



Tender No. I-2022

Bidding Documents

SPECIAL INSTRUCTIONS

- No Cutting erasing is allowed in the Tender bid.
- Bid offered strictly in accordance with the bid document will only be accepted.
- Only typed bid will be accepted (no hand written)
- Bid Security will be accepted in the form of CDR (Call Deposit Receipt)

THIS IS FOR STRICT COMPLIANCE, FAILING WHICH THE RESPECTIVE BID SHALL STAND CANCELLED

**Contact Address:
Assistant Treasurer/Incharge Purchase Cell
Cholistan University of Veterinary and Animal Sciences,
Near DHA Bahawalpur
Tel: 062-9255718,731**

TERMS & CONDITIONS

1. The price of this tender document is Rs.1,500/- (Non-Refundable)
2. The Tender complete in all respect along with 2% Bid Security of Estimated Price / Cost in the shape of only "Call Deposit Receipt" (CDR) in favor of "Treasurer, CUVAS", Bahawalpur should reach in Treasurer office by **17-10-2022** at **11:00 a.m** in the Cholistan University of Veterinary & Animal Sciences, Bahawalpur.
- 3.

Lot No.	Description	Bid Security (Rs.)
1	Flame photometer (for Na, K, Ca, P, Cl)	20000/-
2	Bomb calorimeter	60000/-
3	NIR Feed Analyzer	160000/-
4	Fume hood	8000/-
5	Atomic absorption spectroscopy	170000/-
6	Hot air oven	16000/-
7	Forced air oven	16000/-
8	Muffle furnace	14000/-
9	Water distillation apparatus	1800/-
10	Gas chromatography (GC)	140000/-
11	ELISA reader	18000/-
12	ELISA Kit	5600/-
13	Grinding mill (along with 0.3, 0.6, 0.8, 1 & 2 mm screen size)	2000/-
14	Laboratory cyclone grinder / Cyclone mill/Laboratory grinding mill	6000/-
15	Heating apparatus (set of 6 heaters)	3000/-
16	Fume hood (small)	3600/-
17	Feed Formulation software with desktop computer for livestock	7000/-
18	Fiber Apparatus	67000/-
19	Sample probe for concentrates	600/-
20	Sample probe for Hay & Silage	800/-
21	Analytical Balance	3200/-
22	Digital weighing balance	400/-
23	Weighing balance (80 kg capacity)	600/-
24	Microscope with fitted camera & LED 50 inches	7000/-
25	Water Bath	1600/-
26	Centrifuge	4000/-
27	Spectrophotometer (UV)	18000/-
28	Daisy Incubator	44000/-
29	Pen state Particle size separator/ Sieves	3000/-
30	Magnetic stirrer with bars	2400/-
31	Vortex Mixture	2800/-
32	pH meter (Electrode method)	4000/-
33	Deep Freezer	3200/-
34	Refrigerator	3600/-

4. The Technical proposals will be opened on 17-10-2022 at 11:30 a.m. in Administration Block, Treasurer Office, Meeting Room, 1st Floor, Cholistan University of Veterinary and Animal Sciences, Bahawalpur.

5. The offered price should be inclusive of all taxes.
6. The rate must be quoted only in Pakistani Rupees.
7. Quoted rates must be valid for 90 days.
8. No offer shall be considered if it is:
 - a) Submitted without Tender Document.
 - b) Submitted without Bid Security money.
 - c) Received after the date and time fixed for the receipt of tenders.
 - d) Is unsigned.
 - e) Is ambiguous.
 - f) Is conditional.
 - g) Is given by the firm black listed, suspended or removed from the approved list by any Government, Semi Government, Autonomous Bodies or other firm.
 - h) Is received by Telegram.
 - i) Is received with a validity period shorter than the required in the tender enquiry.
 - j) Does not confirm to general conditions of the enquiry i.e it is not accompanied by sample or manufacturers literature where required.
 - k) for store materially and substantially different from that required in the tender enquiry.
9. 10% amount as performance security will be deducted from the bills of the firms at the time of payment of total of the supply order which will be retained, for at least three months after delivery of Items mentioned above or till the warranty period which ever will be later, by the Treasurer CUVAS Bahawalpur. In case of non-warranty items performance guarantee/security will be refunded/released after three months subject to the satisfactory report from the end user.
10. The sample may be provided as & when required by Technical Committee.
11. Applicable Govt. levies will be deducted at source from the bill.
12. The equipment / stores supplied by the bidder shall be brand new, in original manufacturer packing and complete in all respects. Cost of transportation of supplied equipment / goods to the site of university and cost of installation and commissioning of equipment shall be the responsibility of the supplier.
13. Supply of material should be made within stipulated period of the Purchase Order positively; in case of failure the amount of CDR may forfeited and purchase will be made at the risk and cost of the defaulter or any penalty as decided by the purchase committee of the University can also be imposed.
14. The buyer shall notify the supplier in writing/through telephone of any defects that occur during the warranty period. On receipt of such notification/telephonic message the supplier shall attend the breakdown call within a maximum of 6 working hours.
15. The firm offering prices for supply of machinery and equipment should have sufficient qualified technical staff and be equipped and having capability to undertake the maintenance or replacement for the equipment supplied to this University.
16. The successful vendors will attach the stamp duty of 0.25% or Rs. 1200/- (whichever is greater) of total value of the contract / purchase order at the time of signing of contract.
17. The bidding documents should be dropped in Tender Box in the office of the treasurer, 1st Floor, CUVAS, Bahawalpur, during five working days till the last date mentioned in tender notice.
18. Bids must be quoted on company's letter pad duly signed stamped by the bidder
19. Please attach NTN, GST and professional tax certificates with bidding documents.
20. Please attach the copy of your FBR Active taxpayer serial Number list for the current financial year.
21. Please read, sign all the tender documents, terms and conditions carefully and attached with your bidding documents.
22. Any further information if required can be obtained from Purchase Cell, CUVAS, Bahawalpur.
23. In case the contractor fails to execute the contract satisfactorily, the amount of security shall be forfeited. The security shall be released after satisfactory completion of the contract on production of report to the effect issued by the committee constituted for the purpose and expiry of successful warranty period.
24. On finding substandard quality or lower specification as and when noticed during process, the security deposited shall be forfeited in favor of the CUVAS Bahawalpur. The purchaser also reserves the right to purchase the material from elsewhere without any notice at the risk and cost of the defaulting contractor.
25. All pages of the tender document should be signed and stamped by the bidder.

26. CUVAS reserves the right to decrease /increase the quantity without consultation as and when required as per requirement and available budget.
27. CUVAS may ask the lowest bidder for any clarification/providing of documents for satisfactory evaluation of offer.
28. The payment shall be subject to the satisfaction of all items duly certified by the inspection committee/end user. Findings of the inspection committee will be binding on the supplier.
29. Quantity of Items can be increased or decreased (Fully or Partially) at the time of issuance of Purchase / Supply Order keeping in view the budgetary provision or any other reason thereof.

We, M/s. _____ hereby certify that we have read and agreed with all terms and conditions mentioned above.

Signature: _____

Designation: _____

Dated: _____

Stamp: _____

Assistant Treasurer/
Incharge Purchase Cell
Cholistan University of Veterinary and Animal
Sciences, near DHA, Bahawalpur
Tel: 062-9255718, 131

TENDER DOCUMENTS

LABORATORY EQUIPMENT

Lot #	Name of item	Qty	Specifications	Origin/ Make	Unit price inclusive all taxes (M)	Total price inclusive all taxes (M)
1	Flame photometer (5 lamps especially Na, K, Ca)	1	<p>Flame photometer should contain 5 lamps (Na, K, Li, Ca, Ba). Ranges: - 120-160 mmol/l Na (linearised) 0-10.0 mmol/l K Limits of Detection: Na 0.2ppm - K 0.2ppm - Li 0.25ppm Ca 15ppm Ba 30ppm Ba 30ppm Reproducibility: 1% Coefficient of variation (C.V.) for 20 consecutive samples using 10ppm Na set to read 50.0. Readings taken at 20 second intervals. N.B. C.V. is defined as: the sample standard deviation X 100 mean reading and sample standard deviation as: Where x is the reading, x is the mean readings of the series and n is the number of readings. Linearity: Better than 2% when concentration of 3ppm Na and K and 5ppm Li are set to read 100. Specificity: Interference from Na, K and Li when equal in concentration to the test element will be less than 0.5%. Stability: Better than 2% over 5 minutes when continuously aspirating 10ppm, sample set to read 50.0. Zero drift better than 2% per hour.</p> <p>Linearity: Better than 2% when concentration of 3ppm Na and K and 5ppm Li are set to read 100. Specificity: Interference from Na, K and Li when equal in concentration to the test element will be less than 0.5%. Stability: Better than 2% over 5 minutes when continuously aspirating 10ppm, sample set to read 50.0. Zero drift better than 2% per hour. N.B. Note warm up requirement. Sample Requirements: Between 2 and 6ml/minute. Recorder Output: Nominal 1.00 volt for readout of 100.0. Warm Up: The flame must be alight for at least 15 minutes to ensure achievement of the above stated specifications. Services: Electrical: 90-125V or 190-250V @ 50/60Hz. Air: Moisture and oil-free. 6 litres/minute at 1kg/cm² (14psi). Fuel: Propane, buta Operating Environment: 15°C to 35°C Size: 420 x 360 x 300mm Including: CO₂ Cylinder & Regulator (Local Arrangement)</p> <ol style="list-style-type: none"> 1) Flame photometer 2) Printer (laser) 3) Allied accessories, power supply, all accessories needed for installation 4) Services and repair facilities should be available in Pakistan 5) Dust cover 	UK/ Germany/ Japan/ USA		
2	Bomb calorimeter	1	<p>Bomb calorimeter: Suitable to determine calorific value of feed material. Heat capacity (14000 ~ 14500) J/K Resolution 0.001 K Measurement accuracy ≤60J/g, Repeatability error ≤0.2% (Grade C) Pressure endurance of bomb 20 MPa, Power ≤150W, stainless steel inner water cylinder Equipped with electric stirrer in the water tank Double-layer external container High uniformity of water temperature to meet the requirement of test. Temperature: 10-35 degree centigrade, Measuring range: 5 MJ/kg to 40 MJ/kg, Testing time: 8-15 minute, Power supply: 220 volts, Oxygen supply: Automatic, Data saved option and also through computer, Whole material: Stainless steel with external water jacket should be double layered, A computer (10th generation) should be attached for data storage, All accessories along with fittings and dust cover</p>	Imported		

3	NIR Feed Analyzer	1	<p>Application: For analysis of quality parameters of forages/fodder crops, grains, concentrates and TMR.,</p> <p>Quality parameters: crude protein, fat/EE, moisture (dry matter), starch, fiber, ash, NDF and ADF, ADL</p> <p>Type/case design: Portable/rugged case, Analysis time: 30-90 seconds,</p> <p>Wavelength ranges: 900 - 1700nm, Wavelength accuracy or Wavenumber accuracy <0.25nm or 0.1cm-1 at 7181cm-1</p> <p>Detector type Diodes Array/InGaAs diode or better, Reflectance source Alogen lamp/Tungsten lamp or better, Operative Software Provided/compatible, Display LCD</p> <p>Built-in printer, Provided Protection from dust, Provided Standard Calibration Package for forages/fodder crops and concentrates (grains, meals). Standard Calibration Package for quality parameters crude protein, fat/EE, moisture (dry matter), starch, fiber, ash, NDF, ADF and ADL</p> <p>Working temperature 0-35°C or better</p> <p>Communication interfaces USB/Wi-Fi/LAN</p> <p>Power requirements: 220Vac 50Hz Language: English.</p>	Imported		
4	Fume hood	1	<p>Material: Steel</p> <p>Function: Exhaust</p> <p>Feature: Corrosion Resistance, Heat Resistant, Acid & Alkali Resistant, Fireproof, Explosion Proof</p> <p>Hood Type: Standard Color: White Size(W*D*H) 1200*700*1600 mm or more Exhaust air volume 1200-1800m³/h Air Velocity 0.4-0.8m/s Sash 6mm thickness tempered glass Operation panel</p> <p>Lighting Switch, ON/OFF Switch, Two Sets of 220V/10A Versatile Electric Socket Sink PP Sink, Epoxy Resin Sink, Stainless Steel Sink</p>	Imported		
5	Atomic absorption spectroscopy	1	<p>Atomic Absorption Spectrophotometer:</p> <p>The specification mentioned below is preferred. Any equivalent or better specifications shall be mentioned in detail</p> <p>Fully automated double beam spectrometer for fast multi-element flame atomic absorption and emission determinations. The system must be capable of determining at least 8 elements in a solution before moving to the next solution. The flame stoichiometry must be optimized for each element during these multi-element determinations.</p> <p>Optics</p> <p>The optical system shall be fully reflective and shall not contain any refractive components such as lenses and/or optical fibers to ensure optimum transmission efficiency Optical components shall be overcoated with quartz for protection and enhanced UV performance.</p> <p>The optical system should be mounted on a rigid, cast metallic base and be fully sealed from the ambient air to ensure long life. The optics shall consist of 2 fixed light paths – one for the sample beam and one for the reference beam. The ratio of the sample and reference beam intensities shall be continuously monitored at the applied mains frequency (50 or 60 Hz) as a minimum. The optics should utilize a single beam splitter and a rotating mirror system to achieve the 2 fixed light paths. The performance of the optical system shall allow the measurement of Cesium (Cs) at 852.1 nm and Arsenic (As) at 189.0 nm using normal hollow cathode lamps. Computer controlled wavelength and slit selection with automatic peaking on each analytical wavelength Wavelength range: 185-900 nm Wavelength repeatability ± 0.040 nm or better Focal length: 250 mm Wavelength slew rate: 2000 nm/min. Slits: Automated slit selection. Settings: 0.2, 0.5 and 1.0 nm plus reduced height 0.5 nm slit</p>	Japan / Germany/ USA or Equivalent		

		<p>for graphite furnace operation Light detection shall be accomplished using a single, selected wide range photomultiplier tube covering the full wavelength range Monochromator design should feature a Holographic grating with minimum of 1200 lines/mm</p> <p>Dispersion 3.1-2.3 nm/mm Detector: Selected wide range photomultiplier tube for maximum signal to noise performance type R446.</p> <p>Lamp support Support for minimum of 8 lamps required. Lamps must be installed in fixed positions and selected using a fast motorized mirror to enable fast lamp selection The lamp power supply must allow simultaneous operation of ALL lamps, and provide option to leave lamps on or automatically switch off at the end of analysis. Lamps must be electronically modulated for better sensitivity and extended lifetime</p> <p>System must be compatible with: Coded lamps for automatic lamp recognition without adaptors Multi-element coded lamps for increased element capacity and automatic selection of next element High intensity boosted discharge lamps for low noise and best detection limits Lamps must be manufactured by AA supplier to ensure quality and support Warranty on hollow cathode lamps must be at least 5000 mA hours or 12 months</p> <p>Background Correction (flame operation) High speed deuterium background corrector with 2 ms response time required for accurate correction of fast background signals. Error in correction to be < 2 % at 2 Abs. background to ensure accurate correction of fast background signals. Both D2 and Zeeman Polarized correction in flame operation are acceptable</p> <p>Gas Control Must be programmable (software controlled)) for every element in flame mode, including if multiple elements are sequenced together in an automated determination Gas control must provide gas flow change within 30 ms after selection of required flows Automatic changeover between air and nitrous oxide flames Automatic flame ignition and flame off sequencing Separate flame-on and flame-off buttons</p> <p>Safety System All interlocks must be made without the use of connecting cables, restraining wires or tools A minimum of 8 safety interlocks required, monitoring: Burner type Burner installation Liquid trap Pressure relief bung Flame operation Flame shield Oxidant pressure Mains power Separate upper and lower flame shields required to protect operator from heat and UV radiation Must allow external adjustment of all burner controls An instrument chimney which contains the nitrous oxide flame must also be provided</p> <p>Flame Atomization System Spraychamber Requirements All gas hoses and connections must be made internally, to minimize exposure of hoses to physical damage, corrosion, heat and UV radiation Must be possible to remove and disassemble in seconds, without special tools. Specify design elements which contribute to rapid spraychamber clean-out Liquid trap must be fixed to the spraychamber and the liquid level interlock must be an integral part of the liquid trap Impact bead required with mechanism to allow external adjustment (without tools) Impact bead must be available for use with both air-acetylene and nitrous oxide-acetylene flames Must be possible to install mixing paddles for improved mixing inside the spraychamber and still retain use of the impact bead for improved performance Spraychamber must be</p>			
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		<p>capable of handling acids, alkalis and organic solvents. Specify materials of construction. Aluminium or polypropylene construction is not acceptable for this application. Must be fitted with an adjustable nebulizer with inert capillary and venturi. Specify materials of construction Atomizer Mounting and Adjustment Atomizer mounting mechanism should be suitable for flame, vapor and graphite furnace Must allow rotation of the burner through a full 90 degrees without having to remove flame shields or extinguish the flame</p> <p>Flame Performance Sensitivity A minimum absorbance of 0.9 is required from a 5 mg/L copper standard using an air-acetylene flame and aspirating at min. flow of 7.2 mL/min. Precision The percent relative standard deviation (%RSD) from ten 5 second integrations must be equal to or better than 0.5% for the same 5 mg/L copper solution aspirating at 5.0mL/min.</p> <p>Software The instrument control software must be a 64 bit system operating under Microsoft Windows 7 operating system, and must support two modes of operational sequencing: all elements determined sample by sample all samples determined element by element Must provide multi-tasking access to third party software applications including spreadsheets, word processors etc Must provide complete Quality Control software package that includes the following minimum protocols: QC blank, QC standard, QC spike, Duplicates, Precision (replicate %RSD), Correlation Coefficient and Detection Limit tests. Each test should provide a choice of user selected error action options, including Stop, Flag and continue, Retry, Recalibrate and repeat, and Switch to next method. All data to be automatically date and time stamped Correction Capability Weight, volume and dilution correction must be provided, with ability to import sample labels and weight/volume/dilution correction factors in ASCII format Password Protection</p> <p>Accessories Compatible Computer System with Software Compatible Air Compressor must be oil free Fume Hood Argon Gas Cylinder with regulator Acetylene Gas Cylinder with regulator Multi element lamp: Ca, P, Mg, Cl, Na, K, S, Zn, Fe, Cu, I, Cd, Ni, Mn, As, Ag, Pb, Se, Ti, Au, Co, Cr, Hg, Te, Bi, Sn Standards of 1000ppm from the manufacturer for the above mentioned elements of capacity 500ml with traceable certificate. Automatic 8 lamp turret Power supply All accessories needed for installation Services and repair facilities should be available in Pakistan Dust cover</p> <p>Vapor Generation Accessory</p> <p>Continuous flow vapor generation required for the determination of Hg, As, Se, Sb, Te, Bi and Sn at ug/L concentrations. Construction must allow rapid changeover between elements with conflicting chemistry (e.g.: As and Hg). Changeover must be modular. Performance of the system must allow 3 replicate readings to be achieved from 1 sample using < 8 mLs of sample with analysis time of 1 min. or better. Precision from the 3 replicate readings must be 1 – 2 % RSD</p>			
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			Allied accessories Power supply and all accessories needed for installation, Services and repair facilities should be available in Pakistan Dust cover			
6	Hot air oven	2	"Application used for treatment of samples with high humidity and density Air circulation type side air flue and forced convection temp. range RT+10~250°C temp. resolution 0.1°C temp. fluctuation ±1°C temp. uniformity ±2.5% chamber material A refers to cold rolled steel; AB refers to stainless steel shell material spraying cold rolled steel thermal insulation material aluminum silicate fiber heating device stainless steel heating tube Controller Temp. control double rows of digital tubes, PID Temp. setting press the four keys slightly Temp. display actual temp.:displayed by 4 digit digital tube(row 1); setting temp.:displayed by 4 digit digital tube(row 2) timer 0~9999minutes(with timing function) operation function running with data set and time set, and automatic shutdown based on setting program mode optional sensor Pt100 additional function deviation calibration, menu buttons lock, power outage compensation, and power outage memory. Safety device over-temperature alarm working size 600*500*750 working capacity 225L shelf load bearing 15kg shelf bracket groove 21layers Power source(50/60Hz)/Rated current AC220V/18.2A NW/GW 77/96kg Optional deviceshelf, RS485 port, printer, recorder, external communication, remote control, program temperature controller, wireless message alert, U disk storage."	Imported		
7	Forced air drying oven	2	Preferred specifications for Forced-air drying oven: Features: Optimized Air Flow by Forced-air Mechanism, Suitable for Drying feed ingredients, preferred with digital Fuzzy Control System, Door with heat insulation effect and double-layer toughened glass observation window with a large viewing angle in the middle. Working chamber stainless steel and surface with anti-corrosion, Ambient +5°C to 250°C Range with Accuracy of ±0.3°C, Max. Temp. Uniformity by Forced Convection: Rear-Side Fan/Heater, Corrosion Resistant Stainless-steel Chamber and Shelves, Perfect Heat Insulation Made by Heat-Resistant Rubber, Over Temperature & Over Current Protector and Sensor Error Detector, Air Flow-type: Forced-air, Blower FAN Capacity: 55liters or more Temp. Range & Accuracy Range: Room Temp +5°C to 250°C, Accuracy: ± 0.3°C at 100°C Temp. Uniformity: ±1°C at 100°C Temp. Sensor be present, Heat-up Time: 15 min. to 100°C, 25 min. to 150°C or better Timer & Alarm system be present, Error status & Timer-end be present, Resolution: Control: ±1.0°C, Display: ±1.0°C Shelves: Included Stainless Steel Wire Shelves, 2ea Ventilation hole, Safety Over Temp. and Over Current Protector and Sensor Error Detector be present. Material Internal : Stainless-steel, External : Powder Coated Steel with insulation Electrical Requirements: AC 220-230V, 50/60Hz	Imported		
8	Muffle furnace	2	1) Digital Muffle Furnace with Digital PID Control With Certificate & Traceability : Controlled by Serial Number, Certificate,	Imported		

			<p>Delivery-information, and Traceable Data Base System</p> <ul style="list-style-type: none"> ■ Patented Jog-Dial Control System and Digital LCD with Back-Light Function Included Ceramic Fiber Plate * Ceramic Fiber Exposed Heating Wire, Side Heating * Safety Switch for Door Opening * User's Self-Compensation Function for Temperature ($\pm 50^{\circ}\text{C}$) * Resolution : 1°C, 1min <p>Technical Specifications: Temp. Range: $300^{\circ}\text{C} \sim 1200^{\circ}\text{C}$ Capacity: 18 Lit or more Heater: Kanthal A1, Exposed Wire Heating Elements, 4-Side Heating Thermocouple: K-type Thermocouple Heating Power: 4 kW Required time to be reached 800°C: 20 min Timer & Alarm: 99hr 59min (Continuous run), Error status & Timer-end Display: Digital LCD with Back-Light Function Controller: Digital PID Controller with Jog-Dial Switch (Turn+Push) Safety Circuit: Over-Temp./-Current protection, Sensor Error Detection Safety Switch for Door Opening Material: Ceramic Fiber with Heating Wire-Internal, Powder Coated steel-External Ceramic Fiber-Insulation Dimension (W×D×H) Internal (cm): 25×35×16 Dimension (W×D×H) External (cm): 53×58×62 Electrical Reqts: 1 Phase AC 220V, 50/60Hz or 3 Phase</p> <p>2)Gloves: one pair heat resistant (900C) flexible and long sleeves gloves</p> <p>Allied accessories power supply All accessories needed for installation Dust cover</p>			
9	Water distillation apparatus	1	<p>Distillate output 4 litres per hour, single distilled Water Supply Requirement 1 litre / min (Min pressure 3 p.s.i)(0.2 x 105 NM-2) pH 5.0 to 6.5 Conductivity 3.0 to 4.0 $\mu\text{s}/\text{cm}$ Temperature 35 to 50°C Pyrogen Content Pyrogen free Power Requirement 220/240v , 50/60 Hz single phase, 13A fused. Dimension (d x w x h) 50 x 15 x45 cm Safety thermostat built into the heater protects the Favorite water still in the event of water supply failure and automatically resets when the water supply is restored All fitting accessories for installation</p>	Germany/USA/ Europe		
10	Gas chromatography (GC)	1	<ol style="list-style-type: none"> 1) Gas Chromatograph 2) Nitrogen generator 2) Hydrogen generator 3) Air compressor 4) Allied accessories for installation and proper working <p>Gas Chromatograph with following specifications or equal Sample injection system: sample injection and evaporation chamber Column oven: Temperature control: Control range: above room temperature 7°C-400°C. (increment of 1°C), Cooling time 400°C to 50°C in 8-15 min at 25°C ambient. Programmed temperature rising: 5 ramps, Rate of programmed temperature rising: 0.1°C- $40^{\circ}\text{C}/\text{min}$ (increment of 0.1°C). Detector/FID: Detection limit $D \leq 3 \times 10^{-12}\text{g/s}$ (C16) Optimum testing result: $\leq 3 \times 10^{-12}\text{g/s}$ Noise: $\leq 5 \times 10^{-14}\text{A}$, Drift: $\leq 6 \times 10^{-13}\text{A}/30 \text{ min}$ Linear range $\geq 10^{-6}$ TCD: Sensitivity $\geq 5000\text{mV.ml/mg}$, Noise $\geq 20\mu\text{V}$, Drift $\leq 60\mu\text{V}$, Linear range $\geq 10^4$</p>	Imported		

			<p>FPD: Sensitivity (minimum testability) $\leq 8 \times 10^{-13}$ g/s, (P) (sample: P in the parathion methyl) Optimum testing result: $\leq 8 \times 10^{-11}$ g (P)/s, Drift $\leq 2 \times 10^{-11}$ A/30 min, Stability $\leq 30 \mu\text{V/h}$, base line Noise, $\leq 5 \times 10^{-12}$ A NPD: Sensitivity (minimum test ability) Dt(N) $\leq 5 \times 10^{-12}$ g/s, ECD: detection limit $\leq 2 \times 10^{-13}$ g/ml Drift ≤ 80 micro v/h Noise ≤ 20 micro V Linear range $\geq 10^{-3}$, Max application temperature 350°C. Nitrogen Generator specifications: Nitrogen purity: 99.997%, oxygen content <3PPM, water content dew point -56°C, Nitrogen flow rate: 0-500ml/min, Output pressure: 0-0.4Mpa (determined by raw material air pressure), Pressure stability: <0.003MPa (depending on the stability of the air source). Power supply: 220V $\pm 10\%$ 50Hz, Power consumption: 100W, Working environment: 1-40 °C Relative, H generator: Hydrogen purity: 99.999%, Hydrogen flow rate: 0-500ml / min 3. Output pressure: 0-0.4Mpa, Pressure stability: Power supply: 220V $\pm 10\%$, 50Hz, Power consumption: 250W</p>			
11	ELISA reader	1	<p>Microplate Reader, automatic Microplate types : 96/48 -well plate, Wavelength range: 400nm~850nm, Touch screen with 10.4" color LED display, Standard filters: 405,450,492,630nm & 4 optional, Reading range: 0.000~4.000A, Microplate types 96/ 48 -well plate, Photo detector: Silicon Photodiode, Light source: 8v/50w Controlled tungsten halogen lamp, Wavelength range: 400nm~850nm, Standard filters: 405,450,492,630nm & 4 optional, Reading range: 0.000~4.000A, Resolution: 0.001A, Accuracy: ± 0.008A, Reproducibility: $\leq 0.2\%$, Stability: ± 0.003A, Reading Speed: Single, Wavelength ≤ 3s ; Double Wavelength ≤ 6s, Shaking: Linear, Shaking , 3 speeds, Printer: Built-in Thermal Printer, optional external printer, Interface connections, dvi, vga, network interface, usb, audio interface, rs-232, Power supply: 100~240V, 50~60Hz: Dimensions: 460(L) \times 350(W) \times 197(H)mm, Net weight 8kg.</p>	Imported		
12	ELISA Kit	4	ELISA kit	Imported		
13	Grinding mill (along with 0, 1, 2, 3, 4, 5 and 6 number screen size/jaali number)	1	Grinding mill along with 0, 1, 2, 3, 4, 5 and 6 number screen size (Jaali number)	Imported/ Local		
14	Laboratory cyclone grinder / Cyclone mill/Laboratory grinding mill	1	<p>Laboratory Mill/sample grinder cyclone mill Technical Specifications: Funnel volume 200 ml to 500 ml, Product discharge For collection tubes with norm grinding, Sieves 0.2 to 6 mm mesh size, Grinding attachments (convertible), Hammer attachment, Cutting attachment Motor: prefer the motor with wear-free three-phase, Gearless direct drive Security system auto-off, having uniform particle size in a variety of materials. Designed to be adaptable to lab sample grinding requirements with quality interchangeable components and attachments. Drive power 1000W, Speed range 50 to 6'000 rpm, Supply voltage 100 - 230 V $\pm 10\%$, 50Hz / 60Hz, operating temperature 0 – 40 °C Sieves; 0.2, 0.5, 1, 2, 3, 4, 5, 6mm or mill with arrangement to grind the feed material in above said sizes.</p>	Imported		

			Allied accessories: All accessories needed for installation, Services and repair facilities should be available in Pakistan, Dust cover			
15	Heating apparatus (set of 6 heaters)	1	Power Supply AC 220V/110V 50Hz/60Hz Speed 0-2400rpm, Motor power 25W*6 Heating power 150W*6 Temperature control range: room temp to 100° C	Imported		
16	Fume hood (small)	1	Material: Stainless Steel Size 2x2x4 feet Power 220 Light Manual door acrylic sheet	Imported		
17	Feed Formulation software with desktop computer for livestock	1	<p>Preferred specification for Dairy feed formulation software:</p> <p>Software should be formulator and evaluator for livestock feeds. Should be least Cost Feed Formulation Software, easy and friendly to use, useful for ruminants (Cattle, buffaloes, camel, goat and sheep etc.),</p> <p>Multi-plants (Each plant having specific Ingredients, Nutrients, Formulas store and Ingredients Prices), can handle unlimited numbers of Ingredients (Ingredients values also automatically set on Moisture Basis on a single click) and Nutrients A high-quality interface to set Ingredients and Nutrients Values and limits. Can import and Export database (ingredients, Nutrients, Composition and Price). Can calculates a least cost formula, and you can manage Batch Size and Bag weight. Advanced features like, Para metrics, Formula comparison, Cost Summary (Profit/loss Managed by adding Sale price, Overhead charges etc.), Nutrients Ratio's (Lysine to other Amino Acids). Amino Acid Calculator (Total and Digestible) just select ingredient and add Crude protein Value), Energy Calculator, just select ingredient and add values of Proximate analysis on a single click, can calculate Metabolizable Energy, Net Energy. Registered Windows 08/ 10, also OS apple supporter, should programmed in Microsoft CTM 32 or 64-bit Microsoft or OS Windows applications and were programmed in Microsoft Visual Basic 6.0 or 8.0TM and Microsoft C++ 6.0or 8.0TM with a Microsoft Access 2000TM database capability to store input and output values. Work under Mathematical nutrition model that computes dairy cattle requirements energy and nutrients based on characteristics of the animal, environment and the physicochemical composition of the feeds under diverse production states.</p> <p>Designed as a steady-state model to use rates of degradation of feed carbohydrate and protein and the rate of passage to estimate the extent of ruminal fermentation, microbial growth, and intestinal digestibility of carbohydrate and protein fractions in computing energy and protein post-rumen absorption, and the supply of metabolizable energy and protein to the animal. Facilitate the characterization of individual feeds and a sub-model to predict ruminal metabolism and intestinal absorption of long chain fatty acids.</p> <p>Auto calculate ingredients without leaving stored formula screen, Change plant codes easily, Export data to tables, Database of feed ingredient and cost, Show nutrient composition on percentage of dry matter and fresh matter, It defines the nutrient level required in the formula and feed ingredient inclusion level, Click to copy data from one plant to all plants within same source plant, Click to delete a nutrient from all ingredients, Compare nutrients in new vs. stored formula, Changes from 0 are marked in red, Formula stored date" on optimization main screen, A computer with Processor i5, Ram 8 GB, Storage 256 SSD to run the software.</p>	Imported /local		
18	Fiber Apparatus	1	Fiber Analyzer apparatus: Main fiber apparatus unit with all accessories Performance data: Sample size: 0.5 - 3 g	Imported /local		

			<p>Measuring range: 0.1 - 100%</p> <p>Preheating time 10-12 minutes</p> <p>Heating to boiling 13-15 minutes</p> <p>Capacity per batch = up to 6 samples, Safest fiber analysis solution available for Crude fiber, ADF, ADL and NDF,</p> <p>Repeatability error 0.4 to 1%</p> <p>Repeatability: < 1% relative at 5 - 30 % fiber level,</p> <p>Accuracy: According to official methods Official reference method results with unrivalled accuracy (ISO, AOAC, Van Soest)</p> <p>Applications: • Crude Fibre (acc. to Weende). Neutral Detergent Fiber, Acid Detergent Fiber, Acid Detergent Lignin,</p> <p>Rated power 2.2 Kw</p> <p>Power supply (220 V AC(50-60 Hz.),</p> <p>Display 7 inches touch color screen</p> <p>Hot Extraction Unit comprising: Hot Extractor, Reflector, Reagent Bottles, Hot Water Sprayer, Beaker, Funnel, Water Suction Pump, Antifoaming Agent, Tubing, Holder for 6 crucibles, Stand for 6 crucibles, Crucibles (P2 standard, 2 sets of 6), Manual.</p> <p>Cold Extraction Unit comprising: Working temp 10-40 C Sample wt. 0.5-3 g Batch capacity 6 pcs per batch Cold Extractor, Spray Bottle, Tubing, T-tube, Spare Part Kit, Stand for 6 crucibles, Crucible, P1 (100 - 160 µm), set of 6 Crucible, P2 (40 - 100 µm), set of 6, standard Crucible, P3 (16 - 40 µm), set of 6 Crucible, P0 (160 - 250 µm), set of 6 Antifoaming Agent, Celite, 1 l Allied accessories Power supply and all accessories needed for installation, Services and repair facilities should be available in Pakistan Dust cover</p>			
19	Sample probe for concentrates	1	SS steel made slotted probe for concentrates and grains	Imported/ Local		
20	Sample probe for Hay & Silage	1	MS Steel made forage/silage/hay probe	Imported/ Local		
21	Analytical Balance	2	<p>Semi-Micro Analytical Balance</p> <p>Capacity(g) 220g</p> <p>Resolution(g) 0.0001g</p> <p>Min weighing(g) 0.0004g</p> <p>Stable Time ≤3s</p> <p>Display LCD(white back light with black font)</p> <p>Pan size: Ø80mm to 90mm,</p> <p>Operation temp 5-35°C</p> <p>Repeat ability ±0.0002g</p> <p>Liner ±0.0003g</p> <p>Preferably Dimension 300X200X295mm</p> <p>Draft shield size 180x175x200mm</p> <p>LCD Size 96x24mm</p> <p>Cal.weight External(Internal) Calibration</p> <p>Option RS232C(Standard)/ RS485 /</p> <p>USB/Printer(Optional)</p> <p>Standard Language:English,</p> <p>Power Supply:110-230V 50/60Hz Out DC 12V 1A.</p>	Imported		
22	Digital weighing balance	2	Capacity to weight 1g to 5 kg	Imported		
23	Weighing balance (80 kg capacity)	1	Capacity to weight 1g to 80 kg	Imported		
24	Microscope with fitted camera & LED 50 inches	1	<p>Microscope fitted with camera: 30 degree inclined, 360 degree rotatable trinocular Siedentopf head 1 pair Wide-field 10X eyepieces 1 pair Wide-field 25X eyepieces</p> <p>Interpupillary distance: 48-75mm Adjustable ocular diopter: +/- 5dp</p>	USA/Europe or equivalent		

			<p>4 Objective lenses: 4X, 10X, 40X (Spring), 100X (Spring, Oil) Magnification levels: 40X, 100X, 250X, 400X, 1000X, 2500X Quadruple revolving nosepiece Mechanical stage with rack stop, 130x130mm Stage x-y travel range: 70x30mm NA 1.25 Abbe condenser with iris diaphragm Coaxial coarse and ultra-fine fine focus knobs Transmitted illumination with 1W LED bulb, adjustable brightness Power supply: Built-in 110-240V power input Siedentopf Trinocular Microscope Head *1 Microscope Body Frame with Double Layer Mechanical Stage and LED Illumination *1 Four DIN Standard Objectives(4X, 10X, 40X and 100X)*1 One Pair of Widefield 10X Eyepieces*1 One Pair of Widefield 25X Eyepieces*1 Blue Color Filter *1 Dust Cover *1 Sample Immersion Oil *1 User's Manual Download *1 Power Supply Cable* 1(UK/EU Plug) With Camera 5mp</p> <p>LED 50" inch: TV Type Smart TV USB Port 2.0 Remote Control, Audio systems Dolby Digital Remote Control Type Wattage per Speaker Channel (RMS) 10 W x 2 Built-in speakers Standby Power Consumption 0.3 W Package weight in KGs 17.5 Kgs Processor Type Quad Core VESA Mount (400x400 mm) Display Resolution 3840 x 2160 Frequency 50/60 Horizontal resolution 3840.0 Bluetooth Internet connection Integrated WiFi Input voltage 220 – 240 Wireless Standard 802.11ac Operating System Type Tizen WiFi Full HD, HDMI Yes Display Type LED TV Ethernet Display, Screen Size 50 Inch HDTV 4K UHD, Connectivity Number of HDMI Ports 3.0 Technical Information Aspect ratio 16:9</p>			
25	Water Bath	2	<p>Temperature controlled, Capacity: 22 Lit. Temp. Range: Ambient +5°C ~ 100°C. Temp. Sensor: PT 100. Display: Digital LCD Display Sensor Error Detector.</p>	Imported/local		
26	Centrifuge	1	<p>Centrifuge machine: Speed 300-4500rpm, 100rpm increments, Speed Accuracy +/- 20rpm, Rotor Capacity 8 x 15ml centrifuge tubes, 12 x 10ml/7ml/5ml vacutainer, Max. RCF 2490g Accel / Decel 20sec / 13sec Run Time 30secs to 99mins Timer or Continuous Operation Rotor diameter 230mm Motor Brushless DC motor Display LCD Dimensions (L) 11.0 –(W) 10 (H) 5.5 inches (Rotor radius: 11.5cm), Safety Devices Door interlock, Overspeed detection; Automatic internal diagnosis</p>	Imported		
27	Spectrophotometer (UV)	1	<p>1)Spectrophotometer: Double beam spectrophotometer (UV-Vis) with wide and color LCD screen. Spectral Bandwidth should be 0.5, 1, 2, 4nm. Wavelength Range 190 – 1100nm. Detector Solid Silicon Photodiode, Light Source Tungsten Halogen/Deuterium Lamp. Wavelength Setting should be automatic, Wavelength Accuracy should be ±0.3nm, Wavelength Repeatability should be ≤0.2nm. The instrument should show various scanning curves and charts for users to complete various tests without computers. Support USB storage and different data formats such as Excel, text and image. The instrument should have advanced hardware and processor. The equipment should have long-life socket type tungsten-halogen and deuterium lamps which can work up to 2000 hours, can switch the lamps according to test needs and record its working time automatically. The instrument can be connected to printer directly and output test charts and data.</p>	USA/Europe/Germany		

			2)All allied accessories for installation. 3)Laser printer should be supplied with spectrophotometer			
28	Daisy Incubator	2	Daisy II In-Vitro Incubator Sample Size 0.25 g - 1.0 g, Samples per batch: >100, Operating Temperature 39.5°C (can be adjusted) Dimensions: 44 cm wide x 47 cm deep x 64 cm high, Power Requirements: 110 – 240V, 50/60 Hz Weight: 34 kg Filter, Bag Type: F57.	Europe/USA / Imported		
29	Pen state Particle size separator/ Sieves	1	Set of 4 sieves (19mm, 8mm, 3mm and 1.20mm diameter) with tray as base and cover similar to Pen state particle separator	Local made/imported		
30	Magnetic stirrer with bars	1	Temp range : Ambient +5 - 380°C Overheat protection : 420°C Temp accuracy at plate : ±1(100°C) Temp control accuracy of liquid using PT- 1000 Sensor : ±1°C Temp increments : 1°C Heat output : 500W Power : 510W Heating rate (1 liter water) : 6K/min Speed display : LCD (backlit) Protection class : IP21 Plate size : 5.5 x 5.5 in. Plate material : Ceramic coated aluminum Dimensions : 12.5"L x 7"W x 4.2"H Weight : 5lbs Voltage : 110Volts 60Hz, 510W With bars	USA/Europe or equivalent		
31	Vortex Mixture	2	Variable speed control from 250 to 2500rpm Quiet and compact stable design, Used for various mixing applications with adapters Adapters available for tubes etc. Touch operation or continuous mode Electronic speed control for constant speed even during changes in load Steel base, silicone feet for ultra stability and vibration damping Specially designed vacuum suction feet for body stability Robust aluminum-cast construction cTUVus approvedCE Marked	USA or Equivalent		
32	pH meter (Electrode)	2	Preferred Specifications pH meter with electrode method, Display with wide LED screen Parameters pH, mV, temperature pH Measuring range -2.00~16.00 pH pH Resolution /0.01/0.1 pH pH Accuracy ±0.02pH Temp Measuring range:-5°C~110°C Temp Resolution: 0.1°C Temp Accuracy: ±0.5°C Temp Compensation: 0-100°C, automatic Calibration: automatic Auto recognition of standard pH buffer solutions Buffers Europe/USA/NIST Working Conditions: Temperature: 5-40° Humidity: 5-85% Accessories Buffers for calibration (low and high pH) Power supply All accessories needed for installation Dust cover	USA, Europe or Equivalent		
33	Deep Freezer	2	Type: Chest Freezer (inverter), medium size, Gross Capacity (Cubic Ft.): 12.19 or more Temp Freezer: Min -28 Temp Ref: Net Voltage Range: 160V - 260V Refrigrent: R600a Food Basket: 1 Super Freeze Function: Yes LED Lights: 1 Power On Indicator: Yes Climate Class: T Copper Evaporator: 5 sides Warranty: 10 Years Compressor Warranty	Imported /local		

34	Refrigerator	2	Inverter Refrigerator Full size, Two Door Voltage (v) 220 Climate Class T Warranty at least 5 Years Compressor Warranty Freezer Position Freezer Top Refrigerant R600a Control System Mechanic Cooling Technology Direct Cool Type of Shelf Wire Ice Tray 1 Refrigerator Light Yes Number of Crisper 1 Freezer Door Pockets2 Egg Tray 1 Refrigerator Door Pockets 3, Door Lock Yes, Door Type Glass Type, Lowest Ampere Technology 35% Energy Saving Bigger Crisper Space Top LED light	Imported /local		
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Technical Evaluation Criteria

The Technical proposals shall be evaluated by the technical evaluation committee in the light of following evaluation criteria:

Category	Description	Points
Legal (Mandatory)	Certificate of Company/Individual / Firm Registration/Incorporation under the laws of Pakistan.	Mandatory
	Valid Income Tax Registration.	Mandatory
	Valid General Sales Tax Registration (Status = Active with FBR as on the date of submission)	Mandatory
	Submission of undertaking on legal valid and attested stamp paper that the firm is not black listed by any of Provincial or Federal Government Department, Agency, Organization or autonomous body or Private Sector.	Mandatory
Eligibility Criteria	Organization anywhere in Pakistan. Must have 3 Years' Experience	Mandatory
	Compliance to the technical specifications of all items to be procured.	Mandatory

Mandatory Note:

- Verifiable documentary proofs for all above requirements are mandatory.
- Vendor/ Supplier will be responsible for installation and configuration of the supplied equipment in client environment as per client's requirements (where necessary)
- Brand and Model Number of quoted equipment must be mentioned. (Where applicable)
- Technical Brochures of quoted equipment must be attached. (Where applicable)

PROCUREMENT OF LABORATORY EQUIPMENT
TECHNICAL PARAMETERS

Category	Description		Marks
Relevant Experience (Max points 15)	3 to 8 years		5
	9 to 14		10
	15 and above		15
Financial (Max points 25)	Annual Turnover	Rs. 1 million	5
		Rs. 2 million	10
		Rs. 3 Million and above	15
	Audited Financial Reports	For the Past 3 Years	5 (1.67 per year)
	Income Tax Returns	For the Past 3 Years	5 (1.67 per year)
Relevant Projects in Govt. public sector university and Semi Govt. Departments (Minimum 03 Projects)	Cost of 3 Projects in the Past 5 Years Each project carries 10 Marks	Rs. 3 million and above	30
Human Resource (Max points 20)	Total Number of Employees including minimum 3 Designer / Professional	0 – 10	10
		20 – 30	15
		31 and above	20
Company Website	Accomplished with Complete Products and Details		5
At least 1 Repair / After Sale Service Satisfactory Certificate from Semi Government / Government Departments			5

Note:

- Verifiable documentary proofs for all above requirements are mandatory.
- Vendor/ Supplier will be responsible for transportation and installation of equipment in client environment as per client's requirements. (Where applicable)
- Sample may be provided within 7 working days if required.
- Passing marks will be 50 for technical qualification.

Convener Technical Committee