

**Punjab Engineering College
(Deemed to be University)
Chandigarh**



E-TENDER DOCUMENT

FOR

Electrical Machines Lab

In

Electrical Engineering department

At

**Punjab Engineering College
(Deemed to be University)
Chandigarh**

Description

Section	Terms and condition of contract
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SECTION-I

Invitation for E-Tender

For Electrical Machines lab in Electrical Engineering Department at Punjab Engineering Collage (Deemed to be University) Chandigarh.

1. Director, Punjab Engineering College (Deemed to be University), Chandigarh invites e-bids from eligible bidders for the supply and installation of Electrical Machines lab in Electrical Engineering Department at Punjab Engineering College (Deemed to be University), Chandigarh.
2. Interested eligible Bidders may obtain further information from Electrical Engineering Department, Punjab Engineering College (Deemed to be University), Sector 12, Chandigarh 160012, India.
3. The bidding document is downloadable from institute website <http://www.pec.ac.in>.
4. All bids must be accompanied by a bid security as specified in the <https://etenders.chd.nic.in> and must be delivered to the office address mentioned below by the date and time indicated below.
5. Bids will be opened in the presence of Bidders' or their representatives who authorized to attend on the specified date and time.

TABLE – 1 EMD (Earnest Money Deposit)

S No.	Name of the Work	EMD Security	Performance/Security
1.	Electrical Machines Multipurpose Trainer Kit in Electrical Engineering Department at Punjab Engineering College (Deemed to be University)	Rs. 30,000 (Thirty Thousand only) Payable through DD/ Banker Cheque/ Fixed Deposit	5% of Tender value
2.	Electrical & Electronic System Trainer Kit	Receipt/ Bank Guarantee in favor of Director PEC	

TABLE - 2 Time Schedule

I	Date of publication	23-2-2018
II	Downloading of e-tender document	23-2-2018
V	Last date of submission of e-tender	15-3-2018
VI	Physical submission of EMD and other necessary pre-qualification documents (scanned copies)	16-3-2018
VII	Opening of Technical Bid (online) and meeting for scrutiny of technical bid and declaring eligible bidders.	17-3-2018
VII	Opening of Financial Bid of only eligible technically qualified bidder as determined by the Committee.	To be informed after checking eligibility of Bidders
	Place of opening of bids	Electrical Engineering Department Punjab Engineering College (Deemed to be University) Sector 12, Chandigarh 160012

Important Notes:

I.	Bidders shall have to submit their bids on-line in Electronic Format with Digital Signatures.
II.	All terms and conditions, instructions to bidder regarding e-tendering process etc. may Kindly be seen from the Detailed Notice Inviting Tender (DNIT) available on the Punjab Engineering College (Deemed to be University) institute website (www.pec.ac.in).
III.	The bidder has to submit the original documents in physical form such as EMD, eligibility documents and other desired documents on the date fixed for the same as above. The failure will entail summarily rejection of its tender.
	The Director reserves the rights to reject or accept any or all tenders without assigning any reasons.

CHECKLIST FOR TENDER DOCUMENT

S. No.	Checklist Tick	(Yes/No)
1.	Whether name of the firm/organization & address and telephone/mobile number/fax number on letter pad of the company/firm have been mentioned	Yes/No
2.	Whether EMD as mentioned in Table-1 of Section I in the shape of DD/ Banker Cheque/ Fixed Deposit Receipt/ Bank Guarantee in favour of Director, PEC, payable at Chandigarh has been attached? If yes, DD/B.C No. _____ dated _____ and _____ name of the Bank)	Yes/No
3.	Whether Income tax return (Self attested) of the two financial years 2015-16 & 2016-17 attached?	Yes/No
4.	Whether Document showing experience of providing similar items in reputed institutes/Departments/College/ research labs etc. in INDIA in the years 2014-15, 2015-16 & 2016-17 and providing satisfactory performance certificate from such institutes/Departments/College/ research labs etc. is attached (Annexure 2.3 of SECTION II).	Yes/No
5.	Whether financial statements of Financial years 2014-15, 2015-16 & 2016-17 submitted or not as proof of Annual Turnover of Rs. 10.00 lacs or above ?	Yes/No
6.	Whether Document showing current details of similar equipment's being rendered which will be available for inspection by our officials.(Annexure 2.4 of SECTION II)	Yes/No
7.	Do you agree to provide 90 days validity of tender as per point 4 of Section-VI?	Yes/No
8.	Whether attested photocopy of PAN/TAN Card is attached?	Yes/No
9.	Whether name, address, contact number, designation/capacity of person signing tender document is attached?	Yes/No
10.	Do you comply the specification and details given in SECTION IV	Yes/No
11.	Whether attested photocopy of Registration Certificate attached?	Yes/No
12.	Whether Affidavit of not being Black Listed has been attached? (Annexure 2.2 of SECTION II)	Yes/No
13.	Covering letter (Annexure 2.1 of SECTION II) is attached	Yes/No
14.	Do you agree to provide the equipment in 60 days from the date of supply order?	Yes/No
15.	Do you agree that no advance payment will be made by the PEC in view of condition No. 7 of SECTION-VI?	Yes/No
16.	Do you agree to provide the items F.O.R. Punjab Engineering College (Deemed to be University) Sector-12, Chandigarh?	Yes/No

Place: _____ Signature of Tenderer _____

Dated: _____ Full Name of the Tenderer _____

Address: _____

SECTION II

Terms and Conditions of Contract

1. Tenderers are advised to study all technical and commercial aspects, instructions, forms, terms and specifications carefully in the tender document. Failure to furnish all information required in the Tender document or submission of a bid not substantially responsive to the Tender document in every respect will be at the tenderers risk and may result in the *rejection* of the bid.
2. The tenderers should give their quote in Indian currency only keeping in mind that our institute (i.e.Punjab Engineering College (Deemed to be University) is exempted from the payment of custom and excise duty. If foreign make equipment is quoted in Indian currency, no sales tax will be payable. Only custom duty exemption certificate will be issued.
3. The Bidders shall have to submit their Bids online in Electronic Format with Digital Signatures. For participation in the e-tendering process, the Bidders need to register themselves on <http://etenders.chd.nic.in>. On registration, they will be provided with a user ID and a system generated password enabling them to submit their Bids online using Digital System Certificates (DSC).
4. Tenders without digital signatures will not be accepted by the Electronic Tendering System. No Tender will be accepted in physical form and in case, it has been submitted in the physical form only, it shall be rejected out rightly.
5. Bids will be opened online as per time schedule mentioned in e-tender notice (**SECTION I Table 2**).
6. Before submission of online Bids, Bidders must ensure that self-attested scanned copies of all the necessary documents as mentioned in **SECTION III “Technical Bid”** and **SECTION V “Financial Bid”** of this tender document have been uploaded with the Bid, failing which their bids may be out-rightly rejected and will not be considered.
7. The Director, Punjab Engineering College (Deemed to be University) Chandigarh will not be responsible for any delay in online submission of the Bids due to any reason whatsoever.
8. It will be mandatory for all the Bidders to upload all the documents mentioned under Tender document.
9. Bidder are required to upload scanned copy of EMD as specified in the tender documents and send original along with other hard copies of desired documents to be sent in technical bid envelope.
10. The details of EMD specified in the Tender Documents should be the same as submitted online (scanned copies) otherwise tender will be rejected.

11. The conditional bids shall not be considered and may be rejected outright in very first instance.
12. The Financial Bids through e-tendering of only those bidders shall be opened who will qualify in the pre-qualifying criteria.
13. An affidavit as per specimen enclosed as **Annexure – 2.2 of SECTION II** should accompany the tender. The tenderer who has been black-listed or his/her tenders have even been cancelled or any legal proceedings have ever been initiated/pending or any penalty has ever been levied on account of delay or non-completion of supply order by any State/UT/Central Government, his/her tender will be outrightly rejected.
14. **EARNEST MONEY DEPOSIT (EMD):** The Tender should be accompanied with Earnest Money as mentioned in the **Table-1 of SECTION- I** to be paid in the shape of Demand Draft/ Banker Cheque/ Fixed Deposit Receipt/ Bank Guarantee from any Commercial Bank in favour of the Director, Punjab Engineering College (Deemed to be University), Chandigarh which shall be valid for three months. No firm/ tenderer will be exempted from submission of EMD. The EMD deposited by the tenderer in respect of another similar tender will not be considered against this tender. Apart from submission of original EMD in physical form, scanned copy of EMD duly attested and countersigned by the firms shall also be uploaded. The EMD of unsuccessful bidders will be refunded immediately after finalization/allotment of tender. No interest will be payable on the EMD. The EMD will be forfeited, if the tenderer withdraws his/her bid after submission of the Tender. Expression of Interest without the EMD shall not be considered. If EMD is not submitted / received as detailed above, tender will be rejected.
15. Separate financial bids and EMD is to be submitted for Equipment as per Table-1.
16. **TECHNICAL BID:** The tenderer should submit scanned copy of documentary proof of his/her eligibility as mentioned in SECTION III **“Technical Bid”** of this tender document.
17. Financial bid will be opened of only those bidders who qualify the technical bid criterion through e-tendering process.
18. **FINANCIAL BID:** The Financial Bid (**SECTION V**) shall be quoted by the bidder through e-tendering. The Financial Bid should contain rates taxes if applicable. The rates should be mentioned both in figures as well as in words. Any change in rate quoted by the tenderer afterwards will entail forfeiture of Earnest Money Deposit, cancellation of tender and blacklisting of the firm.
19. The award of supply order, when issued to the successful bidder, constitutes the contract with collateral support from terms and conditions of the tender invitation notices as well as formal

agreement on non-judicial stamp paper, all of which finally form contractual obligations to be adhered to /performed by the bidder and the non-performance of any of such obligations make the bidder liable for consequential effects i.e. EMD and Performance security forfeiting,blacklisting etc.The bid should not contain corrections or over writing.

20. The Successful bidder shall have to execute an agreement as per the timelines fixed by PEC, with the Director,Punjab Engineering College (Deemed to be University), on a non-judicial stamp paper of Rs.100/- (Rupees One Hundred only) and provide the equipment(s) as per the specification of tender document and in case they fail to do so, the PEC shall be at liberty to forfeit the performance security deposit and/or EMD, and get the Equipment Provider black-listed.
21. Performance Security Deposit: The successful tenderer will have to deposit performance security 5% of the total value of tender item awarded (**Table -1 of SECTION - I**) within 15 days of issuance of letter of intent by the competent authority to be paid in the shape of Fixed deposit receipt/ Bank guaranty, Demand Draft from any commercial Bank in favor of the Director,Punjab Engineering College (Deemed to be University), Chandigarh which shall remain valid for a period of 60 days beyond all contractual obligations.The security deposited in connection with any other similar tender will not be considered against this tender. Thereafter, the supply order will be issued. If successful tenderer fails to submit the requisite performance security deposit within prescribed 15 days, Earnest Money Deposit (EMD) deposited by the tenderer will be forfeited andPunjab Engineering College (Deemed to be University) shall be at liberty to declare the equipment(s) provider black listed.
22. Tender received through e-tendering shall be opened online by the Committee duly constituted by the authorities ofPunjab Engineering College (Deemed to be University), as per schedule given in Tender Notice in the Computer Centre,Punjab Engineering College (Deemed to be University), Chandigarh. In the event of date of opening of Tender being declared a holiday, the due date of opening of the Tender will be the next working day at the same hours.
23. Tender is non-transferable.
24. The bidder shall submit the hard copy of e-tender along with forwarding letter (**Annexure-2.1 of SECTION - II**) duly signed by the authorized signatory.
25. The tenderer should indicate specifically the Basic Price, Taxes/Excise duty, other duties (if any), and levies chargeable. No additional information will be entertained after due date.

26. The bidder must have an experience of providing similar equipments in reputed institutes/Departments/Colleges/ research labs etc. in India during last 3 years, 2014-15, 2015-16 and 2016-17 from the publication of this tender.
27. The bidder must have minimum annual turnover of Rs. 10.00 lakhs in each of last three financial years i.e. 2014-15, 2015-16 and 2016-17 and shall be submitted as proof.
28. Downloading and submission of Tender will be done by E-tendering process through the websites of Chandigarh Administration and Punjab Engineering College (Deemed to be University) <http://etenders.chd.nic.in> or www.pec.ac.in

ANNEXTURE – 2.1

(Covering letter to be furnished by the Tenderer)

From

To

The Director
Punjab Engineering College (Deemed to be University)
Sector-12, Chandigarh

Subject: Submission of Tender for the Electrical Machines lab in Electrical Engg dept.
at Punjab Engineering College (Deemed to be University), Chandigarh.

Dear Sir,

With reference to your above-mentioned notice inviting e-tender, I/We hereby offer to provide-
Electrical Machines lab in Electrical Engineering Department, Punjab Engineering College (Deemed
to be University), Chandigarh.

I/We shall supply the equipment truly and faithfully as set forth in the terms and conditions of
the tender document. I/We shall be responsible for all complaints as regards to the quality of
product and in case of any dispute; your decision shall be final and binding on me/us.

A Demand Draft No. _____ Dated _____ drawn on _____ intended for
the prescribed amount of Rs. _____ (Rupees _____ only) in favor
of Director, Punjab Engineering College (Deemed to be University), Chandigarh, payable at
Chandigarh is enclosed as earnest money as desired.

I/WE shall have no claim to the refund of earnest money prescribed against this tender in the
event of my/our non-compliance of the contract, provided such contract is implemented within
the period of validity of my/our tender.

I/We further understand that my/our earnest money shall stand forfeited in case of
unsatisfactory supply of equipments/service/violation of any term, or if I/We withdraw my/our
tender at any stage during the period of validity. My/Our tender shall remain valid for a period of
90 days from the last date prescribed for submission of the tender against the above-mentioned
notice. My/Our tender along with terms and conditions with relevant columns and annexure duly
filled in under my/our attestation and with each page of the tender paper including the enclosed
terms and conditions signed by me/us (in the capacity of sole owner/general or special attorney
attached) is submitted for your favorable consideration.

I/We have read the terms and conditions carefully and have signed the same in token of our
absolute and unqualified acceptance. My/Our tender constitutes a firm offer under the
Indian Contract Act, 1872 and is open to an acceptance in whole/my/our offer, if accepted
on the attached terms and conditions will constitute a legal binding of Contract Act 1872.

Thanking you,

Yours faithfully,

Place

Signatures

Date with stamp

& Full Address

ANNEXURE - 2.2

(To be furnished on non-judicial stamp paper duly attested by the 1st Class Magistrate or Notary Public)

AFFIDAVIT

I/We/M/s _____ are registered Company/Ltd Company etc. as per Registration Certificate No. _____ issued by _____ having registered office at _____ and manufacturing/supply base at _____ do hereby declare and solemnly affirm that I/We have not been **Black-listed**, nor mine/our Tenders have ever been cancelled by any State/UT/Central Government or any partner or shareholder either directly or indirectly connected with or has any subsisting interest in the business of my/our firm nor any legal proceedings have ever been initiated/pending or any penalty has ever been levied due to delay of non-completion of work/service/supply order by any State/UT/Central Government or by any authority.

Place: _____

DEPONENT

Dated: _____

Verification

I/We do hereby solemnly declare and affirm that the above declarations are true and correct to the best of my knowledge and beliefs. No part of it is false and nothing has been concealed therein.

Place: _____

DEPONENT

Dated: _____

ANNEXURE - 2.3

Details of previous similar equipments installed in India

(Attach self-attested photocopies of the work order and original certificate of satisfactory performance):

S No.	Type of Equipment	Date of Installation	Name and Address of the Organization with reference letters	Value of the Equipment (In Rs.)	Name of the contact person & Mobile No
1					
2					
3					
4					

Place:

SIGNATURE OF THE TENDERER

Date:

with stamp

ANNEXURE - 2.4

Details of previous similar equipment(s) (Last three years) installed in India by you and which will be available for inspection by our officials (Attach self-attested photocopies of the work order and original certificate of satisfactory performance):

S No.	Type of Equipment	Date of Installation	Name and Address of the Organization with reference letters	Value of the Equipment (In Rs.)	Name of the contact person & Mobile No.	Remarks
1						
2						
3						
4						

Place:

SIGNATURE OF THE TENDERER

Date:

with stamp

SECTION III
TECHNICAL BID
SCHEDULE OF REQUIREMENT

Table -3 Schedule of requirement

S.No	Item	Quantity	Delivery Schedule	EMD Security
1.	Electrical Machines Multipurpose Trainer Kit	01	30 days	Rs. 30,000/-
2.	Electrical & Electronic System Trainer Kit	01	30 days	

PRE-QUALIFYING CRITERIA

Offer will be accepted/ uploaded in two covers under Details containing:

FIRST COVER TITLED as "Technical Bid" should contain the Self-attested scanned copies of following with consecutive Sr. No. :-

1. Name of the firm/organization & address and telephone/ Mob. No. / Fax. No. on letter pad of the company/firm.
2. Earnest money deposit (EMD) as mentioned in Point 14 of SECTION II of this tender document.
3. Self-attested copies of Income tax returns of last three years assessments.
4. Document showing experience of providing similar equipment(s) to reputed Institutes/Departments/Colleges/ research labs etc. in last three years and satisfactory performance certificate from such Institutions/Departments/College/ etc. (Annexure 2.3 SECTION II).
5. Details of previous equipments (Last three years) installed by you and will be available for inspection by our officials. (Annexure 2.4 SECTION II)
6. Self-attested copies of PAN/TAN Card.
7. Name, address, contact number, designation/capacity of person signing tender document.
8. Registration Certificate of the company issued by the competent authority
9. Affidavit of not being Black Listed (Affidavit as per Annexure 2.2 of SECTION II)
10. Individual signing the bid or other documents connected with the contract shall submit the proof of signing authority as under:
 - i. A sole proprietor of the firm or constituted attorney of the proprietor as per registration certificate.
11. The financial bid of only those bidders will be opened who qualify in a technical bid.
12. Covering letter (Annexure 2.1 of SECTION II)

NOTE: All the above mentioned documents should be duly in order and are essential to qualify at Technical Bid Stage.

All the equipments will be evaluated on individual merits.

Punjab Engineering College
(Deemed to be University)CHANDIGARH

SECTION IV

TECHNICAL SPECIFICATIONS AND DETAILS

Total EMD Amount: Rs. 30,000/-

I. **Name of Equipment:** Electrical Machines Multipurpose Trainer Kit

Quantity: 01 Nos.

Specifications

A) Technical Specifications of interfacing panel rack: -

Flat panel system to consist of various high voltage components placed in plastic enclosures to minimize the effect of shock. It should be able to hold the below mentioned control panels with a colourful display.

B) Contents of control panel rack: -

Input 3 phase DOL Starter panel

- 4 pole MCB of 400-430 V/0.2-2A ratings
- Direct On Line 7-10A Contactor with 220V / 50 Hz / 11VA Coil
- Bimetallic thermal Overload relay with range of 1.5A - 2.2A.

Multifunction 1 Phase Meter

- Auxiliary Supply: 230V_{AC} 50Hz
- Voltage: 0 to 350V
- Current Rating: 1A/6A range
- Current Transformation Ratio: 15/1A-10/1A
- Measurement: V, A, Hz, PF, KW, KVA, kVAR, Energy
- Display: LED/LCD Display

Multifunction 3 Phase Meter

- Connection: 3Phase, 3 or 4 wire
- Input Voltage: 440V/220V_{AC}
- Auxiliary Supply: 220V_{AC}, 45-65Hz, 3-6W
- CT Input: 3-6A, 0.1VA/ph.
- Measurement: V, I, Hz, Pf, kVA, kW, kWh

- Computer Input: Modbus RTU RS 485
- Display: LED/LCD Display

FWD/REV, Star-Delta starter panel

- FWD/REV, 3 pole 3 way switch with centre OFF, 5-7A/440V.
- Star/Delta switch 3 pole, 3 way with centre OFF, 5-7A/440V.

1 Phase Motor, Alternator & Synchronous Motor Panel

- 3-5A/1.5-1.7A single phase MCBs
- 2P 2W selector switches to run as 1 ϕ alternator and synchronous motor.
- 7-10A push button switches to simulate as centrifugal switch.

DC voltmeter and DC ammeter panel

- a) DC voltmeter (0-350V)
- b) DC Ammeter (0-7A) with diode for polarity protection
- c) Field failure relay to control armature supply.

SCR Actuator (variable DC) cum sensor signal conditioning panel

- Half bridge SCR based 0-200V/6A sinusoidal firing having linear characteristics.
- Supporting signal conditioning circuit for speed, torque in kg wt. to output 0-3Vdc (FS).
- 3 units of the above two required for DC Armature, DC motor field and AC generator field.

Instrumentation Power supply cum Multichannel DPM panel

- (a) \pm 9-15 V, 600 mA
- (b) +4-6 V, 350mA
- (c) Multi channel DPM for digital display of torque, speed, etc.

Resistor Load Panel

Having off position to run at no load and contains both AC as well as DC resistors

LC Load panel

- (A) Inductive load = Ranging from 0.1-5.0H/ 500mA approx.
- (B) Capacitive load = Ranging from 1.25- 5 μ F/440V approx.

C) Machine set to be constituted of the following machines:

i) DC Integrated Machine

Voltage rating: $V_{arm} = 180V$, $V_{field} = 180V$

Capacity/Speed/Terminals: 350W / 4 Pole m/c 1500RPM / 6 terminals

Rotor Construction: Must have standard commutator/brush arrangement with laminated

stack, with 2 terminals

Stator Construction: Separately excited field winding with laminated pole, solid yoke and series winding with 4 terminals

Chassis mounted with 20mm diameter.

Application: Must work as shunt, series or compound motor and generator.

ii) 3 Phase AC Integrated machine

Voltage rating: 440V_{AC}, 50Hz

Capacity/RPM/Terminals: 300W/4 Pole m/c 1500RPM/10 terminals

Rotor Construction: Must be star connected having four terminals including star point with 4 slip rings mounted on the shaft.

Stator Construction: Six terminals to be brought out to start the machine using STAR - DELTA Starter.

Chassis mounted with 20mm diameter.

Application: Must work as slip ring wound rotor I.M, synchronous motor, and synchronous generator.

iii) 1 Phase AC Integrated machine

Voltage rating: 220V_{AC}, 50Hz

Capacity/RPM/Terminals: 350W/4 Pole m/c 1500RPM/10 terminals

Rotor Construction: Die-cast Rotor

Stator Construction: Must have two windings brought out on 4 terminals for main and auxiliary to configure different motors Split phase.

Chassis mounted with 20mm diameter.

iv) 1 Phase Synchronous machine

Voltage rating: 230V_{AC}, 50Hz

Capacity/RPM/Terminals: 350W/4 pole m/c 1500RPM/4 terminals

Rotor Construction: Must be Single phase wound rotor type with terminals brought out on two slip rings mounted on a shaft.

Stator Construction: One winding to be used to configure synchronous motor and alternator output when used as single phase generator.

Chassis mounted with 20mm diameter.

v) Universal Motor

Voltage rating: 230V_{AC}, 50Hz / 140-160V_{DC}

Capacity/RPM/Terminals: 350W / 4 Pole m/c 1500-1600RPM / 4 terminals.

Rotor Construction: Standard commutator brush arrangement with 2 terminals

Stator Construction: Stator with 2 terminals to allow AC/DC operation & change of direction. Built-in compensating winding to minimize armature reaction & sparking.

Chassis mounted with 20mm diameter.

vi) 3 phase squirrel cage motor

Voltage rating: 440V_{AC}, 50Hz.

Capacity/RPM/Terminals: 350W / 4 Pole m/c 1500RPM / 12 terminals

Rotor Construction: Die-cast rotor.

Stator Construction: 6x2 terminals brought out to run machine at two speeds using pole changing method. Chassis mounted with 20mm diameter.

Applications: Motor must work as Induction generator and be able to plot torque-speed curve for motor as well as generator mode.

vii) Repulsion Motor

Voltage rating: 220V_{AC}, 50Hz

Capacity/RPM/Terminals: 350W / 4 Pole m/c 1500 rpm / 2 terminals

Rotor Construction: Standard short circuited commutator brush

Stator construction: Standard stator with 2 terminals provided with a handle to rotate brush position w.r.t. neutral axis.

Chassis mounted with 19mm diameter.

viii) 3 Phase Salient Pole alternator

Voltage rating: 440V_{AC}, 50Hz

Capacity/RPM: 300W / 4 Pole m/c 1500RPM

Rotor Construction: Star connected with four terminals including star point brought out on 4 slip rings mounted on shaft.

Stator construction: Separately excited field winding with laminated solid yoke with 4 poles brought out on 2 terminals

Winding Temperature: Thermistor mounted on terminal box to monitor temperature of the winding

Frame/Mounting Shaft diameter: 90 Frame, Chassis mounted with 20mm diameter with easy to interchange gear coupling

Net Weight / Gross Weight: 40Kg, 60Kg approx.

(Additional Technical Specifications of Equipment-I)

Features:

- Machines to be mounted on a firm base frame with easy interchangeable connections.
- Graphs to be easily drawn.
- Machines to operate up to 350W power levels and up to 1800 RPM speed.
- Ability to measure power using electronic torque/speed measurement.
- One Dynamometer type DC m/c per aluminium rack with multiple panels.

A) Following Essential accessories should be provided with trainer:

- i. Hand held Tacho meter – 2 No.
- ii. Shrouded patch chord – 150 approx.
- iii. Well written student's workbook explaining at least 50 experiments with instructor guide. – 1 No.
- iv. A DEMO CD to help student to work by themselves – 1 No.
- v. The equipment must be handy and easily attachable and detachable with the help of screw less couplings.
- vi. There should not be any foundation requirements for the setup.
- vii. The setup should have real-time interfacing with PC for real-time recording and storage requirements.
- viii. All the units must be embedded in a single frame structure having wiring diagrams drawn on it.

II. Name of Equipment: Electrical & Electronic System Trainer Kit

Quantity: 01 Nos.

List of Experiments to be Performed

DC : Resistance, current and voltage measurements, Loading of Potentiometer, Ohm's law, Power DC circuits, Series, parallel and 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 and parallel, charging and 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

Technical specifications

Built in Power Supply

- **DC Supply** : 5V / 1A. & $\pm 12V$, 500mA. 0 to 15V
DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated),
High Volt DC 15V to 120V, 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 $\pm 400mV$ (+ 50% modulation)
- Clock Generator: 10 MHz TTL clock.

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.

- All the panels should be in the form of a Multi-panel single framework unit having wiring diagrams drawn on it.
- The unit must be supplied alongwith a dust cover and storage unit for wires etc.
- The wiring connection diagrams and student manuals for experiments must be supplied alongwith the kit.

Features:

- Machines to be mounted on a firm base frame with easy interchangeable connections.
- Graphs to be easily drawn.

A) Following Essential accessories should be provided with trainer:

- i. Shrouded patch chord – 150 approx.
- ii. Well written student's workbook explaining at least 50 experiments with instructor guide. – 1 No.
- iii. A DEMO CD to help student to work by themselves – 1 No.
- iv. The equipment must be handy and easily attachable and detachable with the help of screw less couplings.
- v. There should not be any foundation requirements for the setup.
- vi. The setup should have real-time interfacing with PC for real-time recording and storage requirements.
- vii. All the units must be embedded in a single frame structure having wiring diagrams drawn on it.

**Punjab Engineering College
(Deemed to be University)CHANDIGARH**

SECTION V

FINANCIAL BID

SECOND COVER TITLED AS “**FINANCIAL BID**” CONSISTS OF

Financial (Price) Bid for Electrical Machines Lab Kitsto be supplied by the bidder in thePunjab Engineering College (Deemed to be University), Sector 12, and Chandigarh is as follows:

Tender Inviting Authority: Director, Punjab Engineering College (Deemed to be University), Chandigarh 160012

Equipment Name:

Contract No: PEC/CED/

Bidder Name:

Table -4 Cost of requirement for Electrical Machines Lab Kits

S.No	Description of Work	Qty	Unit	Rate Per unit in Figures to be entered by the Bidder (Rs.)	Taxes (Rs.)	TOTAL (Rs.)
1						

Total Quoted Price of All Items

Rs. In figures _____

Rs. In words _____ only)

Notes: In case of equal rates quoted by more than one bidder, priority will be given/ awarded to the bidder who has more experience and better performance. In this regard, decision of The Director PEC will be final.

SECTION VI

GENERAL TERMS AND CONDITIONS

1. Clarification of Bidding Documents; A prospective Bidder requiring any clarification of the bidding documents may notify the Purchaser in writing or by telex or cable or fax at the Purchaser's mailing address indicated in the Invitation for Bids. The Purchaser will respond in writing to any request for clarification of the bidding documents which it receives no later than 15 days prior to the deadline for submission of bids prescribed by the Purchaser.
2. Amendment of Bidding Documents; At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by amendment. In order to allow prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.
3. Language of Bid; The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in English language. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language in which case, for purposes of interpretation of the Bid, the translation shall govern.
4. Period of Validity of Bids; Bids shall remain valid for 90 days after the deadline for submission of bids prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.
5. Opening of Bids by the Purchaser; The Purchaser will open all bids, in the presence of Bidders' representatives who choose to attend, at the time and date as mentioned in *Table2 – Time Schedule*- in the following location:

Electrical Engineering Department,
Punjab Engineering College (Deemed to be University)
Sector 12 Chandigarh 160012

The Bidders' representatives/bidders who are present shall sign a register evidencing their attendance.

In the event of the specified date of Bid opening being declared a holiday for the Purchaser, the Bids shall be opened at the same time and location on the next working day.

6. Warranty: The Supplier warrants that the Goods supplied under this Contract are new, unused, of the most recent or current models and those they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except when the design and/or material is required by the Purchaser's Specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.

- The warranty period shall be 36 months from date of acceptance of equipment(s)/machines, mountings, accessories and fittings and any other related spare/parts and equipments. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract.
- The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. "Upon receipt of such notice, the Supplier shall, within the period of 30 days and with all reasonable efforts, repair or replace the defective goods/equipment(s) or parts thereof, free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter.
- In the event of any correction of defects or replacement of defective material/part(s) during the warranty period, the warranty for the corrected/replaced material shall be extended to a further period of 36 months.
- The period of correction of defects in the warranty period is 3 days.

7. Payment: Payment for Goods and Services shall be made in Indian Rupees only as follows:

- I. On Final Acceptance
 - II. Payment shall be paid on the successful Installation, Training and Satisfactory Performance and on Final Acceptance by the Purchase committee.
- The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted and upon fulfillment of other obligations stipulated in the contract.

- Payments shall be made promptly by the Purchaser but in no case later than 120 days after submission of the invoice or claim by the Supplier.
- Payment shall be made in Indian Rupees only.
- No advance payment will be made. Payment will be released after satisfactory receipt of equipment(s) goods/ material, demonstration/training and installation.

8. Documents comprising the Bids; The Bids prepared by the Tenderers shall comprise of following components:

- Bid to be furnished as per the format for technical specifications.
- Technical literature for each product/service, covering full technical specifications.
- Bid prices should be quoted item wise excluding taxes duly signed and complete as per the format.
- Maximum educational discount as could be offered should be mentioned.

9. Cost of Tender: The tenderer shall bear all costs associated with the preparation and submission of its Bid, including the cost of presentation for the purpose of clarification of the bid, if so desired by the client and the client will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Tendering Process.

10. Any proprietary terms used in specifications may be quoted with equivalent specifications.

11. Others Terms and Conditions:

- An EMD/ bid security of equipment should be submitted for each item in form of DD in favour of the Director, Punjab Engineering College (Deemed to be University), Chandigarh. Tender without earnest money shall be considered unresponsive and rejected.
- A Performance security of 5 % of the cost of the equipment will have to be deposited by the successful bidder awarded the supply order in form of Demand Draft (DD)/ fixed deposit receipt or Bank Guarantee from a commercial bank which should be valid for 60 days beyond the completion of warranty. Warranty period shall be 3 years from the date of handing over of the equipment to the satisfaction of Director PEC.
- Performance Security will be forfeited and credited to the institute (Punjab Engg College, Chandigarh) in the event the supplier does not honors the warranty and other terms and conditions of the tender.

- It must be specified if the packing, insurance and sales Tax/Excise Duty etc. will be inclusive or extra of the prices quoted.
- Delivery Period of the equipment shall be less than 60 days from the date of supply order.
- Detailed Catalogue should be sent along with supply of equipment(s).
- All legal disputes will be subject to Chandigarh Jurisdiction and will be interpreted under Indian Laws.
- The Director, Punjab Engineering College (Deemed to be University), Chandigarh reserves to himself the right to reject any or all tenders without assigning any reasons.
- The firm who has been blacklisted by Centre/State Govt/UT/Boards/Corporations/any Government authority/Punjab Engineering College (Deemed to be University) is not eligible for the Tender.
- The penalty will be charged @ 0.5% of cost of the tender (total cost quoted by tenderer) per week after the expiry of delivery period, mentioned in the purchase order if delivery date is extended by the purchaser.
- All the rates will be FOR, Punjab Engineering College (Deemed to be University), Chandigarh.
- The institute being a premier Education and Research Institute funded by Chandigarh Administration, discounts as applicable to Research Institute/Educational Institutes may be provided in the Tender.
- The bidders shall not be allowed to change, alter or modify the bids after expiry of the deadlines for the receipts of bids.
- The firm is entirely responsible for any damage or losses occurred to the material in the transit. The firm will lodge all complaints regarding the damage occurred in the transit and shall bear all expenses.
- If an agent bids on behalf of the Principal/OEM, the same agent shall not bid on behalf of another Principal/OEM in the same tender for the same item/ product.
- Situation in which bid security will stand forfeited if a bidder withdraws its bid during the period of bid validity specified by the bidder on the bid form and in case of successful bidder, if the bidder fails to complete the project or to furnish performance security in accordance with the tender.
- Bids received after the due date will be rejected.

- The tenderer is required to bring their own testing and measurement instruments which are required for the installation, commissioning and testing. These can be taken back after completion of the process.
- Form 'D' will not be issued
- If price is quoted in foreign currency, the equivalent rupee price must also be indicated.
- In case, any free gift scheme / cash scheme is launched by the company same will be Offered by the vender to Punjab Engineering College (Deemed to be University), Chandigarh free of cost.
- Generally the bid offer will be received /opened on the day as specified in the time schedule. If the scheduled date is declared as a holiday, then the tender shall be received / opened on the next working day at the same time.
- The agency/supplier shall arrange to provide demonstration/Training to the concerned lab staff regarding operation / maintenance of equipment(s) free of cost.
- The institute has been exempted from custom duty in terms of Government Notification No.
- 51/96-Customs Dated 23 July 1996 and Central Excise duty in terms of Government Notification No. 10/97-Customs Dated 01 March 1997 as amended from time to time.
- Warranty period shall be 03 year of the equipment(s) installation /Demonstration to Punjab Engineering College (Deemed to be University).
- A technical compliance chart of the quoted product mentioning technical specifications of quoted product verses asked specifications is compulsory. Attach the compliance chart with technical bid.
- List of users of the quoted model in India along with their names, telephone numbers and email addresses should be sent along with the quotation.
- Tender validity should be 90 days from the opening of tender.

12. The equipments will be evaluated in its individual merit.

All the terms and Conditions of this tender document are acceptable to me /us.

Signature of Bidder

SECTION VII

CONTRACT FORM

(To be executed on Rs 100/- stamp paper)

AGREEMENT FOR the Provision of "Electrical Machines lab Kits" in Punjab Engineering College (Deemed to be University), Sector – 12, Chandigarh.

This agreement has been made on this _____ day of _____ 2017 at Punjab Engineering College (Deemed to be University), Chandigarh between Director, Punjab Engineering College (Deemed to be University), Chandigarh, and M/s _____ registered under the companies Act-1956 and having its registered office at

_____ (hereinafter referred to the supplier and expression shall include his/their respective heirs, executors, administrators and assignees), represented by Shri _____, S/o Sh.

_____ on the other part. And whereas the Director, Punjab Engineering College (Deemed to be University) has empanelled some agencies for providing Equipment(s) to Electrical Engineering Department, as per the terms and conditions, specifications and general conditions of the Tender, as attached along with this agreement. And whereas the said terms and conditions, specifications as well as the scope of work to be done, as set out in the General Conditions of the Tender, have been accepted and signed by the supplier. And whereas the supplier has agreed to execute, upon and subject to the condition set forth herein, (herein referred to as the said conditions) the work shown in the General Conditions of the supplier.

And whereas the supplier had deposited a sum of Rs. _____ as security in the form of a Demand Draft or Banker Cheque order No. _____ dated _____ issued by

_____ in favor of the Director, Punjab Engineering College (Deemed to be University), Chandigarh as performance security deposit for the said equipment and has agreed that this be retained by the Director Punjab Engineering College (Deemed to be University), Chandigarh as security deposit.

Now therefore, it is hereby agreed as follows:

- (a) In consideration of the payment to be made to the supplier, as hereinafter provided and agreed to by both the parties, the supplier shall upon and subject to the said condition execute and complete the contract.
- (b) Director, Punjab Engineering College (Deemed to be University), Chandigarh, shall pay the supplier such sums as shall become payable hereunder at the time and in the manner specified in the said conditions.
- (c) The quality of performance related to the work is the essence of the contract and in the event of failure to perform as per term and conditions of the contract and to the satisfaction of the; the supplier shall be penalized as per provisions of the contract.
- (d) The scope of work and prices schedule of quantities and conditions of tender shall form the basis of this contract and the decision of the Director, Punjab Engineering College (Deemed to be University) or arbitrator, in reference to all matters of dispute shall be final and binding on both parties.
- (e) The said conditions of tender document and this agreement thereto shall be read and constructed as forming part of this agreement and the parties hereto will respectively abide by and submit themselves to the conditions and perform the agreement on their parts respectively in such conditions contained.
- (f) The several parts of this contract have been read to us and fully understood by us. In witness whereof the parties hereto have set their respective hands the day and the year herein above written.

ARBITRATION

- i). Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement or matter whatsoever, before/after completion or abandonment of work or during extended period, hereafter arises between the parties, as to the meaning, operation or effect of the contract or out of or relating to the contract or breach thereof, shall be referred to a Sole Arbitrator to be appointed by the Director of the Institute (Punjab Engineering College (Deemed to be University) at the time of the dispute. The award given by the arbitrator so appointed shall be binding on the parties. It will not be open to the parties to challenge the jurisdiction of the arbitrator after the award has been made.
- ii). If the arbitrator to whom the matter is originally referred dies or refuses to act or resigns/withdraws for any reason from the position of arbitration, it shall be lawful for the Director of the Institute to appoint another to act as arbitrator in the manner aforesaid. Such

person shall be entitled to proceed with reference from the stage at which it was left by his predecessor if both the parties consent to this effect failing which the arbitrator shall be entitled to precede de-novo. iii). It is a term of the contract that the party invoking arbitration shall specify all disputes to be referred to arbitration at the time of invocation of arbitration under the clause.

- iv). It is a term of the contract that the cost of arbitration shall be borne by the parties themselves.
- v). Subject to the aforesaid provisions, the Conciliation and Arbitration Act, 1996 and the rules made thereunder and any modification thereof from the time being in force shall be deemed to apply to the arbitration proceedings under this clause.
- vi). All disputes arising out of or in any way connected with this agreement or arbitration shall be deemed to have arisen in Chandigarh and only courts in Chandigarh shall have jurisdiction to determine the same.

The Director,
Punjab Engineering College (Deemed to be University)
Chandigarh

Shri _____
M/S _____
(FOR & ON BEHALF OF THE Contractor)
In the presence of:
1. _____ 2. _____
(Witness) (Witness)

PERFORMANCE SECURITY FORM

To: (Name of Purchaser)

WHEREAS..... (Name of Supplier)

Herein after called "the Supplier" has under taken, in pursuance of Contract (Notification of Award)

No..... dated, 20.... to supply.....(Description

of Goods/equipment and Services) hereinafter called "the Contract". AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract. AND WHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of(Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or

the sum specified therein. This guarantee is valid until theday of.....20.....

Signature and Seal of Guarantors

.....
.....
.....

Date..... 20

Address:

.....
.....

PERFORMANCE STATEMENT

Please attach "Performa for Performance Statement"