College of Agricultural Engineering & Technology
Junagadh Agricultural University
Junagadh

Tender Notice

Sealed quotations are invited for purchase of the different laboratory items: Direct shear test apparatus, Water stage recorder, Metacentric height of ship model, Manometers, Friction loss apparatus, Portable TDR soil moisture meter, Optical groundwater level indicator, book scanner, Clamp on water meter, Integrated Community Computer Screen In-built, Junker's Gas Calorimeter, Biomass Pelleting/Extruder, Solar Refrigeration System, Infrared Camera, Lypholizer/Freeze Dryer, Spot welding, Smith hearth furnace, Portable generator (Petrol start petrol run), Portable Arc Welding Machine. The Tender form, detailed specifications, terms and conditions can be downloaded from our website: www.jau.in/tenders. The tender fees of Rs. 1500/- in form of DD and required EMD in form of FDR separately drawn in the favor of "JAU Fund A/C payable at Junagadh" should be attached with sealed quotations. The filled tenders should be sent through Speed Post/RPAD only within 30 days after publication of this Tender Notice. Any information regarding changes in context to this tender will be displayed on our website only.

Date : 09.08.2019 **Principal & Dean**

JUNAGADH AGRICULTURAL UNIVERSITY

TENDER DOCUMENT

For The Purchase of Direct Shear Test Apparatus, Water Stage Recorder, Metacentric Height of Ship Model, Manometers, Friction Loss Apparatus, Portable TDR, Soil Moisture Meter, Optical Groundwater Level Indicator, Book Scanner, Clamp on water meter, Integrated Community Computer Screen In-built for Soil and Water Conservation Engineering Laboratory; Junker's Gas Calorimeter, Biomass Pelleting/Extruder, Solar Refrigeration System for Renewable Energy Engineering Laboratory; Infrared Camera, Lypholizer/Freeze Dryer for Process and Food Engineering Laboratory; Electronic Seed cum fertilizer drill test rig set up , Power Weeder, Tractor mounted Blade Harrow, Horizontal Diesel Engine of Different Capacity, Spot welding, Smith hearth furnace, Portable generator (Petrol start petrol run), Portable Arc Welding Machine for Farm Machinery & Power Engineering Laboratory.

DURING THE YEAR 2019-20
BY

College of Agricultural Engineering & Technology
Junagadh Agricultural University
Junagadh- 362 001 (Gujarat)
Tel. /Fax No.: 0285-2671018

Bid reference :		
Period for downloading of tender documents.	:	Within 28 days after publication of this tender Notice
Physical submission of Tender Fee, EMD, other relevant documents as per check list of the tender as well as company printed literature/ catalogue and other necessary documents by RPAD/Speed Post	:	Within 30 days after publication of this tender Notice. In the office of : The Principal & Dean, College of Agricultural Engineering & Technology, Junagadh Agricultural University, Junagadh 362 001, Gujarat.
Probable date for opening of primary Bid and verifying physically submitted documents	:	16/09/2019 (10.30 hrs.)
Probable date for opening of commercial bid	:	16/09/2019 (After 15.30 hrs.)

- *Tender fee Rs.1500/- in form of DD in favor of "Junagadh Agricultural University Fund A/c", payable at Junagadh, non refundable for entire tender*

- *Separate EMD for an amount of **3%** of quoted price (Refundable) per equipment/instrument in the form of FDR have to be paid in favor of "Junagadh Agricultural University Fund A/c".*

Note: 1 <u>THE MAIN ENVELOPE CONTAINING THE FOLLOWING THREE ENVELOPES IN MAIN ENVELOPE</u> should reach to the undersigned at given address within one month of publication of notice by RPAD/ Speed Post.

Envelop-1: Tender Fees and EMD (Details inside this document):

Original DD of Tender fee Rs. 1500/- and Original FDR of EMD amount equivalent to 3% of quoted price of individual equipment/tender

<u>ENVELOP-1</u>

Equipment EMD & TENDER Fee

To,

_____

FROM:

_____

Envelop-2: **Technical Bid**:

Company detail & Tender Supporting Documents, documents consisting authority letter, ISO/ISI/CE certification, compliance statement related to tender specifications, Product literature, Country of origin of equipment, colour catalog, list of installation, etc. Equipment with specification to be purchased etc.

ENVELOP-2: Technical Bid

Company Details, Technical Specifications & Tender Supporting Documents

To,

_____

FROM:

_____

Envelop-3 : Commercial Bid

Please note that scan copy of documents mailed through email at **caet@jau.in** must tally with the physical submission of original / attested Xerox copy. The bidder will be entitled for immediate disqualification, if fails to submit the physical documents within time limit.

ENVELOP-3

Commercial Bid

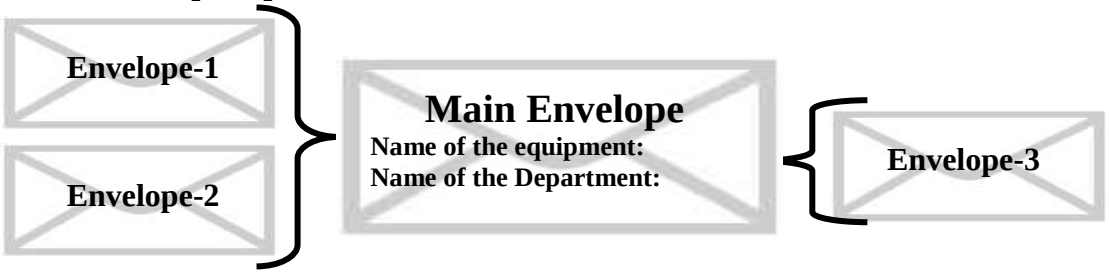
To,

_____

_____

FROM:

Keep envelop-1, envelop-2 and envelop-3 in main envelop and submit through RPAD or Speed post.



1. **Tender Fee Details: (Rs.1500/-)** DD in favor of "Junagadh Agricultural University Fund A/c", SBI, code: 60218

a. Name and Address of Tenderer

2. Details of Demand Draft:

Sr. No.	**Particulars**	**Number**	**Date**	**Amount** (Rs.)	**Drawn on.... (Please mention <u>Name of Bank)</u>**	**Branch &Place**
1	Demand Draft			1500/-		

3. <u>Format for EMD to be filled in the letter pad by the tenderer:</u>

EMD (*Equivalent amount of 3% of quoted rates per item*) as **FDR** in favour of "Junagadh Agricultural University Fund A/c" payable at Junagadh.

Item No.	Name of Equipments	EMD of Rs.
A : Department of Soil and Water Engineering		
1	Direct shear test apparatus	
2	Water stage recorder	
3	Metacentric height of ship model	
4	Manometers	
5	Friction loss apparatus,	
6	Portable TDR soil moisture meter	
7	Optical groundwater level indicator	
8	Book scanner	
9	Clamp-on water meter	
10	Integrated Community Computer Screen In-built	
B : Renewable Energy Engineering Department		
11	Junker's Gas Calorimeter	
12	Biomass Pelleting/Extruder	
13	Solar Refrigeration System	
C : Process and Food Engineering Department		
14	Infrared Camera	
15	Lypholizer/Freeze Dryer	
D: Farm Machinery & Power Engineering Department		
16	Electronic Seed cum fertilizer drill test rig set up	
17	Power Weeder	
18	Tractor mounted Blade Harrow	
19	Horizontal Diesel Engine	
20	Horizontal Diesel Engine	

21	Horizontal Diesel Engine	
22	Spot welding	
23	Smith hearth furnace	
24	Portable generator (Petrol start petrol run)	
25	Portable Arc Welding Machine	

COMPANY DETAIL

1. Name of supplier / firm :

2. Complete postal address :

3. Telephone Number :

4. FAX Number (if any) :

5. E-mail address (if any) :

6. Sales Tax No. :

7. Registration No. :

8. Any other details:

We agree to abide by the terms and conditions of supply mentioned in this tender Document

Signature of Tenderer

(With Stamp, Name & Designation)

TENDER SUPPORTING DOCUMENTS (CHECK LIST)

1	Tender Fee: (Demand draft of Rs. 1500/- in favour of "Junagadh Agricultural University Fund Account" drawn on STATE BANK OF INDIA, JUNAGADH BRANCH[CODE NO. 60218] towards the tender fee (Non-Refundable)	
2	EMD Fixed Deposit Receipt (FDR) of minimum 3% of quoted price of the equipment have to be paid in favour of "Junagadh Agricultural University Fund Account" drawn on STATE BANK OF INDIA, JUNAGADH BRANCH [CODE NO. 60218] towards the Earnest Money Deposit(Refundable).	
3	Vendor's Profile / Company details	
4	Registration copy/GST certificate copy	
5	IT Clearance	
6	Specification Supporting Documents with colored catalog	
7	Minimum Technical Specification sheet	

Note: 1) All photocopied documents must be attested with seal and signature.

2) All documents photocopy attached in physically.

Note:

It is verified that all the certificates / permissions / documents are valid and current as on date and have not been withdrawn / cancelled by the issuing authority. It is further verified that the certificates are as per the format and it is clearly and distinctly understood by me / us that the tender is liable to be rejected if on scrutiny and of these certificates is found to be not as per the prescribed format.

I/We further undertake to produce on demand the original certificate / permission / document for verification at any stage during the processing of the tender.

DECLARATION

We solemnly declare that we have attached all the documents mentioned here above and mentioned in the tender. We also understand that non-compliance of any documents will be treated as non-respective tender and we will loose our claim to participate in the Tender Enquiry automatically and our tender will be liable to reject.

Name of the Firm:

Authorized Signature:

Name: Designation:

Seal of firm:

Terms & Conditions

1. **Tender fee of Rs. 1500/- (Non Refundable)** for exclusive tender be provided through DD in favour of " Junagadh Agricultural University Fund A/c "
2. The **EMD** (Earnest Money Deposited) for an equivalent amount 3 % (three percent) of quoted rates per item has to be paid in **form of FDR only**, from any nationalized Indian Banks drawn in favour of "Junagadh Agricultural University Fund A/c" payable at Junagadh in the Envelop-1. Quotation without EMD will not be considered. In case of un-successful tenderers the Earnest Money deposit (EMD) will be released after finalization of the tender, while in case of successful tenderers / suppliers the Earnest Money so deposited (EMD) will be released after successful completion of supply.
3. Manufactures must submit **certificate of registration** as manufacturer in the envelop-2.
4. **Authorized dealer/distributor of a company have to submit** a copy of their dealership/ distributorship certificate validated by the company for the Current year for each equipment in envelop-2. In case of a chain of dealership (Area dealer sub dealer, local dealer), all the relevant Authorization certificates up to the end supplier has to be submitted of each equipment in envelop-2.
5. Each page of the tender documents should be signed by the authorized signatory of the firm. Unsigned quotation will be rejected.
6. **Type of currency in price bid Bid**: Currency Prices shall be quoted in **Indian Rupees only**.
7. **Mode of Selection:-** The Technical bids are to be opened at the first instance and evaluated by a committee. At the second stage, financial bid of only bidders who fulfill all the criteria of Technical bid will be opened.
8. The selection of Bid for purchasing the equipment, will be made solely on the basis of lowest rate. A bid will be declared L-1 on the basis of total lowest procurement value.
9. **All applicable Taxes shall be mentioned clearly and separately.**
10. In case of imported instruments, suppliers will have to clear the consignment; will have to pay custom duty clearance charges. **Custom duty exemption certificate (Registration with DSIR) only will be provided.**
11. **Selected bid party has to supply and install the equipment at the site** and the actual cost of transportation, up/down loading, installation, commissioning, etc. should be mentioned separately & clearly otherwise it will be assumed that all above costs are

inclusive (F.O.R should be CAET, JAU, Junagadh)

12. Should provide minimum **1 year warranty** from the date of installation **OR** as per the **general condition given in the specification** of the equipment.
13. Compliance to carry out user acceptance test with **test run as per standard** and other tests that qualify the specifications offered
14. Vendor may quote for higher version (output) system however, base prices will be considered for given specifications only for comparison purpose.
15. Vendors please specify separately cost if any **civil work** is required including Material and construction of suitable size foundation for installation of the system.
16. The manufacturers shall have to stick to their **quality standards** while supplying the goods. Goods supplied shall be rejected if found of inferior quality.
17. On scrutiny of tender documents, any queries raised by the committee have to be replied satisfactorily with all documentary proofs within 7 days.
18. Payment will be made as per JAU rules only after satisfactory installation and demonstration/testing/training.
19. The **list of customers and complete illustrated literature** should be enclosed with the tender form in the envelop-2.
20. Tenderer will have to **attach original colour catalog** of the each quoted product ensuring exact specifications in the envelop-2.
21. Post bid scrutiny will be done by instrument committee nominated by the university authority. Commercial rate of the disqualified parties will not be considered.
22. Vendor giving wrong information on specification will be **black listed for the period of 5 years**.
23. In case of **defective items, the same shall have to be replaced by the party concerned** at its own cost, and risk, and within stipulated time.
24. Being an education institution we are eligible for exemption of excise duty / custom duty. Hence, rates should be quoted keeping that in mind.
25. **Number of items to be purchased may be varied** according to requirement.
26. In the case of delayed supply of material within stipulated period, it will be at the discretion of the university to accept delivery with late delivery clause @1% per week maximum to the extent of 10% of the ordered value for delayed supply.
27. **Security deposit @ 5 % of the work order** and **stamp duty@ 4.9% of the security deposit** for the successful tenderer in the form of FDR has to be submitted for the period

of 18 months before receiving the purchase order.

28. The instrument/equipment will be **purchased within the provision of fund** allocated/available.

    Rates Validity: up to 31st December, 2020.

29. Legal action may be initiated against such tenderer in case any of the information submitted by the tenderer is found to be false at any stage of the contract.
30. For any dispute, final decision of the Vice-Chancellor, JAU, Junagadh will bound to supplier/s.
31. University reserves the right to accept/reject any or all the tenders without assigning any reasons. No enquiry after submission of the quotation will be entertained.
32. For all legal purpose court jurisdiction will be Junagadh, Gujarat.
33. We agree to abide by the terms and conditions of supply mentioned in this tender document.

Signature of Tenderer

(With Stamp, Name & Designation)

Authorized Signature:

Name: Designation: Seal of firm

COLLEGE OF AGRICULTURAL ENGINEERING AND TECHNOLOGY
JUNAGADH AGRICULTURAL UNIVERSITY
JUNAGADH

SCHEDULE-B

LIST OF ITEMS/EQUIPMENTS/INSTRUMENTS WITH SPECIFICATIONS

SN	Name of item	Specifications	Unit	Approximate Quantity Requirement	Quoted price (Rs/Unit) + state clearly all taxes separately	Specification matching (Yes/ If No, % matching)
	SOIL AND WATER CONSERVATION ENGINEERING DEPARTMENT					
1	**Direct Shear Apparatus**	12 speed, Motorized IS : 2720 (Part XIII) IS:11229 It should be provided with a turret type gear box to get 12 different constant rates of strain i.e 1.25, 0.625, 0.25, 0.125, 0.05, 0.025, 0.01, 0.005, 0.002, 0.001, 0.0004, and 0.0002 mm/min. and arrangements to carry out residual shear strength tests. Horizontal loading system for shearing the specimen. Hangers are provided for creating normal stress. It comprises :- i) Shear box assembly, 60 mm square, complete with a U-bracket, guide pins and spacing screws, made of brass. ii) Gripper assembly consisting of two plain grid plates, two perforated grid plates, one base plate and one loading pad, all made of brass. iii) Two porous stones, each 6 mm thick, fitting the shear box iv) Shear box housing of brass, complete with two ball roller strips. v) Loading unit with normal loading of 8 kg/cm2 on 60 mm square specimen. vi) Specimen cutter for a specimen size of 60 mm x 60 mm x 25 mm. vii) Set of weights to give a normal stress upto 3 kg/cm2 through lever, comprising 4 of 0.05 kg/cm2 , 1 of 0.1 kg/cm2, 1 of 0.2 kg/cm2, 3 of 0.5 kg/cm2 and 1 of 1 kg/cm2. Complete as above but without dial gauges and proving ring. Proving Ring (Integral) capacity 200 kg (2 kN) (Tension/ Compression). Two Dial Gauges 0.01 mm x 25 mm range for measuring strain and	No.	02 No.		

		consolidation.				
2	**Water stage recorder**	• With data logger to collect real time data and with internal storage memory and based on sensor. • Record interval less than 1 minute. • With the real time clock with LCD display. • Weatherproof enclosure with solar panel/power supply.	No.	2 No.		
3	**Metacentric Height of Ship Model**	It should be a compact apparatus and requires minimal installation. The ship model should be floated on water, and should be tilted by moving a small weight at the level of the deck of the ship. To note down the tilt of the ship a plumb should be provided which records the tilt on a graduated arc of a circle. An arrangement should be made to load the war ship or cargo ship. It can be used to determine metacentric height of a war ship and cargo ship. With instruction manual.	No.	04 No.		
4	**Manometers**	• 1. U-Tube Manometer: It should consist of a U –shaped transparent tube whose one end is attached to the gauge point and other end is open to the atmosphere with manometric liquid heavier than the water. It should be fitted with balanced compact MS frame with clear SS scale of 1mm LC. • 2. Differential U-Tube Manometer: A transparent U-Tube with manometric liquid heavier than the water for which the pressure difference can be measured. It should be fitted with balanced compact MS frame with clear SS scale of 1mm LC. • 3. Inverted U-Tube Manometer: It should consist of an inverted transparent U – Tube containing a liquid lighter than the liquid for which it is used to measure the differences of low pressures between two points where better accuracy is required. It should be fitted with balanced compact MS frame with clear SS scale of 1mm LC. • 4. Micro Manometer: It should have one transparent chamber having larger cross sectional area in one limb and can be used to measure very small pressure differences with high precision. It should be fitted with balanced compact MS frame with clear SS scale of 1mm LC. 5. Inclined Manometer: It should be capable to measure small pressures. It	Set	01 set		

		should be fitted with balanced compact MS frame with inclined clear SS scale of 1mm LC. The price should be quoted separately for each manometer.				
5	**Friction Loss Apparatus**	It comprises of 1/2 bend and elbow. Pressure tapings are provided at inlet and outlet of these fittings under test. A differential manometer fitted in the line gives pressure, loss of individual fittings. Flow control valve and by-pass valve are fitted in water line to conduct the experiment on different flow rates. The set-up is capable to determine loss of head in the fittings at various water flow rates and to measure the loss coefficient for the pipe fittings. Electric motor 0.5 kW, 220V AC, Single Phase, Sudden Enlargement: From 15 mm to 25 mm, Sudden Contraction: From 25 mm to 15 mm, Bend: 1/2 ", Elbow: 1/2 ", Ball valve: 1/2 ", Gate valve: 1/2 ", With instruction manual.	No.	04 No.		
6	**Portable TDR soil moisture meter**	TDR300 of Spectrum Technologies USA Accurately measures soil moisture across full range of soil moisture conditions Measurement Principal :Time-domain measurement method Measurement Units: Per cent volumetric water content Measurement Range: 0% to saturation (typically around 50% V.W.C Resolution: 1.0% Accuracy: +/- 3.0% vwc with electrical conductivity < 2mS/cm Display: 16 character, 2 line LCD Power Source/Life: 4 AAA alkaline cell /Approximate 12 months Data Logger Memory: 3250 Page 3/16 measurement without GPS, 1350 with GPS Probes: 120 mm & 200 mm long Probe Rods Weight: 3 lbs. (1.4 kg) Dimension: 3.1" x 3" x 1" (7.8cm x 7.5cm x 2.5cm) Includes: Soil Moisture Meter with data logger; Pilot Hole Maker; 12-cm & 20-cmProbes; Software for data retrieval; USB interface cable and carrying case. With instruction Manual	No.	02 No.		
7	**Optical groundwater level indicator**	Optical groundwater level measurement: Devices allow to work on light reflective based technology, and workup to 1000 feet water depth in tube well or water source.	No.	02 No.		
8	**Book scanner**	OVER Head Scanning, CCD Camera With High Resolution Image Output, Scan Up-to-1200 DPI Color & Black & White Mode, Auto	No.	01 No.		

		Cropping & Desktops Images, 1-2 Sec Two Scan Automatic Recognize Document Size, A3, A4, A5, A6, B4, B5, B6. Post Card, Business Card, Double Letter (Landscape or Portrait) Letter, Legal and Customize Sizes Recovery Desk by text On Document, Auto Paper Size Detection, Auto Image Rotation, Auto Color Detection, Book Image Correction, Multiplayer Document Detection With All compatible Software.				
9	**Clamp on water meter**	The hand held, measurement of onsite pump discharge, recharge flow, compatible to 15mm to 1000mm pipe line diameter.	No.	1 No.		
10	**Integrated Community Computer**	Integrated Community Computer Screen In-built Interactivity, Windows 8.1 S.L, CPU :Intel i3 Processor, Chipset :Intel Chipset, Memory: 4 GB RAM, Graphics: Integrated Graphics Storage : Minimum 1TB Brightness: 3000 SVGA ANSILumens (Short Throw) ContrastRatio:18000:1, Audio: 30W Audio, Speakers with Volume Control	No.	1 No.		
	Renewable Energy Engineering Department					
11	**Junker's Gas Calorimeter**	The Standard equipment consists of the Calorimeter with Powder Coated Stainless Steel exterior with burner (with choice of two nozzles) on a tripod stand, a Gas Flow Meter) and a pressure governor. Requisite tubing & measuring jars as well as thermometers (0.1 °C graduation) for reading inlet & outlet water temperatures should also be provided along with a detailed instruction manual. The Calorimeter should cover a wide range between 120 BTU (1000 to 26000 K Cal/m3). The Calorimeter should be fixed on a tripod stand having leveling screws to keep the Calorimeter in perfectly vertical position. The Calorimeter mainly consists of a gas combustion chamber, heat exchanger and water flow system. Heat exchanger should be designed for maximum efficiency of heat transfer and fabricated out of heavily tinned copper sheet. A constant water head maintenance device provided in the feed water pipe along with the inlet water flow regulator is fixed to the outer housing of the Calorimeter. The outer housing is of powder coated stainless steel. This constant water level attachment has an over flow device through which excess water drains out. Water from this constant head device enters the	No.	1 No.		

		bottom of the heat exchanger through inlet water flow regulator and raised along the annular space, comes up to the filtering position at the top and gets collected at the swinging funnel attachment. While going up it absorbs the heat generated by burning the gas in the burner located at the bottom of the central chamber of the Calorimeter. Two digital temperature sensors with indicators should be provided in the water inlet and outlets ports. Temperature of the effluent gas can be measured from the temp. sensor fixed at the exhaust gas outlet. Provision for fixing the burner is provided at the Calorimeter base. An outlet for collection of condensate should be provided at the bottom. Gas flowmeter: It should be a wet type Gas Flow Meter, with recording facility on a mechanical counter of the number of revolutions made, which gives total volume of gas burnt, for more details of the Flow Meter, please refer to its individual leaflet. Pressure governor: This is to regulate the pressure of gas before it enters the flow meter. These governors are factory adjusted for a required pressure.				
12	**Biomass Pelleting/Extruder**	Machine should have throughput capacity of pellets up to 100 kg/hr. The machine should be made of Mild Steel (M.S.). The material of construction of Pelletizer unit should be Mild Steel Special Purpose Alloy steel, precision machined. The construction material of die should be of Controlled heat treated, high wear resistant, special purpose alloy steel. Machine should accept raw material like wood, tree, husk, saw dust, crop straw, bamboo and any agriculture biomass. Power type should be electric motor up to 5 kW of rated power 220-240 V and up to 1500 RPM (min.) speed and air cooled or equivalent. Motor should be supplied with Direct Online (DOL) starter; mounted on the panel. Pellet Size should be 8 mm – 12 mm diameter with separate die for each size and length of 30 mm – 45 mm. Bulk density of pellets after compression. 500 kg/m^3 (min.). The machine should have Gear box like Bonfiglioli or equivalent, Pre-lubricated for minimum 10,000 hrs and maintenance-free. The burning of pellets should not generate any kind of hazardous smoke. Calorific value of pellets should be 3000 - 4000 Kcal/g. The machine should be supplied with control panel. The control panel should be standard control panel	No.	1 No.		

<table>
<tr><td></td><td></td><td>with CE standard attachment like MCB, On and OFF switches, ammeter, Voltmeter, overload protector etc.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>13</td><td>Solar Refrigeration System</td><td>Minimum and maximum internal temperature range should be up to -10℃ to +10℃. Compressor make should be reputed brand up to power consumption 150 W. Operating voltage should be 230 V AC. Type of refrigeration should be Vapour Compression Refrigeration System. Insulation should be PUF, 2.5 cm thick (min.). A thermostat set to prevent freezing in any part of the refrigerator must be included. Array structures to be of anodized aluminum, stainless steel or hot dipped galvanized steel (i.e. galvanized after cutting and drilling). Number of solar panels should be 4 (min.). Enough batteries should be provided to store power with rated voltage of 12 V DC. Batteries shall be sized to permit a minimum of 5 days of continuous operation, when the battery set is fully charged and the photovoltaic array is disconnected. Inverter cum charge controller should also be provided with the system with rated capacity of 1 KVA (min.). Indicator lights (LED or LCD) or alarms must be included to display 1.) load disconnect (e.g. red LED), 2.) array charging (e.g. green LED) and 3.) low battery. Lightning surge protection shall be provided. System grounding must be included to prevent damage to regulator and all other system components.</td><td>No.</td><td>1 No.</td><td></td><td></td></tr>
<tr><td></td><td colspan="6">Process and Food Engineering Department</td></tr>
<tr><td>14</td><td>INFRARED CAMERA</td><td>PERFORMANCE FEATURES
<table><tr><td>Type</td><td>Hand held</td></tr><tr><td>Detector Resolution (minimum) (pixel)</td><td>19000 OR 14000</td></tr><tr><td>Temperature Range of Objects (Degree Celsius)</td><td>-20 to +350</td></tr><tr><td>Minimum Focus distance</td><td>20 to 65 centimeter</td></tr><tr><td>Thermal sensitivity (NETD)</td><td>0.1 to 0.09 degree Celsius</td></tr></table>OPERATING CONDITION
<table><tr><td>Operating Humidity (RH)</td><td>90-95 percent</td></tr></table></td><td>No.</td><td>1 No.</td><td></td><td></td></tr>
</table>

		Maximum Operating Temperature: 50-65 Minimum Operating Temperature: -10 degree Celsius LENS MEASUREMENTS FEATURES Horizontal Field of View of Standard lens (degree): 20-50 Vertical Field of View of Standard lens: 20-40 DISPLAY Display Type: Color LED Display size: 3.0 – 4.0 inch GENERAL FEATURES Image capture, review and save mechanism: One handed image capture, review and save capability Storage medium: Mini SD card Size of USB stick: 4 OR 2 gigabyte File formats: JPEG,BMP,GIF,PNG,TIFF				
15	**Lypholizer /Freeze Dryer**	Temperature Range: -85 to -55 Degree C Compressor: Hermetically Sealed Compressor Material: MS Condenser: Fin & Tube type Air-Cooled Condenser Discharging facility for condensed water: Presence of Drain Display Resolution: 0.1 Degree C Insulation: High Density Polyurethane Insulation (PUF) Temperature Controller: Microprocessor based Controller with RTD Sensor(PT-100) Vacuum Indication: Pirani Gauge (Analog) Vacuum Level: Up to 0.001 mbar Vacuum Pump: Hindhighvac make Vacuum Pump Vacuum Pump Capacity: 2 stage direct drive,100 ltrs/min	No.	1 No.		

	Farm Machinery & Power Engineering Department					
16	**Electronic Seed cum fertilizer drill test rig set up**	suitable for calibration of seed cum fertilizer drill having a) Hydraulic platform (scissor table), capacity 350 kg minimum, max.. height 1300 mm with handle and moving wheels, b) Geared AC motor 5 hp, 3 ph with inverter drive for variable speed (speed range 0-400 rpm), C) shaft assembly (2 shaft) consisting of shaft with flange (universal rod), d) Control panel with stand, aluminum powder coated instrument box consisting of digital RPM meter with sensor, digital counter cum controller, speed control knob, ON-OFF switch, emergency switch, indicators, cables with connector etc. complete, e) Digital counting balance for counting seeds (Cap. 5 kg max.)	No.	1 No.		
17	**Power Weeder**	Rated Power: 6.7 kW (9 hp), Displacement: 406 cc, Engine Type/Fuel Used: 4-Stroke, Air Cooled/Diesel, Number of Gears: 2 Forward, 1 Reverse, Cultivation Width: 90 cm-121 cm (36"- 48"), (adjustable), Cultivation Depth: 2.5 cm -15.2cm (1"-6")	No.	1 No.		
18	**Tractor mounted Blade Harrow**	Heavy duty	No.	1 No.		
19	**Horizontal Diesel Engine**	Rated Power: 1.9 kW (2.5 hp), Displacement: 199 cc, Engine Type: 4-Stroke, Air Cooled, RPM: 2600, Fuel Used: Diesel	No.	1 No.		
20	**Horizontal Diesel Engine**	Rated Power: 2.9 kW (4 hp), Displacement: 270 cc, Engine Type: 4-Stroke, Air Cooled, RPM: 2600, Fuel Used: Diesel	No.	1 No.		
21	**Horizontal Diesel Engine**	Rated Power: 3.7 kW (5 hp), Displacement: 331 cc, Engine Type: 4-Stroke, Air Cooled, RPM: 2600, Fuel Used: Diesel	No.	1 No.		
22	**Spot Welding Machine**	Pedal Type, Single Phase, 10 KVA With Timer, Electrode Force 100 Kg (Approx)	No.	1 No.		
23	**Portable Arc Welding Machine**	Single Phase, Welding Current Range 50-250,	No.	1 No.		

24	**Smith Hearth With Blower**	Electric Motor 3 hp	No.	1 No.		
25	**Power Generator (Petrol start petrol run)**	Power Rating Range-0.75KVA	No.	1 No.		