



**INDIAN INSTITUTE OF TECHNOLOGY ROPAR,
RUPNAGAR-140001 (PUNJAB)**

**SCHOOL OF MECHANICAL, MATERIALS AND ENERGY
ENGINEERING**

Dated: 20.09.2010

Quotations in sealed envelopes subscribing “Quotations for <name of equipment>” are invited for the purchase of the following items. The detail specifications of the equipments are given on a separate sheet, attached herewith, as Annexure – I and terms and conditions of our institute are given in Annexure – II. The quotations should be sent directly to the “**Registrar, Indian Institute of Technology Ropar, Room Number 104, Nangal Road, Rupnagar – 140001, Punjab, INDIA with attention to Dr. Navin Kumar, School of Mechanical Materials & Energy Engineering**” so as to reach this office on or before 3 PM on 05.10.2010. The quotation (technical bid) will be opened on **05.10.2010 at 4.30 PM**. The interested firms are requested to send offers for technical bid and financial bid in two separately sealed envelopes. If you are interested, kindly send your offer with technical specifications, price bid and complete terms and conditions within the time mentioned. Provide the Proprietary Nature Certificate (PNC) authenticated by with Patent Certificate for the specified equipment (if applicable). Interested bidder must submit a draft as per the money given in the table for each piece of equipment in favour of Registrar, IIT Ropar, **along with the quotation (i.e. with the technical bid)** towards EMD, **without which submitted quote will not be considered. Delivery of the equipments shall be required within 1-2 months of placement of the purchase orders.**

S.NO.	EXPERIMENT	EMD(Rs)
1	Whirling of Shaft apparatus	8000
2	Vibration fundamental trainer	40000

Enclosed: Annexure-I and Annexure-II.

Annexure-I

Sl. No.	Name of the Equipment	Learning Objectives/Experiments, Desirable Features and specifications	Quantity
1	Whirling of Shaft apparatus	<p>Learning Objectives/Experiments:</p> <ol style="list-style-type: none"> 1. Shows how shafts vibrate transversely and ‘whirl’ at a certain rotation frequency. 2. The affect of shaft length and diameter 3. The affect of end conditions (fixings) 4. Loaded shaft (with one and two masses) 5. Eccentric loading <p>Specifications</p> <ol style="list-style-type: none"> 1. The tail end bearing should slides in its housing to allow the shaft length to change as it ‘whirls’. 2. Extra bearings should be supplied so that it restrict angular movement when fitted, to give ‘fixed ends’. 3. Two movable nylon bushes to prevent the shaft whirling amplitude from reaching excessive levels. 4. There should be sensors at the driven end measures the shaft speed and sends its signal to the Control and Instrumentation Unit display. 5. Equipment should have separate Control and Instrumentation Unit. This unit should contain the drive for the variable speed motor and a display to show the shaft speed. 6. It also includes a stroboscope to show trigger output. 7. Equipment should have Shafts of different length and diameter to show how these properties affect whirling. Also should have a set of weights to show how concentrated loads affect whirling. One weight should have an extra hole to make it an eccentric load. 8. Should have removable safety guard with magnetic interlock surrounds the shaft and only allows the motor to work when fitted. 9. Can demonstrate first three mode whirl speeds and predict them. <p>Technical data:</p>	1

		<p>Mild steel shafts: of diameters 3mm, 6mm, 7mm with 750mm, 900mm lengths Weights: 300 g, 400 g, 300 g with hole.</p>	
2	Vibration fundamental trainer	<p>Specifications</p> <p>Excitation motor: The motor can provide variable speed and should have built- in unbalance load. Motor should be driven with software.</p> <p>Provision of Vibration isolation from the floor</p> <p>Should include springs with different stiffness (at least three), and can also demonstrate two degree of freedom.</p> <p>Should have at least three weights that can be stackable</p> <p>Shaft of different diameters (at least three diameter) Rotors of different mass and inertia (at least Three different type of rotor)</p> <p>Tuned mass damper for mass-spring absorber, and for beam vibration absorber.</p> <p>Pendulum with adjustable length and weight</p> <p>Constrained viscoelastic layer treated beams (At least 2 different sample beams)</p> <p>Torsional Damper with one dashpot and at least three fluids.</p> <p>Different material (at least three) beam samples Dirrent weight mass blocks</p> <p>Can be possible to mount beam as cantilever or simply supported with adjustable length</p> <p>Data acquisition system should have minimum eight channels, 16 bit resolution, simultaneous sampling, analysis frequency should be greater than or equal to 4kHz, anti-aliasing filter, AC-DC coupling, gain of 1, 2, 5, 10, +-10V input</p>	1

		<p>Related Software should include Time waveform analysis, spectrum analysis, FRF, motor motion control</p> <p>Should have at least three Accelerometer of 0.3-10KHz, 100mV/G with BNC connector with at least Two DC response capacitive accelerometers</p> <p>Stroboscope, Impact Hammer Beam support force transducer</p> <p>Power Source 220 V 50Hz</p> <p>Modules</p> <ol style="list-style-type: none"> 1- Pendulum Vibration Module 2- Mass-Spring System with Horizontal and Vertical Arrangement. Should have single and two DOF experiments Free and force vibration with different viscous damping at different frequencies. 3- Torsional vibration of Rods with Vertical and horizontal Arrangement. The torsional vibration module should consists of a shaft, rotors, torsional viscous damper, It should demonstrate as one and two degrees of freedom systems for free and forced vibration. It should be configured with different rod length, diameter, and material to various system stiffness, with different disks to vary the mass, and with or without a dashpot. 4- Beam Vibration Module. Should demonstrate natural frequencies, mode shapes, and damping in beams of different materials. Should demonstrate different boundary conditions. Provision for masses can be mounted at different locations. Provision to visualize mode shapes. Modal test can also be performed. 5- Vibration Control Module Provision for passive vibration control, alter excitation frequency, change resonance frequency by modifying modal mass and stiffness and add damping to bring vibration levels to acceptable values. 	
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Annexure-II

IMPORTANT INSTRUCTIONS AND TERMS & CONDITIONS PLEASE SPECIFICALLY INDICATE THE FOLLOWING POINTS IN YOUR QUOTATIONS IF ITEMS ARE TO BE SUPPLIED FROM ABROAD AND COMPLY THE TERMS AS MENTIONED HEREUNDER

1. Prices are to be quoted on 'ex-works' duly packed or on "F.O.B. International port" basis and also including agency commission payable to you, if any, showing clearly the following break up:-
 - a. Ex-works price
 - b. Packing & forwarding
 - c. Freight & insurance
 - d. Incidentals
 - e. Taxes payable by the institute
2. Indian agents address and percentage of agency commission included in above F.O.B. / Ex-works price. This will be paid to the Indian agents in Indian rupees only and not in **FE**. Please enclose copy of agency agreement entered into with your principals indicating the nature of after sales services of Indian agents, precise relationship & mutual interest in the business.
3. Measurements / weight: Net / gross of the consignment and estimated air freight charges from international port to Ropar (India). In case of an order, air worthy package should be used (as applicable) duly certified with documents – ply to – sanitary certificate (as per quarantine order 2003).
4. Estimated sea-freight (if applicable) charges from f.o.b. Seaport to sea-port in India.
5. Your banker's address.
6. Whether any export license is required from your international counterpart's government, if so, please confirm with details.
7. Ours being a government of India organization, we prefer "sight draft" terms of payment. Please confirm acceptance of the same. No advance payment. L/C in exceptional cases only.
8. **Technical catalogue / leaflet justifying specifications must be enclosed without failing.**
9. Please confirm whether you are authorized to quote on behalf of your principals and if so, please enclose a copy of such authorization with your quotation.

10. The supplier shall provide a copy of the insurance policy along with invoice to the purchaser who makes arrangements to extend the validity of the policy, if necessary.
 - a. The supplier shall initiate and pursue claim till settlement, and
 - b. Promptly make arrangements for repair and / or replacement of any damaged item (s) irrespective of settlement of claim by the underwriters.
11. Foreign suppliers are requested to send their offer indicating the commission payable to the Indian agent directly to us for consideration.
12. Country of origin.
13. The institute shall provide the custom duty exemption certificate.
14. Liquidated damages: if a firm accepts an order and fails to execute the order in full or part as per the terms and conditions stipulated therein, it will be open to this institute to recover liquidated damages from the firm at the rate 2% of the value of the undelivered stores per month or part thereof, subject to a maximum of 10% of the value of the undelivered stores. It will also be open to this institute alternatively, to arrange procurement of the required stores from any other source at the risk and expense of the firm, which accepted the order but failed to execute the order according to stipulated agreed upon.
15. Patent rights: the supplier shall indemnify the purchase against all third party claims of infringement of patent, trademark or industrial design rights arising from use of the goods or any part thereof in India.
16. Tenders are invited in duplicate sets complying the requirement for tender as detailed in the tender specification to be submitted in the company's / firm's letterhead neatly printed / typed duly signed by authorized person with the seal of the bidders. All envelopes containing the tender should be properly sealed. **Separate envelopes should be used for technical and price bid and indication to their effect may please be super scribed on the envelope.**
17. Period of validity: bids shall remain valid for acceptance for a period of 90 days from the date of opening.
18. Provide the proprietary nature certificate (PNC) for the specified commodities if applicable.
19. Late tenders i.e. tender received after the due date and time of submission as mentioned above may liable to be rejected.
20. The institute does not bind itself to offer any explanation to those bidders whose technical bid has not been found acceptable by the evaluation committee of the institute.
21. Those bidders who do not receive any communication for participation in price bid opening meeting may presume that their bid has not been accepted by the institute.
22. Conditional offer will not be accepted.

23. The person / officer signing the tender / bid documents should be delegated with an appropriate power of attorney (duly endorsed by a notary public) by the chief executive officer of the company to sign such documents.
24. Name and address of premier institutes and industries to which such equipment have been supplied should be mentioned with date.
25. **Warranty: Five years onsite maintenance and warranty for the instrument with factory/well trained engineer.**
26. Delivery period: the stores are required to be delivered / dispatched within 60 days from the date of receipt of the order by the supplier. All offers of delivery should be made ex-stocks, and a clear note should be inserted in case ex-stock delivery is not possible.
27. Opening of quotation: every quotation will be opened at the office of the concerned school/centre, IIT Ropar, at the time and date mentioned in the tender form. Time of commercial bid opening will be communicated (to those who qualify in the technical bid) through e-mail and a firm may send its accredited representative to witness the opening if it so desires.
28. Quality & specification of stores: the stores offered should be of the best quality available, unless otherwise specified confirming strictly to the specifications cited. The institute reserves the right to reject the stores as found unacceptable on these grounds.
29. Sales & income tax clearance: the intending supplier must be a registered dealer under central sales tax act. In such cases the intending supplier has to furnish this institute its sales and income tax clearance certificate (up to date).
30. Payment: 90% to 95% of the payment will be made by a crossed account payee cheque or RTGS, normally within 30 days from the date of receipt of the bill of the stores in good order and condition, and its successful installation/training & satisfactory performance.
31. Performance guarantee: the remaining 10% to 5% of the payment will only be released after the performance bank guarantee is produced for the same amount, else it will be released after the warranty period.
32. *Termination for default:* Default is said to have occurred.
 - (a) If the supplier fails to deliver any or all of the services within the time period(s) specified in the purchase order or any extension thereof granted by IIT Ropar.
 - (b) If the supplier fails to perform any other obligation(s) under the contract.
 - (c) If the vendor, in either of the above circumstances, does not take remedial steps within a period of 30 days after receipt of the default notice from IIT (or takes longer period in spite of what IIT may authorize in writing), IIT may terminate the contract / purchase order in whole or in part and forfeit the EMD. In addition to above, IIT may at its discretion also take the following actions: IIT may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate IIT for any extra expenditure involved towards goods and services to complete the scope of.

33. *Applicable Law*

- a) The contract shall be governed by the laws and procedures established by Govt. of India, within the framework of applicable legislation and enactment made from time to time concerning such Commercial dealings/processing.
- b) All disputes are subject to exclusive jurisdiction of Competent Court and Forum in Ropar, India only.
- c) Any dispute arising out of this purchase shall be referred to the Registrar IIT Ropar, and if either of the parties hereto is dissatisfied with the decision, the dispute shall be referred to the decision of an Arbitrator, who should be acceptable to both the parties, to be appointed by the Director of the Institute. The decision of such Arbitrator shall be final and binding on both the parties.

34. Submission of quotation: all quotations must be forwarded in sealed cover by mail only (ordinary post/regd.post/speed post/courier) addressed to the Registrar, (Attn: name of the person mentioned in the enquiry, name of the school), Indian Institute of Technology Ropar, Room 104, Rupnagar – 140001, Punjab, INDIA so as to reach within the specified period. The reference to the NIQ name and the last date for submission must clearly be super-scribed on the sealed envelope. To ensure receipt of quotations in time intending suppliers are advised to mail them 7 clear days in advance. If no counter offer is made in the quotation, it will be taken for granted that the offer is strictly in accordance with the specification and term and conditions laid down in the tender notice.

35. **The suppliers must support the quoted specifications with the help of original printed manuals of the equipments and must highlight the specification details in the original manual.**

36. The payment terms should be specified in the quotation clearly.

37. Service facility: Supplier should mention about the possible service set up in India and how capable they are to provide after sales service.

38. List of institutions/universities in India and abroad should be attached where the quoted instrument is installed.

39. The suppliers should supply service and operational manuals of the systems.

40. The product will be used for educational / research purpose, hence applicable academic discount must be offered and stated.

41. The suppliers MUST include a detailed compliance report vis-à-vis required specifications, **WITHOUT WHICH THE QUOTATION SHALL BE REJECTED WITHOUT ANY NOTICE.**

42. **In addition to institutes terms & condition following should be mentioned specifically.**

43. **Training should be imparted.**

44. The manufacturer has to stand guarantee for the relocation of the instrument once the permanent campus of IIT Ropar gets ready for operation. They must be in a position to dismantle the setup in present campus and re-install it to the new campus. Necessary charges for the same may be shown separately in their offer.

45. IMPORTANT

- a. Director of IIT Ropar may accept or reject any or all the bids in part or in full without assigning any reason and does not bind himself to accept the lowest bid. The Institute at its discretion may change the quantity / upgrade the criteria / drop any item or part thereof at any time before placing the Purchase Order.
- b. In case of any dispute, the decision of the Director of this Institute shall be final and binding on the Bidders.