The only additional equipment needed is a General purpose C.R.O.

688. Capacitance And Permitivity Kit-
Order Code - TP2097
- •Completely self contained : no other measuring instruments are needed.
- No calibration required.
- High sensitivity : change of the order of 0.1 of can easily be detected.
- Integrated circuit electronics.
- Linearity betterthan 1%f.s.d.
- In operation it produces an output current proportional to capacitance.

Description
The Kit consists of reed relay switch with its A.C. supply, integrated circuit current amplifier and 0- 100 micrometer housed in a cabinet. In addition, a pair of capacitor plates 0.25m x 0.25m x 4 mm, a Perspex sheet, two capacitors (500 pf each), and set of perspex/ polythene spacers are provided with the kit.

689. Fourier Analysis Kit-Order Code - TP2098
The Kit consists of a stabilized power supply (6-0-6), a function generator and the analyzer. Square, triangular and clipped sine waveforms are generated by a specially designed integrated circuit function generator whose output frequency can be varied in the range of 500 Hz to 15 KHz using the 100K Ten Turn potentiometer. The output level of the sine and triangular waves can be varied using the amplitude control provided on the front panel of the unit. The only equipment needed for the experiment is any general purpose C.R.O. available in laboratory.

690. Universal B-H CurveTracer-
Order Code - TP2099
We have developed technique to quickly trace B-H loop of ferromagnetic materials of any shape without winding primary and secondary coil on the sample. The present technique is specially designed for teaching and industrial applications. Universal B-H Curve Tracer is a self contained instrument and need any low cost C.R.O

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having X-Y gain. In this technique, B-H loop is formed by simply inserting the specimen in a magnetizing coil. It make use of a specially designed integrated circuit probe to measure the flux density B. Any magnetic specimen, e.g. a 4-inch nail, soft iron wire or a hacksaw blade can be inserted in a magnetizing coil without disturbing the arrangement.
Change of the specimen results in a different shape of the hysteresis Curve. Even 10MHz CRO is sufficient for the B-H Loop.

691. Applications of IC 555-Order Code - TP2101
Instrument Comprises of DC Regulated power Supply 5 VDC/150mA, IC 555 & various components kept inside the cabinet & connections are brought out at 4mm sockets.

692. Hartley Oscillator-Order Code - TP2102
Hartley's Oscillator is intended for generation of high frequency signals like carrier wave signals in a communication system. This consists of a Tank circuit made up of an inductor and a fixed capacitor shutted by a voltage variable capacitor network. Using this trainer the student experiments how variable frequency is generated.
Instrument comprises of DC regulated Power Supply. Circuit Diagram printed & components mounted on front panel

693. Colpitt's Oscillator-Order Code - TP2103
Colpitt's Oscillator has fairly good frequency stability, can be used for wide frequency ranges and it is easy to tune. This similar to shunt-fed Hartley's Oscillator, except that two capacitors are used in the tank circuit instead of a tapped inductor. The frequency adjustment is possible both by varying the capacitor or inductor.
Instrument comprises of 12V DC Regulated Power Supply, Circuit diagram is printed & components are mounted on front panel.

694. RC Shift Oscillator-Order Code - TP2104
Phase shift Oscillator is a Sine Wave generator. The cascaded phase shift network provides necessary feedback voltage required to enable the circuit oscillate in association with active components using either OP-Amp or transistor configuration. The frequency range depends on the values of RC components selected in the phase shift network. The trainer has all the active components like Op-Amp, and transistor, built-in power supplies, appropriate value of components, variable uncommitted potentiometer etc. to perform the experiment.
Instrument comprises of 12V DC Regulated Power Supply, Circuit diagram is printed & components are mounted on front panel.

695. Tuned Collector Oscillator-
Order Code - TP2105
In built Power Supply of +12V.
Gang capacitor is provided as standard accessory.
The circuit diagram of oscillator is provided on the front panel.

696. Crystal Oscillator-Order Code - TP2106
Instrument comprises of fixed output DC Regulated Power Supply of 12V, circuit diagram is printed, components are placed inside the cabinet & important connections are brought out on

697. Operational Amplifier Trainer (IC741)-
Order Code - TP2110

Complete Kit (Digital) in all respects with the following buit-in components:-
- Built-in ±1.2V power supply for IC 741.
- 0-5V, 0-5V : 2 continuously va ria ble power supply.
- Spare resistances 22K, 4.7K, 3.3K : 1 no. Each ,47K, 1K, 33K: 2 nos Each & 10K :3 nos. & IC1 no.
- Solderness Breadboard of size 3.5" x 2.5" is also mounted on substantial Hylem backing palte.
- Spare plastic coated single Tinned copper wires (SWG No : 22) are provided for easy connections.
- •Digital meter with selector switch to read V_1 V_2 & output voltage (V_0)

Principle
Operational Amplifier are high gain differential amplifiers and are known so because they are used to perform a number of operations e.g. summing, Inverting, non-inverting etc. Such amplifiers are available in the form of an integrated circuit-IC 741.

698. Study of 741 Applications-
Order Code - TP2111
Features :
Study of Linear and non-linear applications as :-

- Integrator
- Differentiator
- Summer
- Subtractor
- Voltage to Current converter
- Current to voltage converter
- Astable Mode
- Precision rectifier
- 1.Built-in power supply
- 2.Built-in square wave and triangular wave Generator
- 3.Built-in current source.

699. Op-Amp as a Differentiator -
Order Code - TP2112
700. Op-Amp as a Integrator-
Order Code - TP2113
701. Op-Amp as a Subtractor-
Order Code - TP2114
702. Op-Amp as a Summer/Adder-
Order Code - TP2115

Note: Specifications are subject to change.

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703. Op-Amp as Voltage Follower-
Order Code - TP2116
704. Op-Amp as a Schemit Trigger-
Order Code - TP2117
705. Op-Amp as a Inverting & non-invertng Amplifier.-Order Code - TP2118

706. Digital LCR Meter-Order Code - TP2120

Technical Specifications:

Measuring Parameters	:	L-Q, C-D , R-Q
Test Frequency	:	100 Hz, 1 kHz, 10 kHz
Level	:	0.3Vrms
Accuracy	:	0.25%
Display Range	:	R 0.0001W -99.99 MW C 0.01 pF -19999 mF L 0.01 mH -9999 H D 0.0001 - 9.999 Q 0.01 - 9999
Sampling Rate	:	5 times/sec.
Equivalent Circuit	:	Series, Parallel
Test Mode	:	Auto, Hold
Calibration	:	Open circuit, Short circuit and Zeroing Test Ports,5Terminals
Display Mode	:	Direct readout
Operating Ambient	:	°C - 40°C, =90% RH
Power	:	AC11OV or 220V ± 10%, 50/60Hz
Power Consumption	:	20VA
Dimension	:	350 x 110 x 340 mm

707. FET Volt-Ohm Meter (VOM-60)-
Order Code - 2121

Tesca FET VOLT-OHM is an electronic voltmeter for quick and precise measurement of D.C. and A.C. voltage as well as resistance values. Large measuring ranges with high input impedance make the instrument ideal for a wide variety of laboratory, workshop and testing branch. Basic Operation: Voltage measurements are based on the bridge principle. The D.C. voltage applied to the input is fed to the bridge circuit via an attentuator and unbalance this bridge circuit, which indicates in built in calibrated meter. A. C. Voltage rectified through a double diode and subsequently measured by the bridge circuit. Resistances are measured in a calibrated network.

Specifications

Meter	:	For better accuracy Meter used with basic movement of 1001.1A.

AS ELECTRONIC D.C. VOLTMETER

Ranges	:	Seven 0-1.5, 5,15, 50,150, 500 and 1500 volts FSD
Accuracy	:	±3%
Input resistance	:	11 Megohms

AS ELECTRONIC A.C. VOLTMETER

Ranges	:	Seven 0-1.5, 5,15, 50, 150, 500 and 1500 volts FSD
Accuracy	:	15%
Input resistance	:	1.5 Megohms

AS ELECTRONIC OHM METER

Ranges	:	Seven 0-1K, 10K, 100K ohms and 0-1,10,100,1000Megohms FSD
Accuracy	:	±3%

This unit is housed in an attractive metal

708. Analog Signal/Function Generator-
Order Code - 2125

This is very useful and versatile laboratory instrument and it provides three basic waveform-sine, Square and Triangular waves.

Description:
Tesca Function Generator is completely an IC-Version and generates frequencies from 1 Hz to 100 KHz in five version decade ranges. The amplitude of the waveforms can be varied from 20mV to 20V, peak abut zero level with the help of 3 step coarse control and fine control. The instrument is housed in a sturdy metal cabinet with a facility of a stand on the bottom side totilt the instrument.

Waveforms	:	Sine, square & triangle waveform
Frequency range	:	This switches has five ranges providing Switch multipliers, ranging from 1 Hz to 100 KHz (X1,X 10, X100, X1K, X10K)
Waveform Switch	:	Sine, Square & Triangular wave may be selected by changing this particular switch given below the frequency range switch.
Frequency Dial	:	Varies the frequency between the extreme of the selected range and this dial calibrates for 1 to 10.5.
Course Amplitude	:	There is three step attenuator providing Switchrange of 0.2V, 2V and 20V maximum amplitude.
Find Amplitude Switch	:	The amplitude of the selected function can be varied from 10% to 100% of the value, selected

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by the coarse switch.
Output : Lock type terminals are provided to deliver the output signal with an internal source
Output Voltage : Variable up to 20V (p/p) into 50 ohms impedance

709. Analog Function Generator (0.1Hz to 1MHz)- Order Code - TP2126

Output : Sine, Square, Triangle Wave Frequency
Range steps : 0.1 Hz to 1 MHz in 7 decade
Output Voltage : 0-20 V p-p Continuously Variable
Output Impedence : 600 ohms.

710. Digital Function Generator (0.1Hz to 1MHz)- Order Code - TP2127

Output : Sine, Square, Triangle Wave
Frequency Range : 0.1 Hz to 1 MHz
Output Voltage : 0-10 V p-p Continuously Variable
Output Impedence : 50 & 600 ohms.
Digital Display : 4 Digit Freq. Counter provided

711. 2MHz Function Generator (Digital Display)- Order Code - TP2128

Specifications :
Frequency Range : 0.2 Hz to 2 MHz in four ranges.
Display : 7 Segment Digital, 4 digit Display
Function : Sine, Square, Triangle, Ramp, Pulse & TTL pulse output.
Output Amplitude : 25 V p/p open circuit
D.C.offset : Upto ± 15 V into open circuit & 7.5 V into 50 ohms.
Drift : 0.1% after warm-up time of 10 minutes
Output Impedance : 50 ohms & 600 ohms switch selectable
Duty Cycle : (5 to 9 % or better) Continuously Variable for continuous working
Attenuator : 0 to 60 db variable (2 x 20 db step attenuator and 20 db fine control)
Amplitude Flatness : Better than 0.5 dB
Characteristics :
Sine : Distortion : < 1% upto 100 KHz < 3% upto 1 MHz & < 5% upto 2 MHz
Square : < 50 nsec. rise and fall time at 10\/ p-p output. Square wave symmetry : ± 2%
Triangle Linearity : < 1% deviation from straight line at 1 KHz and maximum amplitude Ramp/ Pulse Duty Cycle20% to 80% variable to 100 KHz
VCO/ FM Modes : Available
Trigger Output : TTL Pulse provided
Power : 230V±10%, 50 Hz

provided to deliver the output signal with an internal source
Output Voltage : Variable up to 20V (p/p) into 50 ohms impedance

712. Function Generator 5MHz (with frequency counter upto 30MHz)- Order Code - TP2130

Technical Specifications

Frequency Range : 0.1Hz - 5Hz in 7 ranges
Output /Waveform : Sine, triangle, Square positive & negative Pulse Positive & negative ramp
Output impedence : 50 Ohms ± 10%
Amplitude : Not Less than 20V p-p (open circuit)
DC Voltage : 0 -± 10y continuously adjustable
Symmetry range : 90:10 - 10:90
Attenuation : 20dB, 40dB, 60dB
Rising Edge of Square : Less than 100ns
Sine Characteristics
Distortion : Less than 1% at 10Hz - 100KHz
Frequency response : 0.1Hz 100KHz : < + 0.5dB 1000KHz 5NHz : <+ dB
TTL/CMOS Output level TTI : Low level less than 0.4V in pulse wave less than 3.5V. CMOS low level than 0.5V pulse wave, high level 5V - 14V continuously variable
Rising Time : Less than 100ns
VCF Input Output voltage : -5V - OV + 10%
Max. Volt-controlled : 1000:1
Input Signal : DC - 1KHz
Frequency counter
Measuring range : 1Hz - 30MHz
Input impedance : Not less than 1Mohms 20pF
Senstivity : 100mV ims
Max. input : 150V(AC+DC)
Accuracy : less than 0.003%± 1 digit
Power Supply : 230V + 10%, 50Hz
Dimension : 310W x230 Hx90Dmm
Weight : 3Kg Approx

Note: Specifications are subject to change.

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- Frequency 0.1Hz-5MHz in 7 ranges
- Output waveform: Sine, square, Triangle, Ramp, Pulse
- TTL/CMOS output
- 1Hz-10MHz Frequency Counter
- Attenuation : 20dB; 40db & 60dB (20+40dB)

713. Digital Function Generator (10MHz)- Order Code - TP2131

Output	: Sine, square ,Triangular , Ramp & Pulse waves
Frequency Range	: 0.1 Hz to 10 MHz
Digital Display	: 3.1/2 Digit LED Freq. Counter provided
Output Voltage	: 0 - 20 V p-p Continuously Variable
Output Impedence	: 50 & 600 ohms.

714. Battery Charger-Order Code - TP2132

For Charging batteryfrom 230VAC, 50cycles line. This charger is recommended forgeneral use in laboratories, especially where the drain on the battery is quite severe. The charger is equipped with a heavy transformer, silicon diode bridge rectifier, ampere meter, current control switch and safetyfuse.

D.C. Output 2-4-6-12 volt selectable at Current

TP2132A : 2 Ampere
TP2132B : 3 Ampere
TP2132C : 4 Amper
TP2132D : 5 Ampere

715. Transistor PNP-Order Code - TP2150

On board with diagram

716. Transistor NPN-Order Code - TP2151

On board with diagram

717. Junction Diode-Order Code - TP2152

On board with diagram

718. UJT Transistor-Order Code - TP2153

On board with diagram

719. Thermistor-Order Code - TP2154

On board with diagram

720. Light Dependent Resistance- Order Code - TP2155

On board with diagram

721. Field Effect Transistor-Order Code - TP2156

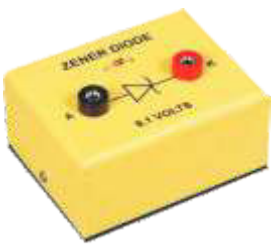
On board with diagram

722. Photo Diode-Order Code - TP2157

On board with diagram

723. Zener Diode- Order Code - TP2158

On board with diagram



Note: Specifications are subject to change.

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724. Photo Transistor Unit- Order Code - TP2159
On board with diagram

725. Digital Multimeter Economical Model-
Order Code - TP2161
Pocket sized, multimeter with TA DPM Rugged, easy to read. Low cost suitable for higher secondary classes or general work.

726. Analog Multimeter, low cost-Order Code - TP2162
A useful pocket size multimeter for basic electrical measurements when high degree of sensitivity is not required.

727. Diode Valve Charac-teristics Apparatus (Regulated Power Supply)-
Order Code - TP2165
This instrument is designed to work on 230V A.C. it consists of 0-250 volts at 25mA continuously variable, well filtered D.C. stabilized power supply. Two moving coil meters (Voltmeter of 250V and millammeter of 25mA) are provided to read voltage and current. On/Off switch with jewel light and diode valve is fitted on the panel.

728. Triode Valve Charac-teristic Apparatus (Regulated Power Supply)-
Order Code - TP2166
The unit consists of 0-300 volts continuously variable filtered stabilized D.C. Power Supply for teh plate. One MO-65 meter of 300 volts is used for plate current and 3rd 0-15 Volt (floating) for the bias voltage. On/Off switch with jewel light and triode valve is fitted on the front panel.

729. Tetrode/ Pentode Valve Characteristic Apparatus (Regulated Power Supply)-
Order Code - TP2167
It consists of two separate power supplies giving stabilized output 0-300 volt at 30mA. Three MO-65 moving coil meters are used.
1. Double Range meter 0-300V/300mA
2. Double Range meter 0-300V/30mA
3. Single Range meter 0-10 V D.C. (reversible)
On/off switch with jewel light and valve is fitted on the front panel.

730. Triode Valve 6J5-Order Code - TP2168
On board with diagram

731. Diode Valve 6H6-Order Code - TP2169
On board with diagram

732. Tetrode Valve 6V6-Order Code - TP2170
On board with diagram

733. Pentode Valve 6SJ7-Order Code - TP2171
On board with diagram

734. Millikan's Oil Drop Apparatus-
Order Code - TP2175
The principal elements of the assembly are a specially designed condenser, a light source and a measuring microscope, all are mounted on a common support.
Consists of a heavy cast iron base which is mounted on a steel pillar that carries the microscope and the lamp house. The microscope can be adjusted smoothly by slow motion screw in the horizontal as well as in the vertical direction. An automizer is also fitted on the same carriage. The apparatus does not need any critical adjustment and the oil drops appear in microscope within seconds. The microscope is provided with a micro meter scale.

735. Power Supply for Milkman's oil Drop. Apparatus.-Order Code - TP2176
It gives IC regulated D.C. Output 0-300 volt continuously variable to be applied to condenser plates and a 6 volt at 3A A.C. supply for the lamp house.

736. Leads with Banana Plug-
Order Code - TP2180
Two Banana plugs connected by flexible plastic insulated copper wire of 14/36". The leads are provided with different lengths of flexible wire.

737. Leads with Stackable Banana Plug-
Order Code - TP2181
4mm plugs connected by length of flexible, plastic insulated copper wire. Each plug has a transverse 4mm hole for extra connection and the insulating body is of flexible mould plastic. The leads are provided with different lengths flexible wire.

Order Code	Description
TP2181A	Leads with flexible wire of 10cm in length
TP2181B	Leads with flexible wire of 25cm in length
TP2181C	Leads with flexible wire of 50cm in length
TP2181D	Leads with flexible wire of 100cm in length

Note: Specifications are subject to change.

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738. Leads with Banana Plug & Crocodile Clip- Order Code - TP2182

One end of flexible wire are connected with banana plug & other end is with crocodile clip, length 18" These leads are generally supplied with Battery Eliminators or with Electronic Components on board.

739. Digital Control System-Order Code - TP2251

Specifications

- Second order simulated process (analog Process)
- Built -in D/A and A/D circuits (8-bit)
- 8085 based µP-kit as digital controller with user software in 8K EPROM
- 16- bit arithmetic for algorithmic calculations
- Square wave test input (internal)
- 16 built-in levels of P, I and D gains each.
- Complete flexibility for the user to develop own software
- IC regulated internal built-in power supplies
- Detailed literature and patch cords included
- Essential accessory - a CRO

740. A.C. Servomotor Study-Order Code - TP2252

Specifications

- 2-phase A.C. Servomotor - 12V/ 50Hz per phase
- Small generatorfor loading
- 4-digit speed display
- 3-digit time constant display
- 3½ digit r.m.s. voltmeter
- 3½ digit D.C. panel meter
- Voltage regulated internal supplies
- Detailed literature with sample results

741. D.C. Motor Study-Order Code - TP2253

Specifications

- Study of a 12V, 8W D.C. Motor
- Small generator (2W)for speed pick up and loading
- 4-digit speed display
- 3-digit time constant display
- 3½ digit voltmeter and current meterfor D.C. measurement
- IC regulated power supply
- Supporting literature with experiment details.

742. D.C. Position Control System- Order Code - TP2254

Specifications

- Position control of a 12V,1A D.C. gear Motor (50)rpm.
- Provision for positive and negative techo generator feed backTechoconstant:2V/1000 rpm approximately.
- Calibrated dial for reference and output Position: resolution 1^0
- mP based waveform capture card.
- Literature and patch cords included.
- Built- in 3½ digit DVM for signal measurements.
- Built-in step signal and IC regulated power supplies for electronic circuits.
- Servo- potentiometers with full 360° Rotation
- Separate unit for motor in a see-through cabinet.
- Essential accessory - a CRO.

743. A.C. Position Control System- Order Code - TP2255

Specifications

- 2-phase Servomotor 12V/phase,50Hz, 10W
- Power amplifier for driving
- Servo potentiometer type error detector
- In-built 10.00V (rms) panel meter
- Step response capture/display card
- Detailed literature with typical results Included
- Complete unit except a measuring CRO

744. D.C. Speed Control System- Order Code - TP2256

Specifications

- Speed control of a 12V, 4W permanent magnet D.C. Motor
- Speed range: 0 to 3000 rpm (typical)
- Opto- interrupter based speed in rpm
- 4-digit speed display in rpm
- Electronic techo generator for feedback
- Separate unit for motor in a see- through cabinet
- Essential accessory- a CRO

Note: Specifications are subject to change.

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- Smooth, non-contact eddy current- brake for loading
- Built- in 3½ digit DVM for signal measurements
- Built- in IC regulated internal power supply
- Supporting literature and patch Cords included

745. Temperature Control System-
Order Code - TP2258

Specifications
- Temperature controller with facilities for P, I, D and relay control blocks
- Operating temperature: Ambient to 90°C
- Separate controls for P, I, D channel gains
- Two settings for relay hysteresis
- Fast 25W oven fitted with IC temperature sensor
- Digital display of set and measured temperature on a 3½ digit built-in DVM
- Buffered output for recorder
- IC regulation in controller circuit power supplies
- Supporting literature and patch cords included

746. PID Controller-Order Code - TP2259

Specifications
- Simulated blocks- dead time (transportation lag), integrator, time constants, error detector and gain
- PID Controller (Configurable as P, PI, PD or PID)
- Prop. Band : 5%to 50% (Gain 2-20) Integral time : 10msec-100msec Derivative time : 2-20msec
- Built-in 3½ digit DVM for d.c. Measurements
- Built-insignal sources
- Set value : -1V to +1V
- Square wave :1V p-p (min.) at 40HZ Triangular wave :1V p-p (min.) at 40HZ
- Built-in IC regulated power supply
- Detailed literature and patch chords included

747. Study of Synchro Devices-
Order Code - TP2260

- Synchro transmitter-receiver pair with calibrated dials
- Locking system for receiver rotor
- Receiver use as control transformer
- Built-in balanced demodulator circuit
- Panel meter for AC/DC voltages
- Only an external CRO required

748. Linear Variable Differential Transformer-
Order Code - TP2261

Specifications
- LVDT
- Range: ±50mm or tota1100mm
- Sensitivity: 25mV/cm
- Operating frequency: 5KHz±5%
- Displacement measurement on a mm scale with fine motion control
- Carriersource (internal): 5KHz±5%; 1.5V (nominal)
- Built-in 3% digit DVM for output reading
- IC based balanced demodulator circuit
- IC controlled internal power supplies
- Essential accessory-a CRO

749. Study of Magnetic Levitation System-
Order Code - TP2262

Specifications
- Object suspended in air by magnetic force.
- Highly nonlinear system control through linearization.
- Controller design to maintain stability.
- Position changing by reference.
- Built-in power supplies, meters etc.
- Detailed technical literature included.

750. Study of Stepper Motor-
Order Code - TP2263

Specifications
- Single stepping and free running modes of operation with speed variation and direction reversal -internal TTL circuit.
- 360° motion Servo-Potentiometer position picked up for motor dynamics
- Operation through microprocessor kit sample control programs provided
- Stepper motor specification
- Torque : 2.8 Kg-cm
- Step angle : 1.8°
- Power : 12V,1A/phase
- Essential accessory - a CRO

Note: Specifications are subject to change.

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751. Relay Control System-Order Code - TP2264

Specifications
- Simulated electronic relay using high speed Ic's
- Simulated 2nd order linear plant. Facility for displaying x and x. signals
- Dead zone variable from 0-600mV
- Hysteresis variable from 0-500mV
- Built-in signal sources -Sine and Square Amplitude: 0-1V (min.) Variable Frequency : 10, 20, 40, 80, 100, 200, 400, 800 and 1000Hz
- IC regulated internal power supplies
- Literature and patch cords included
- Accessory- a dual beam CRO

752. Compensation Design-Order Code - TP2265

Specifications
- Simulated "uncompensated" system having adjustable damping. Peak percent overshoot M,, variable from 20% to 50%,and steady state error variables from 50%to 0.5%
- Compensation network implementation through built-in variable gain amplifier. Gain is adjustable from 1 to 11
- Built-in square and sine wave generators for transient and frequency response studies.
- Frequency adjustable from 25Hz-800Hz (approx)
- Essential accessory - a CRO

753. Study of Second Order Networks-
Order Code - TP2266

Specifications
- Active RLC network using 3-Op Amps
- Damping 1.1-0.1(approx)
- Square Wave 35-700 Hz., 0-1V (typical)
- Sine Wave 35-700 Hz., 0-1V (typical)
- Essential Accessory- a CRO

754. Linear System Simulator-
Order Code - TP2267

Specifications
- Simulated first, second and third order system of type-0 and type-1
- Calibrated variable gain amplifier (Resolution 1: 1000)
- Built-in signal sources:
- Square wave and Triangular
- Frequency : 45-90Hz
- Amplitude : 0-2.5V approximately
- Trigger output for perfectly steady display on CRO
- Uncommitted amplifier for phase adjustment
- Provision for disturbance inputs
- Complete in all respect, except a measuring CRO

755. Potentiometers Error Detector-
Order Code - TP2268

- High quality servo-potenteometers of 360' shaft rotation
- Requires an external CRO for a.c. Studies
- Built-in signal and power sources
- 3½ digit DVM for measurements

756. Light Intensity Control System-
Order Code - TP2269

Specifications
- Built-in 3½ digit DVM
- Built-in IC regulated power supplies
- Literature and patch cords included
- Seven lamps 6V/300mA
- 5Hz square wave and triangular wave for dynamic response study

757. Study of Temperature Transducers-
Order Code - TP2270

Specifications
- Temperature controlled oven upto 150°C with digital temperature display
- Digital voltmeter on the panel for sensor output measurement
- Built-in interfacing circuit and switched gain instrumentation amplifier
- IC regulated power supplies and detailed manual

758. Stroboscope-Order Code - TP2271

Specifications
- Speed range : L:50-2000 rpm, M:50-6000 rpm, H:50-12000 rpm

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- Crystal controlled accuracy
- Mains Operation
- Display : 5 digit LCD
- Freq. Control : Fine & Coarse
- Weight : Approx. 1 kg.
- Portable Model with strong plastic body
- With carrying case
-

759. SCR Firing Circuits-Order Code - TP2275

760. SCR Communication Techniques-
Order Code - TP2276

761. Phase Control using Techniques-
Order Code - TP2277

762. Switching Action of a BJT-
Order Code - TP2278

763. Switching Action of FET-
Order Code - TP2279

764. Thyristor Firing Circuit Kit (UJT Controlled SSCR Time Delay)-Order Code - TP2280

765. Zero Voltage Switching using SCR-
Order Code - TP2281

766. Step up Chopper-Order Code - TP2282

767. SCR Single Phase half wave, Full wave, fully controlled Bridge-Order Code - TP2283

768. Three phase Fully Controlled Converter-
Order Code - TP2284

769. Single Phase Cyclo Converter-
Order Code - TP2285

770. SMPS Trainer Kit-Order Code - TP2286

771. Jine's Chopper-Order Code - TP2287

772. Morgan's Chopper-Order Code - TP2288

773. Series Inverter using SCR's-
Order Code - TP2289

774. Parallel Inverter using SCR's-
Order Code - TP2290

775. Single Phase Inverter (using power mosfet)-
Order Code - TP2291

776. Chopper Circuit (using Poerr Mosfet with Motor)-Order Code - TP2292

777. DC Drive Trainer-Order Code - TP2293

778. Single Phase Half Controlled DC Drive-
Order Code - TP2294

779. SCR Ring Counter-Order Code - TP2295

780. Maxwell's Vibration Needle Graduated-
Order Code - TP2300

It consists of a hollow cylindrical brass tube open at both ends provided with a small chuck (torsion head) in the middle of which is fixed a plane mirror. The length of the hollow brass tube is 40cm, diameter is 18cm and graduated with scale divided in millimeters on both sides from 0 to 15cm and with vernier to read 0.05mm.
Two solid brass cylinders and two hollow brass cylinders, all of length 10cm long are provided so that when place end to end, they fill the hollow tube completely. Supplied with superior quality clamp of TP2316

781. Rigidity Apparatus (Searle's Pattern)-
Order Code - TP2302

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 30 cm long at their mid points by two screws fitted at the ends of the wire. The rods are suspended from hooks. Complete with three test wires and connecting screws.

782. Stand for Rigidity Apparatus-
Order Code - TP2303
A specially designed stand for above Rigidity apparatus

783. Rigidity Apparatus (Dynamic Method)-
Order Code - TP2304

It consists of an iron rod of length 16" and diameter 1". The circular rod is graduated 15-0-15 cm. The circular weight with thumb screw which fits into the rod is also provided. Supplied with superior quality clamp of TP2316

784. Torsion Pendulum (5" Brass Disc)-
Order Code - TP2315
The torsion pendulum is an interesting example of simple harmonic motion, often overlooked by students.

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It is helpful in explaining the meaning of moment of inertia and moment of torsion and how they affect the period of vibration. The one end of suspension wire hangs from a Universal Clamp with the help of a chuck nut and the other end is clamped to a solid brass disc of 12.5cm dia and 1.25cm thick with the help of a chuck nut. A heavy metal ring of the same metal (brass) and the same outside diameter as the disc is included. When ring is placed on the disc, the moment of inertia, and therefore the period of vibration of the system, is Increased. Supplied with universal clamp of TP2316.

785. Spare Universal Clamp-
Order Code - TP2316

Spare universal clamp which can be fitted to the wall as well as to the retort stand, useful for torsion pendulum, inertia disc, inertia bar and Maxwell needle etc.

786. Torsion Pendulum (Bridge Type, Small Size)-
Order Code - TP2317

Consists of an aluminum disc 25 cm diameter. Another small disc of iron C.P. having same diameter as the interior of a grooved area of the bigger disc. (the small disc has approx. 8 cm dia and 1.25 cm thickness). A tall U
Shape metal bridge with a split chuck, fitted into disc enable accurate suspension and torsion. Article of irregular dimension as large as brick can also be inserted in the U-Shaped suspension. Supplied with wall-ket.

787. Torsion Pendulum (Bridge Type, Bigger Size)-Order Code - TP2318
Same as TP2317 but diameter of aluminum disc 25cm (larger size) and another smaller disc of Iron C.P. has diameter of 10.5 cm and thickness 1.25 cm.

788. Torsion Apparatus Searle's Horizontal Pattern (Half Meter Long)-Order Code - TP2322

Two cast iron feets each with 3 through holes and grub securing screws, separating by two support rods approx 600mm long, one of which is graduated in cm and mm. The wheel 165mm dia. over groove moving on ball bearings is provided with chuck to hold the test rod of 55cm long and 5mm dia with two aluminum scales graduated 30-0-30 in single degrees, mounted on pillar support, which are adjustable along the rod, two pointers with clamp for attaching to specimen, on each of brass and steel rods, cord and hook for carrying masses. Supplied without weights.

789. Torsion Apparatus Searle's Horizontal Pattern (One Meter Long)-Order Code - TP2323
Same as TP2322 but with length of rod approx.1100mm.

790. Torsion Apparatus Searle's (Vertical Pattern) or Barton's App.-Order Code - TP2325
A steel frame mounted on a heavy cast iron base with leveling screws. Upper end of the rod (under test) 900mm length and 5mm dia is clamped by a 3-jaw chuck and the lower end is clamped into the axis of a torsional drum which can be rotated by putting load in the scale pan passing over two frictionless pulleys. Freely sliding three circular scales graduated in single degrees can be clamped at any position. Three pointers for clamping to the test rod are provided. Complete with three other rods, strings and two scale pans, but without weights.

791. Poisson's Ratio of Rubber Appt.-
Order Code - TP2327

Consists of a cycle rubber tube of about one meter length with a small pointer, slotted weight, hanger, clamp, burette and a rubber stopper on a heavy cast iron stand. The metallic stand is provided with levelling screws to make the apparatus vertical.

792. Hook's Law Apparatus-Order Code - TP2330

It consists of a support with mounted millimeter scale, a spiral spring, a hanger for weights. The scale is 12cm 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 3 cm long when unstretched is suspended from a hook above the scale. Weights not included.

793. Fletcher's Trolley-Order Code - TP2331
All metal, capable of being assembled and dismantled easily. A large metal trolley with removable cylindrical weights is fitted with wheels which run with very little friction on a track of two steel rods 150cm long. The rail rods are held in heavy clamps which are fitted in two vertical rods, mounted on cast iron feet. the steel vibrator is fitted to one of the vertical rods and frictionless pulley to the other. The unit is capable to verify the law under different conditions. Complete with cord, scale pan, brush and ink.

794. Deflection of Beam Apparatus-
Order Code - TP2332
Consisting of two knife edge and supports , a hanger with knife edge, and a pointer moving over a graduated scale. Complete with scale pan and two beams, one of iron and

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the other of wood each beam is 120cm in length. Without weights.

795. Bending of Beam Apparatus-
Order Code - TP2333
It consists of brass beam 9mm square one meter long resting on the two knife edges fixed on heavy stands at the bases of which are fitted leveling screws. A central knife edge with hanger rests on the beam at the top of which is provided a pin. Complete with a cast iron slotted weights set having two weights of 1 Kg, two weights of 'A and a hanger of 1 Kg.

796. Shear Force Apparatus-Order Code - TP2334
Consisting of two knife edge supports on stand and a seasoned wooden bar 180 cm long which is hinged at one point of its length. The dynamometer is with an adjusting screw for restoring line of beam under load conditions. Complete with three sliding U shaped weights.

797. Bending Moment Apparatus-
Order Code - TP2335
Consisting of well seasoned wooden beam 180 cm long hinged at a distance of 60 cm from one end, spring balance is with adjusting screw so as to compensate the initial extension of the spring and to keep the beam horizontal under any load. Complete with three U shaped sliding weights and two knife edge end supports on stands.

798. Stresses in Beam Apparatus-
Order Code - TP2336
Consisting of a well seasoned wood beam 180cm long with two knife edge end supports on stands and two strips. A device with a pointer and roller is applied to magnify strains. Complete with four weights of 1, 0.5, 1.5 and 2 kg (one weight each)

799. Link Polygon Apparatus-
Order Code - TP2337
The apparatus is provided with five linkages and connectors, having hooks to which pans are hung. These are fixed between two pulleys around which rope is run to connect to two extension type spring balances. The unit is very useful for the study of arches, abutments and piers. The wooden rectangular beam is fitted with scale. Without weights.

800. Bending of Beam Apparatus-
Order Code - TP2345

Consisting of two G. clamps with knife edge top. Comprising a metal powdered coated bar of 100cm length having width 25mm and thickness 4.5mm. Sharp knife edge with hanger is also provided which moves on the metal bar. A spherometer fitted on a cast iron stand with electric contacts is also provided, Supplied w/o weights.

801. Bending of Beam Apparatus Koenings Method-Order Code - TP2346

It consists 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 mirrors (like optical lever) are also provided forthis apparatus supplied w/o weights.

802. Y by Uniform & Non-Uniform Bending (as per Tamil Nadu Syllabus)-Order Code - TP2347
Consisting of two knife edges with heavy supporters, one meter scale with pin at the centre, two nos. Iron C.P. slotted weights 50gms x 10

803. Cantilever Apparatus-Order Code - TP2348

In this apparatus, a hook is provided to one end of powdered coated bar having dimension 100x1.8x0.3 cm (LxBxW). The whole metallic bar is marked with lines. All lines are separated from each other by a distance of 5cm. The cantilever bar is held horizontally keeping its breath in horizontal position.

804. Compound Pendulum (steel C.P.)-
Order Code - TP2355
It consists of a powdered coated steel bar of dimensions 100x3.75x0.5cm with a number of equidistant holes drilled along its length at equal intervals of 5 cm. The pendulum is provided with two removable knife edges passing through any one of the holes. Complete with wall bracket & two removeable knife edges.


805.Compound Pendulum (Brass C.P.)-
Order Code - TP2356
A chrome plated brass bar of dimension 100x25x0.5 cm bored at equal intervals of 5cm and provided with two removable knife edge. Complete with wall bracket.


806. Compound Pendulum (S.S., Rod Type)-
Order Code - TP2357
It consists of a stainless steel rod of 1 meter long and 1.0 cm diameter. The S.S. rod is marked with lines at equal distance of 5 cm. Two circular removable knife edges are provided, complete with wall bracket & two circular knife edges.

807. Spare wall Bracket for Compound Pendulum or Kater's Pendulum.-Order Code - TP2358
Spare wall Bracket suitable for Compound Pendulum or Kater's Pendulum.

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808. Spare knife Edge for Compound Pendulum-
Order Code - TP2359
Spare knife edges suitable for Compound Pendulum of TP2355 & 2356, set of two knife edges.

809. Kater's Reversible Pendulum (Steel C.P.)-
Order Code - TP2360

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

810. Kater's Reversible Pendulum (Brass or S.S.)-
Order Code - TP2361
Specifications are same as above but it consists of brass or stainless rod instead of steel C.P. rod. Two metal weights are also made of brass instead of cast iron. Other specifications are same as TP2360

811. Stand for Kater's Reversible or Compound Pendulum-Order Code - TP2362

This stand is suitable for all types of compound pendulums or Kater's pendulums listed above. Heavy type stands having approx. height 52 inches.

812. Bifilar Pendulum-Order Code - TP2364

It consists of a heavy cast iron rectangular plate of dimension 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 chucks is provided on the heavy base.) When the plate is suspended freely, the two strings will be equally inclined to the horizontal face of the plate.

813. Force into Force Arm /Lever Apparatus-
Order Code - TP2365

It consists of a half meter aluminum strip with stone agate knife edge at the centre. The aluminum strip is first black painted and after that it is screen printed as 25-0 25cm with zero at the centre. Two plastic hooks, which move along the aluminum meter scale, are also provided. These plastic hooks are used for carrying brass slotted weights. Supplied w/o weight.

814. Slotted Weight Brass C.P.-
Order Code - TP2366
Following brass weights are suitable for the above Lever App.

Order Code	Description
TP2366A	5 X 5 grms
TP2366B	10 X 5 grms
TP2366C	20 X 5 grms

815. Lever Apparatus-Order Code - TP2367
(Apparatus for verification of Law of Moments) Consisting of an aluminium graduated beam fitted into a pivoted stirrup and spirit level on a metal base, the top of the beam is provided with notches all along for hanger carrying weights. With two set of brass slotted weights each set containing four weights and one hanger of 20 gms.

816. Universal Force Table-Order Code - TP2368

For experimentally verifying the laws of triangle, parallelogram and polygon of forces. Comprising of a circular 40cm diameter aluminium disc, graduated into 360 degrees. Complete with levelling screws, clamping devices to fix the table at any desired angle, five sliding clamp, pulleys, central ring, string and five sets of iron nickelled slotted weights, each set containing nine weights and one hanger of 50gms each.

817. Viscosity of Water using as Oscillating Disc-
Order Code - TP2369
This consists of following :-
a) Oscillating Disc of Brass
b) Water Chamber of Oscillating Disc
c) Heavy Stand for Disk Suspension
Supplied without Lamp & Scale Arrangement.
Accessory required for this Experiment : Lamp & Scale Arrangement

818. Fly Wheel Without Counter-
Order Code - TP2370

Comprising of carefully machined and balanced cast iron wheel of about 20 cm in dia and 4.4cm thick, and steel spindle supported on the ball bearings in strong iron brackets. The sides of the wheel are red or grey 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

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the shaft to take a pin and cord. The base is provided with four holes so that the apparatus can be fixed on a wall, complete with cord and hook.

819. Fly Wheel With Counter-
Order Code - TP2371
Same as TP2370 but provided with superior quality Indian make revolution counter.

820. Moment of Inertia Table-
Order Code - TP2372
It consists of an aluminum disc of approximately 6" dia with a groove. The circular aluminum disc supports five semicircular masses which just fit into a groove, concentric with the circumference. It can be suspended by a steel wire pivoted at the centre of a long frame work, provided with circular base which is also fitted with leveling screws. Supplied with four different shapes of masses (Rectangular, Square, circular and triangular.)

821. Inertia Disc-Order Code - TP2373
Consisting of a brass disc about 15cm in diameter, 6 mm thickness, with arrangement for clamping a split chuck. Supplied with wall bracket.

822. Inertia Bar-Order Code - TP2374
It consists of a solid brass rod of length 30cm and diameter 1.5cm with centre split chuck for clamping and suspending. Supplied with wall bracket.

823. 'G' Clamp-Order Code - TP2375
For general use in laboratory

Order Code	Size
TP2375A	3″
TP2375B	4″
TP2375C	5″
TP2375D	6″

824. Young's Modulus Apparatus (Iron Frame)-
Order Code - TP2380
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 frames connected by a link. The frames are fitted with self centering chucks.
An accurately graduated micrometer screw to read 0.01mm is fitted on a frame. One end of a sensitive spirit level is pivoted to one of the frame, the other end on the points of a micrometer screw is fitted in other frame. Complete with iron C.P. Chucks, cast iron ceiling attachment and torsion weight but w/o velvet case.

Note: Specifications are subject to change.

825. Young's Modulus Apparatus (Iron Frame, Brass Fitting)-Order Code - TP2381
Similar to above, but brass parts fitted (Maximum iron C.P. parts, which are used in above TP2380 are replaced by brass C.P. Parts) w/o velvet case.

826. Young's Modulus Apparatus (Brass Frame, Brass Fitting)-Order Code - TP2382
Similar to TP2380 but all parts are of brass except torsion weight (i.e. rectangular frame, pin vice, ceiling attachment, screws, rings etc. all are of brass make), without velvet case.

827. Young's Modulus (Vernier Type)-
Order Code - TP2383
Simple form but efficient. Consists of a brass scale 10cm long and vernier to read 1/10mm with V slide clamp guides for wire ceiling attachment and torsion weight.

828. Young Modulus of a Metal Rod By Interference Method-Order Code - TP2385
The experimental rod carries 2 metal plates at different points. These metal plates support a glass plate and a lens. One is on the top of other adjusted by 3 springs and screws. On applying a load the rods bend slightly, increasing the distance between the plate and the lens. Newton's rings are observed before applying the load. As the load is applied gradually the rings run into the centre, disappearing one at a time. To the right is a microscope fitted with a micrometer eye piece scale for observing and making measurement upon the rings. The instrument is supplied w/o weights & Sodium Lamp Unit.

829. Inclined Plane-Order Code - TP2390
This is an economical form of inclined plane consisting of 60x10cm board either with glass top or sunmica top, hinged to the base board of size 45x10cm. The pulley is attached to one end of the upper board. The upper board (plane) can be set at any angle by clamping the wing nut. Complete with graduated aluminum arc and iron N.P. Roller. Supplied with wooden carriages of 10x10cm with look for determine the force of friction.

830. Inclined Plane-Order Code - TP2391
Same as TP2390 but with brass arc and brass N.P. Roller.

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831. Inclined Plane(Deluxe Pattern)-
Order Code - TP2392

Heavy cast Iron base 45x15x2.5cm thick hinged to wood. Plane comprising two wood strips 47.5x6.2x2cm thick, 2 cm apart, rigidly jointed at ends by metal cross pieces. One strip with 5 cm extension carrying a clamp for holding pulley at any angle. Aluminum pulley 4.5cm in diameter on stem 15cm long. The angle can be read in degrees and the hypotense and vertical height of the force triangle can be read in cm directly from the scale on the sides. The plane can be inclined up to 45 degrees. Supplied with iron roller and S.S. scale pan.

832. Friction Slide Apparatus-
Order Code - TP2393

Simple type having a wooden board 50x10cm. With glass surface, a frictionless pulley is fixed to one end, one sliding wooden board is provided to determine the force of friction, supplied with scale pan but without weights.

833. Friction Slide Apparatus-
Order Code - TP2394

It is very interesting to study different laws of friction with it. Comprising of a 75x15cm, wooden board and a frictionless pulley at one end, a scale pan with the following accessories but without weights.

1. One set of three wooden carriages with different bottom surface (Wood, glass and iron).
2. One carriage with frictionless rollers.
3. One set of three different surfaces for friction board - a glass plate, a plywood and felt cloth.

834. Combined Inclined Plane & Friction Slide Apparatus-Order Code - TP2395
Consisting of a wooden plane 90x18cm having adjustment for setting the required angle precisely. Complete with frictionless pulley, linear and circular scale, pan a wheeled trolley and a set of eight slide draws having bottom of different materials. Without weights.

835. Coil Friction Apparatus-
Order Code - TP2396

It consists of aluminium drum and three frictionless pulleys mounted on wooden board 60x75cm in size. The pulleys can be fixed to give a lap of 1/4 or 3/4 full circumference of the drum, complete with cord and two scale pans, but without weights.

836. Combined Coil & Belt Friction Apparatus-
Order Code - TP2397

It consists of metallic pulley of 30cm, diameter with two grooves one for rope and the other for belt. On the back a circular sturdy wooden disc graduated at 10 degree interval is provided. A rotating pulley is fixed at the circumference of the scale. Complete with one belt and rope. The whole apparatus is mounted on a heavy vertical stand. Weights are not included.

837. Parallelogram of Force App. (Wall type)-
Order Code - TP2400

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 painted black. It is supplied with two nos. z-pulleys and 3 sets of iron C.P. slotted weights (50gmx5), 5 No. Drawing sheets, one packet of drawing pin & two numbers of mirror strip, but without cord.

838. Parallelogram of Force Apparatus (Wooden Stand Type)-Order Code - TP2401

This product is similar to the wall type but is intended for use in laboratories where wall space is limited. A thick plywood pieces of thickness 12mm having dimension 45x30cm on a substantial wooden stand supplied with 2 sets of z-pulleys and 3 sets of (50gms x 5) slotted weights, 5 No. Drawing sheets, one packet of drawing pin & two numbers of mirror strip, but without cord.

839. Pulley Clamp Pattern (Z Pulley)-
Order Code - TP2402

This pulley is specially designed for screwing to a parallelogram of Force Apparatus. This pulley will accept 25mm thick board.

840. Polygon of Forces Apparatus-
Order Code - TP2403

Consisting of a wooden board of 75x70 cm, size, provided with two wall brackets and four adjustable frictionless aluminium pulleys, complete with four one kilogram.

841. Triangle & Parallelogram of Forces App.-
Order Code - TP2404

The black board is made of wood and fixed within a wooden slotted frame of over all size 75x70 cms. Four frictionless pulleys are adjustable in the slots of the frame and the frame is provided with suitable arrangement for fixing it to a wall. The unit is complete with four hangers and 16 iron nickelled slotted weights of 50gms each.

842. Polygon & Triangle of Forces Apparatus-
Order Code - TP2405

Same as above but with six pulleys and 24 iron nickelled slotted weights and four hangers of 50 gms each.

Note: Specifications are subject to change.

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843. Parallel Forces Apparatus-
Order Code - TP2406

(Simple supported beam type supported at its ends) For verification of condition of equilibrium of parallel forces, law of lever and forces on beam etc. Consisting of two thrust type 10kg, tubular, spring balances fixed on wooden polished board, a wooden bar with steel back plate. Complete with stirrups, hooks and two 1 kg. weights.

844. Parallel Forces Apparatus-
Order Code - TP2407

Same as TP2406 But fitted with 10 kg. Dial type compression balance.

845. Parallel Forces Apparatus Overhang Beam Type-Order Code - TP2408
The apparatus is with two circular dial type 10kg, extension spring balances. Complete with suitable stnads, a wooden beam, with scale and slots at regular intervals, four stirrups, hooks and two 1 kg. Weights.

846. Capillary Tube Clamp-Order Code - TP2410


The apparatus comprises a metal frame, on which three capillary tubes of 10cm long Borosilicate glass and of different internal diameters are clamped with the help of small metal brackets. The 9mm rod is also attached to a metal plate, so that the complete clamp can be held in any stand for determining the surface tension of liquid by capillary rise method.

847. Slow Motion Stand (Rising Table)-
Order Code - TP2411

A machine cast aluminum table 10cm dia with a stem of 12cm can be lowered or raised to a desired height and can be tightened with a thumb screw. In addition to this coarse movement, fine adjustment is provided by a flush in arrangement. The whole arrangement is fitted on a heavy circular base with three leveling screws.

848. Capillary Tube Apparatus-
Order Code - TP2412

It consists of rising table (as described under TP2411) and capillary tube clamp (as described under TP2410) In this case three leveling screws of rising table are replaced by two leveling screws and one long rod to hold the capillary tube clamp of TP2410

849. Searle's Surface Tension Balance-
Order Code - TP2413

A cast iron base carries a vertical pillar terminating in a horizontal frame. A chrome plated steel wire is stretched across the frame.

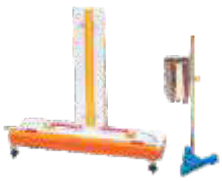
A lightweight metal pointer approximately 200mm long with an adjustable counterpoise is attached to the centre of wire by means of a small clamp. A plastic scale is carried on the end of the arm extending from the torsion frame and is calibrated 5-05 cm. A small mass pan of 40mm dia is attached to the pointer. The sensitivity of the balance is ultimately dependant upon the modulus of elasticity of the torsion wire and the wire supplied.

850. Jaeger's Surface Tension Apparatus-
Order Code - TP2415

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, three different bore jets and beaker etc.

851. Poiseuille's Viscosity Apparatus-
Order Code - TP2416



A capillary tube of fine bore is fitted on a wooden board. Then two ends are joined by a rubber tubing which is joined to two upright L-shaped glass tubes forming the manometer with scale. With the help of a pinch cork, a steady flow of water is maintained. Complete with a three limbed constant level tank of brass, one stand with rubber tube and glass parts of corning glass.

852. Quinck's Surface Tension Apparatus-
Order Code - TP2417

This method is usually used for the determination of surface tension of mercury. It comprises a circular metallic plate with three leveling Screws.

853. Viscosity Apparatus Stoke's Method (With Glass Tube)-Order Code - TP2420


This method is based on the application of Stoke's law to the fall of spheres through the liquid. With the help of this apparatus, we can determine the viscosity of a transparent liquid like glycerine or caster oil.

A corning glass tube of 35mm dia and one meter long is made to stand firmly in between two upright bars with the help of clamps on a heavy cast iron base. The lower side of tube is closed, whereas on the upper end a rubber cork with hole is provided. Supplied with medium wall borosilicate glass tube. Glass tube is graduated in centimeters from 0 to 100 cm.

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854. Viscosity Apparatus Stoke's Method (Without glass tube)-Order Code - TP2421
Same as TP2420 but supplied without borosilicate glass tube.

855. Viscosity of a Liquid by the Co-axial Cylinder (Viscometer Searle's Pattern)-
Order Code - TP2422
The value of the coefficient of viscosity for a liquid such as glycerine may be obtained at any desired height. The inner cylinder is graduated in mms and slot is covered by a transparent cover, complete with scale pans and releasing Pins.

856. Viscometer Ostwald-
Order Code - TP2423
Comprises glass U-tube with two bulbs, connected by a capillary tube. Borosilicate glass.

857. Mechanism of Pulley Apparatus-
Order Code - TP2426
All metal make as per Bombay Vico pattern, supplied complete with two aluminium pulleys of 2" diameter and two pans. This setup is provided with a superior quality Duco painted sheet metal stand, but without any weights.

858. Pan for Mechanism of Pulley Apparatus-
Order Code - TP2427
Spare pan aluminium with hanger of thread is supplied.

859. Aluminum Pulley (1.5" dia., Brass Frame)-
Order Code - TP2428

Order Code	Size
TP2428A	Single pulley, single hook
TP2428B	Single pulley, Double hook
TP2428C	Double pulley, supplied in parallel mount or in line mount.
TP2428D	Tripple pulley, supplied in parallel mount or in line mount.

860. Pulley Demonstration Set-
Order Code - TP2430
Almost every kind of pulley experiment can be demonstrated with the help of this equipment. It is very much interesting and of educational value to students, comprising of wooden polished base of 100x20 cm size with two metal supports, and a horizontal bar having eight adjustable collars with hooks from which pulleys can be suspended. The following accessories are provided with the unit.

Single pulley with two hooks---------- 7
Pulleytripple long---------- 2
Pulleytripple parallel---------- 2
Wheel and axle----------1
Capston----------1
Slotted weights hanger 50 gm---------- 7
Slotted weights 10 gm---------- 3
Slotted weights 20 gm---------- 3
Slotted weights 50 gm---------- 2
Slotted weights 100 gm---------- 4
Slotted weights 200 gm and 20 meter cord.-- 7
Slotted weightsand hangers are made of iron and duly nickelled.

861. Bell Crank Lever-Order Code - TP2431
A wooden right angled lever with fulcrum at the angle, the horizontal arm is of 75 cm and vertical arm is of 20 cm., A spring balance with adjustable wingnut is attached to the shorter arm. The lever arm is with scale and grooved at every 5 cm. Complete with one sliding weight of 1 kg.

862. Compound Lever-Order Code - TP2432
Comprising of two iron beams connected to each other and fitted on two different stands, well balanced with a scale pan. All metal parts fitted on wooden polished base, Complete with 1 kg. Weight and a physical iron nickelled weight box 1-50 gms.

863. Laws of Moments Apparatus-
Order Code - TP2433
A well balanced machine turned aluminium disc rotating at about its axis and can be clamped on a tripod stand in vertical plane. The disc moves on ball bearing and has number of holes, two pins carrying scale pans may be inserted into the holes at any desired place. Complete with horizontal graduated mirror scale and plumb lines.

864. Cranked Compound Lever-
Order Code - TP2434
All metal parts, mounted on wooden base with spring balance and a set of slotted weights.

865. Compound Wheel and Axle :-
Order Code - TP2435
Student quickly grasp a clear understanding of the mechanical advantage of the wheel and axle using this all metallic smooth running apparatus. The wheel is of 35cm dia and axle in 3 steps of 20,10 and 5 cm reducing diameter supported on ball bearings in iron brackets. The base is provided with holes to fix the apparatus on wall. Complete with snatch pulley block, cord and hooks. Weights are not included.

866. Wheel and Differential Axle-
Order Code - TP2436
All metal wheel of 30 cm diameter. The axle having

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diameter of 15 & 7.5 cm respectively giving a ratio of 1:2:4. A steel axle passes through the centre of the wheel which is mounted on ball bearing in cast iron brackets reducing friction to minimum. The base has holes to fix the apparatus on wall. Complete with snatch pulley block, cord and hooks but without weights.

867. Winch Crab Single Purchase-
Order Code - TP2440
Fitted with heavy cast iron wall brackets. The grooved wheel is of 25 cm diameter and gears are machine cut. This apparatus is used for experiments in efficiency of mechanical advantage Weights are not included.

868. Winch Crab Double Purchase-Order Code - TP2441
Experimental type.
Same as above but with double set of gearing arrangement. Without weights.

869. Geared Jib Crane-Order Code - TP2442
Strongly built frame mounted on a heavy cast iron base and comprising of single and double wheels. The gears are machine cut and the jib is 1:2 meter high and tapered at both ends, the machine is capable of working either single or double purchase. Complete with cord and hooks. Without weights.

870. Worm and Worm Wheel-
Order Code - TP2443
An all metallic self contained apparatus useful for demonstrating the efficiency of worm and wheel and also the principle of work. Consisting of a machine cut worm gear of 25cm diameter, carrying a metal drum of 12 cm diameter, and machine cut worm on steel spindle carrying a 12 cm diameter pulley. The whole arrangement is fixed on heavy cast iron bracket capable to be fixed to a wall. Complete with effort pulley, string and hooks but without weights.

Order Code	Description
TP2443A	Single Purchase
TP2443B	Double Purchase
TP2443C	Triple Purchase

871. Shear Legs Apparatus-Order Code - TP2444
Mounted on sturdy wooden base with provision for changing the width between legs, complete with two tubular compression balances, one tension balance and scale pan. Without weights.

872. Worm and Worm Wheel-
Order Code - TP2446
A self contained apparatus, consisting of a 80 teeth cut worm gear carrying a metal drum of 8cm dia pulley. The whole arrangement is fitted with string and hooks. Weights are not included.

873. Screw Jack-Order Code - TP2447
All Metallic construction accurately machine cut screw with a pitch of 5mm carrying a double flanged turn table of about 20cm diameter. Fitted on a heavy cast iron base and complete with two adjustable pulleys, cord and hooks. Weights are not included.

874. Screw Jack-Order Code - TP2448
Small size, experimental model, an aluminium turned pulley of about 10 cm dia is fitted on a screw jack fitted on a 12cm dia metallic circular base with an adjustable pulley and a linear vertical scale. Overall height of the model is about 15cm without weights.

875. Compound Screw Jack-Order Code - TP2449
Consisting of a jack screw of 4 T.P.I. and double start carrying load platform. The nut of the screw is fitted on a pedestal bearing and is keyed to a worm gear of 40 teeth operated by a worm screw. The spindle of the worm screw is provided with an effort wheel of 15cm diameter. Weights are not included.

876. Jointed Roof Truss on Wheels-
Order Code - TP2450
The apparatus is about 1.2 meter in length and strongly constructed in all metal, one leg is fitted on a immoveable bracket and the other on rollers. Spring balances show tension on the rod and the compression on rafters. Complete with specially made dynamomete, cahin and pan, but without weights.

877. Simple Jib Crane-Order Code - TP2451
Consisting of a tubular compression balance, pivoted about an axis fitted to the base. The tie chain has an adjustable angle bracket and fitted with a 10 kg extension balance. Complete on wooden base with 1.2 meter jib. Without weights.

878. Rope Brake and Dynmometer-
Order Code - TP2452
Consists of a cast iron truly machined wheel of 45 cm. Dia with a groove. The steel axle is mounted on call bearings to minimise friction and assembled on a sturdy wooden frame. Provided with an extension balance, rope and a set of slotted weights and hanger.

879. Ring and Ball (Hand Form)-
Order Code - TP2501
It consists of a brass ball of 18mm in diameter, secured to amounted brass ring by a chain. The ring is mounted on a brass rod with a superior quality wooden handle. When both ball and ring are at the same temperature, the ball passes easily through the ring. When the ball is heated, it will no longer fit until cooled or until the ring itself is heated.

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880. Ring and Ball (Hand Form)-
Order Code - TP2502
Same as above but with brass ball of 25mm in diameter.

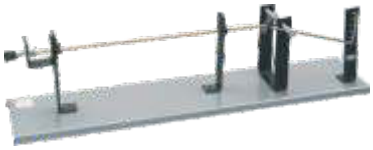
881. Ring and Ball on stand(Mounted Form)-
Order Code - TP2503
An 18mm brass ball and a ring through which it will just pass are supported on a vertical rod. When expanded by heat, the ball will no longer pass through the ring. Overall height is 27cm.

882. Bar and Gauge-Order Code - TP2505
Comprising a bar of iron 108mm long x 11.5mm diameter mounted at its midpoint on a support rod fitted with a wooden handle, and a brass gauge 150x28mm with a cut out, with a wooden handle, which just admits the bar lengthways. Two holes are provided on brass gauge, which passes the circular bar endways when cold.

883. Compound Metal Strip-Order Code - TP2506
It consists of two different types of metals strips, joined together lengthwise, with a wooden handle attached to one end. As the thermal expansion of the two materials is unequal, the bar will bend when heated. Four different types of compound metal strips are available.

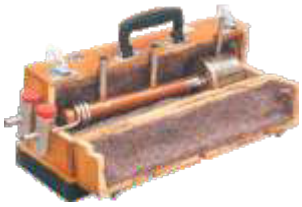
Order Code	Description
TP2506A	Iron & Aluminium
TP2506B	Iron & Brass
TP2506C	Iron & Copper
TP2506D	Brass & Copper

884. Linear Expansion Simple Form-
Order Code - TP2511
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 50x10 cm with four vertical pillars. One supports a pointer, pivoted at its upper end, with the free lower end traversing on arbitrary scales. In the same pillar there is a supporting bracket for the specimen rod. The second pillar carries the arbitrary scales. The third pillar holds the brass rod from the center. The fourth pillar supports the second end of the specimen rod (brass rod) and has an adjustment screw for setting the pointer to zero. Dimensions of the brass rod are 12.5x5/32 inches.



885. Linear Expansion Apparatus (Vertical / Horizontal Pattern)-Order Code - TP2515
This complete apparatus consists of a nickel plated steam jacket (brass pipe of 50cm long and 2.5cm in diameter)containing one out of three test rods, a micrometer heavy support assembly to mount the steam jacket vertically, fitted with superior quality spherometer. The brass pipe (steam jacket) has a welded inlet and outlet tube for steam and opening for a thermometer. Complete with three test rods but without thermometer.

886. Searle's Apparatus for Thermal Conductivity of copper-Order Code - TP2518
Comprising of a copper bar 25mm in diameter and 300mm in length fitted with a steam jacket heater at one end to be supplied from a steam boiler, and a copper water cool spiral at the other end. The bar has tubes for inlet of water and for thermometers. Fitted in a superior quality wooden case. Packed with felt for thermal insulation and removable from the front showing the construction. Supplied without steam boiler and thermometer.



887. Searle's Apparatus for Thermal Conductivity of copper-Order Code - TP2519
Same as TP2518, but with copper bar of 37.5mm in diameter.

888. Lee's Disc Apparatus-Order Code - TP2521
For determining the relative conductivity of thin layers of
materials, it consists of cylindrical brass slab of 11cm dia and 10.5mm thickness. On this is connected another 4.5cm deep brass hollow cylinder (steam chest) of the same dia with inlet and outlet tubes for steam. A hole for thermometer is drilled radially in each, and the cylindrical brass slab is fitted with eyelets to enable it to be suspended by three strings from a stout annular ring. The ring is held on a heavy Tesca Retort Stand complete as above with accessories but without thermometer.

889. Lee's Disc Apparatus-Order Code - TP2522
Same as above but the brass cylindrical slab is replaced by iron cylindrical slab of same size.

890. Spare set of Sample Discs-
Order Code - TP2523
For use with Lee's Disc Apparatus comprising one each of 11cm diameter discs of glass, hylum and cardboard.

891. Thermal Conductivity of Metal Apparatus-
Order Code - TP2528
Comprising strips of copper, iron, aluminum and brass with nominal thermal conductivities of 395, 72, 240 and

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128 Wm' K' respectively, mounted on a wooden ring.

892. Study of Variation of Specific Heat of Graphite with Temperature-Order Code - TP2529

It consists of following instruments :

TP2829A : Graphite rod of 50mm dia 300mm length
TP2829B : Circular heater atthe top of the Graphite rod
TP2829C : Chro-Alu Thermocouple Provision to measure temp.
TP2829D : Sturdy Stand for Graphite assembly
TP2829E : Voltmeter 300 Vwith Stand
TP2829F : Ammeter 1 Amp with stand
TP2829G : Dimmerstat 2 Amp
TP2829H : Digital Temperature Indicator

893. Co-efficient of Linear Expansion of given material with Fizeau's Method-

Order Code - TP2530

It consists of following instruments :

TP2530A : Study Base for the unitthe glass slides.
TP2530B : Vertical movement to adjust the height of the sample
TP2530C : Small furnace to heat the sample
TP2530D : Angle adjustment bracketto keep the glass sodium
TP2530E : Travelling Microscope Cat. No.1566
TP2530F : Digital Temperature Indicator
TP2530G : Sodium Vapor Lamp 35 Watt
TP2530H : Wooden Boxfor Sodium Lamp
TP2530I : Transformer for Sodium Vapour Lamp
TP2530J : Dimmerstat

894. Copper Calorimeter (Wooden)-

Order Code - TP2533

It consists of a rectangular teak wood box of size 9.5x9.5xcm fitted with a thermometer holder and packed with felt for thermal insulation. It consists of a copper calorimeter of 3"x2" size. Supplied with a copper stirrer but without thermometer.

895. Copper Calorimeter (Wooden)-

Order Code - TP2534

Same as above but with copper calorimeter of 4"x3" size.

896. Joule's Calorimeter (3"x2")-

Order Code - TP2538

It consists of a copper vessel of 3"x2" with outer vessel as a superior quality teak wood box of size 9.5 x 9.5 x 11.5 cm fitted with bakelite lid with hole for thermometer and stirrer.

Note: Specifications are subject to change.

897. Joule's Calorimeter (4"x3")-

Order Code - TP2539

Same as TP2538 but with copper Vessel of 4"x3" size.

898. Steam Boiler Copper-Order Code - TP2552

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

Order Code	Description
TP2552A	1 Litre
TP2552B	2 Litre
TP2552C	3 Litre

899. Steam Heater, Copper-Order Code - TP2554

Comprising a cylindrical copper boiler of size 150mm x100mm with an inclined brass heating chamber 25mm diameter, closed by sliding inner tube provided with bakelite top.

On raising the inner tube slightly the heated material slides down, the chute into the calorimeter. Thick copper joint-less pot is used. The body is provided with a long steam outlet tube to prevent any possibility of scalding the user's hands.

900. Steam Heater, Copper-Order Code - TP2555

Same as above but with small size and light pattern

901. Hope's Apparatus-Order Code - TP2556

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

Order Code	Description
TP2556A	G.I. Sheet
TP2556B	Brass
TP2556C	Copper

902. Hypsometer Copper-Order Code - TP2557

Comprising a Copper boiling vessel with a steam jacked in a tube. A lid with a tubule is provided, which holds the thermometer under test in a cork, supplied without thermometer.

903. Thermal Conductivity of Rubber Tubing Apparatus-Order Code - TP2562

Consists of a copper calorimeter of size 4"x3" described as per TP2534, Steam boiler 2 litre as per TP2552B, thermometer 110°C and measuring cylinder.

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904. Continuous flow Calorimeter (Callender and Barne's Method)-Order Code - TP2563

The apparatus consists of a horizontal corning glass tube open at both ends. The heating element is a coil about 40cm long of Ni-chrome wire and is wound spirally inside the axis of the glass tube. The element is easily detachable and is encased in a wooden case lined with felt and provided with a hinged cover. Terminals are brought at each end of the tube for the electrical supply. The horizontal tube is connected either by rubber tube or rubber cork to the inlet and the outlet system, each having a short vertical extension to accommodate a thermometer.
The complete apparatus is mounted on a polished wooden base board. Supplied with constant level tank fitted on stand but without thermometer &Transformer.

905. Transformer for Callender & Barne's Apparatus-Order Code - TP2564

Specially designed for use with above apparatus having five tappings of 6, 12, 18, 24 & 30 volt A.C. And current 3 Amp.

906. Constant Level Tank-Order Code - TP2565

For maintaining a uniform flow of water through calorimeter or other equipment regardless of pressure fluctuations in water supply line. The level cannot rise above a central overflow tube in the chamber.
Consisting of a copper vessel of 100x75mm diameter with tubes for water inlet, outlet and overflow. A clamp for attaching to any 9mm support rod is provided. Supplied with suitable retort stand.

907. Conductor of Heat Apparatus (Four Metal Apparatus)-Order Code - TP2566

An aluminum metal box (20x12.5x5cm) has four apertures on one side through which rods of brass, aluminum, iron and copper pass. The dimension of each rod is 5"x5/32". The outer end of each rod has a cavity in which a lump of paraffin with a low melting point is to be placed. When hot water is put in an aluminum metal box, the different metals melt the paraffin at different rates. A top aluminum lid is also provided to close the metal box.

Note: Specifications are subject to change.

908. Stefan's Radiation Constant Apparatus-Order Code - TP2568

Comprising a blackened hollow hemisphere about 25cm dia, fitted in a wooden board lines with tin, and a steam chamber above the hemisphere to measure them an uniform temperature by passing steam through it recorded by two thermometers- Heavy silver disc soldered a bottom to copper - Constantan thermocouple housed in Ebonite tube with lid Engraved on ebonite tube are Disc Constants, mass and Area, Complete with one extra similar thermocouple for calibration is supplied.

909. Stefan's Constant Kit-Order Code - TP2569

Built-in IC regulated power supply, two moving coil meters & small bulb to find Stefan's Constant.

910. Stefan's Constant Kit-Order Code - TP2570

This contains two copper plates with heater element in between, three thermometers , built-in power supply, A.C. Voltmeter, AC Ammeter and their controls. The Kit is self contained and needs no additional equipments.

911. Newton's Law of Cooling Apparatus (Brass Sheet)-Order Code - TP2572

Consists of two copper calorimeters 2" x 1". Resting inside a trough which stands in an outer tank. The latter is fitted with a wooden top with two holes for thermometer. Supplied without thermometer, but with stirrer. The outer tank is made from Brass. Sheet

912. Newton's Law of Cooling Apparatus (G.I. Sheet)-Order Code - TP2573

Same as TP2572 but outer tank is made of G.I. sheet instead of Brass sheet.

913. Newton's Law of Cooling Apparatus-Order Code - TP2574

University Pattern - Comprising two units, each with double walled joint-less brass vessels richly nickel plated and highly polished with non-

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conduction cover through which is suspended a 7.5x5cm size copper calorimeter. A second covering protects the top of the calorimeter from dust and heat losses. The annular spaces between the double walled vessels are connected by T-Tubes, which enable water at same temperature to be kept circulating through them. Superior quality.

914. Solar Cooker Working Model-
Order Code - TP2576

Very superior quality in working condition.

915. Forbe's Conductivity Apparatus-
Order Code - TP2577

A long uniform metallic bar is fitted on wooden board as shown in the picture. One experimental bar is also provided. Supplied without accessories.

916. Chemical Thermometer (Mercury Filled)-
Order Code - TP2601

These permanently filled thermometers have been subjected to test under rigid conditions. Easier reading stem, yellow back and mercury filled thermometers. Length of thermometer is approximately 12 inches and diameter is 7 to 8mm. All of the thermometers listed below are for partial immersion.

The quality of these thermometers are very superior because these thermometers are screen printed and imported yellow capillary is of higher quality than the Indian white capillary is used in all our Tesca Thermometers. Each thermometer is individually packed in a plastic case. These thermometers are exactly as per design of Zeal England Make. Supplied with Tesca Trade Mark only.

Order Code	Temperature Range	Graduation	Length
TP2601A	-10 to 50°C	1°C	12″
TP2601B	-10 to 110°C	1°C	12″
TP2601C	-10 to 110°C	½°C	12″
TP2601D	-10 to 150°C	1°C	12″
TP2601E	-10 to 250°C	1°C	12″
TP2601F	-10 to 360°C	2°C	12″
TP2601G	220°F	1°F	12″
TP2601H	400°F	1°F	12″

917. Precision Thermometer (Mercury Filled)-
Order Code - TP2603

Same as TP2601 but these thermometers are calibrated in fractional degrees and can therefore be used for more precise work. Very accurate permanently marked clear reading stem.

The outer diameter of the stem is 7 to 8mm. Imported yellow capillary is used.

Order Code	Temperature Range	Graduation (in Inch)	Length
TP2603A	-10 to 50°Cx1/5	0.2°C	12
TP2603B	-10 to 50°Cx1/10	0.1°C	16
TP2603C	-10 to 110°Cx1/5	0.2°C	16
TP2603D	-10 to 110°Cx1/10	0.1°C	18

918. Red Alcohol Thermometer-
Order Code - TP2604

This is an engraved stem Centigrade/Fahrenheit thermometer filled with red spirit instead of mercury. It is intended for usewhen a general utility thermometer that is extremely easy toglass with screen printing. Red Alcohol filled thermometer, packed in plastic case.

Order Code	Temperature Range	Graduation	Length
TP2604A	-10 to 50°C	1°C	12″
TP2604B	-10 to 110°C	1°C	12″
TP2604C	-10 to 150°C	½°C	12″
TP2604D	220°F	1°F	12″

919. Maximum & Minimum Thermometer-
Order Code - TP2608

Deluxe Model with Magnate Plastic Body. Range : -30°C to 60°C

920. Wet & Dry Bulb Thermometer-
Order Code - TP2609

Deluxe Model with Plastic Body. include humidity, chart C& F Range : -10°Cto 50°C

921. Sectional Working Model of 2-Stroke Petrol Engine-Order Code - TP2611
All parts in aluminum alloy and metal. Ignition is shown by means of a miniature bulb. Carburetor and fuel supply are sectioned with a Crank handle for manual operation. Mounted on a polished wooden base with printed

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diagram.

922. Sectional Working Model of 4-Stroke Petrol Engine-Order Code - TP2612
All parts in aluminum alloy and metal. Ignition is shown by means of miniature bulb. Carburetor and fuel supply are also sectioned with a Crank handle for manual operation.
Mounted on a polished wooden base with printed diagram.

923. Sectional Working Model of 2-Stroke Diesel Engine-Order Code - TP2613
All parts in aluminum alloy and metal. Ignition is shown by means of miniature bulb. Carburetor and fuel supply are also sectioned with a Crank handle for manual operation. Fitted on a polished wooden base with a printed diagram.

924. Sectional Working Model of 4-Stroke Diesel Engine-Order Code - TP2614
All parts in aluminum alloy and metal. Ignition is shown by means of a miniature bulb. Fuel supply is also sectioned with Crank handle for operation. Fitted on polished wooden base with printed diagram.

925. Steam Engine Model (Lower Range)-
Order Code - TP2615
Horizontal Pattern, school model.

926. Steam Engine Model-Order Code - TP2616
An all metallic and amusing working model. The brass cylinder is section and cut and is covered with a glass plate. Complete with working parts;-piston, slide valve - link motion and reserving method can be observed. The movement of wheel is light enough to demonstrate working even by blowing with the mouth.

927. Steam Engine Model (Electrically Heated)-
Order Code - TP2617
Operation of a commercial steam engine can be well illustrated by this working model. Its simplicity and reflectiveness for teaching the principles of steam engine has made it to be very widely used. It has a horizontal boiler mounted on a base along with a flywheel, cylinder and sea valve. Provided with glass screen and whistles mounted on the top of the boiler. Before switching on the engine one must take precaution that water in the tank must fill above the level of the glass screen. Connecting cord and plug are provided.

928. Fortin's Barometer (Precision Form)-
Order Code - TP2620
This is an instrument for making precise barometric pressure correction in laboratory operations. It is also used in weather observations, factories, mines and power plants.
The mercury cistern is constructed on the Fortin Principle adjustable to zero, indicated by an ivory point in the cistern. The glass barometer tube is carefully made and annealed and mounted in a brass metal casing. The Metrical and English system scales read from & from 640 to 810 mm with vernier reading to 1/100 inch and 1/10 mm.
The mercury level is adjusted by means of a knurled screw mounted at the bottom of the casing. When the knurled screw is turned all the way into the casing mercury fills the entire system and the tube accepts a very small volume to allow for thermal expansion. The barometer tube and scales covering the glass are made from corning glass. The barometer is mounted on a polished wooden board fitted with metal thermometer. Supplied without mercury.

929. Fortin's Barometer Case (Soft Wood)-
Order Code - TP2621
Case made of Superior quality Haldu wood with glass on three sides

930. Rain Gauge without Jar-Order Code - TP2622
This durable non-rusting, all metal gauge consists of a funnel 4" in dia fitting into the top of cylindrical vessel of the same diameter. When the inner tube is removed, the outer case serves as an overflow container.
TP2622A : G.I. Sheet
TP2622B : Brass Sheet
TP2622C : Copper Sheet

931. Solar System-Order Code - TP2625
With nine planets electrical fitting, school model.

932. Solar System-Order Code - TP2626
With nine planets electrical fitting, college pattern. Superior quality, with built in DC battery eliminator.

933. Dynamo A.C.-Order Code - TP2627
On nicely polished wooden board with driving wheel and bulb. superior quality.

934. Dynamo D.C.-Order Code - TP2628
On nicely polished wooden board with driving wheel and bulb. superior quality.

935. Dynamo A.C./D.C.-Order Code - TP2629
superior quality.

936. Electric Motor-Order Code - TP2630
Heavy pattern on wooden base with Newton Colour Disc. Export Quality.

937. Electrical Demonstration Bell-
Order Code - TP2631
All parts clearly visible; rigid construction to show the connections; mounted on a vertical stand.

938. Three Port Ferrite Isolator-Order Code - TP2635
Circulators are matched three-Port devices and these are meant for allowing microwave energy to flow in clockwise direction with negligible loss but almost no

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Transmission in the anticlockwise direction. Frequency range : 8.2-12.4 GHz

939. Variable Attenuators-Order Code - TP2636

These are simple and conveniently type set-level attenuators to provide at least db (1.5 bd in V & W Bands) of continuously variable attenuation.
These consists of a movable lossy vane inside the section of a waveguide by means of a micrometer, the configuration of lossy-vane is so designed to obtain the low VSWR characteristics over the frequency band.
These are meant for adjusting power level and isolating a source from the load etc.

940. Slotted section with precision waveguide slotted line and probe-carriage.-
Order Code - TP2637

Slotted Section consists of a precision waveguide slotted line and the probe carriage. The wavelength slotted line, comprise of an accurately machined section of waveguide in which a small longitudinal slot has been cut which is a basic means for monitoring wave —patterns inside the waveguide system. Such data may be transformed into impedance of the terminal load of unknown system of components, percent of transmitted power, degree of antenna-match and other characteristics of waveguide. A precision built probe carriage has a centimeter-scale with a vernier reading of 0.1mm least count.

941. Frequency Meters-Order Code - TP2638

Direct Reading Frequency Meter to give direct frequency on the dial provided. These are recommended of frequency and easy readings are desired in laboratory and production testing.
These consists of a section of waveguide connected to a tunable resonant cavity of high Q. The cavity absorbs some power at resonant cavity of high Q. the cavity absorbs some power at resonant frequency. These are designed to have 5 Mhz resolution & off-resonance VSWR of 1.01.

942. Tunable Probe-Order Code - TP2639

Tunable probe is designed to be used with slotted line section. These are meant for exploring the energy of Electric Field in a suitably fabricated section of waveguide. The depth of penetration into a waveguide section is adjustable by the knob of the probe.
The tip picks up the RF power from the line, this power is rectified by crystal detector which is fed to the VSWR meter or indicating instruments.
Frequency Range : 8.2 to 12.4 GHz
Output Connector : BNC

943. Detector Mount (Tunable)-
Order Code - TP2640

Tunable detector mount are simple and easy to use instruments for detecting microwave power through suitable detector.

Frequency Range : 8.2 to 12.4GHz
Output Connector : BNC

944. Movable —Shorts-Order Code - TP2641

Movable Shorts consists of a section of waveguide, flanged on one end and terminated with a movable shorting plunger on the other end. By means of this non-contacting type plunger a reflection co-efficient of almost unity can be obtained.
These are available in other frequency bands also.

945. Precision Movable—Shorts-
Order Code - TP2642

Precision Movable Shorts are similar to movable shorts accept that a non contacting type plunger is driven by the micrometer of least count 0.01mm for precise movement and reading of plunger.

946. Matched Terminations-Order Code - TP2643

It is a nonreflective termination based on tapered flap. These are useful for VSWR measurements of various waveguide components. These are also employed as a precise reference loads with Tee junctions, directional couplers etc.

Frequency Range	:	8.2 to 12.4 GHz
VSWR	:	Better than 1.02
Average Power	:	2 watts

947. Waveguide — Stand-Order Code - TP2644

Waveguide stands are meant to accept the components of respective bands for setting up a waveguide test bench and system.
The height of stand is adjustable with a locking screw. These consists of a C.I. base with supports of different frequency bands.

948. Slide Screw Tuner-
Order Code - TP2645

Slide Screw Tuner are used for matching purpose by penetration and position of a screw in the slot, provided in the centre of waveguide section. These consist of a section of waveguide, flanged on both ends

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and a thin slot is provided in the broad wall of waveguide. A carriage carrying the screw is provided over the slot.

949. Liquid Dielectric Cells-Order Code - TP2650

Liquid Dielectric cell are used to measure dielectric constants of low loss liquids. It consists of a section of waveguide with micrometer driven plunger mounted on a E-plane bend and surrounded by a temperature control water jacket.
An outstanding feature of this cell is its compact and rugged design.

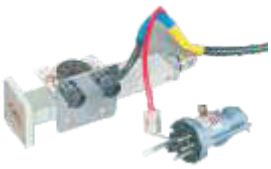
950. Solid Dielectric Cell-Order Code - TP2651

Solid Dielectric cell consists of a section of waveguide flanged on both ends and one end is terminated with a polished fixed reflector. These are meant for measurement of dielectric constant of solids.

951. Waveguide Phase - Shifters-
Order Code - TP2652

Waveguide Phase Shifter consists of a section of waveguide flanged on both ends with a dielectric vane, which is movable by means of a micrometer inside the waveguide.
These Phase Shifters provides a phase-shift of around 180°. A calibration-chart giving micrometer reading Vs.
phase Shift at particular Frequency is provided with each unit.

952. Klystron & Klystron Mounts-
Order Code - TP2653



Klystron Mount for mounting corresponding Klystrons such as 2K22, 2K25, 732A/B, 726A or RK-5979 etc.
These consists of a section of waveguide flanged on one end and terminated with a movable short on the other end and terminated with a movable short on the other end. An octal base with cable is provided for connecting these mount to Klystron power supply.

953. Klystron Power Supply-
Order Code - TP2654

Model KP-151, is a state-of-the-art solid state, regulated power supply for operating low power Klystrons such as 2K25, 723 A/B, RK 5976, 726, 2K22 etc.
Incorporates a number of proprietary features
a) Regulated Beam Supply, Repeller and Filament Supply voltages.
b) Overload TRIP protection for Beam Supply Output.
c) LED Digital metering for Beam voltage, current and Repeller voltage.
d) Stand-by mode.
e) Ultra compact and Reliable.
In addition to AM and FM modulation of Beam current, a provision for externally modulating the klystron supply with desired signal waveform has been provided.
Model KP-151 utilizes quality components, rugged construction and ergonomically designed front panel. A careful handling of the instrument will provided years of trouble free service.

954. Klystron Cooling Fan-Order Code - TP2655
This is provided for keeping the klystron cool.

955. Gunn Oscillators-Order Code - TP2657
Model 2152 Gunn Oscillators are solid state microwave energy generators. These consists of waveguide cavity flanged on one end and micrometer driven plunger fitted on the other end. A gunn-diode is mounted inside the waveguide with BNC (F) connectorfor D.C. Bias.
Each Gunn Oscillator is supplied with calibration certificate giving frequency Vs. micrometer reading at 200 MHz intervals.

956. Pin Modulators-Order Code - TP2658
Model 451 Pin-Modulators are designed to modulate the CW output of Gunn Oscillator. It is operated by the square-pulses derived from the UHF (F) connector of the Gunn Power Supply Model X-110.
These consists of a Pin-diode mounted inside a section of waveguide flanged on its both end. A fixed attenuation vane is mounted inside at the input port to protect the oscillator.

957. Gunn Power Supply -
Order Code - TP2659
Model X-111 Gunn Power Supply has been designed to operate high frequency Gunn oscillators and where PIN Modulators are not available, in this supply variable frequency square wave modulation is provided on the bias supply itself.
Front panel digital meter reads the Gunn bias and the current drawn by the Gunn-diode through a switch.
This consists of a regulated D.0 power supply 2.0 to 12.0 V variable and a square wave generator of variable frequency 850 to 1150 Hz.

958. Different type of cables-Order Code - TP2660
TP2660A : BNC to BNC Cable
TP2660B : BNC to Open Cable

958. Solid-State VSWR Meter-Order Code - TP2663
Model VS-411 is a calibrated high gain amplifier tuned at one frequency to be used for measurement of VSWR, impedance and relative power levels. The meter indicates the signal level in proportion to the input, which is calibrated directly in VSWR and db. Input Selector

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Switch is provided for NORMAL and EXPAND range.

Specifications

Amplifier type	:	High gain tuned at one frequency
Frequency	:	1000 Hz Amplifier
Sensitivity	:	0.1 microvolt at 200 ohms for full scale
Band-width	:	25-30Hz.
Noise-level	:	Less then 0.02 microvolt
Range	:	70db min. in 10db steps
Accuracy	:	¸ 0.15 db on one range
Meter-Linearty	:	1% of full scale
Scale-Seletor	:	Normal, Extand
Gain-Control	:	'Coarse' & 'Fine'
Input	:	BNC (F), 200 ohms impedance

959. Smith's Chart Pad of 100 purchase-
Order Code - TP2664

960. Fixed Short-Order Code - TP2665

961. Wave Guide Cavity-Order Code - TP2666

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