



Central University of South Bihar

(A Central University established under Central Universities Act 2009)
Camp Office: BIT Campus, P.O.: B. V. College, Patna – 800014 (Bihar)

[Formerly Central University of Bihar, and since changed under the Central Universities (Amendment) Act, 2014]

Extension Notice

Tender Ref. No. :CUSB/S&P/Chem/Tender/35/2016-17, Dated 01/02/2017

Sub: Supply and Installation of Lab Equipment.

Refer to our tender as published on CPP Portal and on our website bearing No. – **CUSB/S&P/Chem/Tender/35/2016-17, Dated 01/02/2017** regarding **Supply and Installation of Lab Equipment**. The last date of submission of the tender is extended till **08/03/2017 till 04 p.m** with revised specifications.

Bidders who have already submitted their bid are at liberty to replace their bid as per revised specification if they so desire.

**Sd/-
Registrar**

Annexure I: Fume Hood

Description
Stainless Steel body Fume Chamber should have two parts.(i) Storage Base Cabinet. (ii) Upper working Chamber. Double wall construction with monkey grid, water, gas , electrical points and Granite work top.
Design Structure:- Aerodynamic, Floor mounted.
Size: 6ft. length x 3ft. depth x 7.5ft. height
Construction (Exterior): 316 grade Stainless Steel Angles structure. Outer wall should be fully covered with 316 Stainless Steel sheet.
Construction (Interior):- Chemicals & Heat resistant, Fire retardant , Smooth Finish Easily Cleanable Panels made out of 6 mm thick non metallic non corrosive PP/FRP sheet or phenolic-resin based compressed laminate integral work walls. joints should be sealed by Silicon Rubber. One 6 inches square monkey grid net or grids made up of Epoxy Rods for holding apparatus made of S. S. 12 mm round welded pipe will be fixed through back wall inside the chamber.
Base Storage Cabinet:- It should have a special design to receive the fume hood at its top. Complete Stainless Steel structure to support Fume hood. It should have two vertical compartments with two double skin hinged doors with lock and key facility. The interior should be lined with Chemical-resistant, Heat resistant, Fire retardant, non-corrosive material such as PP/FRP sheet or phenolic-resin based compressed laminate. For storage of corrosive acids/chemicals, appropriate ducting and ventilation should also be provided in the cabinet.
Door (shutter) :- Concealed type counter balanced single frame with 6mm thick glass fitted door.Smooth & light sash operation. Clear open able. It should have two type of sliding facility (Horizontal & Vertical) and maximum opening system. It should be fixed with S.S. Cable, Plastic Channel and Nylon pulley. Designs with chain-drive mechanism are also acceptable.
Motor:- 1H.P.2800 rpm three phase 440 volts “Krilosker/ Bharat Bijile” Brand motor.
Blower:- Centrifugal blower of Delving type Corrosion resistant FRP body , FRP impeller. it should be capable of delivering the flow rate against all duct losses. The fans should be robust in construction and suitable for Continuous duty operation. There should be one blower for each fume hood.
Suction:- 1200 to 1500 Cfm
Baffle arrangement:- Interstitial 3-point suction system(for light, normal& heavy fumes) with baffle for smooth and immediate exhaust of fumes.
Ducting:- Rigid and flexible PVC duct 15cm dia pipe length up to 15-20 ft.
Temperature Withstand:- 120 °C
Flooring:- Working table top should be covered by 18 mm thick ‘jet’ black Granite stone .One small Stainless Steel Sink size- 10” x 8” with remotely operated water valve, one gas valve and one compressed air valve.. Colour coded knob (as per DIN 12920 norms) . PP sinks can also be offered.
Electrical Facility:- One vapor proof 40 Watt Tube light set, Four/Two Nos 15amp or LED lamps of equivalent luminosity. Socket and Switch, one MCB and one motor starter. Cable entering port should have easy access of cables from fume hood to electrical sockets.
Airflow Type:- Air is introduced automatically Aerodyne type below the Sash through multi channel slots in airfoil, when the sash is closed.

Servicing:-All parts of Fume Chamber should be assembled by Nut & Screw such that In future any defective part can be easily replaced without major dissemble of the main structure.

Note: Bidders are advised to visit the site to familiarize themselves with the site conditions.

Annexure II: Laboratory Work Bench (Chemistry)

General Description – The steel frames, panels & shutters should be made from Prime Quality CRCA (Cold Rolled Close Annealed) Steel. All cabinet bodies should be of over closing design with fully knock down construction and having a main and add on construction to avoid any gaps in between two units. All units should be interlocking type construction to form a rigid integral structure. These units should be supported on wide base high grade plastic legs of diameter 40 mm. These legs should be height adjustable with a range of +/- 50 mm. Each unit should have a locking **facility with 180° and 10 lever cam lock mechanism.**

Specifications

- **Overall Dimensions : 15 ft (length) × 5 ft. (width) × 3.5 ft. (height)**
(approximate values)
- **Surface Treatment:** The complete M.S. material of cabinet to be pre – treated (degreased, Zinc Phosphated) and epoxy powder coated for better corrosion resistance. The thickness of powder coat to be 50 microns, which passes the test of Salt Spray for 1000 hours and having the Scratch Hardness of 3Kgs.
- **Cabinet frame:** Frame is a combination of 1.2 mm horizontal stiffeners and 0.8 mm vertical panel of CRCA MS sheet.
- **Cover panels:** End side panel, false panel and back panel of 0.8 mm thick CRCA MS sheet.
- **Shelves and Drawers:** CRCA shelves should have a load carrying capacity of 40 kg. The overall load carrying capacity of cabinet should be 80 Kg of UDL (40 kgs. on each shelf and 40 kgs. on bottom). The overall load carrying capacity of drawer should be 40 kgs. of UDL for a pair of ball slide.
- **Door Pulls:** Flush pulls for doors shall be of PVC, providing a recessed finger grip. Finger holes or slots machined into doors will not be acceptable.
- **Drawers:** The outer drawer and door head shall have plastic inserts with half round post forming to eliminate sharp raw edges of steel. Drawer and door, when closed, shall be over closing on the cabinets.
- **Slides:** High precision Double Extension Ball slides which enable the drawer to open fully. They should have passed more than 55000 cycles of Drawer Cycle test (forward & backward movements) with a 15kg load in the drawer.

- **Shutters:** Metal Shutters should be double walled and made up of 0.8mm thick CRCA MS sheet with profil inserts and 40-50 microns pure epoxy powder coated. It should have good scratch resistance, reasonable chemical resistance to acids, alkalis, organic solvents and heat resistance properties.
- **Hinges:** Hinges shall be made of MS with Cathode electrode deposition for better corrosion resistance. The hinges should be spring loaded with 105 degree opening. Welding of hinges to door or case will not be accepted. Doors less than 36" in height shall be hung on one pair of hinges, and doors over 36" high shall be hung on 3 hinges in case of under storage cabinets.
- **Positive Catch:** All units to be with self-closing type spring loaded hinges. The hinge should close the doors once left at certain angles. No additional catch will be allowed in the units.
- **Shelf supports:** Shelf support clips shall be of nickel-plated steel.
- **Legs:** All Legs to be made of plastic with a load carrying capacity of 450 kg/each. All units to be on plastic legs for better clean ability of the lab area. Fully enclosed flush design will not be acceptable. Leg should be able take evenness of the floor. It should have at least 50mm adjustability.
- **Skirting:** It should be made up of Poly Vinyl Chloride that is light in weight & is not affected by water that comes in contact while cleaning the floor.
- **Support Bracket:** Granite /Reagent Support Brackets serve the purpose of supporting the granite with carrying the service lines. It should be made of 2 mm CRCA MS sheet with epoxy powder coating.
- **Configuration of Storage Units:** The storage units should be available in three configurations:

- ☐ Storage unit with one/two shutters and one adjustable shelf
- ☐ Storage unit with one drawer, one/ two shutters and one adjustable
- ☐ Storage unit with 4 drawers (only with 450 mm width unit).

Sink Units – The sink unit should consist of a base cabinet, S.S. & a faucet. The raw material used for a base cabinet should be 0.8 mm thick CRCA M.S. Sheet. The complete M.S. material of cabinet should be pre-treated (degreased, Zinc Phosphated) and epoxy powder coated (Ivory colour) for better corrosion resistance. The thickness of powder coat should be 45-50 microns, which passes the test of Salt Spray for 1000 Hours and having scratch hardness of 3 kg.

Sinks should be Polypropylene Molded Sinks - Made up of 5 mm thick high density and elastic poly propylene with good resistance to organic solvents. Standard bowl size (L x W x D) is 500 x 400 x 300 mm. Sink unit should also have 3-way (2 Straight + 1 Swan Neck) water faucet made up of Brass and with Epoxy powder coatings.

Reagent Shelves – Reagent Shelves to be of complete modular design consisting of horizontal 2 stage storage shelves. The end vertical support should be 0.9 mm & horizontal shelves of 0.8 mm thick CRCA M.S. Sheet surface to be PP Laminated 1 mm thick

of approved shade. Each shelf should have a load carrying capacity of 30 kgs. of UDL for the length of 1000 mm. Each vertical panel shall be assembled with horizontal shelf with M6 fasteners having Zinc-Cobalt coating for better corrosion resistance. The complete M.S. material of cabinet to be pre-treated (degreased, Zinc phosphated) and epoxy powder coated for better corrosion resistance. The thickness of powder coat to be 45-50 microns, which passes the test of Salt Spray for 1000 hours and having the Scratch Hardness of 3Kgs.

Switches and Sockets – It should be made of High gloss virgin grade engineering thermoplastics to impart a defect free surface. It should also impart excellent electrical insulation properties i.e. should not melt on heating or catches fire. Owing to this all electrical switches and sockets should be capable of handling higher currents and operating temperatures. Front plates should be able to be changed at any time with ease without disturbing the wiring to quickly and economically match changes in the surroundings.

Worktop

- **Granite** – It shall be 18mm thick jet black granite with edges having round profiles of 5 mm radius on top side. The overhang should be 25 mm at the front side. The backing material used for granite should be a neoprene mat of 6 mm thickness.
- **Gas Valves** All gas valves for regular lab gases should be made of powder-coated brass and should have standard needle valve and push and turn type arrangement for all burning gases to be supplied. All supplied valves to clear the following pressure test conditions: Gas Fittings – 7 bar.

Note: Bidders are advised to visit the site to familiarize themselves with the site conditions.



(photograph: indicative only)

Make: Godrej or equivalent

Annexure XIII: Digital Polarimeter

Specifications:

1. **Principal :** Computer controlled automatic digital polarimeter for measurement of optical rotation, specific rotation at variable wavelengths
2. **Light Source :** Tungsten Halogen Lamp or equivalent
3. **Measurement wavelength:** 589 nm,
In addition, there should be an option to choose other wavelengths in the range of 365 nm to 600 nm as per the desired application.
4. **Measurement Angular Range:** ± 90 deg
5. **Measurement Accuracy :** ± 0.01 or better for the entire measuring range
6. **Resolution :** 0.001deg or better
7. **Detector :** Photomultiplier tube
8. **Aperture :** 1.8, 3 and 8 mm
9. **Automatic Recognition:** Light source, filter, cell holder
10. **Readout modes :** Optical rotation, optical specific rotation, Concentration sugar scale (Z), optical purity
11. **Temperature Control Range :** 0-40 deg C Temperature Accuracy: $\pm 0.1^{\circ}\text{C}$

An in-built peltier-temperature control for automatic electronic heating and cooling would be preferred.. Alternatively, thermostated cell holder alongwith circulating water bath can also be provided.

12. **Power requirement :** AC 240V, 50 Hz

13. Sample Compartment:

- (i) V-Shape Cell Holder
- (ii) Cylindrical quartz cell

Or,

The sample cells should be supplied with path length of 2.5 mm, 100 mm, observation tube of one each.

14. Equipment specific software should include the following :

Measurement modes : Polarimeter measurement Optical rotation,

Readout modes : optical Specification rotation,
concentration sugar scale Z, optical purity

Statistical calculation : Average value, standard deviation, coefficient of variation

Readout modes : Optical rotation, optical specific Rotation

Data processing : Reaction rate calculation

15. **Interface:** USB or RS232

16. **Accessories:** Computer (4GB or higher RAM, Intel Core-i3 processor, 1 TB HDD, Microsoft Windows-10, DVD, TFT, Keyboard and Optical Mouse with instrument

controller) and Laser Printer (Black and white), UPS, 1 KVA should be supplied with warranty.

Annexure XIII: UV-Vis Absorption Spectrophotometer

Specifications

Computer controlled double beam, compact UV VIS absorption Spectrophotometer, operated through Window 10.. The instrument should have facility for automatic accessory recognition. The instrument must be with single push button start facility and spectrophotometer must have high data collection facility .

UV-Vis Absorption spectrophotometer Specifications:

Wavelength Range:	190 - 1100 nm or higher
Optics:	Double beam type, Single monochromator with 1200 lines/mm Grating or better
Spectral Bandwidth:	1 nm in UV-VIS range
Scan Speed:	2000-4000 nm/min or better
Light Source:	D2 and Halogen Lamp
RMS Noise :	0.00004 Abs
Wavelength repeatability	± 0.1nm
Wavelength Accuracy	± 0.2 nm
Photometric range	-3 ~ 3 Abs
Photometric Modes	Abs, %T, %R
Photometric accuracy	± 0.0015 Abs [0 to 0.5 Abs]
Stray Light	0.02% T
Detector:	Silicon Photodiode Detector
Sampling System:	Standard Liquid Cell
Instrument Control:	By computer through USB port
Software:	<ul style="list-style-type: none">• Spectrum Measurement• Spectral Analysis• Multiple Instrument Control• System Validation• Self Diagnostic Routines• Publication quality presentations• Automated macros command option• PLS and CLS quantitative analysis

Software Specification

Operating System : Windows 10

Data Acquisition Modes : Spectrum, Kinetics and Photometric , Band Gap analysis software with detail facility

Spectrum Mode:

Comparison of multiple spectra/relative processing*2 Save all processed data with original data set including a history of all manipulations. Spectrum enlargement /shrinking, auto scale and Undo/Redo of these operations Annotation on spectrum screen Normalization, Point

Pick, peak/valley detector, area calculation

Transformations 1* - 4* derivatives, smoothing reciprocal, square root, natural log, logarithm power, Abs to %T conversion, and exponential,

Photometric (Quantitation) mode :

Single wavelength, multi wavelength includes 1, 2 or 3 wavelengths), Spectrum quantitation (peak, maximum, minimum, area, etc. for Specified wavelength ranges) Multi-point, single point, K-Factor calibration curves (1st, 2nd, 3rd order Function fits, pass-through-zero specification) Photometric processing with user-defined functions (+, -, x, ÷, Log, Exp, Etc. functions, including factors)

Accessories to be offered separately:

1. Constant Temperature Cell holder with Stirrer, along with a circulating water bath to maintain the temperature in the range of 5 °C to 90 °C
2. Quartz cuvette, 10 mm, 3.5 ml- 2 Pair
3. Glass Cuvette, 10mm, 3.5 ml- 2 Pair
4. UPS (1 kVA), Printer and a Computer (Desktop, 500 GB HDD, 4 GB RAM)

Price has to be including clearing at Kolkata custom and transport it to Gaya campus. Necessary documents will be provided by the University authority.

TECHNICAL QUERIES FOR LAB PROJECT					
Sr No.	Page No	Tender Section	Tender Requirement	odrej Remarks	Response from Dept.of Chemistry
1	24	Annexure I	<p>Stainless Steel Body Fume Chamber (exterior)</p> <p>and interiors made from Chemicals & Heat</p> <p>resistant, Fire retardant, Smooth Finish Easily</p> <p>Cleanable Panels made out of 6mm thick non</p> <p>metallic non corrosive FRP sheet</p>	<p>We offer Fume hoods in Stainless Steel interiors for Radioisotope applications. For chemical</p> <p>applications, we suggest to offer fume hoods in Galvanised Iron with powder coating. The</p> <p>interiors of the fume hood is lined with 6 mm thick phenol-based compressed laminate that</p> <p>is Chemicals & Heat resistant, Smooth Finish Easily Cleanable Panels</p>	<p>Our requiremnt is stainless steel body with interiors lined with Chemicals & Heat resistant,</p> <p>Fire retardant, smooth finish easily cleanble panels. The panel could be made up of 6 mm</p> <p>thick nonmetallic, non-corrosive FRP sheet or phenol-based compressed laminate.</p>
2	24	Annexure I	<p>One 6 inches squire monkey grid net for holding</p> <p>apparatus made of S. S. 12 mm round welded</p> <p>pipe will be fixed back wall inside the chamber</p>	<p>We offer grid made from Epoxy Rods. This is a better solution as there are no possibilities of</p> <p>corrosion since the rods are made from solid non-corrosive material</p>	<p>Grids made up of epoxy rods are also acceptable</p>

3	24	Specifications: Fume Hood - Annexure I	Base Storage Cabinet - Complete Stainless Steel structure	<p>We offer under-storages in Galvanised Iron with powder coating for equipment storage</p> <p>while for storage of corrosive acids we offer ventilated storages made completely from polypropylene which is the best solution</p>	<p>Stainless steel body with interiors lined with Chemicals & Heat resistant, Fire retardant</p> <p>material is required. Interior lining of polypropylene is also acceptable.</p>
4	24	Specifications: Fume Hood - Annexure I	<p>Door Shutter: It should be fixed with S.S. Cable,</p> <p>Plastic Channel and Nylon pulley.</p>	<p>The wire-rope mechanism tends to fail over a period of time because of friction in the pulley</p> <p>with the rope. Instead we have evolved our design to offer chain-drive mechanism which avoids such breakage hazards</p>	<p>Designs with chain-drive mechanism are also acceptable</p>
5	24	Specifications: Fume Hood - Annexure I	<p>Ducting: made from PVC</p>	<p>We offer ducts made from 3mm PP + 3mm FRP which is a better and most widely accepted</p> <p>solution in exhaust of chemical hoods</p>	<p>Ducts made of PP/FRP sheet are all acceptable.</p>
6	24	Specifications: Fume Hood - Annexure I	<p>Flooring: small SS Sink</p>	<p>We offer a small PP Sink which has higher corrosion resistance and because of its color it blends aesthetically with the worktop</p>	<p>PP sinks are also acceptable</p>

7	24	Specifications: Fume Hood - Annexure I	Electrical Facility: One vapor proof 40 Watt Tube light set	We offer LED lamps of Philips make that offer equivalent luminosity and at the same time are more energy efficient and eco- friendly	LED lamps are better alternative to tubelights, hence this is acceptable.
8	24	Specifications: Fume Hood - Annexure I	Blowers	<p>The requirement is for 4 fume hoods. How many blowers are required/what is the clustering</p> <p>scope? Also, it has been mentioned that ducting upto 10 feet is to be considered which is</p> <p>too less. We request you to please share the exact duct path so that the quote offered by us</p> <p>is accurate as per site requirement</p>	<p>One blower for one fume hood is required. Ducting path cannot be defined at the moment</p> <p>because our building is under construction. It will also depend on the location of the room</p> <p>within the building. Tentatively, 15-20 ft of ducting would be required.</p>
8	25	Lab Work Benches (Chemistry) - Annexure II	Overall Dimensions: 15 ft L x 5 ft D x 3.5 ft H	<p>We offer workbenches that are of 3 ft Ht and is the globally accepted standard for standing</p> <p>height workbenches</p>	3 ft height is acceptable.
				Normally skirting near the floor is a additional option that is not a part of the standard	

9	25	Lab Work Benches (Chemistry) - Annexure II	Skirting	<p>offering. As a part of the standard offering the cabinets are supported on metal legs of</p> <p>around 80-100 mm height and the base is left open. Kindly conform if skirting is required</p> <p>additionally</p>	yes, Skirting should be provided
10	26	Lab Work Benches (Chemistry) - Annexure II	Skirting	<p>Normally skirting near the floor is a additional option that is not a part of the standard</p> <p>offering. As a part of the standard offering the cabinets are supported on metal legs of</p> <p>around 80-100 mm height and the base is left open. Kindly conform if skirting is required</p> <p>additionally</p>	yes, Skirting should be provided
11	26	Lab Work Benches (Chemistry) - Annexure II	Sink Units: Sink made from SS	<p>We can offer SS Sink but for chemical application polypropylene PP sinks will be more</p> <p>suitable and without and price difference. Kindly confirm if PP sink can also be offered</p>	pp sinks are also acceptable

		Lab Work Benches (Chemistry) -	Image shown is of C-Frame design while specs	Since the photograph is indicative only we shall offer design as per the technical	
12	27	Annexure II	are of floor-based cabinets design	specifications	Please follow the specifications as given in details, the photograph is indicative only

Response to queries by Citizen Industries, Ahmedabad, Gujarat

General Queries

1. In the tender form located on Pg. No 21 and 22 of the tender document, clause no 6 is mentioned as “Certified that the bidder is: A sole proprietorship firm and the person signing the bid document is the sole proprietor/ constituted attorney of the sole proprietor”. We would like to inform that we, i.e. Citizen Industries is a proprietorship firm. In support to this, shall we submit the “authorization letter to sign the tender and its document” duly signed by the proprietor?

Response: Documents of sole proprietorship to be furnished with seal & signature alongwith self certification from owner.

Fume Hood Queries (Sr No 1 in Annexure – IIA):

1. **Construction (Interior):-** As mentioned in tender document, Chemicals & Heat resistant, Fire retardant, Smooth Finish Easily Cleanable Panels made out of 6mm thick nonmetallic non corrosive FRP sheet integral work walls. But we would like to propose the Interior construction in Solid lab grade phenolic resin construction (Imported Make). These panels are in rigid construction with smooth finish and easy clean ability. Also it is best fire retardant, nonmetallic & non corrosive material. So kindly allow us for the same.

Response: Yes the Phenolic resin based construction is also acceptable.

2. **Blower for Fume Hood:** Kindly confirm the quantity of blower required for Fumehood. Also, confirm the cluster whether we have to choose one blower for one no of Fumehood or one blower for more than one no of Fumehood.

Response: One blower per Fume Hood should be supplied

Laboratory Work Bench Queries (Sr No 2 in Annexure – IIA):

1. The reference photo given in the tender document of laboratory bench is in “C” Frame design but there is no any type of “C” frame technical specification/ design given in the tender doc. So kindly clarify the same.

Response: The photograph is indicative only. Please follow the detailed specifications mentioned in the tender inquiry.



2. **Quantity** : The quantity/type of modules as required in the work bench is not mentioned anywhere in the tender documents. So we will quote according to the given reference photo of lab bench only.

Response: The photograph is indicative only. Please follow the detailed specifications mentioned in the tender inquiry.

Chemical Storage Cabinets Queries (Sr No 8 in Annexure – IIA):

1. As per our standard practice, in chemical storage cabinets required exhaust ducting to exhaust the fumes which generates inside the cabinet. But there were no any type of blower description and ducting quantity given in the documents. Kindly clarify the same

Response: The chemical storage cabinet (Sr. No.8) is to be provided without the exhaust system. However, the base-cabinet to be provided in the Fume Hood should be ducted and fitted with blower to exhaust the fumes

A handwritten signature in blue ink, appearing to read "Aniya Rajan". The signature is fluid and cursive, with a long horizontal stroke at the end.