

INVITATION LETTER

Package Code: TEQIP-III/2019/RJ/gebk/71

Current Date: 03-Dec-2019

Package Name: ECB/TEQIP-III/Physics lab

Method: Shopping Goods

To Be Published on ECB Website

Sub: INVITATION LETTER FOR ECB/TEQIP-III/Physics lab

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)
1	Spectrometer with light in vernier scale setup	1	Engineering College Bikaner Karni Industrial Area Pugal Road Bikaner	Yes
2	Tool Kit with small drill Machine	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
3	Diffraction Grating 100 lpi	2	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
4	Sodium Source (only Bulb)	5	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
5	Transformer for sodium source	5	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
6	Newton's Ring Setup	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
7	BJT Hartley and Collpitts (RF) Oscillators	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
8	Digital IC Trainer	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
9	Diode & Zener Diode Characteristic	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
10	Beakers_250ml	2	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
11	Beakers_100ml	2	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
12	Pipette 2	4	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
13	Weighing Machine	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes

14	PH Meters	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
15	HOT PLATE WITH MAGNETIC STIRRER	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
16	Rectangular Muffle Furnace	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
17	SPIN COATING MACHINE	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
18	Auto range Digital Multimeter	2	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
19	30MHz DUAL TRACE OSCILLOSCOPE With Component Tester	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
20	Prism Crown	8	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
21	Half, full wave and bridge rectifier (FWR) with & with out filter	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
22	FTO Glass Plate	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
23	6 In 1 Digital Multi function Environment meter	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
24	Diffraction Grating	3	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
25	Measuring cylinder 1	5	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes
26	Faraday's effect by He-Ne laser (Complete Experimental Set up)	1	Engineering College Bikaner, Karni Industrial Area, Pugal Road, Bikaner	Yes

2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme [TEQIP]-Phase III Project** and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

3. **Quotation**

- 3.1 The contract shall be for the full quantity as described above.
3.2 Corrections, if any, shall be made by crossing out, initialling, dating and re writing.
3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit Price.
3.4 Applicable taxes shall be quoted separately for all items.
3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
3.6 The Prices should be quoted in Indian Rupees only.

4. Each bidder shall submit only one quotation.

5. Quotation shall remain valid for a period not less than **100**days after the last date of quotation submission.

6. Evaluation of Quotations: The Purchaser will evaluate and compare the quotations determined to be Substantially responsive i.e. which

6.1 are properly signed; and

6.2 Confirm to the terms and conditions, and specifications.

7. The Quotations would be evaluated for all items together.

8. Award of contract The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

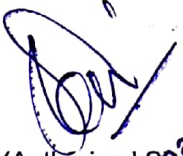
8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of Contract.

8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the purchase order.

9. Payment shall be made in Indian Rupees as follows:

Payment Description	Expected Delivery Period (in Days)	Payment Percentage
Satisfactory Delivery & Installation	30	10
Satisfactory Acceptance	30	90

10. Liquidated Damages will be applied as per the below:
Liquidated Damages Per Day Min %:0.05
Liquidated Damages Max %:0.10
11. All supplied items are under warranty of 36 months from the date of successful acceptance of items and AMC/Others is .
12. You are requested to provide your offer latest by 13:30 hours on 17-Dec-2019 Quotation will be opened at 14:00 hours on 17th December 2019.
13. Detailed specifications of the items are at Annexure I.
14. Training Clause (if any) **yes**
15. Testing/Installation Clause (if any) **yes**
16. Performance Security shall be applicable: **7%**
17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
18. Sealed quotation to be submitted/ delivered at the address mentioned below, **Engineering College, Bikaner, Karni Industrial Area , Pugal Road, Bikaner Rajasthan**
19. We look forward to receiving your quotation and thank you for your interest in this project.


(Authorized Signatory)
Name & Designation
Principal
Engineering College
Bikaner

Annexure I

Sr. No.	Item Name	Specification
01.	Spectrometer with light in vernier scale setup	<p>Spectrometer with Light in vernier scale setup</p> <p>Setup Contains:- An assembly of setup consist of following items are..</p> <ul style="list-style-type: none"> ❖ Spectrometer:- A Heavy Rigid Base with fixed collimating tube & telescope, circular disc with veriner least count:- 60/30 Sec, Dia 6 Inch. ❖ Light Source:- A Sodium Lamp 35-watt, Wooden Box, Sodium Lamp Transformer 35 Watt. ❖ Grating:- Diffraction Grating 15000 Lines (Heligier & Watt Type) ❖ EDF Prism 32x32 mm. ❖ Other Accessories:- Meg. Lens with LED, Spirit Level. <p>ITEM Should be ISO 9001:2015, 14001:2015 and 45001:2015 Certified and CE Certified.</p>
02.	Tool Kit with small drill Machine	Tool Kit with all standard tools of branded make and Drill Machine (Small)
03.	Diffraction Grating 100 LPI	Diffraction Grating 100 LPI
04.	Sodium Source (Only Bulb)	Sodium Source (Only Bulb) 35 Watt.
05.	Transformer for sodium source	Transformer For Sodium source
06.	Newton's Ring Setup	<p>Newton' Ring Setup</p> <p>Newton's Ring Experiment:</p> <p>Aim: To determine the wavelength of sodium light by Newton's Ring.</p> <ul style="list-style-type: none"> ❖ Newton Ring Microscope:- Compact type unit which contains, Newton's ring Micrometer: 0.01 mm least count, Eyepiece: Ramsden 10X or better Objective: 3x or better, optical arrangement for Newton's rings, ❖ Used Light Source:- A Sodium Lamp 35 Watt, Wooden Housing for Sodium Lamp, Operated transformer 35Watt. ❖ Plano-convex lens of large radius of curvature. ❖ Other Supporting Accessories:- Spherometer, Magnifying Lens. <p>ITEM Should be ISO 9001:2015, 14001:2015 and 45001:2015 Certified and CE Certified.</p>
07.	BJT Hartley and Colpitts (RF) Oscillators	<p>To Study Colpitt's Oscillator/ Hartley Oscillator/ RS Flip Flop/ D Flip flop/ JK Flip Flop/ Decade counter/ Half and full wave rectifier/ characteristics of a BJT Hartley and Colpitts (RF) Oscillator</p> <p>This has DC +12V/500mA Fixed Power supply, For Hartley Oscillator- the circuit uses NPN Transistor BC548 with resistors and capacitors provides self bias CE Amplifier mode, with two inductor and one Capacitor as a Feedback components forms a Hartley oscillator circuit to produce an oscillation in RF range. For Colpitts Oscillator- the circuit uses NPN Transistor BC548 with resistors and capacitors provides self bias CE Amplifier mode, with two Capacitors and one inductor as a Feedback components forms a Colpitts oscillator circuit to produce an oscillation in RF range.</p> <p>Objectives :</p> <ul style="list-style-type: none"> ➤ To Study operation of Hartley Oscillator Circuit. ➤ To Study operation of Colpitts Oscillator Circuit. ➤ To Determine the Quiescent Operating Point of Transistor. ➤ To Observe & Note Change in Frequency of Oscillation w.r.t. change in feedback elements. Compare the Theoretical & Practical values. <p>Instruments Required : Digital Multimeter (DMM) for DC Voltage and LC measurement, CRO 20MHz.</p> <p>Features:</p> <ul style="list-style-type: none"> ➤ A Schematic diagram printed in multicolor on the front panel of the board. ➤ Complete enclosed in High Quality poly coated imported pine Wooden Box. ➤ Built-in Fixed / Variable DC Regulated Power Supply. ➤ Maximum Test Points to study all the corners of the Experiment. ➤ Equipped with maximum objectives. ➤ Test Points by 2 mm high quality banana sockets. ➤ Interconnections by 2 mm high quality banana pins. ➤ Digital Meters on Demand. ➤ Very Easy for operation. ➤ Detailed Instruction manual on the line of curriculum.

Sr. No.	Item Name	Specification
8.	Digital IC Trainer	<p>Basic Digital IC Trainer (15 Experiments) The trainer has on board DC +5V fixed Power supply, Digital TTL Logic 1 & 0 Generator (9 No), Digital TTL Logic 1& 0 Indicator (4No) and mono clock pulse generator. It has on board TTL Digital ICS of AND, OR,NOT,XOR, RS Flip-flop, JK F/F,D F/F and decade counter ICs for performing the experiments on all logic gates, all Flip-flops, Decade Counter and their combinational circuits.</p> <p>Objectives :</p> <ul style="list-style-type: none"> ➤ To Study the structure of Basic Logic gates trainers for various inputs and outputs. ➤ To Study Logic Gates AND,OR,NOT,NAND,NOR,XOR,XNOR and verify its truth table. ➤ To Study and verify the truth table of RS, JK, D,T Flip-flops. ➤ To study and verify the truth table of Decade Counter. ➤ To study various circuits based on logic gates and Flip-flops. <p>Instruments Required : Digital Multimeter (Optional)</p> <p>Features:</p> <ul style="list-style-type: none"> ➤ A Schematic diagram printed in multicolor on the front panel of the board. ➤ Complete enclosed in High Quality poly coated imported pine Wooden Box. ➤ Built-in Fixed / Variable DC Regulated Power Supply. ➤ Maximum Test Points to study all the corners of the Experiment. ➤ Equipped with maximum objectives. ➤ Test Points by 2 mm high quality banana sockets. ➤ Interconnections by 2 mm high quality banana pins. ➤ Digital Meters on Demand. ➤ Very Easy for operation. ➤ Detailed Instruction manual on the line of curriculum.
9.	Diode & Zener Diode Characteristic	<p>Diode & Zener Diode characteristics The Trainer has DC 12V / 500 mA Variable Power supply, Diode (Si and Ge) and Zener Diodes of Vz value 5.6V and 6.2V are used to study the characteristics, Test Points for connecting the meters. On board Digital Voltmeter and Milliammeter.</p> <p>Objectives :</p> <ul style="list-style-type: none"> ➤ To Study the Forward & Reverse characteristics of Silicon, Germanium type Diode. ➤ To Determine forward static & dynamic resistance of Diode at a given operating point. ➤ To Study the Forward & Reverse characteristics of Zener Diodes of Different ratings. ➤ To Determine the Zener Voltage Vz from the reverse characteristics of Zener Diode. <p>Instruments Required : Digital / Analog Voltmeter 15V(1No), Ammeters 25mA(1No), 500 μA(1No.)</p> <p>Features:</p> <ul style="list-style-type: none"> ➤ A Schematic diagram printed in multicolor on the front panel of the board. ➤ Complete enclosed in High Quality poly coated imported pine Wooden Box. ➤ Built-in Fixed / Variable DC Regulated Power Supply. ➤ Maximum Test Points to study all the corners of the Experiment. ➤ Equipped with maximum objectives. ➤ Test Points by 2 mm high quality banana sockets. ➤ Interconnections by 2 mm high quality banana pins. ➤ Digital Meters on Demand. ➤ Very Easy for operation. ➤ Detailed Instruction manual on the line of curriculum.
10.	Beakers_250 ml	Beakers, Low Form with spout, Quartz Glass. 250 ml
11.	Beakers_100 ml	Beakers, Low Form with spout, Quartz Glass. 100 ml
12.	Pipette 2	Pipette Graduated Micro Capillary Pipettes, Disposable, calibrated "to contain" Cap. μ l. : 05 Graduation μ l. : 1,2,3,4 & 5 Colour Code : White
13.	Weighing Machine	Weighing Machine Digital Precision Gold Balance with Glass Windshield Salient Features <ul style="list-style-type: none"> ➤ Glass Windshield ➤ Auto Calibration with External Weight

Sr. No.	Item Name	Specification																										
		<ul style="list-style-type: none"> ➤ Low Battery Indicator ➤ Multifunction Weighing Units ➤ In built rechargeable battery for continues use ➤ Auto Zero tracking ➤ Overload Protection Design ➤ S. S. Weighing Pan, Level indicator ➤ Automatic Switch Off Option ➤ High precision loadcell sensor ➤ RS232 Interface <p>Specifications:</p> <table border="1" data-bbox="359 548 1189 1220"> <tr><td>Capacity</td><td>600g</td></tr> <tr><td>Readability</td><td>0.01 g (10 mg)</td></tr> <tr><td>Repeatability</td><td>0.01 g</td></tr> <tr><td>Linearity</td><td>0.02 g</td></tr> <tr><td>Pan Size</td><td>115 mm</td></tr> <tr><td>Make</td><td>WENSAR</td></tr> <tr><td>Display</td><td>RED LED</td></tr> <tr><td>Calibration</td><td>Automatic External</td></tr> <tr><td>Tare Range</td><td>Full</td></tr> <tr><td>Operating Temperature</td><td>10°C to 40°C</td></tr> <tr><td>Power Supply</td><td>AC 220V/ 50-60 Hz</td></tr> <tr><td>Dimension (LxWxH) mm</td><td>325 x 260 x 350</td></tr> <tr><td>Weight</td><td>3.7 kg</td></tr> </table> <p>Should be approved by Department of Metrological ITEM Should be ISO 9001:2015 Company product, should be ISO and CE Certified.</p>	Capacity	600g	Readability	0.01 g (10 mg)	Repeatability	0.01 g	Linearity	0.02 g	Pan Size	115 mm	Make	WENSAR	Display	RED LED	Calibration	Automatic External	Tare Range	Full	Operating Temperature	10°C to 40°C	Power Supply	AC 220V/ 50-60 Hz	Dimension (LxWxH) mm	325 x 260 x 350	Weight	3.7 kg
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4..	PH Meters	<p>pH Meter pH METER.- with ATC and General Purpose Electrode is an easy-use benchtop pH meter designed for daily testing and controls are required.The meter has a clear and bright back light LCD display that show the measured value, mode indicators and help messages</p> <p>SALIENT FEATURES</p> <ul style="list-style-type: none"> • Large backlit LCD display shows mode indicators and help messages. • Up to 3 points push-button calibration with auto-buffer recognition. Selectable pH buffer standards and temperature units. • Automatically calculates and displays electrode slope after calibration. • Automatic Temperature Compensation (ATC) ensures highly accurate measurements over the entire range. • Automatic endpoint function freezes the stable measured values • Help message as a operational guide to helps you understand how to use meter. • Setup menu lets user customizes buffer standards, calibration points, temperature units, automatic or manual hold function, auto-off feature to meet personal preferences. • Reset function can resumes all settings to factory default values <p>SPECIFICATION pH Range :-2.00 to 16.00 pH pH Resolution : 0.01 Accuracy : ± 0.01pH Calibration Points : up to 3 points pH Buffer options : USA (pH4.01/7.00/10.01) or NIST (pH4.01/6.86/9.18) mV</p>																										

Sr. No.	Item Name	Specification
		mV Range : +1999 mV Accuracy : ± 1 mV Resolution : 1mV Temperature Range : 0 to 105°C Accuracy : ± 0.5 °C Resolution : 0.1°C Temperature Compensation : 0~100°C, Manual / Automatic General Hold Function : Available Auto Off Function : Available Connector : BNC Display LCD : (135× 75)mm Power Requirements : DC9V, using AC adapters, AC 220V/50Hz Dimensions (LxWxH) mm : 210 × 205 × 75 Packing Box Size : 300 x 250 x 175 Weight : 1.5 kg Should be ISO & CE Certified.
15.	HOT PLATE WITH MAGNETIC STIRRER	Hot Plate with Magnetic Stirrer Ceramic Hotplate Magnetic Stirrer. SAILIENT FEATURES <ul style="list-style-type: none"> ➤ Digital LCD backlight Display ➤ Big Size Ceramic hot plate with flame protection and durability ➤ Heating and stirring can proceed simultaneously. ➤ Temperature & Stirring speed is stepless adjusted. ➤ Real temperature & speed display on the screen simultaneously ➤ Two sensors, outside PT 100 sensor controls the liquid temperature inside K type sensor control the hot plate temperature. ➤ Over Temperature Alarm SPECIFICATION Display : Digital LCD backlight Display Speed (RPM) : 100-1600 Plate Size (mm) : 190 x 190 Plate Type : Ceramic Max. Volume (ml) : 5000 Temperature Controller : PID Max Temp. (Plate Surface) : 300 °C Tem. Resolution : 0.1 °C Tem. Accuracy : 0.5 °C Power Wattage : 600 W Power Supply : AC 220V / 50Hz Dimension (LxWxH) mm : 300 x 190 x 126 Weight : 5 kg Should be ISO & CE Certified.
16.	Rectangular Muffle Furnace	Rectangular Muffle Furnace (Laboratory Model) Muffle Furnace" <ul style="list-style-type: none"> ➤ Size: 18"x 9" x9" ➤ Material of construction: Outer shell made out of thick mild steel sheet duly finished in powder coated paint. ➤ Fitted with Muffle Block for supporting heating elements. ➤ Maximum Temperature: 1200°C ➤ Working Temperature: 1100° C ± 10°C ➤ Controller: Microprocessor based Digital PID ➤ Temperature controller cum Indicator with Dual Display. ➤ Muffle door will be hinged type & provided with 1" diameter hole in front door with lid.

Item Name

Specification

17.

SPIN COATING MACHINE

- A fume exhaust pipe is fitted at the back of furnace.
- Display of PV & SV, proper & high quality heating element and insulator along with K type thermocouple.
- Complete with main power cable (of 3m) & 15A plug point to work on 220/230V AC supply.

Should be ISO/CE Certified.

Spin Coater Machine

In this model of Spin Coater the angular speed of the substrate, acceleration/ deceleration and coating duration can be set to suit the user requirement using the keyboard and the LCD display in the front panel. The process can be into nine steps maximum, each step having different values of speed, acceleration/ deceleration and coating duration.

Specifications:

- User Interface: 24x4 Line Alpha-Numeric LCD and 16 button keyboard.
- Actuator: Brushless DC servo motor.
- Program Memory: 9 programs with 9 steps for each program.
- Speed Profile : Speed , Duration and acceleration
- Spin Speed: 60-9999 RPM
- Speed Resolution : 1 RPM
- Speed Accuracy : +/-1%
- Acceleration/ Deceleration: 5-2000 rpm/s (Ramp and dwell times can be indirectly set by entering acceleration).
- Duration : 1-99 sec/min/hour for each step
- Sample Chucks: 3 Nos. (25 mm, 32mm & 45 mm)
- Maximum Sample Diameter : 100mm
- Minimum Sample Diameter : 13mm
- Bowl Material : Polypropylene (PP)
- Bowl Size: 8 Inches
- Lid With transparent window and sample dispensing port
- Safety interlocks to prevent spinning when the bowl is open
- Sample Holder: PTFE disk with Silicon rubber O Ring
- Sample Mounting : Secured by Vacuum holding
- Vacuum Connector : 8 mm Dia Snap-in hose connector
- Draining Hose
- Nitrogen/ Inert Gas Inlet
- Vacuum Pump On/Off and Release Switches
- Dimension (mm): 400 (L) 275 (W) 350 (H) MM
- Power Input (Factory Set) : 230V/110V 50Hz/60Hz
- Maximum Power Consumption : 260W (With Vacuum Pump)
- Vacuum Pump Specifications:
- Oil Free
- Max Flow Rate : 45 lpm
- Max Vacuum : 27 inches HG
- Mac Pressure : 60 psig
- Power: 1/4 hp
- Dimension : 300x130x200mm

Should be ISO/CE Certified.

18.

Auto range Digital Multimeter

3 - 3/4 Auto Range Digital Multimeter

Features

- New Type Holster, Streamline Design
- Large LCD Makes the Reading Clear
- Strong Antimagnetic and Anti-jamming Performance
- Full Function Protection
- Unit Symbol Display, Very Easy to Read
- Relative Value, Frequency / Duty Cycle Measuring, Data Hold

Technical Specifications

Basic Function	Range	Accuracy
DCV	400mV / 4V / 40V / 400V / 1000V	±(0.5% +4)
ACV	400mV / 4V / 40V / 400V / 750V	±(0.8% +6)
DCA	400uA / 4mA / 40mA / 400mA / 4A/20A	±(1.0% +5)
ACA	400uA / 4mA / 40mA / 400mA /	±(1.5% +6)

Sr. No.	Item Name	Specification																																							
		<table border="1"> <tr> <td></td> <td>4A/20A</td> <td></td> </tr> <tr> <td>Resistance</td> <td>400Ω / 4k Ω / 40k Ω / 400k Ω / 4M Ω / 40M Ω</td> <td>±(0.8% +1)</td> </tr> <tr> <td>Capacitance</td> <td>4nF / 40nF / 400nF / 4μF / 40μF / 200μF</td> <td>±(2.5% +6)</td> </tr> <tr> <td>Frequency</td> <td>10Hz / 100Hz / 1kHz / 10kHz / 100kHz / 1MHz / 30MHz</td> <td>±(0.5% +4)</td> </tr> <tr> <td>Temperature</td> <td>-40°C - 1000°C</td> <td>±(0.8% +4)</td> </tr> </table> <table border="1"> <tr> <td>Special Function</td> <td>VC97</td> </tr> <tr> <td>Continuity Test</td> <td>Approx. less than 30Ω ±10 Ω</td> </tr> <tr> <td>Low Battery Indication</td> <td>Approx less than 2.4V.</td> </tr> <tr> <td>Data Hold Auto Power Off</td> <td>Approx. 15 minutes.</td> </tr> <tr> <td>Input Impedence</td> <td>10MΩ</td> </tr> <tr> <td>Sampling Rate</td> <td>3 times/s.</td> </tr> <tr> <td>AC Frequency Response</td> <td>40 - 400Hz.</td> </tr> <tr> <td>Operation Method</td> <td>Manual or Auto Range.</td> </tr> <tr> <td>Max. Display</td> <td>4000.</td> </tr> <tr> <td>LCD Size</td> <td>65 x 41mm.</td> </tr> <tr> <td>Battery</td> <td>3V, AAA x 2.</td> </tr> <tr> <td>Power Dissipation</td> <td>Quiescent current approx. 2mA.</td> </tr> </table>		4A/20A		Resistance	400Ω / 4k Ω / 40k Ω / 400k Ω / 4M Ω / 40M Ω	±(0.8% +1)	Capacitance	4nF / 40nF / 400nF / 4μF / 40μF / 200μF	±(2.5% +6)	Frequency	10Hz / 100Hz / 1kHz / 10kHz / 100kHz / 1MHz / 30MHz	±(0.5% +4)	Temperature	-40°C - 1000°C	±(0.8% +4)	Special Function	VC97	Continuity Test	Approx. less than 30Ω ±10 Ω	Low Battery Indication	Approx less than 2.4V.	Data Hold Auto Power Off	Approx. 15 minutes.	Input Impedence	10MΩ	Sampling Rate	3 times/s.	AC Frequency Response	40 - 400Hz.	Operation Method	Manual or Auto Range.	Max. Display	4000.	LCD Size	65 x 41mm.	Battery	3V, AAA x 2.	Power Dissipation	Quiescent current approx. 2mA.
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19.

30MHz DUAL TRACE OSCILLOSCOPE WITH COMPONENT TESTER 3706C

Features

- DC - 30MHz Bandwidth
- 1mV/div Sensitivity on Both Channels
- CH1, CH2 (Independent Channels), CH1 & CH2 (Alternate / CHOP), CH2 INVT, ADD and SUBTRACT
- X-Y Operation
- 40ns/div to 0.2s/div Time Base
- 140mm Rectangular CRT with Internal Graticule
- Triggering to 40MHz
- Z Modulation (TTL Level)
- 8 x 10 cm. Display
- TV Triggering Frame (V) & Line (H)
- MAINS Trigger
- Variable Hold Off
- Built-in Component Tester / Comparator

Technical Specifications

VERTICAL DEFLECTION

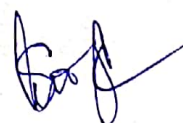
Deflection Coefficient (CH1 & CH2)	1mV/div to 20V/div, 5mV/div to 20V/div in 12 calibrated steps in 1-2-5 sequence. x5 Magnification increases the sensitivity to 1mV/div & 2mV/div. (LED indicated).
Accuracy	±3%.
Bandwidth	DC - 30MHz (-3dB), dc coupled. 10Hz - 30MHz (-3dB), ac coupled. 20MHz (-3dB) in x5 MAG.
Rise-Time	11.6 ns or less, 17.5ns in x5 MAG.
Display Modes	CH1, CH2, CH1 & CH2 Alternate or Chop mode, Algebraic addition CH1+ CH2, Algebraic subtraction CH1 - CH2, CH2 Invert & X-Y.
Input Impedance	1 M ohms & 25 pF (approx).
Maximum Input Voltage	400 Volts (dc + peak ac).
Internal Trigger Signal	CH1 or CH2 signal.
TIME BASE	
Sweep Speed	18 calibrated steps.

30MHz DUAL TRACE OSCILLOSCOPE With Component Tester

Sr. No.	Item Name	Specification				
			0.5 μ s/div to 0.2 s/div in 1, 2 & 5 sequence.			
		Sweep Magnifier	x5 Magnification extends the sweep speed to 100 ns/div. x5 Magnification indication with LED.			
		Accuracy	$\pm 3\%$.			
		Variable	Uncalibrated continuously variable control between steps, extends fastest sweep speed to 40 ns/div (approx). (Uncal LED indication).			
		Hold-off Time	4:1 variable control.			
		TRIGGER SYSTEM				
		Triggering Mode	Automatic or Normal with Level Control.			
		Source	CH1 / CH2 / MAINS / EXT.			
		Slope	Positive or Negative.			
		Coupling	ac / dc / HF reject or TV Frame / TV Line.			
		Trigger Sensitivity	Mode	Freq - Range	INT	EXT
			AUTO	30Hz - 30MHz	1 div	1V p-p
			NORM	3Hz - 30MHz	1 div	1V p-p
			(Typical 40MHz at 2 div).			
		HORIZONTAL DEFLECTION				
		Deflection Coefficient	Same as CH2.			
		Bandwidth	DC - 1MHz (-3dB).			
		Input Impedance	1M ohms and 25pF (approx).			
		COMPONENT TESTER / COMPARATOR				
		Dual Component Tester allows comparison of V-I characteristics of a Device - Under - Test (D.U.T.) and a sample Device.				
		Test Voltage	8.6V r.m.s.			
		Test Current	28mA.			
		Test Frequency	50Hz or 60Hz.			
		GENERAL INFORMATION				
		Cathode Ray Tube	140mm Rectangular screen, Internal Graticule, 8 x 10 cm, P31 phosphor.			
		Trace Rotation	Front Panel control, allows $\pm 50^\circ$ of trace adjustment.			
		Z-Modulation	TTL level.			
		Calibrator	Provides 0.2V $\pm 2\%$, 1KHz square-wave output for probe compensation.			
		Power Requirement	230V AC $\pm 10\%$, 47-65Hz, 40VA.			
		Dimensions	165 (H) x 340 (W) x 420 (D) mm.			
		Weight	7.5 Kgs. approx.			
		Standard Accessories	Instruction Manual, 2 Input BNC Leads.			
		Optional Accessories	High impedance switch probe with x1 or x10 attenuation (Model 306), Trolley.			
		Environmental	Normal : 10OC to 40OC RH 85%.			
		Specifications	Operational : 0OC to 50OC RH 85%.			
20	Prism Crown	Prism Crown 32x32 mm				
21	Half, full wave and bridge rectifier (FWR) with & without filter	Half, Full Wave and Bridge Rectifier (FWR) With & Without Filters The Trainer has single phase 230V/12-0-12V/500mA/50Hz transformer, Diode 1N4007 (1 No) for Half wave, Diode 1N4007 (2Nos) for Center tap and Diode 1N4007 (4Nos) for bridge type with Variable Load resistor of @ 10K Ω as to form HWR, Center tap and Bridge type Full wave Rectifier (FWR), Filters used C, CLC, LC & π type, facility to select the HWR/FWR with and without filter, DC output @ 12V, different values of capacitor used to study the effect on ripple factor and maximum test points to observe signals on CRO and DMM. On board Digital Voltmeter and Milliammeter.				

Sr. No.	Item Name	Specification																		
		<p>Objectives :</p> <ul style="list-style-type: none"> ➤ To Study the Half Wave Rectifier (HWR) without and with C, CLC, LC & π filter. ➤ To Study the Center tap Full Wave Rectifier (FWR) without and with C, CLC, LC & π filter. ➤ To Study the Bridge type Full Wave Rectifier (FWR) without and with C, CLC, LC & π filter. ➤ To observe & Note the change in ripple factor w.r.t. change in type of filter. ➤ To Observe and note I/P and O/P waveforms on CRO. <p>Instruments Required : Digital Multimeter (DMM) for AC/DC Voltage, Current measurement, CRO 20MHz</p> <p>Features:</p> <ul style="list-style-type: none"> ➤ A Schematic diagram printed in multicolor on the front panel of the board. ➤ Complete enclosed in High Quality poly coated imported pine Wooden Box. ➤ Built-in Fixed / Variable DC Regulated Power Supply. ➤ Maximum Test Points to study all the corners of the Experiment. ➤ Equipped with maximum objectives. ➤ Test Points by 2 mm high quality banana sockets. ➤ Interconnections by 2 mm high quality banana pins. ➤ Digital Meters on Demand. ➤ Very Easy for operation. ➤ Detailed Instruction manual on the line of curriculum. 																		
22	FTO Glass Plate	FTO Glass Plate																		
23	6 In 1 Digital Multi function Environment meter	<p>6 IN 1 DIGITAL MULTIFUNCTION ENVIRONMENT METER</p> <p>The 6 in 1 digital multi-tester has been designed to combine the functions of Sound Level Meter, Light Meter, Humidity Meter, Temperature Meter Non-contact AC Voltage Test Meter and Digital Multimeter. It is an ideal multi-function Instrument with scores of practical applications for professional and home use. The Sound Level function can be used to measure noise in factories, schools, offices, airports, home, etc., checking acoustics of studios, auditoriums and hi-fi installations. The Light function is used to measure illuminance in the field. It is fully cosine corrected for the angular incidence of light. The light sensitive component used in the meter is a very Stable, long life silicon diode. The Temperature is for use a semiconductor sensor and K type thermocouple. This operations manual contains general information and specification. The digital Multimeter performs AC/DC Voltage, AC/DC Current, Resistance measurement and Audible Continuity, Diode, Temperature test.</p> <ul style="list-style-type: none"> ➤ 14 functions measure Sound level, Light, Humidity, Temperature, DC Voltage, AC Voltage, DC Current, AC Current, Resistance, Diode and Continuity test. ➤ 3 - 4/5 Digital large LCD display with units of Lux, °C, %RH and dB indication. ➤ Easy to use with single function switch operating, pocket size and light weight. ➤ Sound level measures from 35dB to 100dB for C weighting checking with 0.1dB resolution. ➤ Light measuring levers ranging from 1 Lux to 40,000 Lux. ➤ Humidity measurement from 30%RH to 90%RH with 1%RH resolution and fast time response. <p>General Specifications</p> <table border="1" data-bbox="363 1697 1209 2123"> <tr> <td>Display</td> <td>3 - 4/5 Digital 4000 counts LCD display with function of Lux, °C, % and dB indication</td> </tr> <tr> <td>Polarity : Over-range</td> <td>Automatic, (-) negative polarity indication. "OL" mark indication</td> </tr> <tr> <td>Low Battery Indication</td> <td>The "(-)(+)" is displayed when the battery voltage drops below the operating level</td> </tr> <tr> <td>Measurement rate</td> <td>3 times per second, nominal</td> </tr> <tr> <td>Operating environment</td> <td>0°C to 40°C (32°F to 104°F) at <70%RH</td> </tr> <tr> <td>Storage temperature</td> <td>-10°C to 60°C (14°F to 140°F) at <80%RH</td> </tr> <tr> <td>Power</td> <td>One standard 9V, NEDA1604 or 6F22 battery</td> </tr> <tr> <td>Dimensions</td> <td>170 (H) x 78(W) x 48(D) mm</td> </tr> <tr> <td>Weight : Approx.</td> <td>335g including holster</td> </tr> </table>	Display	3 - 4/5 Digital 4000 counts LCD display with function of Lux, °C, % and dB indication	Polarity : Over-range	Automatic, (-) negative polarity indication. "OL" mark indication	Low Battery Indication	The "(-)(+)" is displayed when the battery voltage drops below the operating level	Measurement rate	3 times per second, nominal	Operating environment	0°C to 40°C (32°F to 104°F) at <70%RH	Storage temperature	-10°C to 60°C (14°F to 140°F) at <80%RH	Power	One standard 9V, NEDA1604 or 6F22 battery	Dimensions	170 (H) x 78(W) x 48(D) mm	Weight : Approx.	335g including holster
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Sr. No.	Item Name	Specification
		Accessories: Carrying Case, Test Leads, Temperature Probe, Instruction Manual, Battery and Test Certificate.
24	Diffraction Grating	Diffraction Grating 15000 LPI
25	Measuring cylinder 1	Measuring Cylinders 25 ml with spout, Hexagonal Base, Accuracy as per Class 'A' IS 878 : 2008, ISO 4788 : 2005, with NABL works certificate. Capacity ml : 25 Sub. Div. ml : 0.5 Tolerance \pm ml. : 0.25
26	Faraday's effect by He-Ne laser (Complete Experimental Set up)	Faraday's Effect by He-NE Laser (Complete Experimental Set up) Faraday Rotation Setups. Setup Contains:- <ul style="list-style-type: none"> ➤ He-Ne Laser:- A Laser Tube along with Power Supply are Housed in thick powered coated aluminum box , From Hole the laser beam comes out. It has also wavelength 6328 Å, Red Color, Random Polarisation, 2mW. ➤ Optical Bench:- With 1.5 Length Long S.S rods, two slow motion rider, two fixed rider , two stand. ➤ A Solenoid rod with sample glass rod (For Measure Verdet Constant) ➤ Power Supply for Solenoid. ➤ Ammeter for Measure Current. ➤ Analyser & Polariser with rod. ➤ Suitable Stand for Coil & Laser. ➤ Photo Cell with multimeter. ITEM Should be ISO 9001:2015, 14001:2015 and 45001:2015 Certified and CE Certified.



FORMAT FOR QUOTATION SUBMISSION
(In letterhead of the supplier with seal)

Date: _____

To: _____

Sl. No.	Description of goods \ (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex-Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
Total Cost							

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. _____ (Rupees _____ amount in words) within the period specified in the Invitation for Quotations. Gross Total Cost (A+B): Rs. _____ (Amount in figures)
 We confirm that the normal commercial warranty/ guarantee of _____ months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.
 We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier
 Name: _____
 Address: _____
 Contact No. _____