

**TENDER DOCUMENT FOR SUPPLY AND INSTALLATION OF
LABORATORY EQUIPMENTS/INSTRUMENTS TO
MIZORAM STATE POLLUTION CONTROL BOARD**

Tender Notice No.E.55055/Accts./51/2019-MPCB

:

Dated 17th March 2022



Mizoram State Pollution Control Board

New Capital Complex, Thlanmual Road, Khatla, Aizawl, Mizoram-796001
Ph.No.0389-2336173/2336590 Fax:0389-2336591 Email:mpcb@mizoram.gov.in
Website:<http://www.mpcb.mizoram.gov.in>

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MIZORAM STATE POLLUTION CONTROL BOARD
AIZAWL : MIZORAM

0.1. SCHEDULE OF TENDER

Tender Notice No.E.55055/Accts./51/2019-MPCB dated 17th March 2022 for supply and installation of laboratory equipments/instruments to Mizoram State Pollution Control Board

<i>Last Date of Submission of Tender</i>	: 30 th March, 2022 (up to 12:00 Noon)
<i>Date of opening of Tender</i>	: 30 th March, 2022 at 2.00 P.M.
<i>Type of Tender</i>	: 2 Bid System
<i>Tender Fee</i>	: Rs. 1000/- (non-refundable)
<i>Earnest Money Deposit(EMD)</i>	: Rs. 25,000/- (refundable)



No.E.55055/Accts./51/2019-MPCB

MIZORAM STATE POLLUTION CONTROL BOARD
AIZAWL : MIZORAM

Dated Aizawl, the 17th March, 2022

0.2. TENDER NOTICE

Sealed tenders are hereby invited from the bona fide manufacturers/authorized dealers/suppliers for supply and installation of laboratory equipments/instruments to Mizoram State Pollution Control Board. Tenders should be submitted to the undersigned on or before **12:00 Noon of the 30th March, 2022** and shall be opened on the same day at **2:00 P.M**

The Tender document containing terms and conditions, specifications of the equipments/instruments and formats etc. is available/downloadable at the office's website <https://mpcb.mizoram.gov.in/page/tender>

A handwritten signature in blue ink, appearing to read 'C. Lalduhawma', with a horizontal line underneath.

(C.LALDUHAWMA)
Member Secretary
Mizoram Pollution Control Board
Mizoram New Capital Complex, Khatla
Aizawl, Mizoram-796001
Ph.: 0389-23316590/2336173
Email: mpcb@mizoram.gov.in



MIZORAM STATE POLLUTION CONTROL BOARD

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0.3. TERMS AND CONDITIONS OF THE TENDER

3.1. General:

- i. The bidders are required to go through the tender document thoroughly and to ensure compliance of all the instructions herein. Non-compliance of the instructions contained in this document may disqualify the bidders from the tender process.
- ii. Tender should be submitted in one sealed envelope duly superscribed on the cover with “**Supply and installation of laboratory equipments/instruments to Mizoram State Pollution Control Board**” and addressed to:

The Member Secretary,
Mizoram Pollution Control Board,
Mizoram New Capital Complex,
Thlanmual Road, Khatla,
Aizawl, Mizoram-796001.

- iii. The sealed envelope should contain 3 sealed envelopes marked **A, B, & C** as prescribed below:
 - a) **Envelope A** containing duly filled up and signed Application form as per the proforma, given at **Annexure-1** enclosing valid up-to-date Tax clearance certificate, duly attested Photostat copies of valid GST registration and PAN certificate and Tender fee of Rs. 1000/- as well as Earnest Money Deposit (EMD) of Rs. 25,000/-, both in the form of Demand Draft in favour of Member Secretary, Mizoram Pollution Control Board, Aizawl, Mizoram
Note: Original Certificates should be produced at the time of opening of the quotations, if demanded.
 - b) **Envelope B** containing the Technical Bid along with the supporting documents.
 - c) **Envelope C** containing the Financial Bid.
- iv. The tender should reach the office of the Mizoram Pollution Control Board on or before 12:00 Noon of 30th March 2022. Late or delayed tender shall not be entertained in any case and the Board does not assume any responsibility on postal delay/non-receipt in case of submission of the tender by post.

- v. Bidders may submit tender through registered post or by dropping in the Tender Box, placed at the office of Mizoram Pollution Control Board. Tenders not in proper sealed cover or received telegraphically/E-mail/Fax will not be entertained.
- vi. The Bid shall be treated as a 2 Bid System. The Technical Bid will be considered for applicants whose Tender Fee, Earnest Money Deposit (EMD) and other documents enclosed with Application form (Annexure-1) are found in order. The bid shall be opened on 30th March 2022 at 2:00 P.M. at the office of Mizoram Pollution Control Board in presence of the bidders or their representatives who desire to be present.
- vii. Tender Fee is non-refundable whereas the Earnest Money Deposit in respect of the unsuccessful bidder will be released without any interest after selection is finalized. Selected Firm must supply the materials within the specified time, failing which the Earnest money will be forfeited alongwith cancellation of supply order, otherwise, EMD shall be returned without any interest within one month of the successful installation and commissioning of the supplied items.
- viii. The bid and all the related correspondences and documents must be written in **English** language, typed or hand written in indelible ink/ball pen.
- ix. All pages of the tender should be signed, stamped and dated. Corrections if any, should be made clear without overwriting and should be initialed. Note that the tender document is subjected to verification with the original document and if any discrepancy is found, the tender would be rejected.
- x. **Payment:** Full payment will be released after complete installation and commissioning of the instruments, to be certified by concerned in charge of the Laboratory of Mizoram Pollution Control Board and on submission of bills in duplicates, payment will be made through PFMS. There shall be no advance payment and no such request shall be entertained.
- xi. **Delivery:** Items should be supplied within 30 days from the date of issue of Purchase order. Failure to do so will amount to cancellation of the Purchase order.
- xi. **Packing:** The items have to be supplied in standard packaging to ensure its safe delivery in accordance with good commercial practices

- xii. If the supplied item is found defective or unsatisfactory or fall short of the specifications in the purchase order, the same will be replaced at the supplier's risk and cost. No freight and other charges for replacement will be paid by the Board.
- xiii. If any bidder violates and fails to fulfill any of the above mentioned requirements, his or her tender will be liable to be rejected at the time of opening of the tender.
- xiv. Acceptance of the lowest rate is not obligatory. The instruments shall be selected on the basis of its reliability and viability and after sales services etc., not only from the quoted rate and the Board reserves the right to reject any/all of the tenders without assigning any reason thereof.
- xv. The Board has the power to revoke the supply order for unsatisfactory performance or for any other reason any time during the contract.
- xvi. In case of any legal disputes and litigations arising out of this Tender Notice, the matter will be heard and settled in the court of law at Aizawl only.

3.2. Technical Bid:

- i. Technical bid should be submitted using prescribed Bid Format (Technical Bid) enclosed at **Annexure-2**. Bidders can bid for more than one item, however, bidders are required to submit separate tender for each instrument using separate sheets/pages, packed in separate envelope for each item quoted clearly indicating item code and name of the item on top of each bid.
- ii. Details of firm/company along with copy of registrations must be enclosed. In case of authorized dealers/distributor/supplier, certificate in prescribed format at **Annexure-3** from Original Equipment Manufacturers (OEM), on the same should be enclosed for participation in the said tender. Other documents such as performance certificates from clients, experiences, list of users etc., if any, may be enclosed.

Note: Original Certificates should be produced at the time of opening of the tenders, if demanded

- iii. **Specifications:** Bidders are requested to submit bid only if their offer strictly conform to the specifications prescribed by the Board. The bidding for the instruments having different specifications will be on the bidder's risk as the Board will not entertain such bids. At the same time it must be kept in mind that merely copying the Board's specifications in the tender or merely stating

'specifications as per Tender document' shall not be entertained. The product specifications must be supported by the printed technical leaflet/literature of the quoted model of the item and list of users.

iv. The placement of work order/purchase order will be according to technical evaluation and after consideration of its price worthiness.

v. **Installation and Commissioning:** The delivery, installation and commissioning of the instruments is the entire responsibility of the supplier. The items should be delivered to Mizoram State Pollution Control Board, MINECO, Khatla, Aizawl, Mizoram-796001 and within a time period of within 30 days & installation be completed within next 15 days. The installation and commissioning should be free of cost and trainings be provided to the concerned Laboratory staff without any charge. During warranty period, instrument must not be non-functional for more than three days from the date of reporting the non-functional of the respective instrument to authorized dealer. Otherwise the warranty period will be extended proportionally. The bidder should provide complete list of consumables required for operation and maintenance of the instruments along with the price list.

vi. **Annual Maintenance Contract:**

If Annual maintenance contract is offered for any instruments quoted, charges for the same beyond the warranty period must be quoted by the Bidder. A separate annual maintenance contract will be executed after completion of the warranty period.

vii. **After sale service:**

After sales service is most important and taken into consideration for evaluating and comparing bids. After sales service/maintenance capability, mitigation of risks or breakdown and replacement capability and nearest sales and support service centres and their plan to address issues about services, maintaining minimum service inventory etc. offered by the manufacturing company must be submitted by the Bidder.

viii. **Warranty :**

Warranty period for instrument quoted should be indicated which should not be less than twelve months from the date of successful commissioning of the instrument. During the warranty period, replacement of any part of equipment's or rectification of defects of works will be free of cost.

- x. **List of users:** Bidder must give details of identical or similar equipment, if any, supplied to Central Pollution Control Board or any other State Pollution Control Boards or educational institutions particularly North-eastern states during last three years along with copy of supply order/Performance certificate from them.

3.3. Financial Bid:

- i. Price bid should be submitted using prescribed Bid Format (Financial Bid) enclosed at **Annexure-4** and prices should be clearly quoted in terms of **Indian Rupees**, in figures as well as in words.
- ii. The prices must be quoted item-wise, that is, basic price, taxes, duties, installation, packing, freight and other charges.
- iii. The quoted price should be F.O.R Mizoram State Pollution Control Board, Mizoram New Capital Complex, Khatla, Aizawl, Mizoram - 796001
- iv. The quoted rates must be valid for 90 days from the date of submission of the tender.



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0.4. LIST OF EQUIPMENTS/INSTRUMENTS WITH ITEM CODE & QUANTITY

<i>Sl. No.</i>	<i>Item Code</i>	<i>Name of Equipment/Instrument</i>	<i>Quantity</i>	<i>Page No.</i>
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3.	03	Atomic Absorption Spectrophotometer with Flame	1	12
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10.	10	Dry and Weight Bulb	5	19
11.	11	Ekman Dredge	1	19
12.	12	Flame Photometer	3	19
13.	13	Flash Point Apparatus	1	20
14.	14	Flask Shaker	1	20
15.	15	Hot Plate (Digital)	2	20
16.	16	Ion Specific Analyser	1	21
17.	17	Kjeldal Apparatus	1	22
18.	18	Refrigerator	2	23
19.	19	Magnetic Stirrer with hot plate	2	23
20.	20	Micropipettes	10	23
21.	21	Orsat apparatus	1	24
22.	22	pH Meter	5	24
23.	23	Standard Weight Box	1	24
24.	24	Turbidity Meter	2	25
25.	25	UV-Visible Spectrophotometer	2	25
26.	26	Water bath: (Serological with 06 holes Digital controller with sensors)	3	25
27.	27	Water Purification System	2	26



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0.5. TECHNICAL SPECIFICATIONS OF EQUIPMENTS/INSTRUMENTS

Sl.No.1

Item Code: 01

Item : **Air conditioner (Window Type)**

Quantity: 2

Technical Specifications:

- Type& Capacity: 2 Nos. split type, 2 ton cooling only capacity Inverter AC, 5 star rating with an automatic timer. Separate Automatic Voltage stabilizer will be provided with each unit.
- The indoor units should be running alternately at an interval of four hours with timer control and the temperature inside the station should be maintained at 25°C inside during all the time including peak summer months.
- Cooling Capacity: 7000 W
- Star Rating: BEE 5 star Inverter with Cooper Coil
- Indoor Noise Level: 40-50 dbA (cooling)
- Control Type: Remote
- Compressor: Inverter
- Refrigerant: Eco Friendly
- Feature: filter clean Indicator, defrosting Sensor
- Power supply: 230 volts \pm 10volts AC and 50 Hz \pm 3%
- Standard Warranty
- Remote: LCD Wireless.

Sl.No.2

Item Code: 02

Item : **Ammonia Distillation Assembly**

Quantity: 1

Technical Specifications:

- Capacity: 500 ml
 - Ideal for batch production of high purity distilled water
 - Batch Distillation Assembly equipped with an interchangeable stoppered neck that facilitates addition
 - Flask; flat base with a delivery tube on the side
-

Sl.No.3

Item Code: 03

Item : **Atomic Absorption Spectrophotometer with Flame**

Quantity: 1

Instrument Composition:

- Atomic Absorption Spectrophotometer (FLAME/VGA) :

a) One set – System for Flame with D2 background correction facility.

Desirable: - Fast Sequential capability using hollow cathode lamps in the flame mode of operation, where all the elements (as mounted in the lamp holder) in a sample can be analysed in a single aspiration. The system should have an option for Furnace for future upgradation.

b) Unit of Burner for Flame (Air acetylene and nitrous oxide acetylene) : One set each

c) Vapour generation assembly (VGA): One set

d) Optical Double-Beam with Double Atomizer system with Facility of automated changeover from Flame to future Graphite Furnace upgradation to avoid any mechanical movement of the set up while changing from flame to furnace mode (Including Auto sampler of GF) (Simultaneously)

e) Future Ready Graphite furnace upgradation.

- **Technical Specifications**

a) Computer controlled with built-in flame emission mode

b) Wave length range: 180-900 nm wavelength or better

c) Sensitivity: Sensitivity at least 0.9 abs for 5 $\mu\text{g/ml}$ aqueous copper (Cu) standard solution with < 0.5 RSD or better

d) Detection Limit : Easily cover the drinking water standard as specified in IS 10500:2012 with respect to trace elements. Minimum detection limit for Arsenic & Mercury should 1.0 $\mu\text{g/L}$ & 0.1 $\mu\text{g/L}$ respectively or better.

- **Optics**

a) Double beam dual blazed/holographic Monochromator

b) Focal length: At least 250 mm focal length

c) Resolution: Grating 1800 lines/mm or more

d) Width : Automatic bandwidth of 0.2 to 2.0 nm or better.

e) Wavelength range: 185 to 900nm or better

f) Monochromator: Monochromator and prism 2D Spectrum or Grating with 1800 lines/mm blazed at 240nm or so with Reciprocal linear dispersion: 0.6 nm/mm or better

g) Sensitivity: Minimum absorbance of >0.9 Abs for 5ppm Cu (Copper)

h) Reciprocal Linear Dispersion 0.5 nm/mm at 200 nm

i) Spectral bandpass of 0.1, 0.2, 0.5 or 1.0 nm should be automatically selectable

j) Background Correction: High intensity D2 for flame as well as Zeeman

k) Universal burner for both flames.

- Flame Atomizer : All titanium or equivalent burner with impact bead / Flow spoiler, Premix Design

a) Movement : Automatic Movement into the sample compartment

- b) Affect from Acids/Organic solvent : Resistant to acid solutions (i.e. 5% HF, HCL, H₂SO₄ & HNO₃) or organic solvents e.g. Methyl isobutyl Ketone (MIBK)
- c) Flame Alignment in liquid beam : Fully automatic, optimized with motorized burner mount for vertical and horizontal burner adjustment.
- d) Spray Chamber : Corrosion resistant
- Nebulizer : High precision able to provide manually adjustable uptake rates material of the nebulizer and related Venturi should be inert to acid solutions and organic solvents, such as MIBK.
- Flame Control : Computer controlled ignition
- Gas Control : Computer controlled with oxidant and fuel gases monitoring to monitor constant fuel/oxidant ratio ignition.
- Safety Function : Interlocking system to prevent ignition
- Essential Interlock Monitors : Burner type as well as its presence in position, air selector, flame sensor, liquid trap level, gas supply pressures and air supply anywhere in the network of gas tubing in the system
- Automatic Lamp Selection Function
 - a) Computer controlled Hollow cathode lamp selection and alignment
 - b) Lamp Holder : At least 4 lamp holder with built-in Power supplies for hollow cathode lamps and electrodeless discharge lamps or equivalent.
 - c) Operating Parameter setting : Automatic setting
- Read out/ Display : Display facility for absorbance as well as concentration, Display of errors or error codes, absorbance range at least up to 2.0 Abs.
 - a) Scale expansion : Scale expansion at least up to 100X.
 - b) Integration time : Integration time should cover at least 0.2 to 50 seconds range
 - c) Measurement : Measurements of mean, RSD and CV, Background only mode, integration of peak height and peak areas.
- **Automated Hydride Generator:**
 - a) Continuous Flow /Flow injection/Automated hydride Vapour Generator for analysis of As, Se, Hg, Pb etc.
 - b) It should come with an integrated controller & four MFC controlled channel peristaltic pump.
- **Accessories/Spares with the Flame AA System**
- Hollow Cathode Lamps : 14 Hollow Cathode Lamps. One lamp for each of the following elements – Aluminum, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Nickel, Arsenic, Mercury, Iron and Zinc
- Vapour generation assembly : Should be continuous flow based hydride/mercury vapour generator for determination of Hg, As, Se, Sb, Te, Bi & Sn at $\mu\text{g/L}$ concentration.
 - a) Precision : Precision of better than or at least 1% at ppb levels of mercury, arsenic etc.
 - b) Flame Arrestor : Flame arrestor should be provided in the tube which connects the assembly to the absorption cell.

- c) Cell design holder : The design of the cell holder should give a firm and easily adjustable (for alignment) mounting on the burner head.
- d) System accessories : Complete with necessary reagent bottles, connectors etc.
- Air Compressor with Air Filter or equivalent Air Service Unit : Complete with pressure regulator quite in operation, necessary tubing and connectors and should meet the air supply requirements of AAS operation.
 - a) Oil free Pump : Oil-free, less noise pump with moisture trap or equivalent.
 - b) Corrosion resistant : Resistant to acidic vapour and the drain value (if any) should be made of stainless steel or equivalent corrosion resistant material.

Software

- Application Software : Programme facility with multitasking software
 - a) Should provide complete control of instrument with instrument status display and its various accessories Provide accurate and reproducible time averaged, integration, non-averaged integration, multi-level calibration
 - b) Software should handle instrument linear absorbance reading, concentration, or emission intensity, integration time, built in statistics, calibration equation control, slope of analytical curve using operator selective calibration standard.
 - c) Built in interface for computer connection and use of optional accessories
 - d) Comprehensive quality control protocols facility including blank, multiple quality control standards, QA/QC audit trail and calibration failure.

Computer System

- Make: Reputed brand such as HP/Compaq/Dell etc. compatible with the instrument.
 - a) Processor : Intel Core i7 processor with 3.60 GHz
 - b) RAM : 8 GB RAM
 - c) HDD : 1 TB
 - d) Monitor : 21" TFT-LCD Flat Colour (Digital)
 - e) Ports :2 Serial, 1 parallel and 4 USB front 4 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS
 - f) Key board : Cordless, latest multimedia (HP / Microsoft)
 - g) Mouse : Cordless, Optical mouse with pad
 - h) Ethernet : 64 bit auto selectable 10/100 MBPS
 - i) Graphics : Internet ready with integrated Graphics
 - j) Sound: Integrated sound card and inbuilt stereo speakers
 - k) Printer : Branded multicolour LaserJet Printer

Operating Software

- a) Pre-Loaded operating system with Licensed CD
- b) Latest MS Office, Professional with media, manual and Licensed CD (Compatible with main Instrument)
- c) Preloaded Antivirus with latest version of 5 years or more lifetime along with Licensed CD

Quality Control Support

- a) Supplier should provide Certificate on Installation Qualification (IQ), Performance Qualification (PQ) & Operational Qualification (OQ) during the installation of the instrument. The activity should cover limit of detection (LOD) and limit of quantification (LOQ).

Additional Items

- a) Following items to be supplied.

Gas Regulators

- a) Nitrous-oxide gas regulator – Two numbers : Nitrous-oxide gas regulator (two stage) with heater, with necessary tubing and connectors. Necessary transformer should be provided to transform this supply to the requirements of the heater The heater should work on 230 ± 10 volts 50 Hz AC power supply.
- b) Acetylene gas regulator – Two numbers : Acetylene gas regulator (two stage) with necessary tubing and connectors
- c) Argon gas regulator – Two numbers : Argon regulator (two stage) with necessary tubing and connectors

Gas cylinder (filled with relevant Gas)

- a) Nitrous Oxide Gas Cylinder – One number : High pressure seamless steel cylinder fitted with high purity Nitrous oxide gas. Should be ISI marked conforming to IS 7285 specifications. Flat bottom with valve as per complete neck ring and cap painted as specified under Gas Cylinder Rules along with Hydraulic test certificate and explosive certificate from Chief Controller of Explosives, Nagpur as per BIS standards
- b) Acetylene Gas Cylinder – One number : High pressure seamless steel cylinder fitted with high purity Acetylene gas having gas capacity 7 m³ water capacity 47 liters. Cylinder should be ISI marked conforming to IS 7285 specifications. Flat bottom fitted with valve as per IS: 3224. Complete with neck ring and cap painted as specified under Gas Cylinder Rules, 1981 along with Hydraulic test certificate, ISI inspection / Test Certificate. Explosive Certificate from Chief Controller of Explosives, Nagpur as per BIS standards.
- c) Argon Gas Cylinder with gas – One number : High pressure seamless steel cylinder fitted with high purity Argon gas having gas capacity 7 m³ water capacity 47 liters. Cylinder should be ISI marked conforming to IS 7285 specifications. Flat bottom fitted with valve as per IS: 3224. Complete with neck ring and cap painted as specified under Gas Cylinder Rules, 1981 along with Hydraulic test certificate, ISI inspection / Test Certificate. Explosive Certificate from Chief Controller of Explosives, Nagpur as per BIS standards.

Vent and Fuming Hood assembly: Stainless Steel Fuming Hood along with exhaust blower having efficiency to evacuate acid fumes of 6 – 7 m³/ minute. Stainless steel duct of 12 ft. length

Operation kit : Manufacturers Standard Operation Kit including all required items, tubing, fittings for startup /regular operation of instrument

Operation/ Maintenance manual : Operation and Maintenance manual for each unit

Analytical Manual : Analytical Manual including applications for Flame, VGA.

Service manual : Service Manual with one set of required tools for each system / unit

Application notes : Application notes for trace metal analysis in environmental, biological, geological, metallurgical and industrial samples.

Consumables : For five years operation for each of the following units:

- a) Flame AAS (basic unit, burner system) – one set each including O-rings etc.
- b) Vapour generation assembly – tubes, glass items, Cell & Cell holder

Warranty: Comprehensive 5 years' warranty with spares from the date of successful installation and commissioning of the instrument should be covered. Warranty will start from the date of complete installation. {Optional – the supplier may also quote annual maintenance contract (AMC) on regular basis beyond the warranty period for a three years}.

Operational and Maintenance Training: Two weeks (at installation site) training to be provided to MPCB Scientists on software training, operation, maintenance and troubleshooting aspects of instrument

Sl.No.4

Item Code: 04

Item : **Automatic Burette**

Quantity: 10

- Class A and Class AS Burettes
- PTFE Stopper
- Fully Autoclavable
- Detachable Needle Valve Stopcock to ensure no breakage
- NABL, Batch and Individual Certificates available
- Made of Chemical and Heat Resistant Glass Boro 3.3
- Manufactured under ASTM, ISO and USP Standards

Sl.No.5

Item Code: 05

Item : **BOD Incubator**

Quantity: 2

Construction

- Insulation: 75mm puff insulation
- Inner chamber and 3 shelves made of Anodized aluminum. Outer chamber made of Mild Steel and painted in Epoxy Powder coating
- Full view inner acrylic door and Outer metal door with MAGNETIC GASKET

Operation

- Controlled by Micro process Electronic Digital Temp. Controller cum Indicator from 5°C to 60°C and $\pm 1^\circ\text{C}$
- Uniform temp. is provided by 2nos. air circulating Fan.

- Hermetically sealed compressor (CFC FREE) & CFC free refrigerant gas with a fan cooled condensing coil.

Control Pannel

- Provided at the top
- With 3nos. indicators for main heating and cooling
- Connecting cord with plug suitable
- Work on 220/230 Volts A.C. 50 cycles

Deluxe Automatic

Size Inside Chamber:

W	D	H	LTRS
455	x410	x610	mm 112 ltrs

Sl.No.6

Item Code: 06

Item : **Bomb Calorimeter**

Quantity: 1

- This instrument is to be used for the determination of Calorific values of oil, coal, food stuffs etc.
- The calorimeter Jacket and inner vessel are made of bright chrome plated copper.
- The bomb is to be made of a special grade stainless steel resistant to intergranular corrosion and is tested at a pressure of 300 atmosphere for signs of leakage as per IP.12/56T.
- It should consist of a speed controlled stirrer along with temperature indicator with an accuracy of 0.01 Deg.C. with built in timer.
- A Push Fit type Gas filling system should form part of a System. The Bomb body and Lid of the Calorimeter Bomb are to be mechanized from rolled bar of an austenitic corrosion resistant Chromium-Nickel-Molybdenum steel resistant to intercrystalline corrosion.
- Water Jacket & Calorimeter Vessels should be made of Chromium Plated Copper as per international standards. Additional built in Printer to ensure printed recordings of the temperature v/s Time readings.

Sl.No.7

Item Code: 07

Item : **Centrifuge**

Quantity: 1

- Power requirement-100W
- Max. rotational speed-14,500rpm
- Relative centrifugal force (RCF)- 14,000 x g
- Timer- 20sec--99min
- Acceleration time to max speed- 15s
- Breaking time from-15s
- Dimensions(W x D x H)- 270 x 230 x 155mm

- Low sample heating (only 12°C after 30min, at max. speed)
- Autoclavable rotor (121°C, 20min)

Sl.No.8

Item Code: 08

Item : **Conductivity meter**

Quantity: 3

- Conductivity Range : 0.1 μ S to 100/200mS
- Resolution : 0.001 μ S
- Relative Accuracy : ± 1 digit F.S ± 1 digit
- Temperature : 0 to 100°C (Auto/Manual)
- Auto Temperature Comp. : 0 to 100°C
- Compatible Cell Constants : 0.1 to 5
- Power : 230 volts $\pm 10\%$, 50 Hz
- Weight : Less than 2 kg

Sl.No.9

Item Code: 09

Item : **Distillation (Filtration) Assembly with vacuum pump Flask 1000 ml and clamp**

Quantity: 2

Specification for Filtration Assembly

- Filter size: 47mm dia.
- Effective Filtration area: 9.60cm²
- Filter flask capacity: 1000ml
- Funnel capacity: 300ml
- Filter Holder : Anodized Aluminium Clamp
- Stopper : Perforated Neoprene
- Pressure: Vacuum only

Specification for Portable Oil Free Vacuum Pump

- Excellent suitable for HPCL & Filtration applications Supplied complete with Vacuum Gauge & Regulator

Salient Features

- No Lubrication required
- Noiseless performance
- Light weight & portable
- Oil-free construction
- Practically maintenance free
- All parts manufactured from special graded Aluminium die cast material
- Diaphragms made of special 2-ply Nylon reinforced Neoprene Rubber
- Valves made of SS316
- Built-in micro suction filter
- Extra large bearings for smooth trouble free operation
- Max Flow Lrs./min: 15 ; Max Vacuum Inches of Hg: 27

- Max Pressure Psi: 35 ; Approx Weight Kg : 4.10
- Motor HP: 1/16

Sl.No.10

Item Code: 10

Item : **Dry and Weight Bulb**

Quantity: 5

- Temperature Range-10 to 50 Deg C
- Accuracy 0.5% FS
- Material Glass

Sl.No.11

Item Code: 11

Item : **Ekman Dredge**

Quantity: 1

- Material – Stainless Steel with stainless steel springs and cables
- Case: 6" x 6" x 6" sample area
- Feature flow-through design for low drag and good descent stability
- Dredges must have positive-acting lid and jaw-control mechanism
- Suitable for Sampling soft, silty, vegetation-free river, stream, or lake bottoms.

Sl.No.12

Item Code: 12

Item : **Flame Photometer**

Quantity: 3

- System for the measurement of alkali and alkaline earth metals (only Sodium, Potassium, calcium and Lithium) in the environmental samples, using the technique of flame photometry, comprising of an aspirator unit, oil free compression burner unit, filters and photo detector.
- Technical Specifications:
 - Instrument response Sensitivity
 - Sodium : Upto 100 units for 2 ppm.
 - Potassium : Upto 100 units for 1 ppm.
 - Lithium : Upto 100 units for 7 ppm
 - Calcium : Upto 100 units for 30ppm
 - Accuracy & Reproducibility : $\pm 2\%$ of FSD
 - Display : Atleast 2½ digit LCD
 - Power Requirements : 230 \pm 10 V, 50 Hz AC
 - Weight of main unit : Less than 5 kg
- **Accessories:** Instrument with Sample Holders, Instruction Manual, Dust Cover, Mains Lead-Air and Gas Tubing along with End Clamps, Chimney, Capillary Tubes, Lithium and Calcium filters.

Sl.No.13

Item Code: 13

Item : **Flash Point Apparatus**

Quantity: 1

- Designed as per IP-34, ASTM D-93 and IS 1148 (Part i) and IS 1209-1953 method B. It is used for determination of close up flash point of fuels, oils, other viscous materials and suspension of solids. Useful for both low range as well as high range flash point of sample using of different thermometers IP-15C or IP-16C respectively.
- The cover with spring operated rotating shutter having Oil Test Jet Flame Device, stirrer with flexible shaft. The assembly rests in Air Bath which is covered with Dome shape metal top. The cup is fitted with insulated handle and locking arrangement near cup flange. The assembly energy regulator. Suitable to work on 220 volts AC supply. Supplied with one thermometer.
- Optional Accessories:
 - a) Electrically driven stirrer with FHP motor having flexible shaft.
 - b) Spare oil cup thermometer (-70° C to 110° C).
 - c) Water bath thermometer (-90° C to 370° C).

Sl.No.14

Item Code: 14

Item : **Flask Shaker**

Quantity: 1

- Shaking Speed- RT+5°C~70°C
- Orbit- 10 mm
- Independent timer- 1min~99h59min
- Load capacity- 3.0kg
- Motor- DC brushless
- Dimension(L x W x H) mm- 280 x 270 x 110

Sl.No.15

Item Code: 15

Item : **Hot Plate (Digital)**

Quantity: 2

- Thermostatic control for temperature uniformity and stability across the area surface plate.
- It should indicate the cycle light when power is being supplied to heating element.
- Chemical resistant construction material, suitable for corrosive environment
- Size (Surface size) : 60 x 45 cm (L x W)
- Body surface : Stain steel / Teflon Coated
- Inner chamber : Double wall construction inner chamber made using stainless steel
- Cabinet: Cabinet double walled mild steel

- Operating temperature range : 1 0C to 350 0C
- Temperature control :Temperature controller cum indicator with accuracy of ± 0.5 0C, installation should be on top towards front side.
- Power :230 \pm 10 volts/ 50 Hz AC, Single phase
- Heating Element :Long last nichrome Elements.†
- Heating load :2 KW

Sl.No.16

Item Code: 16

Item : **Ion Specific Analyzer**

Quantity: 1

- The analyser is meant of analysis of ions, such as NO₃, fluoride and ammonia etc using selective electrodes. Features:
- LCD Display Type : Simultaneous dual channel or individual channel
- Backlight (on/off) : 5 adjustable levels
- Sensor Inputs : Two BNC, two pin tip (reference), two 8 pin MiniDIN (ATC), stirrer jack
- Method Storage : 20 (10 per channel with calibration data
- Password Protection: Yes
- Datalog Points : 1000 with time/date stamp
- GLP : Yes
- Data Transfer : RS232, USB
- Regulatory and Safety: CE, CSA, TUV, FCC Class A, RoHS, China RoHS
- Ambient Operating Temperature: 5 to 45°C
- Relative Humidity : 5 to 85%, non-condensing
- Power : Universal AC adapter (110V/220V/240V) included with meter
- Warranty : 36 months replacement

Specification:

- pH : Included
- Range : -2.000 to 19.999
- Resolution : 0.1, 0.01, 0.001
- Relative Accuracy : ± 0.002
- Calibration Points : 1 to 6
- Buffer Recognition : USA, NIST, Euro, DIN, Custom
- ISE : Nitrate, Ammonia, Flouride
- Range : 0 to 19999
- Resolution : 1, 2, 3 significant digits
- Relative Accuracy : ± 0.2 mV or 0.05%, whichever is greater
- Units : ppm, ppb, M, %, or unit less
- Technique Options : Single known addition and subtraction Double known addition and subtraction
- Calibration Points : 2 to 6
- Calibration Options mV • Rel mV • ORP : Linear, point to point, non-linear selectable auto-blank
- Range : ± 1999.9
- Resolution : 0.1
- Relative Accuracy : ± 0.2 mV or 0.05%, whichever is greater

- EH Calibration : Yes
 - Capability Temperature Range : -5 to 105°C
 - Resolution : 0.1°C
 - Relative Accuracy : ±0.1°C
-

Sl.No.17

Item Code: 17

Item : **Kjeldal Apparatus**

Quantity: 1

Speed Digester:

- Digestion system for 6sample tubes with Adjustable IR-heating.
- Tight suction module to prevent the escape of sulphuric acid vapors during digestion.
- Robust design with stand-alone tube holder made from stainless steel.
- Complete and ready-to-use system supplied with the following:
 - a)The insulation plate as well as the optimal designed heating chamber guarantees that the sample tubes are heated with optimal thermal homogeneity.
 - b)Sample tubes 300ml (diameter 48 mm), 100mL or 500 mL with constricted condensation zone. Glass thickness for sample tubes atleast 2.2mm.
 - c)Stand alone rack.
 - d) Operating voltage 110-120V ± 10% / 220-240 V ± 10%
 - e)Frequency 50/60Hz
 - f) Power consumption 2000 W
 - g)Temperature range 70-580 °C

Distillation Unit:

- For Steam distillation unit for nitrogen and protein determination, featuring a high performance steam generator for efficient steam distillation, with glass splash protector or plastic splash protector for visual control of the distillation process. A safety switch interrupts power supply when opening the service door. Additional sensors monitor the protective shield and check if a sample tube is present before allowing starting a distillation.
 - a)Cooling water control.
 - b)Alkali addition
 - c) Recall of last dosage.
 - d) Classical nitrogen and protein determination in accordance with official methods (AOAC, EPA, ISO & DIN).
 - e)Kjeldahi nitrogen and protein determination.
 - f) Devarada and protein determination.
 - g)TKN (Total Kjeldahi Nitrogen)
 - h) Recovery Rate > 99.5%
 - i) RSD < 1%
 - j) Detection limit 0.1% Nitrogen.

Sl.No.18

Item Code: 18

Item : **Refrigerator**

Quantity: 2

Specifications

- Capacity : 165 litres
- Door type: Single
- Defrosting type: Direct Cool
- Freezer: Yes
- Door lock: Yes
- Warranty: Yes
- Star Rating: 3 / 5

Sl.No.19

Item Code: 19

Item : **Magnetic Stirrer with hot plate**

Quantity: 2

- Speed Setting- 15 to 1200 RPM (at every 50 RPM)
- Digital Display
- Load Capacity- 4 x 400 ml
- Recommended Stir bar length- 25 mm
- Timer- 1 to 99 mins and continuous
- Last run memory
- Dimension (W X D X H)- 457 x 126 x 13.4 mm
- Weight- 1.9 kg
- Protection Class- IP 65 compliant design (Water spill resistant)

Sl.No.20

Item Code: 20

Item : **Micropipettes**

Quantity: 10

- Should be equipped with Hyper Blower System, longer second - push stroke, improves dispensing efficiency.(2 μ L, 10 μ L)
- The pipette should be fully autoclavable and should sustain 121°C for 20 minutes.
- It should have easy digital volume setting.
- The pipette should be fully UV resistant
- It should have easy maintenance and can be easily calibrated within the laboratory.
- The pipette should come with one-touch locking mechanism making it easy to lock the sample volume.
- It should have PTFE seal / O–ring which ensures better air tightness and better chemical resistance.
- The pipette should have ceramic plungers for models larger than 200 μ l
- The pipette should have Filtered nozzles for the models larger than 1000 μ l
- It should have 8 variable models to cover wide volume range i.e. from (0.1 μ l to 10ml)

Sl.No.21

Item Code: 21

Item : **Orsat apparatus**

Quantity: 1

- Apparatus: an intake valve which feeds into a calibrated water or glycerin jacketed gas burette.
- Burette: a graduated glass tube with a tap at one end, for delivering known volumes of a liquid, provided with a stopcock at its lower end and a tapered capillary tube at the stopcock's outle; controlled by the stopcock valve; connected by tubing to two or more absorption pipettes containing chemical solutions that absorb the gases it is being used to measure.
- The intake and each of the absorption pipettes to be valved with stopcocks to allow the movement of gas through the apparatus to be precisely controlled.
- The base of the gas burette is to be connected to a leveling bottle which can be lifted and lowered to enable readings to be taken at constant pressure and to transfer the gas to and from the pipettes containing the different absorption media.

Sl.No.22

Item Code: 22

Item : **pH Meter**

Quantity: 5

- Modes : pH - mV - °C
- Display : 7 digits,LCD
- Measuring range : 0 – 14pH
- Accuracy : $\pm 1 \text{ mV} \pm 1 \text{ digit}$
- Temp. Compensation : Auto/Manual
- Temp. Measurement range: 0 to 99.9°C
- Power : 230 volts $\pm 10\%$, 50 Hz
- Weight : Less than 2 kg
- System should be complete in all respect and supplied with Measuring electrode combined glass calomel calibration and maintenance kit, operation manual, dust cover, power cable and plug, and spares and consumables for two years of its continuous use.

Sl.No.23

Item Code: 23

Item : **Standard Weight Box**

Quantity: 1

- Material: HDPE.
- Color: Mirror Finish.
- Density: As Per OIML Class.
- Measuring Range: 1 mg to 20 Kg.

Sl.No.24

Item Code: 24

Item : **Turbidity Meter**

Quantity: 2

- Display : Digital
 - Ranges (NTU) : 0 - 20, 0 – 200, 0 – 1000
 - Accuracy : $\pm 1.5\%$ of full Scale
 - Repeatability : $\pm 1\%$ of full Scale
 - Display : 2 line, LCD
 - Power : 230 volts $\pm 10\%$, 50 Hz
 - Weight : Less than 3 kg
-

Sl.No.25

Item Code: 25

Item : **UV-Visible Spectrophotometer**

Quantity: 2

- Optical system : Micro-controller based Double Beam
 - Graphic LCD
 - Photometric Range: cd Abs
 - Photometric Accuracy :0.005 Abs at 1.0 Abs
 - Photometric Display : -3A to +5A
 - Photometric range : : -2A to +3.5A
 - Photometric Repeatability : ± 0.002 Abs at 1.0 Abs
 - Stray Light: $< 1.05 \times 10^{-4}$ at 220 nm & 370 nm
 - Wavelength Range: 100 to 1100 nm
 - Wavelength Accuracy: 5 nm
 - Wavelength Repeatability : ± 0.2 nm
 - Wavelength Resolution: 0.1 nm
 - Wavelength Bandwidth: 1.0 nm
 - Single Position 50/100 mm Cuvette Holder (Optional)
-

Sl.No.26

Item Code: 26

Item : **Water bath: (Serological with 06 holes Digital controller with sensors)**

Quantity: 3

- Temperature range from room temperature to 100°C.
- Temperature is controlled by Micro processed Electronic Digital Temperature Indicator-cum-Controller with an accuracy of plus minus 0.5°C.
- Double walled inside made of Stainless Steel 304 Qlty and Outside Mild Steel painted in epoxy powder coating. Oscillating tray in riding on ball rollers.
- Shaking speed range 40 to 140 r.p.m. To work on 220/230 volt A.C. Without r.p.m. Indicator

Size

L	W	D	LTRS
275	x275	x75mm	12

Sl.No.27

Item Code: 27

Item : **Water Purification System**

Quantity: 2

- Particulates < 1 Particulate/ml
- Bacteria < 0.1 cfu/ml
- Resistivity 18.2 MΩ·cm @ 25 °C
- Endotoxin (pyrogens) < 0.001 EU/ml
- RNase < 0.01 ng/ml
- DNase < 4 pg / μl
- Flow rate > 0.5 l/min
- Total Oxidized Carbon < 5 ppb & < 10 ppb



MIZORAM STATE POLLUTION CONTROL BOARD
AIZAWL : MIZORAM

0.6. TENDER FORMATS

<i>Sl. No.</i>	<i>Format</i>	<i>Annexure No.</i>	<i>Page No.</i>
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ANNEXURE-1

APPLICATION FORMAT

(To be filled by the Bidder)

1. Name and full address of the Bidder with contact No & email .:
2. State whether the bidder is Manufacturer/Supplier/Distributor/Dealer :
3. Registration No. of the Firm :
4. PAN :
5. GST Registration No. :
6. Validity of Tender:
7. Whether the Tender documents are accepted in full? (Yes/No):
8. Item Code no(s) and name of the item quoted for:
9. Details of the D.D:
 - i. Tender Fee of Rs.1,000/- (Non-refundable) : D.D. No.....dt.....issued
by.....Bank
 - ii. EMD of RS. 25,000/- (refundable) : D.D. No.....dt..... issued
by.....Bank
10. Enclosures:
 - i. Attested copy of PAN Card (Yes/No) :
 - ii. Attested copy of GST Registration(Yes/No):
 - iii. Upto date Tax Clearance Certificate (Yes/No):

Name of the authorized signatory of the Bidder:

Signature & Seal :

Place & Date:

ANNEXURE-2

TECHNICAL BID FORMAT

(To be filled by the Bidder)

Dated.....

Tender No.....

Item Code.:.....

To,

The Member Secretary
Mizoram State Pollution Control Board,
Mizoram New Capital Complex,
Khatla, Aizawl, Mizoram-796001

Sir,

Having thoroughly examined tender documents pertaining to the Tender invited by you for supply and installation of Laboratory equipments/instruments and in acceptance of all the terms and conditions stipulated therein:

We, the undersigned, do offer to supply and installas per your requirement.

We enclose herewith the specifications and other details of the item offered by us.

We agree to hold this offer for a period of 90 days from the date of submission of tender.

We undertake that if our bid is accepted, the items quoted by us will conform to the specifications and shall be delivered and installed within the stipulated period.

We undertake that this bid, together with your written acceptance thereof in your Notification of Award shall constitute a binding contract between us.

We also understand that you are not bound to accept the lowest rate offered or any tender that is received by the Board.

Following are also enclosed as part of the Bid:

- i. Details of the company/manufacturer with copy of Registration Certificate /Authorisation Letter from manufacturer on their letter head in case of authorised distributors/dealers
- ii. Note on details of After Sales Service offered and warranty period
- iii. Copy of printed technical leaflet/literature of the quoted model of the item in support the specifications quoted
- iv. List of users, if any, with purchase order/performance certificates (CPCB, State Pollution Control Boards or educational institutions particularly North-eastern states)

Yours faithfully,

Name, Signature & Seal of the bidder

Address:

Telephone:

Email:

Specifications and other details of the item quoted

Item Code.....

Name of Equipment/Instrument.....

Sl. No.	Make/brand of the item with Model No.	Specifications as per Board's Tender	Specifications offered by the Bidder (to be supported by document evidence)	Deviations of the offered specification from that of the Board, if any.	Document enclosed in support of specification (Yes/No.)
1	2	3	4	5	6

Name, Signature & Seal of the bidder

ANNEXURE-3

MANUFACTURER'S AUTHORIZATION LETTER FORMAT
(On Company's Letter Head)

Ref. No.Date:

To,

The Member Secretary
Mizoram State Pollution Control Board,
Mizoram New Capital Complex,
Khatla, Aizawl, Mizoram-796001

Sub.: Tender for supply and installation of laboratory instruments/equipments to
Mizoram State Pollution Control Board

Ref.: Your Tender No.....

Sir,

With reference to your Tender No.....dt.....inviting tender for supply and installation of Laboratory equipments/instruments, we, _____, who are established and reputed manufacturers of _____, having factory at _____ hereby authorize M/s. _____ (name & address of distributor/agent) to bid, negotiate and conclude the order with you for the goods manufactured by us. We shall remain responsible for the tender/Agreement negotiated by M/s _____, jointly and severally. We hereby extend our full guarantee and warranty as per the terms and conditions of tender for the goods offered for supply against this invitation for bid by the above supplier.

Yours faithfully,

[Name & Signature] for and on behalf of M/s. _____
[Name of manufacturer]

ANNEXURE-4

FINANCIAL BID FORMAT

(To be filled by the Bidder)

Dated.....

Tender No.....

To,

The Member Secretary
Mizoram State Pollution Control Board,
Mizoram New Capital Complex,
Khatla, Aizawl, Mizoram-796001

Sir,

Having examined the bidding documents and having submitted the technical unpriced bid for the same:

We, the undersigned, hereby submit, as enclosed herewith the priced bid against the said equipments/instruments quoted, in conformity with the said bidding documents.

We hereby offer to supply the Goods/Services at the prices and rates mentioned against each item in the following table.

We do hereby undertake that, in the event of acceptance of our bid, the supply of Goods/Services shall be made as stipulated in the schedule of requirement and that we shall perform all the incidental services.

The prices quoted are inclusive of all charges net F.O.R Mizoram State Pollution Control Board, MINECO, Khatla, Aizawl, Mizoram.

Yours faithfully,

Name , Signature and Seal of bidder

Address:

Telephone:

Email:

PRICE SCHEDULE

Sl. No.	Item Code	Name of equipment/instrument	Make/brand of the item with Model No.	Basic Unit Price	Taxes and duties, as applicable	Delivery and Other Charges, if any	Total Price (all inclusive)
1	2	3	4	5	6	7	8
1.							
2.							
3.							
4.							

Total No. of Item(s) quoted:

Name of the authorized signatory of the Bidder:

Signature & Seal :

Place & Date:

End of document