

Civil Engineering Department
MNIT, Jaipur
CORRIGENDUM

Tender No. F5(657)ST/MNIT/CIVIL/2019

Name of Lab : Public Health Engineering Lab

A pre-bid meeting is held at the scheduled date and time i.e., 29-8-2019 (2:00 PM onwards) to address the queries of the tenders. After discussion department has finalised below mentioned modifications in the technical specifications of the equipment's of above-mentioned tender. Below mentioned revisions may please be considered.

S.No.	Instrument	Revised Specifications	Qty
1.	CO ₂ + Temperature + Humidity Meter	Measuring Range CO ₂ : 0 to 4,000 ppm; Temp: 0 °C to 50 °C,32 °F to 122 °F; RH: 10 % to 95 % R.H Accuracy CO ₂ : 1) ± 40 ppm for ≤1,000 ppm. Humidity ≥ 70% RH:± (3% reading + 1% RH),Temp:°C – 0.8 °C, °F – 1.5 °F. Resolution CO ₂ : 1 ppm; Temp: 0.1 degree; RH: 0.1 % R.H Display LCD size: 52 mm x 38 mm dual function LCD display. Operating Range Temp: 0 to 50 °C. Humidity Main instrument: Less than 85% R.H. CO ₂ probe: Less than 85% R.H. Repeatability CO ₂ : ± 20 ppm for ≤ 3,000 ppm. Response Time < 2 min. typically. Power Supply DC 1.5 V battery (UM3, AA) x 6 pcs, or equivalent. Relay/ Alarm Alarm For CO ₂ measurement only. Accessories Instruction manual, CO ₂ probe, RH Probe, Hard Carrying case.	01 Nos

2.	CO Meter	<p>Sensor Stabilized electro chemical gas specific</p> <p>Measurement Range 0 to 1000 ppm</p> <p>Display large LCD</p> <p>Response time <30s</p> <p>Fast sampling time 2 times/sec</p> <p>Display Large LCD</p> <p>Sensor life about 5 year</p> <p>Accuracy 5% (Accuracy is not affected by humidity, Small sensor drift, stable readings)</p> <p>Measurement Resolution 1 ppm</p> <p>Zero drift <5 ppm</p> <p>Auto power off after 15 mins of inactivity</p> <p>Alarm Audible</p>	01 Nos
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3.	Portable Photometer	<p>Battery Life 1 day @ 5 readings a day or better</p> <p>Battery Requirements Alkali cells or built in rechargeable battery</p> <p>Cuvette Compatibility 10 mm square / 1 inch square / 13 mm / 16 mm / 20 mm / 50mm / 1 inch round or better having compatible programming for COD, TOC and TKN digestion</p> <p>Data Logger 500 measured values or better</p> <p>Detector Silicon photodiode</p> <p>Display LCD, b/w, backlit</p> <p>Interface USB type Mini IP67 (with optional Module) or RS232 or better</p> <p>Operating Conditions 10 - 40 °C (50 - 104 °F), max. 80 % relative humidity (non-condensing)</p> <p>Operating Humidity max. 75 % relative humidity or better</p> <p>Operating Mode Transmittance (%), Absorbance and Concentration</p> <p>Optical System Reference beam, spectral</p> <p>Photometric Accuracy ± 0.003 Abs @ 0-0.5 Abs or better</p> <p>Photometric Linearity < 0.5 % (0.5 - 2.0 Abs) or better</p> <p>Photometric Measuring Range 0 - 3 Abs (wavelength range 340 - 800 nm or filters in this range)</p> <p>Reproducibility ± 0.005 Abs @ 0-1 Abs or better</p> <p>Sample Cell Compatibility 13 / 16 mm / 1 inch round adapter, 10 x 10 mm 1 inch square and 10x10mm or better</p> <p>Stray Light < 0.5 %T at 340 nm or better</p> <p>User Programs 50 or more</p> <p>Wavelength Accuracy ± 2 nm (range 340 - 800nm or filters 340,410,445,500,525,550,565,605,620,665,690,820 nm)</p> <p>Wavelength Calibration Automatic</p> <p>Wavelength Range 340-800 nm or filter: 340,410,445,500,525,550,565,605,620,665,690,820 nm</p> <p>Wavelength Selection Automatic</p>	01 Nos
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4.	Dual Digestor Block	Compliance Certifications Heating Rate Number of cuvettes Operating Temperature Range Power Requirements (Hz) Power Requirements (Voltage) Temperature Range Temperature Stability	CE Room temperature to 150 °C in 10 minutes 21 bores for vials x 16 mm or 24 bores for vials x 16 mm (dual block) or better with compatible programming for COD, TOC and TKN digestion 10 - 40 °C 50 - 60 Hz 230 V AC Room temperature - 165 °C ± 2 °C or better	01 Nos
5.	Total Nitrogen Unit (TNM-L) with AMC for 3 years	Detection Range Method Compatible With AMC of TNM-L and TOC LSH (full assembly) for 3 years	5 µg/L to 10000 mg/L 720 °C catalytic thermal decomposition/chemiluminescence Shimadzu TOC-LCSH	01 Nos
6.	Simplified TKN Tests	Digestion Required EPA compliant Method Name Number of tests Parameter Range Shelf Life	Yes Yes Simplified TKN 100 Nitrogen, Simplified Total Kjeldahl 0 - 16 mg/L N At least 17 months from production date	01 Nos

7.	Magnesium Tester	<p>Hardness, Magnesium Range 0.00 to 2.00 ppm</p> <p>Hardness, Magnesium Resolution 0.01 ppm</p> <p>Hardness, Magnesium Accuracy $\pm 5\%$ of reading ± 0.20 ppm</p> <p>Hardness, Magnesium Method Adaptation of the Standard Methods for the Examination of Water and Wastewater, 18th edition, EDTA colorimetric method.</p> <p>Photometer/Colorimeter Light Source LED @ 525 nm</p> <p>Photometer/Colorimeter Light Detector silicon photocell</p> <p>Battery Type/Life (1) 1.5V AAA</p> <p>Automatic Shut-Off After ten minutes of non-use</p> <p>Environment 0 to 50°C (32 to 122°F); RH max 95% non-condensing</p> <p>Glass Cuvette with caps (10 mL) 4 nos.</p> <p>compatible with tester 25 tests</p> <p>Pre made Reagents 1 set</p> <p>Calibration Set</p> <p>Warranty 6 months or better</p>	01 Nos
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8.	Iron Tester	<p>Iron Range 0.00 to 5.00 ppm</p> <p>Iron Resolution 0.01 ppm</p> <p>Iron Accuracy ±0.04 ppm ±2% of reading</p> <p>Iron Method Adaptation of Standard Methods for the Examination of Water and Wastewater, 3500-Fe B., Phenanthroline Method</p> <p>Photometer/Colorimeter Light Source LED @ 525 nm</p> <p>Photometer/Colorimeter Light Detector silicon photocell</p> <p>Battery Type/Life (1) 1.5V AAA</p> <p>Automatic Shut-Off after three minutes of non-use and two minutes after reading</p> <p>Environment 0 to 50°C (32 to 122°F); RH max 95% non-condensing</p> <p>Pre made Reagents 25 tests</p> <p>Calibration Set 1 set</p> <p>Cuvette Cleaning Solution 230 mL</p> <p>Warranty 6 months or better</p>	01 Nos
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9.	Calcium Tester	<p>Hardness, Calcium Range Hardness, Calcium Resolution Hardness, Calcium Accuracy Hardness, Calcium Method</p> <p>Photometer/Colorimeter Light Source Photometer/Colorimeter Light Detector Battery Type/Life Automatic Shut-Off Environment</p> <p>Pre made Reagents Calibration Set Warranty</p>	<p>0.00 to 2.70 ppm 0.01 ppm ±5% of reading ± 0.20 ppm adaptation of the Standard Methods for the Examination of Water and Wastewater, 18th edition, Calmagite method. The reaction between calcium and reagents causes a reddish-violet tint in the sample. LED @ 525 nm</p> <p>silicon photocell</p> <p>(1) 1.5V AAA after ten minutes of non-use 0 to 50°C (32 to 122°F); RH max 95% non-condensing</p> <p>25 tests 1 set 6 months or better</p>	01 Nos
10.	Manganese Tester	<p>Manganese Range Manganese Resolution Manganese Accuracy Manganese Method</p> <p>Photometer/Colorimeter Light Source Photometer/Colorimeter Light Detector Battery Type/Life Automatic Shut-Off Environment</p> <p>Pre made Reagents Calibration Set Warranty</p>	<p>0.0 to 20.0 ppm 0.1 ppm ±5% of reading ± 0.2 ppm adaptation of the Standard Methods for the Examination of Water and Wastewater, 18th edition, Periodate method. LED @ 525 nm</p> <p>silicon photocell</p> <p>(1) 1.5V AAA after ten minutes of non-use 0 to 50°C (32 to 122°F); RH max 95% non-condensing</p> <p>25 tests 1 set 6 months or better</p>	01 Nos

11.	Chromium Tester	Chromium, Hexavalent Range Chromium, Hexavalent Resolution Chromium, Hexavalent Accuracy Chromium, Hexavalent Method Photometer/Colorimeter Light Source Photometer/Colorimeter Light Detector Battery Type/Life Automatic Shut-Off Environment Pre made Reagents Calibration Set Warranty	0 to 999 ppb 1 ppb ±5 ppb ±4% of reading adaptation of the ASTM, Manual of Water and Environmental Technology, D 1687-92, Diphenylcarbohydrazide method. LED @ 525 nm silicon photocell (1) 1.5V AAA after ten minutes of non-use 0 to 50°C (32 to 122°F); RH max 95% non-condensing 25 tests 1 set 6 months or better	01 Nos
12.	Color of Water Tester	Color, Water Range Color, Water Resolution Color, Water Accuracy Color, Water Method Photometer/Colorimeter Light Source Photometer/Colorimeter Light Detector Battery Type/Life Automatic Shut-Off Environment Pre made Reagents Calibration Set Warranty	0 to 500 PCU 5 PCU ±10 PCU ±5% of reading adaptation of the Standard Methods for the Examination of Water and Wastewater, 21st edition, Colorimetric Platinum Cobalt method. LED @ 470 nm silicon photocell (1) 1.5V AAA after ten minutes of non-use 0 to 50°C (32 to 122°F); RH max 95% non-condensing 25 tests 1 set 6 months or better	01Nos

13.	Nitrite Tester	Nitrite Range Nitrite Resolution Nitrite Accuracy Nitrite Method Photometer/Colorimeter Light Source Photometer/Colorimeter Light Detector Battery Type/Life Automatic Shut-Off Environment Pre made Reagents Calibration Set Warranty	0 to 150 ppm 1 ppm ± 3 ppm $\pm 5\%$ of reading adaptation of the Ferrous Sulfate method LED @ 575 nm silicon photocell (1) 1.5V AAA after ten minutes of non-use 0 to 50°C (32 to 122°F); RH max 95% non-condensing 25 tests 1 set 6 months or better	01 Nos
14.	Ammonia Tester	Ammonia Range Ammonia Resolution Ammonia Accuracy Ammonia Method Photometer/Colorimeter Light Source Photometer/Colorimeter Light Detector Battery Type/Life Automatic Shut-Off Environment Pre made Reagents Calibration Set Warranty	0.0 to 99.9 ppm as NH_4^+ 0.1 ppm ± 1.0 ppm $\pm 5\%$ of reading adaptation of the ASTM Manual of Water and Environmental Technology D1426-92, Nessler Method. The reaction between ammonia and reagents causes a yellow tint in the sample. LED @ 470 nm silicon photocell (1) 1.5V AAA after ten minutes of non-use 0 to 50°C (32 to 122°F); RH max 95% non-condensing 25 tests 1 set 6 months or better	01 Nos

15.	COMBINE D SAMPLER (PM10+ PM2.5 + GASEOUS)	<p>Flow Rate</p> <p>Particle Size</p> <p>PM10 Impactor</p> <p>PM2.5 Impactor</p> <p>Gaseous attachment</p> <p>Flow Record</p> <p>Dry Gas Meter</p> <p>Operation</p>	<p>PM10 16.7m³/hr. (Constant Flow Maintained with the help of Orifice) PM2.5 16.7m³/hr. (Constant Flow Maintained with the help of Orifice)</p> <p>Particles of 10 microns and below collected on standard glass micro fibre filter paper Of 47mm diameter fitted below single stage impactor. While particles of 2.5 microns Are collected in a separate 46.2 mm diameter PTFE membrane filter fitted at the Bottom off WINS impactor of two stage impactor.</p> <p>Single stage matching to European Design</p> <p>two stage as per USEPA Published Designs (Federal Register 40 CFR part 50)</p> <p>forSO_x, NO_x, Ammonia, Ozone and others. Gaseous (4 any Gas) with Manifold and 0 to 3 lpmRotameter</p> <p>Independent Flow Indicator for PM10 & PM2.5 streams to display air sampling flow Rates passing through filters accurately</p> <p>Total Volume (PM 10 & PM2.5)</p> <p>24 hours continuously</p>	02 Nos
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16.	Spectro photometer	<p>Photometric System Double beam optics or reference beam</p> <p>Detector Photomultiplier or silicon photodiode</p> <p>Light source Halogen lamp or Deuterium lamp or tungsten lamp light source auto position adjustment or xenon flash lamp or better</p> <p>Measurement range 190 to 900nm or better</p> <p>Wavelength accuracy ± 1nm or better</p> <p>Wavelength repeatability ± 0.1 nm</p> <p>Spectral bandwidth 1.8 nm or better</p> <p>Resolution 1 nm (scan 0.1 nm)</p> <p>Stray light <0.1 %T or better at 340 nm</p> <p>Scanning speed Fast, medium, slow</p> <p>Photometric modes Absorbance (Abs), Transmittance(%T), Energy(E)</p> <p>Photometric range Absorbance: -3.3 to 3.3 Abs or better</p> <p>Photometric Repeatability ± 0.1 %T</p> <p>Photometric accuracy ± 0.2 %T</p> <p>Output RS232/ USB</p> <p>Power requirements AC 220 V/ 50 Hz</p> <p>Display Capacitive touch screen or p-cap glass touch screen or better</p>	01 Nos
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17.	Water purification System	Manual dispense flow rate Automatic dispense volume Resistivity TOC Bacteria Pyrogens (endotoxins) RNases DNases Electrical power supply voltage Electrical power supply frequency Compliance Accessories	Adjustable between 50 and 2000 mL/min 100 mL to 60 L 18.2 MΩ.cm at 25 °C ≤ 5 ppb (µg/L) < 0.1 cfu/mL < 0.001 Eu/mL (pyrogen-free) < 0.01 ng/mL (RNase-free) < 4 pg/mL (DNase-free) 100 – 230 V ± 10 % 50 – 60 Hz ± 10 % ISO, CE, ULC certified All the necessary accessories to be provided. The system should have real time monitoring of resistivity/conductivity/TOC/temperature and volume to be dispensed. System should be supplied with pre-filtration unit consisting of 10, 5 & 1 micron filter and booster pump.	01 Nos
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18.	Turbidity meter	<p>Range</p> <p>Resolution</p> <p>Accuracy @25°C/77°F</p> <p>Stray Light</p> <p>Light Detector</p> <p>Light Source</p> <p>Lamp Life</p> <p>Method</p> <p>Calibration</p> <p>Environment</p> <p>Power Supply</p>	<p>0.00 to 9.99; 10.0 to 99.9 and 100 to 1000 NTU (Range Selection automatic) or better</p> <p>0.01 NTU from 0.00 to 9.99 NTU; 0.1 NTU from 10.0 to 99.9 NTU; 1 NTU from 100 to 1000 NTU or better</p> <p>±3% or better</p> <p>< 0.02 NTU</p> <p>Silicon photodiode</p> <p>Tungsten filament lamp or Infrared-emitting diode or better</p> <p>Greater than 100,000 readings</p> <p>Nephelometric Method (90°), ratio of scattered and transmitted light; Adaptation of the USEPA Method 180.1 or Standard Method 2130 B or ISO 7027 or DIN 27027 compliant</p> <p>2-5 points calibration or better</p> <p>Up to 50°C (122°F); RH max 95% non-condensing</p> <p>1.5V AA alkaline batteries (4) or AC adapter or better; auto-off mode</p>	01 Nos
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19.	Weighing Balance	Calibration Capacity Display Pan size Readability Power requirement	Motorized internal calibration ISO compliant 200 g or better LCD 100 mm 0.00001 g 220/230 volts, 50Hz AC supply	01 Nos
20.	Muffle Furnace	Design Temperature maximum Working temperature Accuracy Outer body Temperature controller Insulation Power supply Dimensions	Compact, table mounted 1200°C 1150°C ±1% or better Mild steel Microprocessor based PID temperature controller Ceramic blanket 220 V AC/ 50 Hz 6 inches x 6 inches x 12 inches	01 Nos

21.	BOD Incubator	<p>Double/Triple walled BOD Incubator operative in the temperature range of 5°C to 60°C or more and capable of controlling temperature with an accuracy of +/- 0.5°C or better and usable to grow and maintain microbiological culture.</p> <p>Shelves: Removable shelves, 2 No made of 316 SS</p> <p>Work Space 450 ltr capacity</p> <p>Properly sealed with food grade silicone elastomer</p> <p>Full length transparent door to have a clear inner view of the samples</p> <p>Heating element: Nichrome wire or better</p> <p>Provision for air circulation from the top/back</p> <p>Temperature control: PID controller with alarm</p> <p>Safety: Capillary type thermostat to take care of any temperature overshoots/ failure of PID controller</p> <p>Operation: 230 V AC single phase 50 Hz, 1500 W</p> <p>Microprocessor based control system with Digital LED display of temperature</p> <p>Inbuilt power supply (at least 2 sockets) for equipment like respirometric BOD system</p> <p>ISO certified</p> <p>Free installation if any and free demonstration</p> <p>CFC Free cooling system. R134 eco-friendly refrigerant</p>	01 Nos
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22.	UV Sensor	<p>Output (Sensitivity) 0.2 mV per $\mu\text{mol m}^{-2} \text{s}^{-1}$, 0.61 mV per W m^{-2}</p> <p>Resolution 0.1 W m^{-2}</p> <p>Calibration Factor (Reciprocal of Output) 5 $\mu\text{mol m}^{-2} \text{s}^{-1}$ per mV, 1.65 W^{-2} per mV</p> <p>Calibration Uncertainty $\pm 10\%$</p> <p>Measurement Repeatability Less than 1 %</p> <p>Long-term Drift (Non-stability) Less than 3 % per year</p> <p>Non-linearity Less than 1 % (up to 300 $\mu\text{mol m}^{-2} \text{s}^{-1}$)</p> <p>Response Time Less than 1 ms</p> <p>Field of View 180°</p> <p>Spectral Range 250 to 400 nm</p> <p>Directional (Cosine) Response $\pm 10\%$ at 75° zenith angle</p> <p>Temperature Response Approximately 0.1 % per C</p> <p>Operating Environment -40 to 70 C, 0 to 100 % relative humidity</p>	01 Nos
23.	TDS Meter	<p>Portable meter with probe of EC, pH and TDS</p> <p>Resolution: pH = 0.1, EC = 0.01 mS/cm TDS = 1 ppm or better</p> <p>Range: pH = 0-14, EC: 0.00 to 4.00 mS/cm, TDS = 0 to 19999 ppm, or better</p> <p>Display: LCD</p> <p>Calibration: Manual, 1 point</p> <p>Accuracy for EC and pH: $\pm 2\%$ F.S.</p> <p>Battery type: 9V</p> <p>Warranty: 2 years (probe 6 months)</p>	01 Nos

Note: Other specifications and conditions shall remain same as in the original tender

**Deputy Registrar
(Store & Purchase)**