

Issued to Mr. \_\_\_\_\_

Vide D.R. No. \_\_\_\_\_ dated \_\_\_\_\_.

### TENDER FOR WORKS

I/We hereby tender for the execution, for the Government of Sindh/ Chancellor of Sindh Agriculture University, Tando Jam (hereinbefore and hereinafter referred to as "University of the work specified in the underwritten memorandum within the time specified in such memorandum at \_\_\_\_\_ % above/below Part-I, and at \_\_\_\_\_ %Above/Below Part-II, the estimated rates entered in schedule "B" memorandum showing items of work to be carried out) and in accordance in all respects with the Specifications, designs, drawings and instructions in written referred to in Rule 1 hereof and in clause 13 of the annexed conditions of contract and agree that when materials for the work are provided by the University such materials and rates to be paid for them shall be as provided in schedule, A, hereto.

### M E M O R A N D U M

1. General Description: Supplying & Commissioning of Agriculture Lab Equipment, SAU, Sub Campus at Umerkot

- |     |  |         |
|-----|--|---------|
| (a) | Estimate cost.   | Rs:     |
| (b) | Earnest money.   | Rs: 2%  |
| (c) | Security deposit i/c earnest money.  | Rs: 10% |
| (d) | Percentage if any to be deducted   | Rs:     |
|     | From bills (Rupees _____) percent.   |         |
| (e) | Time allowed for the completion of work from date of written order to commence <u>one month(s)</u> . |         |

Should this tender be accepted I/We hereby agree to abide by and fulfill all the terms and provisions of the conditions of contract annexed hereto so far as applicable, and in default there of to forfeit and pay to University the sums of money mentioned in the said conditions.

Receipt No. \_\_\_\_\_ dated \_\_\_\_\_ from the \_\_\_\_\_ Bank at \_\_\_\_\_ in respect of the sum of Rs. \_\_\_\_\_ is herewith forwarded presenting the earnest Money / (a) the full value of which is to be absolutely forfeited to University should I/We not deposit the full amount of security deposit specified in the above memorandum, in accordance with clause 1 (A) of the said conditions, otherwise the said sum of Rs. \_\_\_\_\_ shall be retained by University on account of such security deposit as aforesaid / or (b) the full value of which shall be retained by University on account of the security deposit in clause (B) of the condition.

Dated the \_\_\_\_\_ day of \_\_\_\_\_ 2017

### **CONTRACTOR**

The above tender is hereby accepted by me on behalf of the Governor of Sindh/Chancellor, Sindh Agriculture University Tando Jam.

Dated: \_\_\_\_\_.

**FOCAL PERSON  
SUB-CAMPUS UMERKOT  
(PROJECT DIRECTOR)  
SAU TANDOJAM  
TANDO JAM**

**Supplying and commissioning of Agriculture Lab equipment, to be used at  
S.A.U Sub-Campus at Umerkot.**

**SCHEDULE 'B'**

S.No	Description	Qty	Unit	Rate	Amount
01	<b>Analytical Balance</b> <b>Features:</b> - Backlit LCD display - Colour coded keys - Level indicator with adjustable levelling feet - Removable draft shield supplied on 0.001g readabilities - Robust metal housing - Sealed keypad - Pan lifter to easily remove samples <b>Technical Specifications:</b> Maximum capacity: 420g Readability: 0.001g Repeatability (S.D.): 0.002g Pan size: 120mm Ø <b>General Specifications:</b> Typical stabilization time: 3 Sec Including operation & Instruction Manual & CD/ Video program on related subject.	04	Each		
02	<b>Autoclave</b> Top-loading type Sterilizer for Easy Loading of Large Working Volume. * Casters equipped for Excellent Mobility. * Digital LCD with Back-Light Function. * Digital Timer Function – 'Delay Time' and 'Operation Time' can be Controlled. * Solid / Liquid Mode can be chosen by a customer considering a Sample Phase. * Complete Safety Pressure Mechanism. * Heat-Protective Lid Cover for User Safety. * Water Low Level Detection * Automatic Over Pressure Release Valve ensures User Safety. * Sterilization Error Indication : Error Alarm and Massage in case of Power Failure and Temperature Error <b>Technical Specifications:</b> Standard Type Capacity: 100 Lit. Temp. Range & Accuracy: Ambient +5°C to 132°C, $\pm 0.5^\circ\text{C}$ at 121°C Pressure & Gauge: 1.2 kgf/cm <sup>2</sup> at 121°C / 2.0 kgf/cm <sup>2</sup> at 132°C, 0 ~ 3 kgf/cm <sup>2</sup> Sterilization mode: Solid- or Liquid-mode Heating Power/Consumption: 2kW x 2 Timer & Alarm: 60 min, Error status & Timer-end Display: Digital LCD with Back-Light Function Controller: Digital Fuzzy-Control System (Fully Automatic) Door & Closing System: Lever-type Sliding Door / Safety Electronic Door Closing System Safety Circuit: Over-Temp./-Pressure/-Current protection, Sensor Error Detection Material: Stainless steel (#304)-Pressure Vessel, Powder Coated	02	Each		



	<p>steel-External Basket: 2ea of Stainless steel Wire Baskets are Included Basket Dimension (mm): Ø420 x h240 Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
03	<p><b>Block digester</b> The Kjeldahl method KjelDigester reduces the block digestion process by up to two hours and meets the highest safety requirements. The high degree of automation is the perfect match to the KjelMaster System allowing for unprecedented sample throughput. The Kjeldahl method KjelDigester reduces the block digestion process by up to two hours and meets the highest safety requirements. The high degree of automation is the perfect match to the KjelMaster System allowing for unprecedented sample throughput. Benefits Highly efficient Acceleration of the heating and cooling step, saving up to two hours Direct transfer of the 20 position rack to the KjelSampler Unattended operation by using automatic lift and delayed start time. Programmable time / temperature profiles and full Scrubber. Safe and convenient Improved sealing for effective transfer of harmful fumes No user contact with hot samples due to automatic lift. Convenient magnetic suction module fixation Extended lifetime of block and accessories with protective drip tray. Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	01	Each		
04	<p><b>Compound Microscope</b> Binocular upright research Microscope with infinity optical system. Should be able to perform bright field, dark field and phase contrast applications. LED illumination high intensity, uniform universal condenser. Nosepiece- Quintuple or above to accommodate 5 or more objectives at a time. Eyepieces- 10x with Field of view greater than 22mm with diopter adjustments. Objective palm Achromat 5x, 10x, 20x, 40x and 100x (Oil immersion) Objective 10X, 20x, 40x and 100x with phase contrast. Stage holder with specimen holder with refocusing stage mechanism with essential accessories. Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	10	Each		
05	<p><b>Dehydration chamber for fruits and vegetables</b> Vertical-Loading 80 Liter Laboratory Autoclave, 240 Vac, 80 L Capacity Time-saving features improve efficiency in your lab Stores customized sterilization programs for repeated use Cooling fan minimizes cooling time Operation and display panel located on top of sterilizer for easy viewing  <b>Specifications &amp; Description</b> Chamber Capacity (cu ft) 2.8 Chamber Capacity (Liters) 80 Chamber Height (in) 29.5</p>	01	Each		

	Chamber Diameter (in)14.5 Chamber Height (cm)75 Chamber Diameter (cm)37 Min Temperature (° F)113 Max Temperature (° F)275 Min Temperature (° C)45 Max Temperature (° C)135 Reservoir Capacity (Liters)6.5 Max Pressure (PSI)36.98 Width (in)20 1/2 Height (in)34 1/2 Depth (in)45 3/4 Width (cm)52 Height (cm)116 Depth (cm)66 Timer Yes Timer Range0 to 99 hours, 59 minutes Chamber construction304 Stainless Steel Power (VAC)240 Power (Hz)50/60 Power (amps)12.5 Description Vertical-Loading 80 Liter Laboratory Autoclave, 240 Vac, 80 L Capacity. Including operation & Instruction Manual & CD/ Video program on related subject.				
06	<b>Deionized water Unit</b> 4 L/Hr, Color change indicator wall mountable, maximum water temperature 40C Including operation & Instruction Manual & CD/ Video program on related subject.	01	Each		
07	<b>Digital Camera</b> DSLR 20 megapixel, Macro lenses 105mm	02	Each		
08	<b>Digital Colony Counter</b> Features : Four digital displays4 digit display offers convenience of showing the present and previous three count values. Multi-counting average Galaxy 330 can make average count from multiple counting. Exclusive BACK button The BACK button allows the convenience of deducting data when over counting. Suitable for Petri-dishes in various diameters Galaxy 330's adjustable dish holder can accept most Petri-dishes in a wide range of diameters from 90 to 150 mm or 60 mm. Pressure sensor design Pressure sensor design can allow user to operate with any marking pens. No worry about sample spoiled or contaminated. Safety compliance : CE certification Applications : Total bacteria counting Total coliform counting <b>Specification :</b> Display : 3-digit (0-999) LED display, 4 panels	02	Each		

5	<p>Magnification : 2~3 X</p> <p>Petri dish diameter : 60 mm, 90-150 mm adjustable</p> <p>Memory : 100</p> <p>Average : Yes</p> <p>Zero reset : Yes</p> <p>Count back : Yes</p> <p>Illumination : LED (adjustable)</p> <p>Pressure sensitivity : Adjustable</p> <p>Acoustical counting signal : Adjustable</p> <p>Output : USB</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
09	<p><b>Digital Penetrometer</b></p> <p>Maximum measurement load-20 kg/196 N</p> <p>Resolution-10 g/0.05 N</p> <p>Accuracy-±0.5%, +2 digit</p> <p>Units of measurement- grams/Newton</p> <p>Maximum overload-30 kg</p> <p>Interface- RS-232</p> <p>Software and cable- optional</p> <p>Data transmission</p> <p>Data is transferred to a computer, using the software, at a rate of one reading every 2 seconds. The penetrometer can transfer data at a quicker rate when transferring from memory to a computer, one reading every 0.25 seconds using Windows hyper terminal.</p> <p>Display-5 digit LCD; 10 mm high</p> <p>Measurement functions- measures firmness of fruit with Peak Hold function</p> <p>Power-6 AA batteries or mains adaptor</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	01			
10	<p><b>Digital Refractometer</b></p> <p>Specifications - RM40 / RX40(*)</p> <p>Accuracy-0.0001</p> <p>Measurement range-1.3200 ... 1.7000 [nD]</p> <p>Temperature range</p> <p>5.0 ... 100.0°C</p> <p>Measurement range BRIX</p> <p>0.00 – 100.00%</p> <p>Accuracy BRIX-0.1%</p> <p>Temperature control- Yes (Peltier)</p>	01			



	<p>Typical measuring time 20s (5s after reaching temperature equilibrium)</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
11	<p><b>Distillery</b> Features: Horizontal thick wall heat resistant Duran glass boiled fitted with 3 KW chromium heater. High efficiency coil condenser ensures low temperature, high output quality distillate of conductivity 3 to 4<math>\mu</math>S/cm. Compact construction suitable for bench and wall mounting. Screw thread connectors enable easy fitting or removal of hose safety. Built in constant level device with Schott Vendura – Nova valve for drainage provides easy descaling without dismantling. 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. Specifications: Capacity: 4litre/hour. Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	02			
12	<p><b>Electrical Conductivity meter (Bench top)</b> Range 0~20.00, 200.0, 2000<math>\mu</math>S/cm, 20.00, 200.0mS/cm Accuracy <math>\pm</math>1% F.S Resolution 0.01, 0.1, 1 Calibration Points 1 to 3 points Calibration Solutions 10<math>\mu</math>S/cm, 84<math>\mu</math>S/cm, 1413<math>\mu</math>S/cm, 12.88mS/cm, 111.8mS/cm Temperature Compensation 0~100°C, 32~212°F, Manual Temperature Coefficient 0.0~10.0%/°C Cell Constant K=0.1, 1, 10 or User-defined Connector 6-pin Mini Plug Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	02			
13	<p><b>Electrical Conductivity meter (Portable)</b> Range 0~20.00, 200.0, 2000<math>\mu</math>S/cm, 20.00, 200.0mS/cm Accuracy <math>\pm</math>0.5% F.S Resolution 0.01, 0.1, 1 Calibration Points 1 to 3 points Calibration Solutions 10<math>\mu</math>S/cm, 84<math>\mu</math>S/cm, 1413<math>\mu</math>S/cm, 12.88mS/cm, 111.8mS/cm Temperature Range 0~105°C, 32~221°F Accuracy <math>\pm</math>0.5°C, <math>\pm</math>0.9°F Resolution 0.1°C Calibration Points 1 point Calibration Range Measured value <math>\pm</math>10°C  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	02			
14	<p><b>Electrical Heater</b> Adjustable Thermostat, Overheat Protection, Portable Heating</p>	05			

	Output: 500W/1000W Fan Heater Including operation & Instruction Manual & CD/ Video program on related subject.				
15	<b>Flame Photometer</b> Digital Detection Element Na, K, LI Ca and Ba. Detection Limit <20 ppb, Aspiration rate 2 to 6 ml/min. warm time 15 minutes. Including operation & Instruction Manual & CD/ Video program on related subject.	02			
16	<b>Freezer Laboratory</b>	01			
17	<b>Digital Fruit Firmness Tester</b> The highest quality digital hand-held penetrometer available. It can be used by research departments, universities, packing houses and farms to measure the firmness of almost any fruit - apples, pears, strawberries, grapes, melons and much more. Help improve your product's quality with quick and accurate firmness measurements, which are a commonly accepted maturity indicator. <b>Features:</b> High precision sensor with peak hold and zero functions Large, reversible LCD with back light Accommodates four different tip sizes 3.5 mm to RS-232/USB connection Can be attached to the manual test stand for additional stability Supplied complete with manual, hard carrying case and tips (3, 6, 8, 11 mm) <b>Specifications:</b> <b>Capacity &amp; Resolution:</b> 20.00 kg x 0.01 kg 44.00 lb x 0.01 lb 196.00 N x 0.05 N <b>Accuracy:</b> $\pm 0.5\% + 2$ digits <b>Unit:</b> kg, lb, Newton <b>Update Time:</b> Fast setting: 0.2 second Slow setting: 0.6 second <b>Power:</b> Six 1.5 V AA batteries or DC 9V adapter (not included) <b>Dimensions:</b> 8.5" x 3.5" x 1.8" <b>Weight:</b> 1.43 lb (650 g) Including operation & Instruction Manual & CD/ Video program on related subject.	01			
18	<b>Fruit Texture Analyzer</b> The Fruit Texture Analyzer (FTA) measures fruit firmness at the push of a button and stores the results on your PC. Test apples, pears, peaches, nectarines, kiwi-fruit, avocados and more, with quick, easy and reliable results.  <b>FEATURES:</b> Tests are conducted at standard depths and speeds of penetration, ensuring accurate and repeatable results. Ranks first in a Washington State comparison study of firmness testing equipment. The FTA connects to a standard PC and runs on Windows XP/Vista/7/8/8.1/10 Results can be saved in an ASCII format or directly accessed from Excel, Word or Access	01			



	<p>Installation only takes a few minutes. The FTA requires minimum maintenance - only cleaning to remove juice. The electronic measure system ensures accurate, reliable firmness readings. All operating parameters can be regulated via the control PC (probe speed, calibration, threshold load, depth). Electronic speed control ensures accurate probe speed and also ensures that tests are carried out under standard conditions. FTA Windows software is included.</p> <p><b>SPECIFICATIONS:</b>  Capacity:  GS-15: 33 lbs  GS-25: 55 lbs  Operating Range:  GS-15: 50-15,000g  GS-25: 50-25,000g  Measuring units: kg, pounds, Newton  Maximum fruit size: 120 mm  Weight: 9 kg (approx)  Power: 100-240 VAC  Power consumption: 30 watt (30 VDC, 1 Amp).  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
19	Gas stove with Cylinder	02			
20	Glassware drying Oven	02			
21	<p><b>GPS Meter</b>  Physical &amp; Performance:  Unit dimensions, WxHxD: 2.1" x 4.0" x 1.3" (5.4 x 10.3 x 3.3 cm)  Display size, WxH: 1.4" x 1.7" (3.6 x 4.3 cm); 2.2" diag (5.6 cm)  Display resolution, WxH: 128 x 160 pixels  Display type: transfective, monochrome  Weight: 5 oz (141.7 g) with batteries  Battery: 2 AA batteries (not included); NiMH or Lithium recommended  Battery life: 25 hours  Waterproof: yes (IPX7)  Floats: no  High-sensitivity receiver: yes  Interface: USB  Maps and Memory:  Basemap: yes  Waypoints/favorites/locations: 1000  Routes: 50  Track log: 10,000 points, 100 saved tracks  Features and Benefits:  Camera: no  Geocaching-friendly: yes (paperless)  Custom maps compatible: no  Photo navigation (navigate to geotagged photos): no  Hunt/fish calendar: yes  Sun and moon information: yes</p>	02			
22	<p><b>Hot Air Oven</b>  * Optimized Air Flow by Forced Convection Mechanism  * Digital Fuzzy Control System Implementing Superior Temperature Accuracy  * New Jog-Dial with Push Button * Compact New Body Design</p>	02			



	<p>* 2ea of Stainless steel Wire Shelves Included * Alarm Function : Error status and Timer-end</p> <p>* RS232C Interface for Monitoring and Controlling with PC</p> <p>* Ambient +5°C to 250°C Range with Fluctuation of <math>\pm 0.3^{\circ}\text{C}</math> at 100°C</p> <p>* Storage Function of Temperature and Timer setting values</p> <p>* Locking Mode Supported for Experimental Safety (Input to Jog-Dial can be disabled)</p> <p>* Corrosion Resistant 304 Stainless steel Chamber</p> <p>* Over Temperature &amp; Over Current Protection, Sensor Error Detection</p> <p><b><u>Technical Specifications:</u></b></p> <p>Capacity: 105 Lit.</p> <p>Dimension (W x D x H) Interior (mm): 485 x 415 x 535</p> <p>Dimension (W x D x H) Exterior (mm): 653 x 712 x 882</p> <p>Heater Power: 1.4 kW</p> <p>Temp. Range: Ambient Temperature +5°C to 250°C</p> <p>Temp. Fluctuation: <math>\pm 0.3^{\circ}\text{C}</math> at 100°C, <math>\pm 0.5^{\circ}\text{C}</math> at 150°C</p> <p>Temp. Variation: <math>\pm 1^{\circ}\text{C}</math> at 100°C, <math>\pm 1.8^{\circ}\text{C}</math> at 150°C</p> <p>Temp. Sensor: PT 100</p> <p>Control Resolution: <math>\pm 0.1^{\circ}\text{C}</math></p> <p>Heat-up Time: 25 min. to 100°C, 45 min. to 150°C</p> <p>Recovery Time (Door open 30sec): 6 min. to 100°C, 6 min. to 150°C</p> <p>Controller: Digital Fuzzy Control by Advanced Microprocessor</p> <p>Jog-Dial with Push Button</p> <p>RS232 Port: Available to connect with PC</p> <p>Display: Digital LCD with Back Light</p> <p>Timer: 99hr 59 min (delay/continuous function)</p> <p>Material Internal: Stainless steel (#304)</p> <p>Material External: Powder Coated steel</p> <p>Material Insulation: Glass Wool</p> <p>Shelves: 2ea of Stainless steel Wire Shelves included, Load per Shelf : 16 kg</p> <p>Ventilation: Ventilation hole with Stainless steel Cap, Hole Diameter 40mm, 2ea</p> <p>Circulation: Forced Air Convection Type</p> <p>Safety device: Over Temp. and Over Current Protector, Sensor Error Detector</p> <p>Others: UL/CUL Certified, CE Certified, GD-mark</p> <p>Storage Function (Temp. and Time)</p> <p>Locking Mode (Jog-Dial Input Disabled)</p> <p>Alarm (Error Status and Timer-end)</p> <p>Net Weight (kg): 69</p> <p>Power Consumption: 1390 W</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
23	<p><b>Hotplate with Stirrer</b></p> <p>180×180mm Ceramic-Coated Plate, with Certi. &amp; Traceability with Digital Feedback Control System, Precise Speed Control, Back Light LCD Display, 80~1,500 rpm, Max. 20 Lit.</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	02			
24	HPLC	01			
25	<p><b>Hygrometer With Data Logger</b></p> <p>This hand-held humidity and temperature meter is compact, robust</p>	01			

	<p>and works in high humidity environments, as found in most fresh produce coolers and ripening rooms. It is an ideal spot checking tool and continues Vaisala's reputation for accuracy and reliability.</p> <p>Features:</p> <p>Displays a wide range of quantities: RH, T, Td, Tw, a, x, h</p> <p>Large graphic display which indicates when measurements have stabilized</p> <p>Hold-button to freeze the screen</p> <p>Multilingual user interface with 10 languages</p> <p>Can be user calibrated</p> <p>NIST traceable (certificate included)</p> <p>Specifications:</p> <p>Ranges:</p> <p>Humidity: 0 to 100% RH</p> <p>Temperature: 14°F to 140°F (-10°C to 60°C)</p> <p>Accuracy: <math>\pm 1.7\%</math> RH up to 90% RH (<math>\pm 2.5\%</math> RH otherwise) / <math>\pm 0.36^\circ\text{F}</math> up to 104°F (<math>\pm 0.72^\circ\text{F}</math> otherwise)</p> <p>Power: Two AA batteries</p> <p>Dimensions: 230 x 72 x 44 mm</p> <p>Weight: 240 g</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
26	<b>Ice Maker</b>	01			
27	<p><b>Illuminated purity work Board</b></p> <p>Purity Workboard and Diaphanoscope provides a convenient work area on a smooth opal glass surface for seed and grain analysis. A light placed under and shining through the glass assists in critical examination of the sample. Used by grain inspectors and seed analysts, the Purity Workboard and Diaphanoscope is ideal for grain grading and checking for stress cracks, germ damage, and seed viability. Unit features a convenient removable sample drawer. Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	25			
28	<b>Juicer/Blender</b>	04			
29	<p><b>Incubator</b></p> <ul style="list-style-type: none"> <li>*Digital Fuzzy Control System Implementing Superior Temperature Accuracy</li> <li>*Display : Seven-segments FND</li> <li>*Ambient to 70°C of Temp. Range, Accuracy of <math>\pm 0.3^\circ\text{C}</math> at 37°C</li> <li>*Corrosion Resistant 304 Stainless-steel Chamber and PE-coated Steel Shelves</li> <li>*Over Temperature &amp; Over Current Protection, Sensor Error Detection</li> <li>*Alarm Function : Error status and Timer-end</li> <li>*Storage Function of Temperature and Timer Setting Values</li> <li>*Locking Mode Supported for Experimental Safety</li> </ul> <p><b><u>Technical Specifications:</u></b></p> <p>Capacity: 105 Lit. .</p> <p>Circulation-type: Forced-air Type</p> <p>Temp. Range &amp; Accuracy: Room Temp, <math>+5^\circ\text{C} \sim 70^\circ\text{C}</math>, <math>\pm 0.3^\circ\text{C}</math> at 37°C</p> <p>Temp. Uniformity &amp; Sensor: <math>\pm 0.5^\circ\text{C}</math> at 37°C, <math>\pm 0.9^\circ\text{C}</math> at 50°C, PT100 Sensor</p> <p>Heat-up Time: 15 min. to 37°C, 30 min. to 50°C</p> <p>Recovery Time (Door open 30sec): 8 min. to 37°C, 10 min. to 50°C</p> <p>Timer &amp; Alarm: 99hr 59min (with delay / Continuous run.), Error</p>	02			



	<p>status &amp; Timer-end  Display: Seven-segments FND  Controller: Digital Fuzzy Controller  Inner Door: with 1ea of Inner Tempered Glass Door  Shelves: Included 2ea of Polyethylene coated Steel Wire Shelves  Permitted Total Load: Total Load 32 kg (16kg x 2 Shelves)  Ventilation Hole: 1ea of Ventilation hole(id. <math>\Phi</math>40mm) with Stainless Steel Cap  Safety Circuit: Over Temp. and Over Current Protector, Sensor Error Detector  Material Internal: Stainless-steel (#304)  Material External: Powder Coated-steel.  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
30	<p><b>Laboratory Aspirator bates</b>  Compared with the Desk-top type Pump, the Bleed Air Flow is more, which Applies to the Vacuum demand with Large Bleed Air Flow PVC Body, Copper Ejector, Tee Junction, PP Back Valve, Stainless-steel Impeller Five-taps can be used alone or in Parallel. The Bleed Air Flow is Large with Five-way Pipe in Parallel, which can meet the Demand of Large Scale Rotary Evaporator or Reaction Kettle.57 Litter, 550W.  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	02			
31	<p><b>Laboratory Safety Equipment</b>  As per Standard</p>	01			
32	<p>Laminar Air Flow  HEPA Filter removes 99.97% of 0.3<math>\mu</math>mParticles Mesh Guard for HEPA Filter Protection 10 Step Air Velocity Control  Microprocessor Digital Controller and Back Light LCD Display  UV and Fluorescent Lamp, Air and Gas Cock, Power Consent  Filter Replacement Warming Function Easy to Replace Filter from the Panel High-Quality Back-Light LCD Display 99hr59min  Timer Silent Vibration-Free Blower ensure noiseless operation and Anti-Vibration Construction provides efficient working environment. Tempered Safety Glass Sliding Door for Protection from UV exposure Safety UV Protection System : UV Lamp is Deactivated when the Safety Glass Sliding Door is not fully Closed  Optimized Air Flow System for Uniform Air Flow/Velocity  Corrosion Resistant 304 Stainless Steel Working table Air Flow-type : Vertical Air Flow-type or Horizontal Air Flow-type.  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	01			
33	<p><b>Portable Leaf Area Meter</b>  Simple, Fast and AccurateProven TechnologyNon-destructive measurementsLightweight  Windows Interface Software.  Open the scanning head and place it over the leafHold the encoding cord stationary at the base of the leafClose the scanning headPress the reset button to initiate the measurementSlide the scanning head over the leaf. Allow the entire leaf to pass through  completelycombines an easy-to-use readout console with the proven scanning technology of the sensor head to provide a powerful system for portable, non-destructive leaf area measurements. It utilizes an electronic method of rectangular approximation to provide 1 mm<sup>2</sup> resolution. Leaf area, leaf length,</p>	01			

	<p>average width, and maximum width are logged by the readout console as the scanning head is drawn over a leaf. Files can be viewed on the display or output to a computer using the application software.</p> <p>Resolution: 1 mm<sup>2</sup> (1 mm x 1 mm scanning area).  Accuracy: Within <math>\pm 2\%</math> for samples &gt;50 cm<sup>2</sup>.  Display Capacity: Area: 9,999,999.99 cm<sup>2</sup>, Length: 99,999,999.9 cm, Width: 12.8 cm.  Display: 2 line x 16 character LCD.  Keyboard: Sealed, 24 key tactile response with audio feedback.  Real Time Clock: Year, month, day, hour, minute, second.  Accuracy: <math>\pm 3</math> minutes per month (0 to 55 °C). Internal Memory: More than 2.1MB of non-volatile FLASH. Measurement data is maintained even in absence of power.  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
34	LED magnifier	25			
35	Magnifying lens	50			
36	Mechanical Shaker for texture analysis with Hydrometer	02			
37	<p><b>Microcentrifuge</b>  Unnecessary Rotor Lid for Running and Reduced Noise (<math>\leq 57</math>dB at Max. RPM)  * High Performance - Digital Feedback Speed Control, Max. 13,500rpm, 12,225 x g  * Realize Extremely Compact Design, with Exceptionally Small Footprint  * Acceleration and Braking Times Lower than 15 sec (for Max. Speed)  * Digital Timer Function with Continuous Running Mode (99min 59sec)  * Storage Function for the Set Values: RPM &amp; Time  * Locking Mode Supported for Experimental Safety (Input to Jog-Shuttle can be disabled)  * Safety System for Motor Error * Electric Door Lock Function Safety  * Safety Electronic Lid Lock System: Opening the Lid is impossible during Operation  * Simple Operation for Repetitive use of 'Spin Down' Function  * Angle Rotor CFAR1512 (1.5/2.0ml x 12 Tubes) * CE Certified  * Using Adapters Accommodates 0.2ml or 0.5ml PCR Tubes  * Patented Jog-Shuttle Control System and Digital LCD with Back-Light Function  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	02			
38	Microscope Stereo tripod with camera fitted for Computer	25			
39	Mortar and pestle	05			
40	Muffle Furnace	02			
41	Nitrogen Analyzer	01			
42	<p><b>Orbital Shaker</b>  30 samples flask, Holding ports to 500ml flasks holders, Rotation time 500rpm</p>	02			



	Including operation & Instruction Manual & CD/ Video program on related subject.				
43	<b>pH meter (Bench Top)</b> Range 0.00~14.00pH Accuracy $\pm 0.05$ pH Resolution 0.01pH Calibration Points 2 points Calibration Solutions USA (pH4.01/7.00/10.01) or NIST (pH4.01/6.86/9.18) Temperature Compensation 0~100°C Compensation Mode Manual mV Range -1999~1999mV Accuracy $\pm 10$ mV Resolution 1mV Including operation & Instruction Manual & CD/ Video program on related subject.	02			
44	<b>pH meter (Portable)</b> Range -2.000~20.000pH Accuracy $\pm 0.002$ pH Resolution 0.1, 0.01, 0.001pH, Selectable Calibration Points 1 to 5 points Calibration Solutions USA, NIST, DIN or User-defined Temperature Compensation 0~100°C, 32~212°F Compensation Mode Manual or Automatic mV Range -1999.9~1999.9mV Accuracy $\pm 0.2$ mV Resolution 0.1, 1mV, Selectable Calibration Points 1 point (Only for Relative mV mode) Calibration Range $\pm 200$ mV Including operation & Instruction Manual & CD/ Video program on related subject.	02			
45	<b>Refrigerator</b> 210 liters capacity, double door Including operation & Instruction Manual & CD/ Video program on related subject.	02			
46	<b>Seed Counter</b> A universal counting machine for any small and irregularly shaped parts, such as: Finest plant seeds Vegetable seeds Cereals, Maize, Rice, Canola Insects, Pupae, Eggs Pharmaceuticals, pills, capsules Gems, diamonds and precious stones Bulk semiconductor chips Small mechanical parts Implants  <b>Technical data</b> Counter for small parts from 0.2 to 18 mm in diameter (*)	01			

	<p>Cylindrical parts can have a length of up to 20 mm (*)</p> <p>Only one adjustable conveyor bowl is used for the whole size range</p> <p>Conveyor bowl: anodised Aluminium, sorting element FS-0. Other bowls and sorting elements available on request.</p> <p>Display and preset range of the counter: 0 to 99'999</p> <p>Modes of operation: Preset counter, Totaliser</p> <p>The conveyor speed is reduced shortly before reaching the desired quantity to achieve a high dosing accuracy</p> <p>External connections allow the combination of the seed counter C1 with other devices, e.g. packaging machines.</p> <p>Typical performance data for spherical parts of 2mm diameter:</p> <p>Counting speed: about 50'000 parts per hour</p> <p>Counting error: 1/10'000 for clean, easy to separate parts.</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
47	<p><b>Seed Blower</b></p> <p>Dakota Seed Blower utilizes airflow, which is generated by a blower motor and as that air passes through a column (1-1/2", 3" or 4") the air lifts light fluffy material or empty seed hulls into the top beveled area of the column, while larger heavier good seed stays at the bottom. The motor is 1/3HP, 110V/60HZ OR 220V/60Hz and operates at 3,450 RPM. , 220V/50HZ unit is 1/2HP and 2,850 RPM. Separations are accurately controlled by a calibrated valve cap in the top of the column. Sold without columns. We offer three column sizes: 1½" I.D. x 23¼" H, 3" I.D. x 34¼" H, and 4" I.D. x 35¼" H, constructed of clear Plexiglas. This permits easy viewing of the calibrated air valves on all three-column sizes. The base measures 20" L x 20" W x 30½" H. Additional features include a 5-minute timer, on/off control knob and a hand brake to stop the motor instantly to eliminate coasting of the blower fan.</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	05			
48	<p><b>Seed Riffle Type Divider</b></p> <p>The Riffle Divider is used for halving dry materials. As the product is poured into the hopper, it is divided into two equal portions by a series of chutes which discharge alternately in opposite directions. Prices include stainless steel dividers, galvanized iron pans, scoop and cleaning brush. This is enclosed and all other models are open style as shown in the photograph.</p> <p>Riffle Type Sample Splitter W/24 Chutes</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	06			
49	<p><b>Seed Sieve Shaker</b></p> <p>The Sieve Shaker is adaptable for use with the shaker. The shaker will hold one bottom pan with one sieve or, one bottom pan, one sieve, and one scalping sieve. A light jarring action keeps material moving over sieves and helps keep sieve opening clean. Unit is equipped with a pulse timer preset to the USDA specified 30 strokes however it can be set between 5 to 100 strokes.</p> <p>Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	04			
50	<p><b>Automatic Seed Weight Analyzer and Seed Weight Sorter</b></p> <p>New possibilities for breeding and quality control of grain, corn, oilseeds, legumes and vegetables. Moreover a variety of</p>	02			



	<p>applications arise in environmental monitoring. Weight distributions of selected samples can be realized.</p> <p>The Seed Weight Sorter can be used as seed weight analyser for large amounts of individual kernels. It can run unattended and with high accuracy. In addition, the tested parts can be sorted. As sorting criterion, a weight limit (above / below the limit) or a window value (inside / outside the window) can be selected. A pneumatic sorting cell transfers the weighted parts according to the measured weight value into one of two bins. The entire process and the storage of all weight values are controlled by a Windows-based PC. The file with all weight data can be exported via XML protocol for further processing with relevant software.</p> <p>Technical data  For parts ranging from 2 mm to 10 mm diameter  Available resolutions of the scale: 10 mg, 1 mg, 0.1 mg  Modes of operation:  Serial weight protocolling without sorting  Sorting with one predetermined weight limit  Sorting according to the moving average  Sorting with two limits: inside or outside of a defined range  Obtained data when parts are sorted with one limit:</p> <p>Number of weighted particles  Weight total  Average weight, all particles  Particles in the right bin  Weight right  Average right  Percentage right  Particles left  Weight left  Average weight left  % left  1000 Grain Weight total  1000 Grain Weight right  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>				
51	<p><b>Set of Sieves &amp; Sieves shaker</b></p> <p>Allows for full portability for production plant applications. Designed to provide coarse separations of material ranging from 3/8" through 100 mesh. Will accommodate up to 7 full-height or 15 half-height, 8" diameter sieves (including pans and covers). The RX-812/E is powered by a vertically-mounted 1/4 HP, 1 Ph motor and comes with a 30-minute timer.</p> <p>Coarse Sieve Shaker For 8" &amp; 12" Sieves, 220 Volt, 60 Hz  Including operation &amp; Instruction Manual &amp; CD/ Video program on related subject.</p>	01			
52	<p><b>Soil Sampling Kit</b></p> <p>The ability to auger in most materials up to 12' and then collect a soil core sample.</p> <p><b>Includes:</b> Regular, sand and mud auger, rubber coated cross handle, soil core sampler, slide hammer, three 4' extensions, plastic liner, plastic end caps, wrenches, and cleaning brushes in a rugged, foam-padded hard-sided AMS deluxe carrying case with handles and wheels.</p>	02			

	Including operation & Instruction Manual & CD/ Video program on related subject.				
53	<b>Soil Temperature meter</b> This is a soil temperature probe, which has a temperature span from -40°C to 85°C. It outputs a voltage linearly proportional to the temperature, so no complex equations are required, to calculate the temperature from voltage. It is highly accurate with 0.125°C of resolution. The sensor has a simple 3 wire interface: ground, power, and output, and is powered from 3.6V to 20VDC, and outputs a voltage 0 to 3V. Where 0 represents -40°C and 3V represents 85°. The probes can be buried, or inserted into pots. Since the blade is so narrow, it can easily be inserted into potted plants. Including operation & Instruction Manual & CD/ Video program on related subject.	02			
54	SPAD Chlorophyll II meter	01			
55	<b>Spectrophotometer</b> Wavelength: 190~1100nm Wavelength Accuracy: $\leq 2.0\text{nm}$ Wavelength Reproducibility: $\leq 1\text{nm}$ Monochromator: Single-beam C-T type, grating 1200L/mm Photometric Accuracy: $\leq \pm 0.5\%T$ Photometer Reproducibility: $\leq 0.3\%T$ Stray Light: $\leq 0.1\%T$ (NaI at 220nm, NaNO <sub>2</sub> at 340nm) Spectral Bandwidth: 2nm, 0%T Stability: $\leq 0.2\%T(30\text{min})$ 100%T Stability: 0.001A/30min (at 500nm, after warming up) Operation Mode: T, A, C, E Photometric Range: -0.3~3A, Display: 16x2 LCD Detector: Silicone Photodiode Light Source: Tungsten halogen lamp, D2 lamp Including operation & Instruction Manual & CD/ Video program on related subject.	02			
56	<b>Top-loading Balance</b> Capacity 1-3Kg, Internal calibration 0.01g. Weighing units g, mg, Kg, Time (Sec) Including operation & Instruction Manual & CD/ Video program on related subject.	02			
57	<b>Top-loading Balance</b> Capacity 1-10Kg, Internal calibration 0.01g. Weighing units g, mg, Kg, Time (Sec) Including operation & Instruction Manual & CD/ Video program on related subject.	02			
58	<b>Vortex Mixer</b> Gentle Mixing to re-suspending Pellet. Speed 3300 rpm, Ideal for Mixing Solutions in Test Tubes or Small Flasks with Circular, Oscillating Movement Supplied with $\Phi 76\text{mm}$ Platform and Pop-Off Cup Realize High Power, Stable Motion with Low Noise Tough Metal Housing Provides a Stable Platform for all types of Mixing 3-position Power Switch Operates with Continuous Action or "Touch On" Control Variable Speed Control Allows Slow Speed Shaking Action up to High Speed Vortex Aluminum Die-casting with Powder Coating Various Shapes, Sizes and Materials of the Head allows for mixing of almost all Common Tubes or	01			



	Containers. Including operation & Instruction Manual & CD/ Video program on related subject.				
59	<b>Water Bath</b> Capacity: 22 Lit. Temp. Range & Accuracy: Ambient $\pm 5^{\circ}\text{C}$ ~ $100^{\circ}\text{C}$ , $\pm 0.1^{\circ}\text{C}$ Temp. Resolution: $0.1^{\circ}\text{C}$ - Display, $0.1^{\circ}\text{C}$ - Control Temp. Uniformity & Probe: $\pm 1.0^{\circ}\text{C}$ , PT100 Heating Power: 2 kW Timer & Alarm: 99hr 59min (Delay & Continuous run), Error status & Timer-end Display: Digital LCD with Back-Light Function Controller: Digital Fuzzy Controller with Jog - Shuttle Switch (Turn + Push) Safety Circuit: Over-Temp. / -Current protection, Sensor Error Detection Material: Stainless steel (#304)-Internal, Powder Coated steel-External Lid: included Stainless steel Flat Lid, Country of Origin: Korea/USA Drain Valve: Mounted( $\varnothing 9.5 \sim 11\text{mm}$ ) Including operation & Instruction Manual & CD/ Video program on related subject.	01			

## Hand Tools and Field Implements

S. No.	Name of Tool/ Implements	Quantity	Unit	Rate	Amount
Laboratory Tools					
1.	Aspirator (For sucking moths)	25			
2.	Atomizer, sprayer	30			
3.	Bunsen Burner	10			
4.	Cork borer (4- 10 nun)	5 of each size			
5.	Cutting boards	10			
6.	Forceps (Different Sizes)	100			
7.	Inoculating /Isolation needle & loop	30			
8.	Insect rearing cages (Plastic made, size 60x40x30 inches)	50			
9.	Insect show cases (Wooden 14 x 28 inches, glass on top, with stand for display)	50			
10.	Scissors	100			
11.	Slide Carrying tray	10			
12.	Small knives	100			
13.	Print	30			
14.	Surgical scalpel blades (Different Sizes)	100 Sets			
15.	Surgical scalpel handles (Different Sizes)	100			
16.	Vacuum cleaner (For sucking insects)	02			
Field Tools					
1.	Axe	15			



2.	Automatic solo sprayer ( 16 litre)	02			
3.	Bucket (medium sized)	15			
4.	Budding knife•	25			
5.	Bulb planters	02			
6.	Cythe	15			
7.	Digging hooks	10			
8.	Earthen pots for different sizes	100 of each size			
9.	Garden hoe	04			
10.	Garden rakes (of three different sizes)	04 of each size			
11.	Grafting kit	05			
12.	Grafting knife	25			
13.	Garden stools	100			
14.	Hand-cultivator	10			
15.	Hand- Drill Machine	10			
16.	Hedge Cutter	25			
17.	Hoes (Pushing Hoes and Pulling Hoes)	10			
18.	Humidifier to control Humidity (0.5 to 90 RH)	01			
19.	Iron Bar (Ramba)	15			
20.	Iron bar (Kurpi)	15			
21.	Iron Bowel/ Taggari	08			

22.	Iron Peg/ Wooden peg	100			
23.	Iron Rake	10			
24.	Knap Sack Sprayer	02			
25.	Ladder (Aluminium)	02			
26.	Lawn Mover (Electrical)	01			
27.	Lawn Mover (Manual)	02			
28.	Lawn Roller	02			
29.	Lopper	25			
30.	Measuring Tape	08			
31.	Planting Board	04			
32.	Polyethene strip	50			
33.	Pruning Saw	15 KG			

34.	Ranging Rod	25			
35.	Rope	20 kg			
36.	Secateurs (for hard wood cutting material)	25			
37.	Secateurs (for softwood cutting material)	25			
38.	Setting board (For setting insect wings, size 8x 10x14)	50			
39.	Shovel	1 5			
40.	Sickle	1 5			
41.	Spade	15			
42.	Spading fork	10			



43.	Sprayer	10			
44.	Teecum	1 5			
45.	Tree pole pruner	25			
46.	Vernier caliper (Digital)	1 5			
47.	Water sprinkler	15			
48.	Weather tracker (Continuous weather recorder, with transferable data on computer)	02			
49.	Wheel Barrow	04			
Field Implements					
1.	Chisel plow (05 bottom)	0 1			
2.	Cultivator (With I l Line)	0 1			
3.	Disc Plow	01			
4.	Front leveler	0 1			
5.	Mould board plow	0 1			
6.	Rabi Automatic drill Machine	0 1			
7.	Rear Leveler	0 1			
8.	Ridger	01			
9.	Rotavator	0 1			
10.	Seed and fertilizer drill machine	01			
11.	Sindhi plow	0 1			
	<b>Total Rs.</b>				