Request for Proposal (RFP) Document
for
Procurement of Lab Equipment's at G P, Bhagalpur

NIT No. 01/2020-21/DST/G P BGP (Electronic) ***Dated: 24th Feb 2021***

Mode of Bid Submission	e-Bid
Procuring Authority	Principal, G P , Bhagalpur
Start Date & Time of Submission of Bid	24/02/2021 from 10:00 am
Last Date & Time of Submission of Bid	05/03/2021 till 05:00 pm
Date & Time of Opening of Technical Bid	06/03/2021 (Saturday) 10:00 am Onwards

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ABBREVIATIONS & DEFINITIONS

Act	Public Procurement Act, 2012 and Rules there to
Authorized Signatory	The bidder's representative/ officer vested (explicitly, implicitly, or through conduct) with the powers to commit the authorizing organization to a binding agreement. Also called signing officer/ authority having the Power of Attorney (PoA) from the competent authority of the respective Bidding firm.
BG	Bank Guarantee
Bid/ e Bid	A formal offer made in pursuance of an invitation by a procuring entity and includes any tender, proposal or quotation in electronic format
Bid Security	A security provided to the procuring entity by a bidder for securing the fulfillment of any obligation in terms of the provisions of the bidding documents. Also called as EMD.
Bidder	Any person/ firm/ agency/ company/ contractor/ supplier/ vendor participating in the procurement/ bidding process with the procurement entity
Bidding Document	Documents issued by the procuring entity, including any amendments thereto, that set out the terms and conditions of the given procurement and includes the invitation to bid
BoM	Bill of Material
Competent Authority	An authority or officer to whom the relevant administrative or financial powers have been delegated for taking decision in a matter relating to procurement.
Contract/ Procurement Contract	A contract entered into between the procuring entity and a successful bidder concerning the subject matter of procurement.

EMD	Earnest Money Deposit. Also, called as Bid Security.
INR	Indian Rupee
ISO	International Organization for Standardization
ITB	Instruction to Bidders
PAN	Permanent Account Number
PBG	Performance Bank Guarantee
PC	Procurement/ Purchase Committee
PQ	Pre-Qualification
Procurement Process	The process of procurement extending from the issue of invitation to Bid till the award of the procurement contract or cancellation of the procurement process.
Procurement/ Public Procurement	The acquisition by purchase, lease, license or otherwise of works, goods or services, including award of Public Private Partnership projects, by a procuring entity whether directly or through an agency with which a contract for procurement services is entered into, but does not include any acquisition without consideration, and "procure" or "procured" shall be construed accordingly
TIN	Tax Identification Number
GST	Goods & Service Tax

Department of Science and Technology

Government Polytechnic Bhagalpur, Barari, Bhagalpur, Bihar, India. Pin - 812003

NOTICE INVITING e-TENDER

(Through e-Procurement mode only over
(https://eproc2.bihar.gov.in**)**

NIT No. 01/2020-21/DST/G P BGP (Electronic) ***Dated: 24th February 2021***

Government Polytechnic, Bhagalpur invites Public tender under two bid systems for Procurement Electronics Engg. Lab Equipments for G P Bhagalpur.

Sl NO.	Scope Of Work	Departments	Emd Amount	5%Performance Fees (in Rs)	Tender fee (Non-Refundable)
1	Analog Electronics Lab	**Electronics Engg.**	28000	70000	1000 + 18 % GST
2	Advance Electronics Circuit Lab				
3	Measurement Lab				
4	Instrument Lab				
5	Analog Circuit Lab				
6	Digital Electronics Lab				
7	Microprocessor Lab				
8	Advance Communication Lab				

Tender Schedule/Programme:

Sl. No.	Activity	Date/Time :Duration
1.	Bid Clarification Date/Time and pre Bid Meeting	26-02-2021, 15.00 Hrs
2.	Start Date and Time of Uploading and Submission	24-02-2021 Up to 10.00 AM. (https://eproc2.bihar.gov.in
3.	End Date and Time of Uploading and Submission	05-03-2021 Up to 17.00 PM. (https://eproc2.bihar.gov.in)
4.	Submission of EMD in Hard copy/Original	04-03-2021 Up to 17.00 PM. (Government Polytechnic, Bhagalpur, PO- Barari, PS- Barari Bihar, Pin-812003)
5.	Date & time for opening of Technical Bid	06-03-2021 (Saturday) 10.00 Hrs. onwards (https://eproc2.bihar.gov.in)
6	Contact person/Nodal Officer for queries	Kundan Kumar Lecturer Department of Mechanical Engg. vd.kundan@gmail.com Mobile- 7005114976
7.	Financial Bid Opening Date and Time	After Technical Bid

- Detailed descriptions of the item and instructions for submitting your offer can be downloaded from e-Procurement Portal (https://eproc2.bihar.gov.in).
- Tender Fee/Cost has to be paid online during requesting of the tender through e-Procurement Portal (https://eproc2.bihar.gov.in).
- Tender Processing Fee (TPF) amount to be paid through e-Payment mode (i.e., NEFT, Internet Banking, Credit / Debit Card) only.
- Bids along with necessary online payments (Tender Processing Fee) must be submitted through e-Procurement Portal (https://eproc2.bihar.gov.in) before the date and time specified in the NIT/RFP. The department/Tendering Authority doesn't take any responsibility for the delay / Non-Submission of Tender / Non-Reconciliation of online Payment caused due to non availability of Internet Connection, Network Traffic/ Holidays or any other reason."
- The bidders shall submit their eligibility and qualification details, Certificates as mentioned in section etc., in the online standard formats given in e-Procurement Portal (https://eproc2.bihar.gov.in) at the respective stage only.
- The bidders shall upload the scanned copies of all the relevant certificates, documents etc., in support of their eligibility criteria / technical bids and other certificate /documents in the e-Procurement Portal (https://eproc2.bihar.gov.in).
- The bidder shall digitally sign on the supporting statements, documents, certificates, uploaded by him, owning responsibility for their correctness/authenticity. The bidder shall attach all the required documents for the specific tender after uploading the same during the bid submission as per the tender notice and bid document.

- For support related to e-tendering process, bidders may contact at following address "e-Procurement HELP DESK mjunction services limited RJ Complex, 2nd Floor, Canara Bank Campus, Khajpura, Ashiana Road, P.S. - Shastri Nagar, Patna 800 014, Bihar. "1800 572 6571" or may visit the link "Vendor Info" at **(**https://eproc2.bihar.gov.in**)**.

- **Corrigendum/ Addendum,** if any, will be published on the e-Procurement, Bihar https://eproc2.bihar.gov.in itself.

Principal
G P Bhagalpur

e-Procurement Standing Instruction

1. **G P Bhagalpur**, invites under two bid system **Technical and Financial** bids for purchase of lab Equipment's.
2. The bidder must have Class II Digital Signature Certificate (DSC) and e-Tendering User-id of the e-Procurement website (https://eproc2.bihar.gov.in) for submission of e-Bid.
3. The payment of Tender Processing Fee needs to be paid through e-Payment mode only.
4. Bids along with necessary online payments must be submitted through e-Procurement Portal (https://eproc2.bihar.gov.in) before the date and time specified in the NIT / RFP. The department / Tendering Authority don't take any responsibility for the delay / Non-Submission of Tender / Non-Reconciliation of online Payment caused due to Non availability of Internet Connection, Network Traffic / Holidays or any other reason.
6. The bidders shall upload the scanned copies of all the relevant certificates, documents etc., in support of their eligibility criteria / technical bids and other certificate / documents in the e-Procurement Portal **(**https://eproc2.bihar.gov.in**)** only.
7. The bidder shall digitally sign the supporting documents / certificates, uploaded by him, owning responsibility for their correctness / authenticity. The bidder shall attach all the required documents for the specific tender after uploading the same during the bid submission as per the tender notice and bid document.
8. The Financial Bid of the successful bidders shall be opened on a suitable date, which will be duly informed later on. The Technical Bid and Financial Bid needs to be filled, uploaded and submitted through e-Procurement Portal https://eproc2.bihar.gov.inon or before **05-03-2021 by 17.00 hrs**.
9. The authority reserves the right to reject or cancel the tender or any part thereof without assigning any reasons thereof.
10. Corrigendum/ Addendum, if any, will be published on e-Procurement, Bihar https://eproc2.bihar.gov.in. itself.
11. Bidders are advised to keep updated their e-Procurement profile with correct / valid email id as all important activity / events emailed to their registered email as per e-Procurement Portal.

Principal
G P Bhagalpur

INVITATION FOR BID (IFB) & NOTICE INVITING BID (NIB)

Name & Address of the Procuring Entity	Government Polytechnic, Bhagalpur, PO- Barari, PS- Barari Bihar, Pin-812003
Name & Address of the Project Officer In- charge (POIC)	Dr. Aseem Kumar Thakur Principal G.P. Bhagalpur bhag.gp@gmail.com Mobile- 9123296334
Subject Matter of Procurement	Procurement Lab Equipments for G P Bhagalpur
Bid Procedure	Two Bid Open Tender
Bid Evaluation Criteria (Selection Method)	Least Cost Based Selection (LCBS) - L1
Websites for downloading Bidding Document, Corrigendum's, Addendums etc.	https://eproc2.bihar.gov.in
Bid Security and Mode of Payment	Online Payment
End Date for the submission of Bids	**05-03-2021 by 17.00 hrs**.
Date/ Time/ of Technical Bid Opening	**06-03-2021(Saturday) by 10.00 am**. or Onwards
Date/ Time/ of Financial Bid Opening	**After opening of Technical Bid**
Bid Validity	120 Days (After Opening of Technical Bid)

Note:

1) Bidder (authorized signatory) shall submit their offer online in Electronic formats both for technical and financial proposal.

2) In case, any of the bidders fails to submit the EMD, up to 05:00 PM on 04th **March 2021**, its Bid shall not be accepted.

3) To participate in online bidding process, Bidders must procure a Digital Signature Certificate (Type III / II) as per Information Technology Act-2000 using which they can digitally sign their electronic bids. Bidders can procure the same from any CCA approved certifying agency, i.e., TCS, Safecrypt, Ncode etc. Bidders who already have a valid Digital Signature Certificate (DSC) need not procure a new DSC.

4) The authorities will not be responsible for delay in online submission due to any reason. For this, bidders are requested to upload the complete bid well advance in time so as to avoid issues like slow speed; choking of web site due to heavy load or any other unforeseen problems at the last moment.

5) The procuring entity reserves the complete right to cancel the bid process and reject any or all of the Bids.

6) No contractual obligation whatsoever shall arise from the bidding document/ bidding process unless and until a formal contract is signed and executed between the procuring entity and the successful bidder.

Principal
G P Bhagalpur

2. TECHNICAL BID

Please note the following terms and conditions for machine & equipment for Electronics Engg. lab.

1) Only Original Equipment Manufacturer/ Authorized Dealer/Supplier can participate: Name of the manufacturer/Mark/Brand should be mentioned in each item or equipment.
2) Similar experience of supplying instruments for 03 terms / years at renowned polytechnics/Engineering college/IITs/ NITs/Universities of repute/ Govt. depts. / PSUS abroad will be preferred.
3) Manufacturing firm/ Authorized dealer should be in existence over and above Ten years.
4) The tender should include complete detailed specifications supported by printed Literature of the equipment.
5) The rate quoted should be F.O.R to destination inclusive of all taxes, installation, commissioning and successful demonstration of the equipment supplied (wherever applicable)
6) After installation and commissioning the equipment the supplier is required to impart necessary training, if any, then only the agreed payment will be released.
7) Any request for alternation / correction in the specification and price in the tender document will not be entertained, once submitted.
8) Payment will be released only after delivery, verification of quality, specification and successful installation, demonstration and training on equipment at institute.
9) If any kind of defect in equipment/ machine or deviation from the specification are detected and reported, the supplier should replace or rectify the defect immediately.
10) **Government Polytechnic Bhagalpur,** reserves the rights to select entire or the part items of the particular package on recommendation of the purchase committee.
11) The rate quoted in the tender should be valid for 180 days from the date of opening of the tender. The price will be same without variation of any kind.
12) **Government Polytechnic Bhagalpur,** reserves the rights to accept the lowest or any tender and of rejecting all or any tender without assigning any reason for the same.
13) Request for the supply of any substitute for any items or equipment other than mentioned in the tender will not be entertained.
14) The entire dispute with regard to the contract of purchase of equipment etc. will be subject to Legal jurisdiction of **Bhagalpur** only.
15) Manufacture of the equipment will be required to furnish a certificate to the effect that they are manufacture of such and such make and whereas Dealers will have to furnish a certificate issued by the manufacture certifying that M/S such & such in the dealer under brand name equipment. Without this certificate the tender will not be accepted.
16) The company should have the following conditions:
    - Audit balance sheet for at least last three financial years and the turn over should be at least thrice the total quoted price and there should be sufficient annual turnover.
    - Income tax returns in name of organization/firm for last Three Financial Assessment years.
    - Company PAN No.
    - Copy of GST Registration Certificate & Latest Paid Challan.
    - Copy of authorization letter from original manufacturers.
    - A judicial affidavit regarding that the firm is not blacklisted by state Government/Central Government.
17) The tender should bear all the transportation & insurance risk till delivery point.
18) The tender should submit Manufacture issued Dealership certificate if he is dealer and in case Manufacturer himself is bidding, he should enclose proof of being manufacturer.
19) **Government Polytechnic Bhagalpur,** will have right to add/ alter any terms and conditions as per existing financial/ treasury rules and provisions applicable in the Bihar state if it has not been include/ addressed in the terms and conditions.

20) Materials having ISI/ISO/certification from valid bodies such as NABL etc will be accepted only.

21) It is not necessary that all the Equipments mentioned in list will be purchased; some equipment may be excluded or changes of quantity if required by the institute at the time of issuing PO order or sign of agreement.

22) **Warranty/Guarantee Clause**:- The bidder would give guarantee that the good / store/articles would continue to conform to the description and quality as specified for a period of three year from the date of delivery of the said good/stories/articles/ to be purchased and that notwithstanding the fact that the purchaser may have inspected and/or approved the said good/stores/articles, if during the aforesaid period of three year, the said good/stores/articles be discovered not to conform to the description and quality afforded or have determine (and the decision of the Procurement entity in that behalf will be final conclusive). The purchases will be entitled to reject the said good/stories/articles or such portion therefore as may be discovered not to confirm, to do said description and quality, on such rejection the good/articles/stores will be at the seller's risk and all the provisions relating or rejection of goods, etc., shall apply. The bidden shall if so called upon to do, replace the goods etc. or such damage as may arise by reason of the breach of the condition herein contained, nothing herein contained shall prejudice any other right of the procurement Entity in that behalf under this contract or otherwise.

23) In case of machinery and equipment also guarantee will be given as mentioned in clause (22) above and the bidder shall during the guarantee period replace the parts if any and remove any manufacturing defect if found during the above period as as to make machinery and equipment's operative. The bidder shall also replace machinery payments in case it is found defective which cannot be put to operation due to manufacturing defect, etc.

24) In case of machinery and equipment specified by the Procurement Entity bidder shall be responsible for carrying out annual maintained and repairs on the terms and conditions as may be agreed. The bidder shall also be responsible to ensure adequate regular supply of spare parts needed for a specific type of machinery and equipment's whether under their annual maintenance and repairs rate contract or otherwise. In case of change of model, he will give sufficient notice to the Procurement Entity who may like to purchase spare parts from them to maintain the machinery and equipment in perfect condition.

25) Procuring Entity reserves the right to change the terms & condition for Machine & Equipment.

Principal
G P Bhagalpur

FINANCIAL BID

Name of the Lab- ANALOG ELECTRONICS, ADVANCE ELECTRONICS CIRCUIT LAB, MEASUREMENT LAB, INSTRUMENT LAB, ANALOG CIRCUIT LAB, DIGITAL ELECTRONICS M			
Sl. No	**Item name**	**Qty**	**Rate**
1	**Two stage RC coupled amplifier trainer kit,**	2	
	Salient Features		
	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	•Set of Users Guide provided with each Unit.		
	Specifications		
	•**Built in Power Supply :**		
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	•**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),		
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	•**Clock Generator :** 10 MHz TTL clock.		
	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	•BNC to 2 channel banana adapter - 2No.		
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	•Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	•**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	•Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	•Onboard POTS : 1K - 1No. 1M - 1No.		
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		

	Transistor Amplifier Experiment Panel		
	Differential amplifier, 2 stage R-C coupled amplifier, Transformer coupled amplifier, common source FET amplifier, common drain FET amplifier (source follower) Push pull amplifier, Complementary symmetry amplifier, Class-D amplifier.		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
2	**Clipper & Clampper trainer Kit**	**2**	
	Salient Features		
	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	•Set of Users Guide provided with each Unit.		
	specifications		
	•**Built in Power Supply :**		
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	•**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),		
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	•**Clock Generator :** 10 MHz TTL clock.		
	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	•BNC to 2 channel banana adapter - 2No.		
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	•Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	•**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	•Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	•Onboard POTS : 1K - 1No. 1M - 1No.		
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	DC, AC & Wave Shaping Circuit Experiment Panel :		

	DC : Resistance, current & voltage measurements, Loading of Potentiometer, Ohm's law, Power DC circuits, Series, parallel & mixed circuits, Kirchoff's law, Superposition theorem, Thevenin's & Norton's theorems, Reciprocity, Compensation, Tellegen, Millman theorems & Maximum Power transfer theorem, Voltage distribution of capacitors in series & parallel, total capacitance of capacitors in series & parallel, charging & discharging of capacitor through resistance & time constant, Wheatstone's Bridge, 2 Port Network Y, Z,h, ABCD Parameters & Star Delta Network, T & Pi attenuators.		
	AC : AC Voltage & Current Measurements - R-L series, R-C series, R-L-C series circuit (Series Resonance). R - L parallel, R-C parallel, R-L-C parallel(Parallel Resonance), Active, Reactive power & power factor(Vector Diagram), average & RMS Value measurement.		
	Wave Shaping: Differentiator, Integrator, Clipping, Clamping, Passive filters LC / RC, LPF/ HPF		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically **designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).**		
	Half and full wave rectifier kit	**1**	
	Salient Features		
	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	•Set of Users Guide provided with each Unit.		
	specifications		
	•**Built in Power Supply :**		
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	•**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots, O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),		
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	•**Clock Generator :** 10 MHz TTL clock.		
	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	•BNC to 2 channel banana adapter - 2No.		
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	•Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		

	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	·**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	·Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	·Onboard POTS : 1K - 1No. 1M - 1No.		
	·Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Rectifier, Filter, Zener Regulator Experiment Panel : Transformer & its study (Transformer DC/AC resistance, Transformation Ratio, Electromagnetic Induction, Loading of Transformer), Half wave rectifier, Full wave rectifier, Bridge rectifier, Filter, Voltage multiplier, Zener shunt regulator		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
3	**Hartley & Colpit Oscillator trainer kit**	1	
	Salient Features		
	· Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	· Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	·Set of Users Guide provided with each Unit.		
	Specifications		
	·**Built in Power Supply :**		
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	·**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),		
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	·**Clock Generator :** 10 MHz TTL clock.		

	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	•BNC to 2 channel banana adapter - 2No.		
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	•Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	•**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	•Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	•Onboard POTS : 1K - 1No. 1M - 1No.		
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Oscillator & Multivibrator Experiment Panel : Hartley oscillator, Colpitts oscillator, Crystal oscillator, Clapp oscillator, Blocking oscillator, Astable multivibrator, Monostable multivibrator, Bistable multivibrator.		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
4	**Hey'Bridge Trainer Kit**	**2**	
	Salient Features		

	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.	
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.	
	•Set of Users Guide provided with each Unit.	
	Specifications	
	•**Built in Power Supply :**	
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.	
	•**Built in Function Generator –**	
	O/p Waveform : Sine, Triangle & TTL O/Ps	
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),	
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min), + 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)	
	•**Clock Generator :** 10 MHz TTL clock.	
	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.	
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.	
	•BNC to 2 channel banana adapter - 2No.	
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.	
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.	
	•Onboard DPMs provided with mode/range selection.	
	(A) DC volt : 2V/200V - 1No.	
	(B) DC current : 2mA/200mA - 1No.	
	(C) DC Volts/Current : 20V/200mA - 1No.	
	•**Onboard moving iron meters provided for**	
	(A) AC Current : 1 AMP - 1No.	
	(B) AC Voltage : 15V - 1No.	
	•Onboard speaker : 8 Ohms, 0.5 Watt (1No.)	
	•Onboard POTS : 1K - 1No. 1M - 1No.	
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.	

DC/AC Bridge circuits Expt. Panel : Wheatstone's Bridge, Kelvin's Bridge, Maxwell's Bridge, Hay's Bridge, DC Sauty's Bridge, Owen's Bridge, Anderson's Bridge, Shearing Bridge, Wien bridge. Provided with 2 capacitor decades [100pF to 100uF]. 1 resistor decade [10E to 100Kohm], 1 tapped wire wound 10 taps (0.01 ohm) 10k 10T pot, 1000 ohm pot, fixed resistors of 10 & 4.7 ohms, Battery & its socket.

	Inclusive of 1 year of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	Linear Variable Differential Transducer trainer kit	**1**	
	Salient Features		
	• Aesthetically designed injection moulded electronic desk. carrying useful experiment resources like Power supplies, DPMs, Computer		

	Interface, Bar graph LED indicator Function Generator etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure.		
	• Has colorful screw less overlay showing schematic & its connection tag numbers for easy connectivity.		
	Set of Users Guide provided with each Unit		
	Specifiations		
	• **Built in power supply :**		
	DC supply +/- 12V,500mA, Variable 7V to 14V @ 3Amp.		
	• **Built in function generator**		
	• **O/P waveform**		
	sine, triangular & square, TTL O/P freq. 1Hz to 200KHz in ranges with amplitude & freq. control pots, o/p voltage 10Vpp.		
	• **On board measurement :**		
	DC voltmeter 2V/20V (1 No) & LED BAR graph with 10 LED indicator to display 0-2.5V or 0-4V input.		
	• **Computer interface**		
	Interfaces through 25 pin parallel port [LPT port] optoisolated adaptor to prevent damage to PC parallel port (25 pin LPT) due to wrong connections. Interfaces through 25 pin M to F cable 1mtr Length. /WIN7/8/10 not in scope of supply. Lab View based executable to support virtual instrumentation with drivers supplied.		
	• 4 ADC channels : 0 to 2.5V full scale		
	• 1 DAC channel : o/p 2.5 V/12 V switch selectable full scale		
	• V to I Function block : Input : 0-2.5Vdc, Output : 0-20 or 4-20mA, upto max. 2Vdc GND compliance		
	• V to PWM function block : I/P -0-2.5V, O/P-1KHz PWM O/P +9V.		
	• USB IO module (HID class) to interface 25 pin D connector on CIA panel to USB PC port enclosed in 25 pin D shell using Type A to mini B cable.		
	Displacement Sensing Transducers:		
	•**Micrometer** 0-20mm (Accuracy 0.01mm)		
	• Precision phase sensitive rectifier		
	• Measurement frequency of 1KHz sine		
	• Signal conditioning circuit with zero & span adjustment for calibration of variac sensor output voltage 0-2.5V or suitable for DPM.		
	• **Zero & span adjustment for calibration of following transducers**		
	i) Resistive linear transducer : 0 -20mm		
	ii) Capacitive linear transducer : 0 -20mm		
	iii) Capacitive angular transducer : 0 - 90 degree		
	iv) Inductive linear transducer : 0 -20mm		
	v) LVDT transducer : 0 -20mm or (-10 to +10mm)		
	Inclusive of 1 year of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	Pressure Transduser Trainer Kit	**1**	

	Salient Features		
	• Aesthetically designed injection moulded electronic desk. carrying useful experiment resources like Power supplies, DPMs, Computer Interface, Bar graph LED indicator Function Generator etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure.		
	• Has colorful screw less overlay showing schematic & its connection tag numbers for easy connectivity.		
	• Hands on learning by plotting sensor characteristics. Set of Users Guide provided with each Unit		
	Specifiations		
	• **Built in power supply :**		
	DC supply +/- 12V,500mA, Variable 7V to 14V @ 3Amp.		
	• **Built in function generator**		
	• **O/P waveform**		
	sine, triangular & square, TTL O/P freq. 1Hz to 200KHz in ranges with amplitude & freq. control pots, o/p voltage 10Vpp.		
	• **On board measurement :**		
	DC voltmeter 2V/20V (1 No) & LED BAR graph with 10 LED indicator to display 0-2.5V or 0-4V input.		
	• **Computer interface**		
	Interfaces through 25 pin parallel port [LPT port] optoisolated adaptor to prevent damage to PC parallel port (25 pin LPT) due to wrong connections. Interfaces through 25 pin M to F cable 1mtr Length. /WIN7/8/10 not in scope of supply. Lab View based executable to support virtual instrumentation with drivers supplied.		
	• 4 ADC channels : 0 to 2.5V full scale		
	• 1 DAC channel : o/p 2.5 V/12 V switch selectable full scale		
	• V to I Function block : Input : 0-2.5Vdc, Output : 0-20 or 4-20mA, upto max. 2Vdc GND compliance		
	• V to PWM function block : I/P -0-2.5V, O/P-1KHz PWM O/P +9V.		
	• USB IO module (HID class) to interface 25 pin D connector on CIA panel to USB PC port enclosed in 25 pin D shell using Type A to mini B cable.		
	Piezo resistive transducer for pressure measurement (0-15psi)		
	Pressure sensor 0- 15 psi (20 psi max.), gage type, Pressure generating handpump connected using T connector to the sensor & Bourden pressure gauge for measurement & calibration.		
	• P to I experiment Can be performed using (V to I FB)		
	Inclusive of 1 year of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	DSO 100MHz 1GS/S COLOUR DIGITAL STORAGE OSCILLOSCOPE WITH FFT	**1**	
	Specifications		
	Horizontal		

	·Bandwidth : DC - 100MHz		
	·Channels 2		
	·Bandwidth Limits : 20MHz (-3dB)		
	·Sample Rate : 1GS/s		
	·Sample Mode : Real Time		
	·Sample Memory Dept: 40 K		
	·Time base range : 4ns/div~80s/div		
	·Time base accuracy : ±50ppm		
	·Display Type : 7 inch LCD color (800X 480 pixels)		
	·Display Language : English Input		
	·Mode : Sample, peak detect, averaging		
	·Input coupling : DC, AC, GND,		
	·Input impedance : 1MΩ ± 2% in parallel with 20pF ± 3pF		
	·Probe attenuation factors: 1X, 10X, 100X, 1000X		
	·Maximum input voltage: 300 VRMS (420V pk-pk ~ CATI & CATII) Vertical		
	·Vertical resolution : 8 bits		
	·Vertical sensitivity : 2mV/div~5V/div (input to BNC)		
	·Rising time (typical on BNC) : 3.5nS		
	·Accuracy : ± 3%		
	Trigger		
	·Trigger Source : Ch1, CH2, Line, External		
	·Trigger Modes : Auto, Normal, Single, Edge		
	·Trigger Coupling : AC, DC, LF Reject, HF Reject		
	·Trigger Sensitivity : DC to 100MHz: 200mV		
	·Trigger Level Range : CH1,CH2 : ±8 Division from Center of Screen		
	Interface		
	·USB		
	Measurement system		
	·Automatic measurement		
	Frequency, Period, Mean, Pk-Pk, Cyclic RMS, Minimum, Maximum, Rise Time, Fall Time, +Pulse width, -Pulse width, Delay 1-2 Rise, Delay 1-2 Rise, Delay 1-2 Fall, +Duty,-Duty, Vbase, Vtop,Vmid,Vamp, Overshoot, Preshoot, Preiod Mean, Preiod RMS, FOVShoot, RPREShoot, BWIDTH, FRF, FFR,LRR,LRF,LFR,LFF		
	·Waveform math : + ,-, x,÷		
	·Waveform storage : 10 waveform, 10 setups		
	·Lissajou's figure : Available		
	·FFT window : Hanning, hamming, blackman, rectangle		
	·FFT acquisition points : 1024 points		
	Power Supply		
	·AC230V, 50Hz		
	H parameter trainer kit	1	
	Salient Features		
	· Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag		

	numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	•Set of Users Guide provided with each Unit.		
	Specifications		
	•**Built in Power Supply :**		
	DC Supply :5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	•**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min), + 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	•**Clock Generator :** 10 MHz TTL clock.		
	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	•BNC to 2 channel banana adapter - 2No.		
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	•Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	•**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	•Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	•Onboard POTS : 1K - 1No. 1M - 1No.		
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Transistor h-parameters & CB / CC / CE amplifiers experiment panel : Thermal stability (Transistor bias stability), Determination of h-parameters, Common base, common collector, common emitter, cascade amplifier, boot-strapping & transistor switching.		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	BJT amplifier Trainer Kit	1	
	Salient Features		

	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.	
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.	
	•Set of Users Guide provided with each Unit.	
	Specifications	
	•**Built in Power Supply :**	
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.	
	•**Built in Function Generator –**	
	O/p Waveform : Sine, Triangle & TTL O/Ps	
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),	
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),	
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)	
	•**Clock Generator :** 10 MHz TTL clock.	
	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.	
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.	
	•BNC to 2 channel banana adapter - 2No.	
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.	
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.	
	•Onboard DPMs provided with mode/range selection.	
	(A) DC volt : 2V/200V - 1No.	
	(B) DC current : 2mA/200mA - 1No.	
	(C) DC Volts/Current : 20V/200mA - 1No.	
	•**Onboard moving iron meters provided for**	

	• (A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No. •Onboard speaker : 8 Ohms, 0.5 Watt (1No.) •Onboard POTS : 1K - 1No. 1M - 1No. **Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).**		
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Analog to Digital converter	1	
	Salient Features **Transistor Amplifier Experiment Panel**		
	Differential amplifier, 2 stage R-C coupled amplifier, Transformer coupled amplifier, common source FET amplifier, common drain FET amplifier (source follower) Push pull amplifier, Complementary symmetry amplifier, Class-D amplifier. • Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	•Set of Users Guide provided with each Unit.		
	specifications		
	•**Built in Power Supply :**		

	DC Supply :5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	·**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),		
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	·**Clock Generator :** 10 MHz TTL clock.		
	·Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	·**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	·BNC to 2 channel banana adapter - 2No.		
	·Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	·2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	·Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	·**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	·Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	·Onboard POTS : 1K - 1No. 1M - 1No.		
	·Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	ADC & DAC Circuits Experiment Panel : 8 bit ADC, 0-5V I/P:- Dual slope ADC, Tracking ADC, SAR ADC, RAMP ADC, Bipolar ADC using level translator, Delta Sigma ADC , 8 bit DAC:- O/P Range 0 5V & +/-5V.		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	Digital to Analog Converter	**1**	
	Salient Features		
	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	·Set of Users Guide provided with each Unit.		
	specifications		
	·**Built in Power Supply :**		
	DC Supply :5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		

	·**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min),		
	+ 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	·**Clock Generator :** 10 MHz TTL clock.		
	·Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	·**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	·BNC to 2 channel banana adapter - 2No.		
	·Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	·2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	·Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	·**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	·Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	·Onboard POTS : 1K - 1No. 1M - 1No.		
	·Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Analog Multiplexer / Demultiplexer & ADC, DAC Expt. Panel : 8 Channel Analog Multiplexer, 1 of 8 Analog Demultiplexer, A to D Converter (3 bit), D to A Converter (4 bit) -weight & binary & R-2R, 2TYPES		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	Universal breadboard trainer kit	**2**	
	Salient Features		
	·Aesthetically designed injection molded electronic desk.		
	· carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will hold various replaceable experiment panels.		
	· Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	· Set of Users Guide provided with each Unit.		
	Specifications		
	· Built in Power Supply		
	· DC. Power Supply : 5V / 1A		
	± 15V, 150mA [variable]		
	Variable : 0 - + / -12V 150mA,		
	AC 12 - 0 - 12, 150mA AC		
	· Built in Function Generator		
	· Output Waveform - Sine, Triangle & Square / TTL		

	Output Frequency - 1 Hz to 200KHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20V p-p max.		
	• Clock Generator : 10 MHz TTL clock.		
	• Input Data Switches & output LED status indicators for		
	• High/Low indication (15+1) No.		
	• Pulser switches (2 nos.) With four debounced outputs..2no.		
	• Fixed TTL (5V) clocks : 4 Nos. 1KHz, 100Hz, 5Hz, 1Hz		
	• Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	• 2 digit 7 segment display with BCD to 7 segment decoder.		
	• LED BAR graph with 10 LED indicator to display 0-2.5V or 0-4V input.		
	• Onboard DPM is provided with mode selection.		
	• DC volt / current - 200mA/20V 1no.		
	Onboard speaker - 8 Ohms, 0.5 Watt (1no.)		
	• Onboard POTS. .1K(1no.) & 1M(1no.)		
	• Built in bread board panel with 1280 tie points & 400 distribution points totalling to 1680 points along with 4mm banana sockets for tapping from the trainer +5V, +12V, GND for the circuits to be assembled on bread board using single stand (#22/24)wire.		
	• Ccomponents for circuit practice (resistors, capacitors, diodes, ICs etc.) supplied as overlay learning system.		
	• 20 Pin ZIF : Various analog/digital IC's can be tested.		
	•Operating Voltage : 230V ±10%, 50Hz/35AOperating Voltage : 230V ±10%, 50Hz/35A		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	Study of various type of Flip Flop with Power supply	**2**	
	Salient Features		
	• Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	• Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	•Set of Users Guide provided with each Unit.		
	specifications		
	•**Built in Power Supply :**		
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	•**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min), + 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		

	·**Clock Generator :** 10 MHz TTL clock.		
	·Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	·**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	·BNC to 2 channel banana adapter - 2No.		
	·Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	·2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	·Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	·**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	·Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	·Onboard POTS : 1K - 1No. 1M - 1No.		
	·Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Flip Flop, Counters & Shift Register Experiment panel : R-S Flip-flop, 'D' flip-flop, 'T' flip-flop, 'J-K' flip-flop, Master- slave J-K flip-flop, Binary Counter, Rotary feed back application of counter, Decade counter, Shift registers: Shift left/Right/Ring counter, Parallel mode, Twisted ring counter.		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		
	Study of Various Decoder with Power Supply	2	
	Salient Features		
	· Aesthetically designed injection molded electronic desk carrying useful experiment resources Variable Power supplies / Status / Pulsar / Function Generator, DPMs etc. while the central slot will carry replaceable experiment panel secured in an ABS molded plastic sturdy enclosure, & has colorful screw less overlay showing circuit & its connection tag numbers for easy connectivity.		
	· Connection through Sturdy 4mm Banana Sockets & Patch Cords.		
	·Set of Users Guide provided with each Unit.		
	specifications		
	·**Built in Power Supply :**		
	DC Supply **:**5V / 1A. & ± 12V, 1A. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated High Volt DC 15V to 110V, 100Ma, AC Supply : 12-0-12V AC,150 mA. Short circuit Protected.		
	·**Built in Function Generator –**		
	O/p Waveform : Sine, Triangle & TTL O/Ps		
	Output Frequency : 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG),		
	Modulation I/P:AM : - I/P voltage + 5V (100% modulation) O/P - For 0V (min), + 5V (max.) - 5V (Phase reversal of O/P) FM : I/P voltage ± 400mV (+ 50% modulation)		
	·**Clock Generator :** 10 MHz TTL clock.		

	•Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High / Low indication.		
	•**Pulser switches** (2 Nos.) with four debounced outputs - 2No.		
	•BNC to 2 channel banana adapter - 2No.		
	•Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status.		
	•2 / 4 digit 7 segment display with BCD to 7 segment decoder.		
	•Onboard DPMs provided with mode/range selection.		
	(A) DC volt : 2V/200V - 1No.		
	(B) DC current : 2mA/200mA - 1No.		
	(C) DC Volts/Current : 20V/200mA - 1No.		
	•**Onboard moving iron meters provided for**		
	(A) AC Current : 1 AMP - 1No.		
	(B) AC Voltage : 15V - 1No.		
	•Onboard speaker : 8 Ohms, 0.5 Watt (1No.)		
	•Onboard POTS : 1K - 1No. 1M - 1No.		
	•Operating Voltage: 220/240Vac switch settable ±10%, 50Hz/60VA.		
	Multiplexer, Decoder & Encoder Experiment panel : Multiplexer, Decoder / Demultiplexer, BCD to seven segment decoder driver, Tristate logic, Encoder.		
	Inclusive of 3 Years of onsite warranty and trainer should be safety aesthetically designed injection molded desk not wooden box (anti Green), not metallic box (Corrosive and shock possibility for the students).		

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S. INSTRUCTION TO BIDDERS (ITB)

1) Sale of Bidding/ Tender Documents

a) The sale of bidding documents shall be commenced from the date of publication of Notice Inviting Bids (NIB) and shall be stopped one day prior to the date of opening of Bid. The complete bidding document shall also be placed on the State Public Procurement Portal and e-Procurement portal https://eproc2.bihar.gov.in. The prospective bidders shall be permitted to download the bidding document from the websites and pay its price while submitting the Bid to the procuring entity.

b) The bidding documents shall be made available to any prospective bidder who pays the price for it.

c) Bidding documents purchased by Principal of any concern may be used by its authorized representative.

2) Changes in the Bidding Document

a) At any time, prior to the deadline for submission of Bids, the procuring entity may for any reason, whether on its own initiative or as a result of a request for clarification by a bidder, modify the bidding documents by issuing an addendum in accordance with the provisions below.

b) In case, any modification is made to the bidding document or any clarification is issued which materially affects the terms contained in the bidding document, the procuring entity shall publish such modification or clarification in the same manner as the publication of the initial bidding document.

c) In case, a clarification or modification is issued to the bidding document, the procuring entity may, prior to the last date for submission of Bids, extend such time limit in order to allow the bidders sufficient time to take into account the clarification or modification, as the case may be, while submitting their Bids.

d) Any bidder, who has submitted his Bid in response to the original invitation, shall have the opportunity to modify or re-submit it, as the case may be, within the period of time originally allotted or such extended time as may be allowed for submission of Bids, when changes are made to the bidding document by the procuring entity: Provided that the Bid last submitted or the Bid as modified by the bidder shall be considered for evaluation.

3) Period of Validity of Bids

a) Bids submitted by the bidders shall remain valid during the period specified in the NIB/ bidding document. A Bid valid for a shorter period may be rejected by the procuring entity as non-responsive Bid.

b) Prior to the expiry of the period of validity of Bids, the procuring entity, in exceptional circumstances, may request the bidders to extend the bid validity period for an additional specified period of time. A bidder may refuse the request and such refusal shall be treated as withdrawal of Bid and in such circumstances bid security shall not be forfeited.

c) Bidders that agree to an extension of the period of validity of their Bids shall extend or get extended the period of validity of bid securities submitted by them or submit new bid securities to cover the extended period of validity of their bids. A bidder whose bid security is not extended, or that has not submitted a new bid security, is considered to have refused the request to extend the period of validity of its Bid.

S. Format and Signing of Bids

a) Bidders must submit their bids online at e-Procurement portal i.e. https://eproc2.bihar.gov.in

b) All the documents uploaded should be digitally signed with the DSC of authorized signatory.

c) A Two part/ cover system shall be followed for the Bid: -

   a. Technical Bid, including fee details, eligibility & technical documents
   b. Financial Bid

S. Cost & Language of Bidding

a) The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the procuring entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

b) The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the procuring entity, shall be written only in English Language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in English/ Hindi language, in which case, for purposes of interpretation of the Bid, such translation shall govern.

S. Bid Security (EMD): Every bidder, if not exempted, participating in the procurement process will be required to furnish the bid security as specified in the NIB.

a) In lieu of bid security, a bid securing declaration shall be taken from Departments of the State Government, Undertakings, Corporations, Autonomous bodies, Registered Societies and Cooperative Societies which are owned or controlled or managed by the State Government and Government Undertakings of the Central Government.

b) Bid security instrument or a bid securing declaration shall necessarily accompany the technical bid.

c) Bid security of a bidder lying with the procuring entity in respect of other bids awaiting decision shall not be adjusted towards bid security for the fresh bids. The bid security originally deposited may, however, be taken into consideration in case bids are re-invited.

d) The bid security may be paid through online mode.

e) The issuer of the bid security and the confirmer, if any, of the bid security, as well as the form and terms of the bid security, must be acceptable to the procuring entity.

f) Prior to presenting a submission, a bidder may request the procuring entity to confirm the acceptability of proposed issuer of a bid security or of a proposed confirmer, if required. The procuring entity shall respond promptly to such a request.

g) The bid security of unsuccessful bidders shall be refunded soon after final acceptance of successful bid and signing of Agreement and submitting performance security.

h) The Bid security taken from a bidder shall be forfeited, including the interest, if any, in the following cases, namely: -

   a. when the bidder withdraws or modifies its bid after opening of bids;

   b. when the bidder does not execute the agreement, if any, after placement of supply/ work order within the specified period;

   c. when the bidder fails to commence the supply of the goods or service or execute work as per supply/ work order within the time specified;

   d. when the bidder does not deposit the performance security within specified period after the supply/ work order is placed; and

   e. if the bidder breaches any provision of code of integrity, prescribed for bidders, specified in the bidding document.

i) Notice will be given to the bidder with reasonable time before bid security (EMD) deposited is forfeited.

j) No interest shall be payable on the bid security (EMD).

k) In case of the successful bidder, the amount of bid security may be adjusted in arriving at the amount of the Performance Security, or refunded if the successful bidder furnishes the full amount of performance security.

l) The procuring entity shall promptly return the bid security after the earliest of the following events, namely:-

a. the expiry of validity of bid security;

b. the execution of agreement for procurement and performance security is furnished by the successful bidder

Performance security

Successful bidder shall submit security deposit at 5% value of tender document mentioned in bid documents as security within seven days of acceptance of Bid in the form of: -

(i) Bank guarantee of a scheduled bank. It shall be got verified from the issuing bank. Other conditions regarding bank guarantee shall be same as mentioned in the rule 42 for bid security.

(j) Fixed Deposit Receipt (FDR) of a scheduled bank. It shall be in the name of procuring entity on account of procuring entity shall ensure before accepting the fixed deposit Receipt that the bidder furnishes an undertaking from the bank to make payment/premature payment of the Fixed deposit receipt on demand to the procuring entity without requirement of consent of the bidder concerned. In the event of forfeiture of the performance security, the Fixed Deposit shall be forfeited along with interest earned on such fixed deposit.

(k) Bid security deposited earlier will be adjustable toward performance security as per norms.

(l) If the successful Bidder fails to furnish the security deposit within the time specified, the Bid security shall stand forfeited besides recovery of consequential losses, if any, sustained by the procuring entity apart from cancellation of award of supply contract and debarring of the Bidder.

(m) The performance security deposit shall be refunded to the supplier upon successful completion of the agreement and on production of 'No Demand Certificate' from the Principal G P Bhagalpur.

(n) No Interest will be paid on the performance security by the procuring entity.

5. PAYMENT TERMS

- On Delivery, Installation: - 85%.
- Demonstration, Manual Submission and Satisfactory Acceptance: - 10%.
- 5% Performance security in terms of Bank Guarantee.

Principal
G P Bhagalpur

Technical Bid Evaluation

Name of the Firm:……..

Technical BID

CHECK – LIST

Documents to be submitted

S.NO.	Particular	Enclosed Y/N	Page No.
1	Last three year Audit profit & loss a/c and balance sheet (Attested by Notary public)		
2	Proof of Existence of Manufacturing Firm/ Agency of 10 years		
3	Copy of PAN duly attested by Notary public		
4	Attested copy of registration certificate issued by competent authority duly attested by Notary public (if required)		
5	Registration copy of GST duly attested by Notary public		
6	Annexure – 1 (Bidder's Authorization Certificate)		
7	Annexure – 2 (Self-Declaration)		
8	Annexure – 3 (Certificate Of Conformity/ No Deviation)		
9	Annexure – 4 (Affidavit regarding acceptance of terms and condition of tender)		
10	Annexure – F(Term & Conditions of Contract)		
11	Financial Undertaking		
12	Affidavit regarding not black listed		
13	Experience of supply in the last three years (enclosed order /certificate)		
14	Copy of Audited income tax return of last three years		

Signature with seal
of Bidder

ANNEXURE-1: BIDDER'S AUTHORIZATION CERTIFICATE {to be filled by the bidder}

To,

{Procuring entity},

_____,

_____,

I/ We {Name/ Designation} hereby declare/ certify that {Name/ Designation} is hereby authorized to sign relevant documents on behalf of the company/ firm in dealing with NIB reference No. _____dated_____. He/ She are also authorized to attend meetings & submit technical & commercial information/ clarifications as may be required by you in the course of processing the Bid. For the purpose of validation, his/ her verified signatures are as under.

Thanking you,

Name of the Bidder: -

Verified Signature:

Authorized Signatory: -

Seal of the Organization: -

Date: _____

Place: _____

ANNEXURE-2: SELF-DECLARATION {to be filled by the bidder}

To,

{Procuring entity},

_____,

In response to the NIB Ref. No._____dated_____for {Project Title}, as an Owner/ Partner/ Director/ Auth. Sign. of _____, I/ We hereby declare that presently our Company/ firm_____, at the time of bidding,: -

a) possess the necessary professional, technical, financial and managerial resources and competence required by the Bidding Document issued by the Procuring Entity;
b) have fulfilled my/ our obligation to pay such of the taxes payable to the Union and the State Government or any local authority as specified in the Bidding Document;
c) is having unblemished record and is not declared ineligible for corrupt & fraudulent practices either indefinitely or for a particular period of time by any State/ Central government/ PSU/ UT.
d) does not have any previous transgressions with any entity in India or any other country during the last three years
e) does not have any debarment by any other procuring entity
f) is not insolvent in receivership, bankrupt or being wound up, not have its affairs administered by a court or a judicial officer, not have its business activities suspended and is not the subject of legal proceedings for any of the foregoing reasons;
g) does not have, and our directors and officers not have been convicted of any criminal offence related to their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter into a procurement contract within a period of three years preceding the commencement of the procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;
h) Does not have a conflict of interest as mentioned in the bidding document which materially affects the fair competition.
i) Will comply with the code of integrity as specified in the bidding document.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken as per the provisions of the applicable Act and Rules thereto prescribed by GoR, my/ our security may be forfeited in full and our bid, to the extent accepted, may be cancelled.

Thanking you,

Name of the Bidder: -

Authorized Signatory: -

Seal of the Organization: -

Date: _____

Place: _____

ANNEXURE-3: CERTIFICATE OF CONFORMITY/ NO DEVIATION {to be filled by the bidder}

To,

{Procuring Entity},

_____,

CERTIFICATE

This is to certify that, the specifications of BOQ which I/ We have mentioned in the Technical bid, and which I/ We shall supply if I/ We am/ are awarded with the work, are in conformity with the minimum specifications of the bidding document and that there are no deviations of any kind from the requirement specifications.

Also, I/ we have thoroughly read the bidding document and by signing this certificate, we hereby submit our token of unconditional acceptance to all the terms & conditions of the bidding document without any deviations.

I/ We also certify that the price I/ we have quoted is inclusive of all the cost factors involved in the end-to-end implementation and execution of the project, to meet the desired Standards set out in the bidding Document.

Thanking you,

Name of the Bidder: -

Authorized Signatory: -

Seal of the Organization: -

Date:_____

Place: _____

FINANCIAL UNDERTAKING

(On Rs. 100/- Non-Judicial Stamp paper duly attested by Notary Public)

I/ We have clearly understood all the terms and conditions of the tender and agreement etc. and agree to undertake the supply of **Lab equipment of Electronics Engineering to** destination specified by Procurement Entity.

I/We shall assure that I/We shall strictly abide by the terms and conditions of the Bid, Agreement and Instructions of the Principal G P Bhagalpur from time to time.

I/We shall furnish the prescribed security Deposit amount of 5% on the total value of the cost of the quantity for supply, within seven (7) days of the acceptance of my/our Bid and enter into the agreements. I/We are well aware of the forfeiture clause in the terms and conditions of the tender and my our EMD stand forfeited if I/We fail to furnish the prescribed security Deposit and also enter into the agreement within seven (7) days of acceptance of my/our tender and I/We will strictly abide by the terms and conditions etc. as per the agreement. In the event of non-fulfillments of contract by me/us, my/our Security Deposit or any amount available with the Principal G P Bhagalpur are liable to be forfeited, award of supply contract stand cancelled besides blacklisting me/us.

PROFORMA OF DECLARATION OF BLACK LISTING / HOLIDAY LISTING

In the case of a Manufacturer Firm/Authorized Dealer/ Supplier:

I hereby declare that I, M/s_____, submitting the accompanying Bid/Tender in my individual capacity, within the past three years have neither been placed on blacklist or holiday list declared by G P Bhagalpur or by any department of any Government (State, or Central) or by any Public Sector Organization in India or in any other country nor there is pending inquiry by G P Bhagalpur. Or any Department of the Government (State, or Central) or by any Public Sector Organization in India or in any other country, in respect of corrupt or fraudulent practice(s) against us.

Signature of Bidder _____

Name of Signatory _____

Place;
Date:

Contact Details of Vendor

Vendor Address_____

_____

_____

City_____PIN_____

State_____

Phone_____

Fax _____

Please fill up the details below:-

Designation.	Name	Telephone Nos,	Mobile Nos	e-mail IDs
CEO / CMD				
Country Manager				
Area Manager				
Marketing Manager				
Sales – Head				
Contact Person(s) for this Tender				

Note:

1. The designations are indicative only. Actual designations may please be mentioned.
2. All the concerned persons in the hierarchy must appear in the above list.
3. In case of multiple phone nos. , mobile nos., e-mail IDs, the same may also please be given

Signature of the bidder

Name:_____

Designation:_____

Mobile No. : _____