



**Centre for Kashmir Himalayan Biodiversity
(Documentation, Bio-prospection and Conservation)
University of Kashmir, Srinagar
Jammu & Kashmir, India**

**Specifications for items for which tenders have been invited vide tender notice
No. KU/CPEPA_Proj/ Tender_Notice/17 dated 17-08-2017.**

Equipment	Specifications
Cooling Microcentrifuge	<ul style="list-style-type: none"> • Automatic rotor recognition • 'Fast Temp' for achieving required temperature in shortest possible time • Should have a low access height: 25cm • Should have maximum speed: 16000 rpm or more • Should have Maximum RCF: 25,000 x g or more • Acceleration time to max.rpm: <18 s • Braking time from max.rpm: <18 s • Temperature range: -11°C to 40°C • Should have a built-in condensation drain to eliminate water accumulation. • Should have a capacity to accommodate 5ml rotor • All the rotors supplied should autoclaveable. • Rotor to be supplied : • The Metallic Rotor should have a maximum capacity of 48 x1.5ml/2ml tubes with 1 2,500 rpm and 18,000 x g. • Adaptor for 0.2/0.5ml tubes should be provided. • Instrument should be European CE certified. • Adaptor for 0.2/0.5ml tubes should be provided. • IQ/OQ and PQ should be provided at the time of installation.
Mini Spin	<ul style="list-style-type: none"> • Should have a Max. Rcf 16800 or better • Should have a speed of 100-14000rpm(100 rpm steps) or better • Timer from 30 sec to 99 mins with continuous run function • Brushless motor • Should be supplied with Metallic Aerosol Tight Rotor 18X1.5ml tubes • Fixed angle rotor should be at 45° • Autoclavable rotor (121° C, 20 mins)

	<ul style="list-style-type: none"> • Separate Short-spin button - for quick centrifugation • Should have acceleration time 11s and deceleration time 12s. • Power consumption should not more than 180W. • Centrifuge should be CE(European Conformity) • Should have a one year warranty • Adaptors for 0.2/0.5ml tubes should be supplied • IQ,OQ and PQ should be provided at the time of installation.
<p>Gel DOC with chemiluminiscent imaging</p>	<ul style="list-style-type: none"> • System should be capable for Western blot imaging, DNA, RNA gel and colorimetric protein gel imaging with extensive analysis tool for molecular weight calculation, band distance, colony counting, merge marker, etc. • Proprietary fixed manual lens with F/0.84 aperture • Sensor size must be at least 1 inch and should be Lumigen coated • Should have auto reconnaissance 4-position manual filter wheel allows for dye flexibility of different fluorescent stains. • Should have scientific Grade eVo-6 CCD camera with sensor size of 1 inch must for high sensitivity and extremely high level of resolution • Camera should give 6.3 megapixels native and 20 megapixels of extended resolution with -55°C maximum differential cooling from the ambient with -30°C absolute and regulated cooling by three stage peltier thermoelectric cooler. • Image output should be of publication quality TIFF format 16-bit with 65,536 gray scales and dynamic range of > 4.8 OD • Should be a lab proof compact design, require minimal bench space, robust and chemical resistant system made of Stainless steel, aluminum, steel and not of plastic cabinet to avoid auto fluorescence from the dark room • UV transilluminator must have Superbright Technology to visualize faint bands thereby increased sensitivity with no visible light background while performing gel documentation • Should have Sensoview Technology for isolation of the electronic components of the camera during the light capture in order to avoid noise • Should have Fluo Flash Technology for smart auto exposure mode with optimum exposure time

	<p>calculation</p> <ul style="list-style-type: none"> • Should have sensor based detection of sample height • Should have light safety switch override for safety and for preparative work when the door is open • Software should be multi-user licensed provided for analysis and must include features for auto exposure and 3D Dynamic scan. • Software should have Apps Studio with library of applications for better ease of use • System must have future upgrade possibilities for two color multiplexing studies with choices of Red, Green, blue and/or IR module for protein multiplexing studies. • System should be supplied with suitable desktop computer for operation and data analysis
<p>Carbon dioxide Incubator</p>	<ul style="list-style-type: none"> • 170-Liter CO₂ incubator with High Temperature Disinfection facility • Direct Heating system with Six-Sided heating effect • IR CO₂ sensor with automatic auto-zero programmable function to ensure accurate calibrated measurements. • Fanless Design. • Seamless Chamber. • Temperature range Ambient +4 °C to 50 °C. • Temperature Control ±0.1 % • Temperature stability at 37 °C ±0.1 °C • Temperature uniformity ±0.3 °C • CO₂ control ±0.1 % • CO₂ range 0.2 – 20 % • CO₂ stability at 5 % CO₂ ±0.2 % • CO₂ uniformity ±0.1 % • 25mm Access port with RS -232 Communications port. • Perforated Shelving . 4-position shelving rack with 4 shelves. • Sealed inner glass door for atmosphere conservation. • Large Volume humidification pan with dedicated independent heater. • Quick and comprehensive chamber cleaning made effortless. • HEPA filtration of gas supply inlets to minimize contamination risk. • High Temperature Disinfection: 120 °C 4-hour cycle. • Suitable Regulator with two Cylinder should be supplied. • Room Temperature Controlling System 1.5 Ton

	<p>should be supplies along with instrument.</p> <ul style="list-style-type: none"> • Should be supplied with 4 split inner doors. • Should have European CE. • IQ,OQ and PQ should be provide at the time of installation.
Carbon dioxide cylinders	<ul style="list-style-type: none"> • Indian
GC-MS	<ul style="list-style-type: none"> ▪ General Specification - Gas Chromatograph Mass Spectrophotometer with Head Space system: • A microprocessor controlled Latest Dual channel Gas Chromatograph should be fully automated with following minimum capabilities :- • Oven Ramps 20 times or more • Electronic Pneumatic Control of carrier gas pressure & flow independently. • Oven temperature Ambient up to 4°C to 450°C. ○ <u>Column Oven</u> • Accommodates up to two 105m x 0.53mm id capillary columns. • Operating temperature range suitable for all columns (packed & capillary) and Chromatographic separations. Ambient temperature +4°C to 450°C. • Temperature set point: 1°C. • Column oven cooling from 450°C to 40°C within 4.0 min. • Maximum achievable temperature ramp rate: 100°C/min or better. • Temp. Variation/rejection: <0.01°C per 1°C • Carrier gas pressure setting range from 0 to 900 kPa or better. • Electronic Pneumatic Control of carrier gas pressure & flow independently. • Replacement of GC column without venting MS vacuum should be possible, • GC should have inbuilt back flush facility in order to flush back the impurity or compounds that we have sometimes injected wrongly or to clean the column. ○ <u>Split/split less capillary inlet (S/SL) with EPC/APC-TWO</u> • Split/splitless injector port - two • Suitable for all capillary columns (50µm to 530 µm, id).

- Split/Split less mode for trace analysis.
- Maximum temperature: Ambient temp 400°C or more.
- FID Detector
 - Flame ionization detector (FID) that responds to most organic compounds.
 - Minimum detectable level :< 1.4pgC/sec or better.
 - Linear dynamic range: 10⁷.
 - Flameout detection and automatic recognition.
 - Maximum operating temperature: up to 450°C.
 - An electronically controlled splitter device to split the column effluent to FID and MS for simultaneous detection on both detectors should be provided.
- Mass Spectrophotometer specification
 - MS: Electron impact ionization (EI), with full scan (FS), SIM, and simultaneous SIM/scan operations.
 - Fast quadrupole scanning, up to 15,000u/s or better.
 - Mass resolution and Mass stability
 - Unit mass resolution
 - Mass stability better than 0.1u/48hours
 - Detector
 - Detector should be an EMT with the design capable of removing neutrals
 - Electron Inoisation (EI)
 - •Ion source temperature: up to 350⁰C
 - •Filament: Dual (Automatic switching)
 - •Electron energy: 10 to 200 V
 - MASS ANALYZERS
 - •Quadrupole mass filter with monolithic, hyperbolic shaped heated quadrupole
- PURGE AND TRAP INJECTOR
 - PTC Sample Concentrator for liquid samples with 60'' Siltek treated transferline, tubing and treated fittings through sample pathway, heated sample mount, Dry flow Moisture System. Should be upgradable to Autosampler.
 - 1. Fully automated liquid auto injector / auto sampler
 - 2) Thermal desorption unit to be attached to the GC/MS for dynamic headspace sampling.
 - 3) TD measurements (can be combined with liquid autosampler if possible for at least 10 samples).

- 4) Remote controlled , cooled injection system.
 - 5) It should inject from 0.1 μ L to 200 μ L or better range with variable speed and must perform from software. Should have capacity for 100 or sample vials.
 - 6) Auto Sampler must have facility to inject samples at two injection port or others.
 - 7) No. of Channels At least two, Operating Voltage 230 V.
 - 8) Separate Tube conditioner module (heater and gas flush) for separate preconditioning of TD sample tubes.
 - 9) It should be an ideal system for field based situations and cryogenfree operation.
 - 10) Capable of Electrical cooling, low gas consumption and possibly stringent leak testing.
- Library :
 - NIST library–latest version NIST 2014 with license to be supplied with the system(If possible latest version).
 - **STANDARD SPECIFICATION**
 - EI Scan sensitivity 1500:1 S/N for 1 μ l injection of 1 pg/ μ l OFN, scanning from 50-300 amu at nominal m/z 272 ion
 - Instrument Detection Limit (EI) : IDL limit of 10 fg or less of OFN for a 1 μ L injection of 100fg/ μ L OFN standard demonstrated at the time of installation
 - HEAD SPACE
 - Headspace analyzer with 10 Vials or more with EPC control and Vial shaking Facility. The HS should be software controlled. There should be provision to connect autosampler and headspace sampler to a single inlet simultaneously .
 - Chromatographic Data Software:
 - 64-bit Windows XP/Vista compatible data software includes Single point control of all GC and its Modules, customizable reports, data acquisition and post-run analysis.
 - User Friendly Software (Licenses version) - Should be Windows based operation system with validation facility for Chromatography.
 - Computer controlled system, 19” monitor computer system with 500 GB hard disc, 04GB RAM with other latest configurations of reputed make, laser printer of

	<p>repute make. Software should provide total support to analysis work controlling all the modules, Software features include high speed data acquisition and build analysis compatibility, full qualitative and quantitative processing function capability,</p> <ul style="list-style-type: none"> • Accessories: • Following items to be supplied along with the instrument: • Gas cylinders with regulators (He, H₂, N₂, zero air) and gas purification panel. • UPS with 10KVA capacity and 30minutes back up. • Columns HP5 MS 30m x 0.25mm x 0.25um or equivalent : 1 No • HP Innowax 30m x 0.25mm x 0.25 um or equivalent 1 No • DB35 MS 30m x 0.25mm x 0.25 um or equivalent 1 No • Autosampler vials 2ml capacity 500 Nos • Headspace vials 20 ml capacity 200 nos • Ferrules for columns for both MS and FID 20 Nos each • Inert glass liner for Split/splitless inlet 25 Nos <p>Low bleed Septa for Inlets : 100 Nos</p>
<p>Biosafety Level-II Cabinets</p>	<ul style="list-style-type: none"> • Type A2 Biological Safety
<p>Deep Freezer (-80)</p>	<ul style="list-style-type: none"> • CFC-free refrigeration • Exterior :18 gauge steel, 1.2mm thick. Powder coated . • Interior: Top Quality, Polished 304L Stainless steel. • internal capacity should be in the range of 400-450Liter. • Four adjustable shelves with five separate door. • Adjustable temperature setting from -40 to -86 degree. • Insulation: Urethane insulation • lowest attainable temperature of -80°C at the ambient temperature range of 32°C.

	<ul style="list-style-type: none"> • Membrane keypad eye level control panel. • Door Latch: Molded handle with built in removable lock. • Battery back up: Activate alarms and displays during power outages time delay and temperature delay mode for second stage compressors. • minimum of 5 year warranty for compressor and refrigerant • Alarm for power failure, high low temperature, battery low , filter clean and fault analysis. • Alarm and temperature should be adjustable with in 1 degree increments. • Inbuilt diagnostic software provides fault codes to trace and solve system error. • On off switch and On off Alarm should be lockable • 4 digit password for set point security • Door Latch: Moulded handle with built in removable lock. • Automatic Reset: Protect the microprocessor controller from failure caused by Power Spikes. • Automatic returns alarm and set points to user – programmed level after power interrupted. • Power consumption not more than 12kWh/day. • Heat output should not more than 650W • Noise level should be more then 55dB • Pull down Time should not more than 5.3 hrs. • Compatible Servo Voltage Stabilizer should be provided. • Instrument Should be European CE and UL certified • IQ,OQ and PQ documentation should be provided at the time of installation.
Microplate Reader	<ul style="list-style-type: none"> • Having monochromator base-UV-Visible wave length selection. • With Complete Data analysis software.
UV/Visible Spectrophotometer	<ul style="list-style-type: none"> • Quantification of sample volumes from 'Microlitres to Millilitres'. • System should be capable of determining very low concentration of biomolecule using fluorescent dyes, with an excitation wavelength of 470 nm and emission wavelengths of 520 and 560 nm • Should have in-built pre-programs for nucleic acids and protein quantification by fluorescence intensity using dyes such as PicoGreen®, OliGreen®,

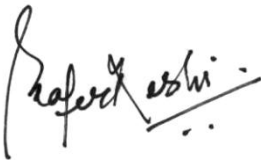
RiboGreen® and NanoOrange®.

- **Fluorescence intensity should be across a range of 0.5 nM - 2,000 nM fluorescein**
- **Detection limit for dsDNA should be 1 pg/μL**
- **Should have excitation wavelength 470 nm with 25 nm bandwidth and emission wavelengths 520 nm with 15 nm bandwidth and 560 nm with 40 nm bandwidth**
- **Random error should not exceed $\pm 2\%$ at 1 nM fluorescein (emission wavelength 520 nm)**
- **Optics must have the combination of xenon flash lamp with holographic aberration-corrected concave grating and receiver as CMOS photodiode.**
- **Operating principle must be with two beams: Absorption single-beam spectrophotometer with the reference beam.**
- **Instrument should operate moment switched on with no warming up time.**
- **Should be compact & stand-alone system to handle sample volume ranging from 1.5 μL to 4 mL.**
- **UV/Vis wavelength range from 200 nm to 800 nm, with spectral scanning feature.**
- **Low volume measuring surface must be of quartz and must be hydrophobic.**
- **System should also allow using conventional quartz/glass/plastic cuvettes in addition to low volume measurement.**
- **Must allow rapid and reliable quantification of Nucleic acids and proteins, OD600, dye methods (to calculate the FOI (both nucleic acid & protein)).**
- **Detection range for dsDNA: 2.5 ng/μL – 1500 ng/μL (with defined pathlength of 1 mm).**
- **Concentration via standard series must have curve fit evaluations viz., Regressions (linear, cubical, quadratic), and Interpolations (linear & Spline) with curve sections in detail with view directly on the instrument display.**
- **Should allow transfer of measured data to PC by connecting the device directly to PC without any additional software in addition to transfer the data via USB stick.**
- **Must have Multi – wavelength, Dual-wavelength applications with subtraction and division analysis.**
- **Direct operation on the device, with no requirement for PC.**
- **Measuring results (>1,000) can be saved directly on the device >100 method programs in memory.**

	<ul style="list-style-type: none"> • Spectral band width: < 4 nm • System should be supplied with Micro-cuvette, Micro-cuvette and Disposable cuvettes. • IQ,OQ,PQ should be provided. • Instrument should be CE certified, European.
vetScan Biochemistry Analyser	<p>Fully automated analyzer for Blood chemistry, electrolytes, immunoassay and blood gas equipped with Intelligent Quality Control. Specifically designed for veterinary applications. Sample integrity alerts: hemolysis (HEM), lipemia (LIP) and icterus (ICT). Able to give results with small amount of whole blood, complete profiling within 10-12 minutes. Able to analyze 8 different profiles viz. Comprehensive Diagnostic Profile (especially blood: Glucose, total protein, albumin, triglycerides, cholesterol, calcium, magnesium, inorganic phosphorus, ALP, AST, LDH, GGT, CPK, lipase, Urea, bile acids, uric acid and creatine kinase), Prep Profile II, Critical Care Profile, Equine Profile Plus, Large Animal Profile, T4-Cholestral Profile, Avian Reptilian Profile Plus, Mamelian Lever. Full colour touch screen operation. Stores up to 5000 test records, inbuilt and other connectivity option.</p>
Growth Chamber	<ul style="list-style-type: none"> • Of appropriate dimension for large experiments • Temp 5 to 45 degree • Option for variable CO₂ regime across chambers • High degree of accuracy and reliability in the control of temperature, humidity and lighting with a provision of larger plants of up to 1.5m can be grown inside the chamber. • Available with up to 5 shelves • Shelves can easily be added or removed by the user • Individually controllable shelf lighting • Optional humidity up to 90%rh • Separate chamber for seed storage, constant temperature chamber, easily adjustable tissue culture racks in each chamber
Line Quantum Sensor	<ul style="list-style-type: none"> • One Meter Long Single Quartz Sensor • LI-191R Line Quantum Sensor • The output of Line Quantum Sensor should have an option to be given to a Data Logger or to a Readout device
Canopy analyser	<ul style="list-style-type: none"> • Built-in GPS for GPS integration and mapping

	<ul style="list-style-type: none"> • Should work under any sky condition and be suitable for any size canopy – from Grass Canopy to Forest Canopy • Takes into account the scattering effect under full sun light condition
Ecosounder	<p> Transducer Frequency 235KHz Active Transducer Beam Spread 8 to 10 Degrees Depth Range 0.30m to 75.00m (Software limited) Accuracy +/-0.025m (RMS) Sound Velocity Range 1400 to 1600 m/sec Data Output Range 2Hz Ultrasonic Ping Rate 3 to 6 Hz (Depth dependent) Internal Power 9-24 v Internal Nickel Metal Hydride sealed battery (NiMh) Operating Temperature 0 to 45 degree Centigrade Usable Battery Life 8Hrs to 12Hrs between charging StandBy Battery Life 10000 Hours Battery Charge Smart switch mode charger for 90..250vac, 40..60Hz </p>
Qubit Fluorometer	<ul style="list-style-type: none"> • The Qubit® 3.0 Fluorometer • Fast and highly accurate quantitation • High levels of accuracy • Storage of results up to 1000 samples • Graphical display
Liquid Nitrogen Tank	<ul style="list-style-type: none"> • With Rack and Box system. • With level monitors.
Shaking incubator	<ul style="list-style-type: none"> • Speed range: 25 to 400 rpm +/- 1 rpm • Plat form size should be 460mmx 460mm. • Temperature Range : At least 20deg C below ambient up to 80deg C , must have Minimum set point 4deg C) • Temp Accuracy: ± 0.1°C at 37°C, with a uniformity of ± 0.25°C. • 1.9 or 2.5 cm (0.75 or 1 in) orbit options is mandatory • Controller: programmable for speed up/down and temperature up or down on a timed basis. • Multifunction single knob operation or key pad , no touch screen. • At least provision of 12 or more multistep programming each with shaking time and temperature. • Electrical motor : Brushless motor. • Drive : Triple eccentric electromagnetic Drive.

- **Stackable** : at least two machines should be stackable without any stand.
- **Universal tray with clamps** should have capacity to hold of variable sizes (50ml to 6L) and at least 18 flasks of 250ml capacity.
- **Moisture proof internal electric socket** installed in chamber for provision of run external equipment.
- **Provision for shelf (with adjustable height)** inside the incubator for incubating petri plates (to be provided by original equipment manufacturer).
- **Facility for future up-gradation for Gassing manifold** for direct gassing into containers placed inside the shaker, **Photosynthetic light** for plant tissue culture, **UV Light** .
- **Alarms System** should have audio visual alarms if units operates +/- 5 rpm and +/- 1 Degree centigrade of set parameters.
- **Clamps to be supplied:** 50ml-3nos., 125ml-3nos.250ml: 3 nos., 500ml: 3nos. nos.,
- **Should have Multi-function reservoir, with built-in pluggable drain, humidifies chamber** to reduce sample evaporation as well as capture accidental spills.
- **Should have Spill cover, above the drive, additionally protects electronics and mechanical components.**
- **Equipment should European CE,UL/ USFDA certified**
- **Atleast 200 installation** should be supplied of same model in India.
- **IQ,OQ,PQ with validation certificate** should be provided.



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