











## ANNEX 1




### Chemistry Lab Items



#### Category - 4

No	Item	Qty	Specification	Pictures
1	High range nitrite colorimeter - checker	3	Range: 0 to 150 ppm Resolution: 1 ppm Accuracy: @ 25°C/77°F ±3 ppm ±5% of reading Light Source: LED @ 575 nm Light Detector: silicon photocell Method: adaptation of the Ferrous Sulfate method Battery Type: (1) 1.5V AAA Environment: 0 to 50°C (32 to 122°F); RH max 95% non-condensing Dimensions: 86.0 x 61.0 x 37.5 mm approx. Weight: 64 g approx.	
2	Freshwater alkalinity colorimeter	3	Range: 0 to 500 ppm CaCO <sub>3</sub> Resolution: 1 ppm Accuracy: @ 25°C/77°F ±5 ppm ±5% of reading Light Source: LED @ 610 nm Light Detector: silicon photocell Method: colorimetric method. The reaction causes a distinctive range of colors from yellow to green to blue to develop Battery Type: (1) 1.5V AAA Environment: 0 to 50°C (32 to 122°F); RH max 95% non-condensing Dimensions: 86.0 x 61.0 x 37.5 mm approx. Weight: 64 g approx Reagent Set: HI775-26 (25 tests)	
3	Multiparameter benchtop photometer and PH meter (HI83300)	1	For replacement of HI83200 multiparameter photometer  Wavelength Accuracy ±1 nm Light Source 5 LEDs with 420 nm, 466 nm, 525 nm, 575 nm, and 610 nm narrow band interference filters Spectral bandwidth 8 nm Input Channels 1 pH electrode input and 5 photometer wavelengths pH Electrode digital pH electrode (not included) Logging Type log on demand with user name and sample ID optional input Logging Memory 1000 readings Connectivity USB-A host for flash drive; micro-USB-B for power and computer connectivity GLP calibration data for connected pH electrode Display 128 x 64 pixel LCD with backlight Battery Type / Life 3.7 VDC Li-polymer rechargeable battery / >500 photometric measurements or 50 hours of continuous pH measurement Environment 0 to 50.0 °C (32 to 122.0 °F); 0 to 95% RH, non-condensing Dimensions 206 x 177 x 97 mm approx. Photometer/Colorimeter Light Detectors silicon photodetector Cuvette Type round, 24.6 mm Number of Methods 128	

4	Dissolved oxygen portable photometer	1	<p>Range:0.0 to 10.0 mg/L (as O<sub>2</sub>)  Resolution:0.1 mg/L  Accuracy:±0.4 mg/L ±3% of reading at 25°C  Measurement Method:adaptation of Standard Methods for the Examination of Water and Wastewater, 23rd Edition, Azide Modified Winkler Method  Photometer/Colorimeter Light Source: LED with 466 nm bandpass filter  Photometer/Colorimeter Light Detector: silicon photocell  Bandpass Filter Bandwidth:8 nm  Bandpass Filter Wavelength Accuracy: ±1.0 nm  Cuvette Type: round 24.6 mm diameter (22 mm inside)  GLP:yes  Display: 128 x 64 pixel B/W LCD with backlight  Logging Memory:50 readings  Battery Type/Life:1.5 V AA Alkaline (3 pcs.) / &gt; 800 measurements (without backlight)  Automatic Shut-Off:after 15 minutes of inactivity (30 minutes before a READ measurement)  Environment:0 to 50°C (32 to 122°F); 0 to 100% RH (IP67)  Weight:380 g  Dimensions:142.5 x 102.5 x 50.5 mm</p>	
5	Ten-parameter test kit, model FF-2	3	<p>Accessories to be included: two 100mL bottles of deionized water, twenty-three reagents, one flask, clippers, one graduated cylinder, one color comparator box, one digital titrator, one delivery tube, two plastic tubes, one thermometer, one BOD bottle, three color discs, a manual, and a carrying case.</p>	
6	HQ4300 portable multi-meter with gel pH, conductivity and dissolved oxygen electrode, 1m cable	3	<ul style="list-style-type: none"> <li>•Barometric Pressure Measurement: Automatic compensation of DO when using an LDO or LBOD prob</li> <li>•Cable Length:1 m</li> <li>•Certifications: CE, FCC, ISED, RCM, KC, ETL Verified: US DOE/ NRCan Energy Efficiency, RoHS</li> <li>•Data Export: USB connection to PC or USB storage device</li> <li>•Data Memory: 100,000 data points</li> <li>•Data Storage: Automatic in Press to Read Mode and Interval Mode. Manual in Continuous Read Mode.</li> <li>•Dimensions (H x W x D):63 mm x 97 mm x 220 mm</li> <li>•Display:3 to 3 parameters at a time, dependent on HQ model</li> <li>•Display Type:40x480 Colour TFT</li> <li>•DO Measurement Range:0.1 - 20.0 mg/L (ppm), 1 - 200% saturation</li> <li>•ISE Direct Measurement Range:Yes</li> <li>•Languages:English,</li> <li>•Measurement method:probe specific programmed method settings</li> <li>•mV Resolution:0.1 mV</li> <li>•Parameter:pH, Conductivity, Dissolved Oxygen</li> <li>•pH Buffer Sets: User-defined custom buffer sets</li> <li>•pH Electrode calibration:3 Calibration points, Calibration summary data logged and displayed</li> <li>•pH Measurement Range: 0 - 14 pH</li> <li>•pH Resolution&gt;Selectable: 0.001/0.01/0.1 pH</li> <li>•Probes included:pHC10101, CDC40101, LDO10101</li> </ul>	

7	Tensette pipette 1.0 - 10.0 ml	3	A Set includes one pipette, a manual and 50 disposable tips.	
8	Tensette pipette 0.1 - 1.0 ml	3	A Set includes one pipette, a manual and 50 disposable tips.	
9	DR300 pocket colorimeter, Nitrate with box	3	<p>Absorbance:0 - 2.5 Abs  Data Logger&gt;Last 50 measurements  Detector:Silicon photodiode  Dimensions (H x W x D): 34 x 69 x 157 mm  Display:LCD with backlight  Enclosure Rating:IP67, waterproof at 1 m for 30 minutes  Measurement method:Cadmium Reduction  Operating Conditions:0 - 50 °C; 0 - 90% relative humidity (non-condensing)  Parameter:Nitrate  Power supply:Four AAA alkaline batteries; approximate life is 5000 tests  Range:0.4 - 30.0 mg/L NO3-N  Sample cell compatibility:1 cm (10 mL), 25 mm (10 mL)  Source Lamp:Light emitting diode (LED)  Special Feature:With Box  Spectral Bandwidth:15 nm filter bandwidth  Wavelength:528 ±2 nm  Weight:0.25 kg  What's to be included?: Pocket Colorimeter should come as a ready-to-use kit in a sturdy custom carrying case, including batteries, sample cells, and a manual.</p>	
10	Colorimeter	3	<ul style="list-style-type: none"> <li>•It should be waterproof, dustproof, shock resistant, and has to be drop tested for greater quality assurance.</li> <li>•The instrument should come with an intuitive user interface, large data storage, and a built-in USB port for the easy transfer of information.</li> <li>•The portable colorimeter should also help satisfy core testing needs by offering at least 90 of the most common testing parameters.</li> <li>•Push button backlit display for use in low light areas</li> </ul>	

11	Spectrophotometer UV7	1	<p>"Wavelength Range (nm) 190 nm - 1,100 nm  Photometric accuracy (K2Cr2O7) <math>\pm 0.005</math> A  Wavelength accuracy <math>\pm 0.5</math> nm  Resolution (Toluene in hexane) <math>&gt;1.9</math>  Stray light (KCl, 198nm) <math>&gt;2.3</math>  Pharmacopeia compliant Yes  Kinetic Measurements Yes  Minimal Scan time 1 s  Display 7 inch QVGA Color TFT touch sensitive screen  Displayed Resolution 800x400  Dimensions (HxWxD) 8.98 in x 8.19 in x 10.04 in (228 mm x 208 mm x 255 mm)  Weight (incl. Terminal) 6.4 kg"</p>	
12	FTIR spectrometer	1	<p>" - Bench top FTIR  - With interchangeable sampling accessories  - 25 mm, optical aperture  - At least 3 Optical path lengths for analysis  - Does not take more than 30 x 30 cm of bench space  - Approximately 3.6 kg  - Pharmaceutical Software package for operation  - With library  - Interferometer: 60° air bearing interferometer  - Type: Double beam  - Wavelength Range: 7,000–350 cm<sup>-1</sup> / 5,100–600 cm<sup>-1</sup>  - Speed: <math>&gt;110</math> spectra/s  - Detection: Cooled DLaTGS / PbSe / Bolometer / Silicon / PMT  - Dimensions: 6 x 12 x 5 in  - Sample Type: Pellets, liquid, and gas  - Resolution: less than 2 cm<sup>-1</sup>  - Weight: 3.8 kg"</p>	
13	Turbidity meter	1	<p>360° x 90° Detection Technology,  Should include sealed vials for calibration</p>	

14	Bomb calorimeter	1	<ul style="list-style-type: none"> <li>• Automatic ignition</li> <li>• Automatic water filling and draining</li> <li>• Automatic oxygen filling, flushing and venting</li> <li>• FID technology for automatic decomposition vessel identification</li> <li>• New design of the decomposition vessel allows for easier and faster sample preparation</li> <li>• Can be operated with a chiller</li> <li>• Convenient and easy touch screen operation</li> <li>• Control chart view and correction calculation of globally used standards</li> <li>• Ethernet interface for data management via FTP server or connection of a network printer</li> <li>• Removable SD card allows for easier data measurement management, in addition to software updates</li> <li>• Measuring range max. [J] 00000</li> <li>• Touchscreen</li> <li>• Working temperature [°C] 22 - 30</li> <li>• Temperature measurement resolution [K]: 0.0001</li> <li>• Cooling medium temperature [°C] 22 - 27</li> <li>• Cooling medium tap water</li> </ul>	
15	Atomic absorption spectrometer	1	<ul style="list-style-type: none"> <li>• 3D Double-Beam Optics and Stable Hardware</li> <li>• Optimal adjustment of the light beam and light beam digital filter, and by using optical components that restrict light losses.</li> <li>• Manual to be included</li> </ul> <p>safety mechanisms, including gas leak detectors</p>	
16	Universal measuring instrument, chemistry	3	<p>LEYBOLD Brand Interchangeable CASSY sensors make it possible to measure many different chemical quantities including pH, Conductivity, Pressure, Temperature, Transmission, Illuminance, Voltage, Current, O2 and CO2 concentration.</p> <p>The sensors are detected automatically and the corresponding measuring range is displayed automatically in the large digital display. The connection of an NiCr-Ni (type K) thermocouple is also possible. The calibration of pH, conductivity, O2 and CO2 concentration is internally saved and therefore only needs to be checked from time to time. Additionally it is possible to connect the measuring instrument via the USB port to a computer. Including software for recording and evaluation of measurements. Measuring ranges: dependent on sensor</p> <p>Measuring range selection: automatic or manual</p> <p>Type K socket: for the connection of an additional NiCr-Ni thermocouple (not included)</p> <p>Calibration: 1 or 2 point (pH, conductivity, O2 and CO2 concentration automatically saved)</p> <p>Display: 5-digit, 7-segment display for numerical values and 7x25 LEDs for displaying units</p> <p>Height of digits: 25 mm</p> <p>USB port: compatible with USB 1.1 and 2.0, full speed, electrically isolated (USB cable included)</p> <p>Supply: 230 V, 50/60 Hz</p> <p>Dimensions: 20 cm x 21 cm x 23 cm</p>	