University College of Engineering and Technology,

Karni Industrial Area, Pugal Road,

Bikaner-334004

INVITATION LETTER

Package Code: TEQIP-III/RJ/gceb/94 **Date: 04-Jul-2019**

Package Name: Fluid Mechanics and Machines Lab **Method: Shopping Goods**

To,

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Sub: INVITATION LETTER FOR Fluid Mechanics and Machines Lab

Dear Sir,

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

Sr. No	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)
1	Metacentric height apparatus	1	University College of Engineering & Technology, Bikaner	SITC in Mechanical Engineering department of UCET, Bikaner
2	Orifice and mouth piece apparatus	1		
3	Apparatus to measure discharge over notch	1		
4	Bernoulli's theorem apparatus	1		
5	Apparatus to measure friction losses in pipelines	1		
6	Reynolds apparatus	1		
7	Apparatus to measure minor losses in pipe	1		
8	Boundary layer	1		

	apparatus			
9	Reciprocating pump test rig	1		
10	Pelton wheel turbine test rig	1		

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

3. **Quotation**

3.1 The contract shall be for the full quantity as described above.

3.2 Corrections, if any, shall be made by crossing out, initialling, dating and re writing.

3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit Price.

3.4 Applicable taxes shall be quoted separately for all items.

3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.

3.6 The Prices should be quoted in Indian Rupees only.

4. Each bidder shall submit only one quotation.

5. Quotation shall remain valid for a period not less than **55** days after the last date of quotation submission.

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

6.1 are properly signed; and

6.2 Confirm to the terms and conditions, and specifications as per annexure-I

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

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

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

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

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

Satisfactory Acceptance - 100% of total cost

10. Liquidated Damages will be applied as per the below:
Liquidated Damages Per Day Min % :0.01
Liquidated Damages Max % : 10

11. All supplied items are under warranty of **36** months from the date of successful acceptance of items and AMC/Others is **NA.**

12. You are requested to provide your offer latest by **12:00** hours on **20-Jul-2019. Quotations received will be opened on the same day at 13.00 hours.**

13. Detailed specifications of the items are at Annexure I.

14. Training Clause (if any) **As per Annexure I**

15. Testing/Installation Clause (if any) **SITC in Mechanical Engineering Department of UCET, Bikaner**

16. Performance Security shall be applicable**: 05 %**

17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.

18. Sealed quotation to be submitted/ delivered at the address mentioned below, **University College of Engineering and Technology, Karni Industrial Area, Pugal Road, Bikaner-334004**

19. We look forward to receiving your quotation and thank you for your interest in this project.

(Nodal Officer – Procurement)
UCET, Bikaner

Annexure - I

S.No.	Item Name	Technical Specifications
1	Metacentric height apparatus	● Tank size: 500 × 500 × 400 mm^3 (Approx.). ● Pontoon: Size 300 x 150 mm (Approx.) with Horizontal Guide Bar for sliding weight. ● Material : Stainless Steel Pontoon ● Front Window of Tank : made of Glass/Acrylic ● A set of weights is supplied with the apparatus. ● The whole set-up should be well designed and arranged in a good quality painted structure. ● A detailed user manual.
2	Apparatus for measuring Coefficients (C_d, C_v, C_c) in Orifice and mouth piece apparatus	● Set of Orifices : Material Acrylic (2 Nos.) Dia. 10mm and 15 mm ● Set of Mouthpieces : Material Acrylic ● Constant Head Tank : 35 Ltrs. ● Hook/Pointer Gauge: To measure X-Y co-ordinates of Jet. ● Water Circulation: 0.5 HP Pump ● Make: Crompton/Godrej/G.E./Kirloskar ● Flow Measurement : Using Measuring Tank with Piezometer, Capacity 25 Ltrs. ● Sump Tank : Capacity 70 Ltrs. ● Stop Watch : Electronic. ● Control Panel Comprises of: Standard make On/Off Switch, Mains Indicator, etc. ● Tanks should be made of Stainless Steel. ● The whole set-up should be well designed and arranged in a good quality painted structure. ● The equipment should consist of a tank provided with inlet supply diffuser, overflow, outlet, provision for fitting Orifice or Mouthpiece at the outlet of tank should be provided. ● An arrangement should be done to vary head and keep it constant at desired level. ● A Hook/pointer gauge arrangement for measuring X-Y co-ordinates of Jet should also fitted. ● The equipment should be self-contained water re-circulating unit, provided with a sump tank and a centrifugal pump etc. ● Flow rate of water should be measured with

		the help of measuring tank and stop watch. ● A detailed user manual
3	Apparatus to measure discharge over notch	● Rectangular and V-notch arrangements with ½ HP pump. ● Measuring tank of size 600 ×600×600 mm (Approx.) with a gauge glass and scale arrangement and a drain valve. ● Sump tank of Size 1500×600×600 mm Height for independent circulation and within the floor space of main unit. ● A detailed user manual
4	Bernoulli's theorem apparatus	● Test Section : Material Acrylic (One Piece). ● Piezometer Tubes : Material P.U. Tubes (7 Nos.) ● Water Circulation : FHP Pump, ● Make: Crompton/Godrej/G.E./Kirloskar ● Flow Measurement : Using Measuring Tank with Piezometer, Capacity 25 Ltrs. ● Sump Tank : Capacity 70 Ltrs. ● Inlet Tank : Capacity 20 Ltrs. ● Stop Watch : Electronic. ● Control Panel Comprises of: Standard make On/Off Switch, Mains Indicator, etc. ● Tanks should be made of Stainless Steel. ● The whole set-up should be well designed and arranged in a good quality painted structure ● The equipment should be designed and fabricated to demonstrate the Bernoulli's theorem. ● It should have convergent and divergent sections. ● Pressure tapings should be provided at different locations in convergent and divergent section. ● The Equipment should be self-contained water re-circulating unit, and should be provided with a sump tank, centrifugal pump etc. ● An arrangement should be done to conduct the experiment on different flow rates. ● Flow rate of water should be measured with the help of measuring tank and stopwatch. ● It should have the scope to verify Bernoulli's Theorem experimentally.

		● It should have the scope to plot the Total energy V/s distance. ● A detailed user manual
5	Apparatus to measure head losses in pipelines	● Pipe Test Section : (i) Dia ½", Length : 1m, Material G.I. (ii) Dia ¾", Length : 1.25m, Material G.I. ● Water Circulation : FHP Pump, ● Make:Crompton/Godrej/G.E./Kirloskar ● Flow Measurement : Using Measuring Tank with Piezometer, Capacity 25Ltrs. ● Sump Tank : Capacity 50 Ltrs. ● Stop Watch : Electronic. ● Control Panel Comprises of : Standard make On/Off Switch, Mains Indicator,etc. ● Tanks will be made of Stainless Steel. ● The whole set-up should be well designed and arranged in a good quality painted structure. ● The equipment should consist of 2 pipes of different diameters, which should be connected in parallel. ● Pressure tapings should be provided on each pipe to measure the pressure losses with the help of a Differential Manometer. ● Control valves should be fitted on each pipe, which enables to use one pipe at a time for experiment. ● The equipment should be self-contained water re-circulating unit, provided with a sump tank and a centrifugal pump etc. ● Flow control valve and by-pass valve should be fitted in water line to conduct the experiment on different flow rates. ● Flow rate of water should be measured with the help of measuring tank and stop watch. ● It should have the scope to determine the losses due to fiction in pipes. ● It should have the scope to determine the friction factor for Darcy - Weisback equation. ● A detailed user manual
6	Reynolds apparatus	● Tube : Material Borosilicate Glass ● Dye vessel : Material Stainless Steel, Suitable Capacity ● Capillary Tube: Material Copper/Stainless Steel. ● Constant Head Water Tank: Capacity 40 Ltrs. ● Water Circulation : FHP Pump ● Make: Crompton/Godrej/G.E./Kirloskar

		● Flow Measurement : Using Measuring Cylinder. ● Sump Tank : Capacity 60 Ltrs. ● Stop Watch : Electronic. ● Control Panel Comprises of :Standard make On/Off Switch, Mains Indicator, etc. ● Tanks will be made of Stainless Steel. ● The whole set-up should be well designed and arranged in a good quality painted structure. ● The equipment should consist of a glass tube with one end having bell mouth entrance, connected to a constant head water tank, at the other end a valve should be provided to vary the flow rate. ● The tank should be of sufficient capacity to store water. ● A capillary tube should be introduced centrally in the bell mouth for feeding dye from a small container placed at the top of tank, through polythene tubing. ● By varying the rate of flow, the Reynolds number should be changed. This also changes the type of flow. ● Visual observation of dye (Thread) should indicate the type of flow, which canbe confirmed from the Reynolds number computed. ● The equipment should be self-contained water re-circulating unit, provided with a sump tank and a centrifugal pump etc. ● The flow control valve and by-pass valve should be fitted in water line. ● The flow rate of water should be measured with the help of measuring cylinder and stop watch. ● It should have the scope to determine the Reynolds number and hence the type of flow either laminar or turbulent. ● It should have the scope to study transition zone. ● A detailed user manual
7	Apparatus to measure minor losses in pipe	● Sudden enlargement and contraction, bends, valves etc. with ½ HP pump. ● Box Dimensions : 1000 x 500 x 1600 mm ● U- tube manometer : 150-0-150 (Mercury filled) ● Sump tank capacity : 75 liters

		● Material of Sump Tank : Stainless Steel ● Volumetric tank : 45 liters ● Material of Vol. Tank : Stainless Steel ● Piping with necessary Valves and Fittings ● Digital Stop Watch with 1/100 second Accuracy is required ● A detailed user manual
8	Boundary layer apparatus	● Wind tunnel with transparent test section and pressure measuring units ● Test section: 200 x 200 x 1000 mm^3 ● Manometer (U-Tube) ● A detailed user manual
9	Reciprocating pump test rig	● Single stage, single cylinder air compressor driven by a 1 H.P. motor with receiver and ● Pressure safety valve. ● Digital multi-channel temperature indicator to measure the temp. at various points. ● Pressure gauge to measure discharge pressure. ● Energy meter to measure input power. ● Orifice with water manometer to measure quantity of air sucked in. ● A detailed user manual
10	Pelton wheel turbine test rig	● 3 phase 5 HP pump of reputed make like Crompton/Godrej/G.E./Kirloskar. The tank of stainless steel with minimum capacity of 200 litres. ● The turbine output 1HP. ● Loading Cast Iron brake drum ● Channel loading frame with screw rod and 2 No's spring balances. ● MS Pipe of 3mm thickness welded with flanges and gate Valve ● Pressure gauge 0 to 4 Kg/cm^2 ● Panel board to main switch and starter ● A detailed user manual

Special Terms and conditions

- The bidder should submit the proof that the manufacturer manufactures the equipment/apparatus as per the required testing standards BIS/ ASTM standards.
- The bidder should submit the NABL accredited lab testing and calibration certificate for the scope of the experiments to be performed on the machine.
- The bidder should provide details of service center and information on service support Facilities/escalation service matrix that would be provided after the warranty period.

- The bidder should furnish detailed technical description and original literature of the Machine.
- The bidder should arrange for pre dispatch inspection of the machine before the final delivery if suggested by the department/institution.
- The Manufacturer should have trained and qualified customer support staff with ample experience in the required field. The details of the same should be provided.
- The bidders should submit the proof of supplying the required items to the reputed institutions like IIT, NIT and other TEQIP III funded colleges in the last three years.
- The bidder should provide undertaking regarding installation/commissioning, and after sales service of the instruments and training/ demonstration to at least two persons of the Lab/Department of the institution.
- Certificate to the effect is required to be submitted by the bidder undertaking that the "price quoted is not more than the cost of the equipment (with same / similar specifications)" which was sold to other Govt. organizations, Universities and institutions during last one year.

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

Date: _____

To:_____
_____

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

Gross Total Cost (A+B): Rs. _____

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. ———————— (Amount in figures) (Rupees ———— ————amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of ———————— months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

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