ਆਈ. ਕੇ. ਗੁਜਰਾਲ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਜਲੰਧਰ, ਕਪੂਰਥਲਾ
I. K. GUJRAL PUNJAB TECHNICAL UNIVERSITY JALANDHAR, KAPURTHALA
DEPARTMENT OF PHYSICAL SCIENCES

Ref. No. IKGPTU/PS/1825 **For Website** Dated 22/02/2019

By Registered / Speed-post

M/S. . . . . .
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Subject: Quotation for Mechanics of Solids Lab equipment/setups at IKGPTU, Main Campus

Dear Sir/Madam,

University intends to purchase the equipment/setups for the Mechanics of Solids Lab in Department of Physical Sciences by inviting sealed quotations. The supply order will be placed to the firm offering the lowest rates equipment/setup wise. Therefore, you are requested to send the sealed quotation by quoting lowest rates (inclusive of all taxes, govt. levied duties, etc.) through registered/speed post or by hand. Please subscribe on envelop **"Quotation for procurement of setups for Mechanics of Solids Lab in Department of Physical Sciences"** and **to be opened by committee only**. The quotations must reach in the office of **Head of Department, Department of Physical Sciences, CB-III, I.K. Gujral Punjab Technical University, Jalandhar - Kapurthala Highway, VPO - Ibban, Kapurthala-144603,** upto 3 P.M. on March 18, 2019. Quotations will be opened in the office of Head of Department, Department of Physical Sciences at 4.00 P.M. on the same day. The vendors or their representatives may be present at the time of opening of the quotations. If Government of Punjab/IKGPTU declares holiday on March 18, 2019, quotations will be opened on the next working day. Specification of items are as per Annexure-I.

Terms and Conditions:

1. Bidder is at liberty to quote rates of one or more setup(s)/item(s)/make(s) etc. There is no compulsion to quote the rates of all setup(s)/item(s)/make(s), etc.
2. The firm having GST number need only apply.
3. Any quotations other than the specifications mentioned will not be considered.
4. Bidder should quote the rates inclusive of two years comprehensive warranty.
5. University reserves the right to buy/not to buy/increase/decrease any of the setup(s) quantity.
6. The items are to be delivered at Department of Physical Sciences, CB-III, I.K. Gujral Punjab Technical University, Jalandhar - Kapurthala Highway, VPO - Ibban, Kapurthala, within 28 days of issuance of the supply order.
7. No advance payment will be made.
8. University will not be paying anything extra as the quotations invited are inclusive of all taxes/Govt. levied duties/transportation charges etc.
9. The payment will be released only after the receipt of satisfactory report from the Department of Physical Sciences in terms of successful installation and demonstration of supplied equipment by the concerned vendor.

HEAD
Department of Physical Sciences
Mail id: physicalsciences@ptu.ac.in

"Propelling Punjab to a Prosperous Knowledge Society"

Annexure-I

Following are the specification of the equipment required for the Mechanics of Solids Lab in the Department of Physical Sciences.

Sr. No.	Name of Experiment	Technical Specifications	No of Units
1	Setup to determine the height of an object using sextant.	• Sextant in standard pattern: 160 mm radius made from a strip of stainless steel or metal inlaid in the circular form • Stand for sextant with brass fitting	3
2	Setup for Flywheel	• Fly Wheel with digital counter consist of cast iron wheel of about 20 cm in diameter and 4.4 cm thick and steel spindle • Slotted Weights 500 gmx5	2
3.	Setup for simple pendulum	• Simple pendulum of brass/metal bob of 1" diameter with heavy metallic base and clamping stand • Thread of different lengths flexible and weightless	2
4.	Setup for compound bar pendulum	• Compound Pendulum: Brass, and stainless steel bars (one each) of dimensions 100 cm with a number of equidistant holes drilled along its length at equal intervals of 5 cm, two removable knife edges passing through holes, with wall bracket • Reading Telescope of aperture 25mm and focal length of 17.5cm, with heavy metallic stand having pillar of 18" length of 15mm diameter, brass metal tubes for telescopes	2
5	Setup to determine the Young's Modulus of a Wire by Optical Lever Method	• Optical Lever: Optical lever work 40mm diameter plain mirror mounted on a metallic arc. The arc is mounted on a aluminium metallic base with two fixed legs and one levelling screw • Laser diode: solid state semiconductor diode laser to produce an intense beam of light at a wavelength 635-670nm for red colour with mount mount. Power supply with operating voltage 3V and Optical power 3-5mW • 1 Cu wire attached to micro-meter pivot • Hanging masses not less then 300gm	2
6.	Setup to determine the Elastic Constants/Young's Modulus of a Wire/ Copper by Searle's method.	• Rigidity apparatus which consist of 30cm long wire under test is connected to two brass rods about 30 cm long at their mid points by two screws fitted at the ends of the wire. The rods are suspended from hooks. • three test wires and connecting screws • Stand for Rigidity Apparatus • Thread, Candle, and Match Box	2
7.	Setup to determine the Modulus of Rigidity of a Wire by Maxwell's needle	• Maxwell's Vibration Needle setup: consists of a hollow cylinderical brass tube is 40cm, diameter 18~20cm, and graduated with scale divided in millimetres, open at both ends provided with a torsion head, a plane mirror fixed at in the middle, two solid brass cylinders and two hollow brass cylinders, all of same length 10cm long to fill the hollow tube completely, with stand • Copper wire of 10 meter length & suitable thickness • Reading Telescope of aperture 25mm and focal length of 17.5cm, with heavy metallic stand having pillar of 18" length of 15mm diameter, brass metal tubes for telescopes	2
8	Setup to determine the Modulus of Rigidity of brass using Searle's Method	• Young's Modulus Apparatus: consists of two iron/brass frames connected by a link. The frames are fitted with self centering chucks. An accurately graduated micrometer screw to read 0.01mm is fitted on a frame. One end of a sensitive spirit level is pivoted to one of the frame, the other end on the points of a micrometer screw is fitted in other frame. Complete with iron/brass C.P. Chucks, cast iron ceiling attachment and torsion weight	2

9	Setup to determine determine g by Kater's Pendulum	• Kater's Pendulum: consist of steel/ brass/ stainless steel rod of 120 cm long and 1 cm diameter with adjustable knife edges • Two Metal weights (cast iron) 7.5*3.75 cm and 3.5*3.75cm made to slide along the bar • Stand for kater's pendulum with approximate height 50~60 inches	2
10	Setup to determine g and velocity for a freely falling body using Digital Timing Technique	• Setup for digital timing technique consist of: Electronic timer unit with four 4 mm sockets, two for gates and another two for solenoid and a toggle switch for release and catch the ball • Heavy retort stand with two base boards. One is solenoid holding base of size 149x97x113 mm providing with two banana sockets of 4mm. Another base connected to retort stand of steel base on which the ball is dropped having base of size 115x60x2 mm. As well as switch is positioned on release, their, breaking the contact between solenoid and ball is dropped. • Two steel ball of diameter-12mm and 18mm	2
11	Setup to study the Motion of a Spring and calculate (a) Spring Constant (b) Value of g and (c) Modulus of rigidity	K Constant Spring Apparatus • A spiral spring of 15mm diameter and 10cm length • Rigid clamp stand • half meter scale fixed vertically in the same stand • Slotted weight (50×5gm set)	2
12	Setup to find the moment of inertia of an irregular body about an axis through its C.G. with the help of torsional pendulum.	• Moment of Inertia Table: It consists of an aluminium disc of approximately 6" diameter with a groove. The circular aluminium disc supports five semicircular masses which just fit into a groove, concentric with the circumference. It can be suspended by a steel wire pivoted at the centre of a long frame work, provided with circular base which is also fitted with leveling screws. Supplied with four different shapes of masses (Rectangular, Square, circular and triangular) • Spirit Level 2"	2
13	Accessories	• Stop Clock with least count 1 second • Stop Clock with least count 0.1 second • Digital Balance with least measurement 1mg, max=1~2kg • Vernier Caliper: Stainless steel chrome plated, metric scale in millimeter for 12 cm and 10parts, Vernier constant of 0.1mm and Measuring range 125mm/5inch • Screw gauge - 30 X 1mm • Measuring tape 10 meter long	5 5 3 5 5 5