Public Health laboratory

قائمة الأجهزة المطلوبة لتطوير العمل في مختبر الصحة العامة

Equipments list for Public Health Laboratory – 2021

1- Priority (A)

#	Items	Descriptions	Estimated price $	Priority	use
1	**HPLC**	**High Performance Liquid Chromatography** **Consist of:** 1- Quaternary bump 2- Auto sampler. 3- PDA Detector. 4- Refractive Index Detector 5- Column oven. 6- Column C18 (4.6mmx15cm), C18 (4.6mmx25cm), C8 (4.6mmx25cm) and C8 (4.6mmx15cm) 2PCS Each 7- PC, monitor, printer and 3KVA Online UPS. 8- Control Software **Notes:** 1- must include: supply, installation and training 2- must include all accessories to be work fully functional	**100,000**	**A**	**Acti ingred in dr anal**
2	**Muffle Furnace**	• Laboratory Muffle Furnace • Capacity: 7L • Torture range: RT+5 to 1000 OC	**5000**	**A**	**Ash foo**

		• Control panel to adjust temperature and time • Power coated steel housing • Unique door locking design to ensure no leakage of high temperature inside the chamber • Working chamber made of ceramic chamber insulation materials, energy saving, light and easy to move • Automatic cut-off of the heating system when the door is opened, with no over temperature occurred • Power Supply 230 V			
3	**Heating Magnetic Stirrers**	• Construction material: epoxy painted aluminium structure • Heating plate: aluminum alloy coated with special protection • Heating plate diameter: >155 mm • Temperature 0 to 300ºc • Magnetic stirrer	**1000**	**A**	**Quant po**
4	**Ultra pure water Unite "HPLC Grade"**	Characteristic: • Automatic microcomputer control system, multi-level menu operation • Supplies end of life alarm, automatic fault detection, to provide security guarantees • Free to start, shut down the ultra-pure water circulation system to maintain 4.the system's low level of bacterial contamination • Integration of plastic molding cabinet, ergonomic design • System flow:PF+AC+RO+DI • Water requirements: city water: TDS<200 ppm • RO water conductivity:1～5μs/cm • heavy metal ion :< 0.1ppb • TOC:<10 ppb（UV<3 ppb） • Heat / endotoxin:<0.001 EU/ml（UF • Microbiology / bacteria:<1 CFU/ml • particulate matter:>0.22μm)<1/ml • Output:10 liter/hour • Power: 220V、50Hz	**7000**	**A**	**Prepa n of s solut**
5	**Laboratory Drying Oven**	• Capacity: Min 70L • Temp. Control Range RT+10OC to 300OC • Floor standing design, bottom heating, vertical force convection.	**2000**	**A**	**Fo mois in fo**

		• Stainless steel working chamber and powder coated steel housing with triple-layer toughened glass window on front door • Stainless steel shelf with adjustable space • Temperature controller with high-peed, high-performance CPU chip • High-sensitivity and high precision Pt resistance sensor • Preset programmed control with timing range up to 99 hours for power-on, power-off and working • Multiple alarmings for sensor failure, high/low temperature deviation, over temperature			
6	**Water distiller**	• Water Still for single distillation (fully automatic) with storage tank. • Capacity: 12 lt/hr. • Distilled water storage tank capacity: 24 liters. • Fully automatic operation with microprocessor control system. • Distilled water quality confirming the requirements of international pharmacopeia and bacteria and pyrogen free with minimized gassing. • Distilled water conductivity is approximately 2.5 µSiemens/cm at 20ºC . • CO2 degassing through the gas exhaust pipe. • Safety system and warning leds for :High water pressure, Low water pressure, Heater failure • Water supply controlled by the solenoid valve which stops the water flow when the distilled water tank is full and the distillation is re-started when water tank is withdrawn. • Protected heaters against running dry. • Stainless steel heaters. • Boiling tank, storage tank and condenser made of stainless steel. • Suitable for bench • Thermostatic low water cut-off • Heating element, evaporator, storage tank and condenser made of stainless steel. • **Separate cooling water inlet .** • Housing made of galvanised sheet steel, powder coated • Double-walled housing • Easy servicing to decrease maintenance time. • Supplied with siliphos cartridge filter to decrease calcification on the heaters. • Cooling water consumption Max. 120 lt/hr	**6000**	**A**	

		• Equipment should have be FDA,European CE, approved product certificate should submitted • Manufacturer should have ISO certification for quality standards certificate should be submitted • Warranty 3 years			

2- Priority (B)

#	Items	Descriptions	Estimated price $	Priority	use
1	**Cooled Incubator**	- Stainless steel working chamber and powder coated steel housing with dual-layer toughened glass window - Double doors structure - Stainless steel shelf with adjustable space - Compressor with over-pressure and under-pressure protection ,intelligent defrost, self-checking on-and-off control programme and internal refrigeration device. Low noise, long life and low temperature fluctuation - Omni-directional 3D heating technology ensuring uniformity of chamber temperature ,with independently-controlled illumination inside the camber - Equipped with 22OV power socket, convenient for BOD tests - Temperature controller with high-peed, high-performance CPU chip - High-sensitivity and high precision Pt resistance sensor - Preset programmed control with timing range up to 99 hours for power-on,power-off and working - Multiple alarming for sensor failure, high/low temperature deviation, over Temperature - Parameter memory - Temperature display calibration - Dynamic self-diagnostic control technology Independent temperature control and alarming system to provide dual protections and stop working in case of over-temperature Specifications: Chamber volume(L) : 80 L Timer :Power-on,power off and working.Timingrange:1min-99hr Temp. Control Range : 5C to 60C Accuracy : ±0.1C at 37C Fluctuation: ±0.3C	**4000**	**B**	**For E**

		Temperature Uniformity : ±0.3C at 37C Controller : PID microprocessor control, soft touch ,LED display Sensor : Pt 100 resistor			
2	**Laboratory Incubator**	• Capacity: Min 50L • Temp. Control Range RT+5O C to 80^{O} C • Directing heating of chamber with isolation • Stainless steel shelves and chamber with round corners, easy for cleaning and sterilization • Powder coated steel housing • Dual doors including inner door made of toughened glass for safety • Reasonable air circulation by fan to ensure uniformed chamber temperature • Temperature controller with high-speed, high-performance CPU chip • High-sensitivity and high precision Pt100 resistance sensor • Preset programmed control with timing range up to 99 hours for power-on, power-off and working • Multiple alarmings for sensor failure, high/low temperature deviation, over temperature	**2000**	**B**	**Fo incuba**
3	**Digital Refractometer**	• **Specification:** • Measuring range • Refractive index ND:1.300-1.700 • Brix BX - TC:0-95 % • Brix BX:0-95 % • Measuring accuracy • Refractive index ND:± 0.0002 • Brix BX - TC:± 0.1 % • Brix BX:± 0.1 % • Temperature • Temperature displaying range:0-50°C • Correcting range of BX versus temperature:15-45°C • Weight (kg):10,0 • Dimensions (mm):330x180x380	**2500**	**B**	**For T in fo**
4	**Digital Balance (2 digit)**	• -Capacity: > 3kg • Minimum Display: 0.01g • Pan Size (mm) approx.: Φ200	**500**	**B**	**Prepar of solu**

		• - Manual and auto calibration mode.			
5	**pH Meter** **Bench Top**	• Ideal for quality control and GLP applications • Up to 3 decimal place resolution • 1, 2 or 3 point pH calibration • Automatic or manual buffer selection • Multiple language options • GLP compliant • 2 year warranty **Technical Specification** • pH range - 2.000 to + 14.000 • pH resolution 0.001- 0.01- 0.1 • pH accuracy ± 0.003 • Calibration User selec table 1, 2 or 3 point • Automatic buffer recognition : (2.00, 4.00, 7.00, 9.20 and 10.00), DIN, NIST, JIS • mV range :± 1999.9mV • Temperature range :- 10 to 105°C • **Supplied with** glass combination pH electrode , electrode stand and holder, ATC probe, BNC shorting plug, pH 4, 7 and 10 buffer sachets and power supply.	**2000**	**B**	**Foo anal**
6	**EC/TDS Bench Meter**	• Conductivity, resistivity, TDS and salinity modes • Special pure water mode for ultra low conductivity measurements • Storage of 500 results with built in data logger • Infra-red data link (IrDA) for connection to printer and RS232 link to connect to printer or PC via DataWay software • 2 year warranty • The meter is a high specification laboratory conductivity /resistivity/TDS/salinity and temperature meter that offers additional accuracy with 1, 2 or 3 point conductivity calibration across the wide measurement range of 0 to 19.99S. • The dedicated "pure water" mode ensures the optimum accuracy for this difficult application. • Conductivity range: 6 auto–selected from 0 to 19.99S* • Conductivity resolution: 0.01µS to 0.01S	**2000**	**B**	**Wat anal**

		• Conductivity accuracy: ±0.5% ±2 digits • TDS range: 6 auto selected ranges from 0 –1999g/l* • TDS resolution: 0.01mg/l to 1g/l • TDS accuracy: ±0.5% ±2 digits • Temperature range: –10 to 105°C • Temperature resolution: 0.1°C • Temperature accuracy: ±0.5°C • ATC and manual: 0 to 100°C			
7	**Incubator CO_2**	• - Microprocessor control with soft-touch operating panel • - Digital displays for temperature and CO2 Level • - Autostart function with automatic zero-point adjustment • - Error analysis (I-function) and service checks via key switch • - Independent electronic over temperature protection with • separate pt 100 • - Stainless steel inner casing. With 2 shelves • - Independent fan , (removable) • - Direct electrical heating • - Cable for door heating runs through the hinges • - Fan shuts off automaticall when glass door is opened • Capacity 60– 80 liter • -Gaz Cylinder Monitor with CO2 Cylinder pressure regulator • - Power Supp. 220 V ± 10 % / 50 Hz	**3000**	**B**	**Foc microbi analy**
8	**Atomic Absorption Spectrophotometer**	**System Design** graphite furnace atomizersystems incorporate a true double-beam flame spectrometer **Monochromator :**Littrow design with motorized drive for automatic wavelength selection and peaking **Wavelength Range :** 184 – 900 nm. **Diffraction grating :** 1800 lines/mm blazed at 236 nm and 597 nm. **Spectral Bandwidths:** User selectable automatic slit widths of 0.2, 0.7 and 2.0 nm at their optimized slit height. **Detector:** Wide-range segmented solid-state detector, including a built- in low-noise CMOS charge amplifier array. **Automatic Lamp Selection:** 8-lamp mount with built-in power supplies for hollow cathode and electrodeless discharge lamps. Computer-controlled lamp selection and alignment via AA software. **Background Correction :** Deuterium Arc Lamp :Built-in continuum source double-beam background correction using a high-intensity Systems deuterium arc lamp **Zeeman-effect background correctionSystems**	**70,000**	**B**	**Hea met anal**

		Longitudinal AC Zeeman-effect Background using a modulated 0.8 Tesla magnetic Correction field oriented longitudinal to the optical path. The magnet is automatically switched on. **Graphite Furnace Atomizer :** Built-in fully computer-controlled **Transversely Heated Graphite Atomizer (THGA)** – the graphite tube is transversely heated, providing a uniform temperature profile over the entire tube. **Furnace Systems :** An external protective gas stream around the graphite tube prevents the entrance of outside Furnace Systems air to maximize tube life. An internal purge gas goes through the graphite tube to remove the volatilized matrix vapors during drying and thermal pretreatment. The two gas streams are computer-controlled independently. Pneumatic opening and closing of the furnace for easy tube change. **Common Furnace Features :** Analytical programs with up to 12 steps can be set up. Each step can be programmed with the following parameters: **Temperature :** Ambient up to 2600°C in steps of 10 °C **Ramp Time :** 0 to 99 sec in steps of 1 sec **Hold Time :** 0 to 99 sec in steps of 1 sec **Internal Gas Flow :** 0 mL/min (gas stop), 50 mL/min (mini-flow), 250 mL/min (full flow); can be switched over to another type of gas (alternate gas). **Furnace Opening and Closing :** Pneumatically-operated by software command. **Required Inert Gas :** Argon – inlet pressure 300 kPa (3 bar) minimum. Maximum gas consumption is 700 mL/min. **Water Coolant :** A circulatory cooling system included **Furnace Autosampler :** **Furnace Autosampler:** Sampler Table: Installed in front of the furnace unit. Removable sample tray with 88 and 148 sampling positions for sample and reference solutions and 1 overflow container for pipette washing. Minimum sample requirement: Ca. 0.1 mL. **Dispensable Volume:** Sample and Reagent: 1-99 µL, selectable in increments of 1µL. Max. dispensable volume is 99 µL (sample volume + reagent volume). Flushing volume is fixed at 1.3 mL. **Electronics:** The autosampler is powered from the spectrometer and is software-controlled **Data System** **Data Handling:** Instrument readings linear in absorbance (-0.500 A to +2.000 A), concentration or emission intensity with continuously variable scale expansion from 0.01 to 100 times. **AA Software Assembly** • AA Software is a workflow-based software designed to speed and simplify the journey from sample to results across a wide range of atomic absorption techniques—Flame, Furnace, FIAS-MHS/Flame/Furnace, FIMS and MHS. the software's intuitive interface mirrors the progression of the workflow, guiding users through each step for greater control and confidence			
9	UV/VIS Spectrophotometer	• **On-Board Data Storage:** • The System can save the test results, up to 200 groups of data and 200 standard curves in the RAM memory. Data can be restored after a sudden power failure. • **Auto setting wavelength:** • To set wavelength automatically to calibrate the system through arrow keys to avoid operation errors. • **Automatic Switching:** • Tungsten& Deuterium lamps switching is automatic. Selectable from a wavelength range of 190 to 1100nm.	**5000**	**B**	

		• **PC control through application software:** • The spectrophotometer is fully equipped and capable of executing all functions in stand-alone mode. • The application software **'Wave Professional'** provides computer control for the spectrophotometer(through the built-in USB port), apart from other functions such as spectrum scan, Time scan(kinetics), multiwavelength scanning & Nucleic Acid /Protein measurement. • **Large sample compartment:** • To accommodate 5–100mm path length cuvettes with built in 4-cell holder for 10mm square cuvette holder • **Optical System** : Single Beam • **Light Source** : Tungsten lamp&Deuterium lamp. • **Spectral Bandwidth :** 2.0nm • **Wavelength Range** : 190-1100nm • **Wavelength Accuracy** : ±0.5nm • **Wavelength Repeatability** : ≤0.3nm • **Photometric Range** : -0.3-3.0A, 0-200%T • **Sample Compartment** : 4-position,10mm ,path length cuvette • **Output** : USB Port&Parallel Port (Printer) • **Power** : 220VAC,50/60Hz,120W • **Must supplied complete with:** 1- Four Pcs glass square cuvettes. 2- Two Pcs quartz square cuvettes. 3- Wave Professional PC software. • User manuals, USB cable& Power cable			
10	**Dissolution Tester**	• Meet requirement of United State Pharmacopeia (USP) • Speed range: (20~200)rpm • Speed accuracy: ±2rpm • Temperature range: Ambient to +45.0ºC • Temperature accuracy: ±0.3ºC • Automatic time range: (5~900)min • Power: 220V	**4000**	**B**	
11	**Disintegration Tester**	• Meet requirement of United State Pharmacopeia (USP) • Basket assemblies: 2	**3000**	**B**	

		• Nacelle up and down frequency: (30~32)/min • Nacelle up and down range: (55±1)mm • Automatic time range: (1~900)min • Temperature range: Ambient to 45.0ºC • Power: 220V			

3- Priority (C)

1	**Biological Microscope**	• Total magnification : 40 x -1000 • Microscope stand :Vertical stage movement , 25 mm - • stroke with coarse adjustment. • Torque adjustment available. Coaxial coarse ad fine focus adjustment. • Fine focus gradations. : 2.5 u.m increment. Built-in • illumination for transmitted light, 6 V – 20 W halogen • bulb (pre-centered) Anti-fungus treatment type. • - Nosepiece : Quadruple nosepiece fixed with microscope stand • Observation tube : field number : 18 , standard binocular tube, inclined 45 degrees. • Interpupillary distance adjustment : 53 mm – 75 mm • Stage, Coaxial low drive controls with right- hand. • Traversing area 50 mm x 76 mm with vemier scales reading to 0.1 mm • Condenser : abbe type (N.A : 1.25) with aperture diaphragm . • Day light filter 1 pc • Objective : ED Achromat objective	**1000**	**C**	

		• 10x , 40x , 100 x spring , oil , anti –fungus . • Eyepiece : 10x , field number 18, anti – fungus. • Electricity : 220 V – 50 Hz single phase • 10 pcs of spare halogen lamp			
2	**Tablet Hardness tester**	• Automatic Tablet Hardness Tester • It has a high accuracy press sensor and displays hardness data • It tests tablet hardness continuity. • Calibration procedures are included. • Test Range: 0 ~ 20 kgf (Optional Up to 50 kgf) • Test Accuracy: ± 0.05Kgf • Probe Testing Range: 40 mm	**2000**	**C**	**Dru anal**
3	**FTIR spectrometer**	**FTIR spectrometer** • Easy to use, powerful, compact and robust – FTIR • Suited to a wide range of applications. • With fully integrated, robust universal sampling for trouble-free measurements and portability options • ideal for use in both laboratory and remote testing environments • Applications: Pharmaceuticals and Nutraceuticals, In-service lubricants and fuels, Environmental, Polymers and Academia • **21 CFR Part 11 Compatible** • **Depth** 30.0 cm • **Height** 21.0 cm • **Operating Range** 5 - 45 °C • **Technology Type** Infrared • **Warranty** 2 year • **Wave Length** 8 • **Wave Length Range:** 8,300 – 350 cm-1	**45000**	**C**	**Dru anal**

		Supplied With: FTIR, Software, drugs and toxic Libraries, ATR Sampling Accessories, Pc, monitor, Printer, online UPS and all required accessories.			
4	**Bench top refrigerated centrifuge**	• Speed range: 4000 rpm • Speed accuracy: ± 20 rpm • Time range: 1 min ~ 99 mins • Maximum capacity: 6 × 50 ml • Temperature range: -20 ℃ ~ 40 ℃ • Temperature accuracy: ± 2.0 ℃ • Maximum RCF: 5310 × g	**5000**	**C**	**For sa prepar**
5	**Digital Balance (3 digit)**	• Capacity: 500g • Minimum Display: 0.1mg • Response Time: Approx. 3.0 seconds • Operating Ambient Temperature: 5-40°C 20-85% • Temp. Coefficient Sensitivity (ppm/C): ±2ppm/°C • Pan Size (mm) approx.: 160 x 160 mm • Glass doors surround and closed fitly the stage of pan • - Power requirement: 12V, 1A	**1000**	**C**	**For sa prepar**

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