



MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY,

JAMSHORO - 76062, SINDH, PAKISTAN

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**ISO-9001:2015
Certified**

**DEPUTY DIRECTOR
(Procurement)**

“SAY NO TO CORRUPTION”

No. DD(Proc.)/MUET/JAM/- 77,

Dated: 30-04-2024

✓ **Mr. Rizwan Mehmood**

Director (MIS)

Public Procurement Regulatory Authority (PPRA),

Govt. of Pakistan.

Tel: 051-9205728

Subject: **PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EVALUATION REPORT
PROFORMA AGAINST PPRA REFERENCE NO. TS528618E DATED 26-12-2023.**

Reference: **PPRA Rule – 35 (Announcement of evaluation reports).**

Dear Sir,

Please find enclosed herewith duly filled and signed Evaluation Report for the tender invited for the work, “Procurement of Equipment for Alternate Energy / Renewable Energy Lab at MUET, Jamshoro”.

This is for your information and uploading of the same on PPRA website please.

Yours Faithfully,


**DEPUTY DIRECTOR
(PROCUREMENT)**

Copy f.w.cs for information to:-

1. The Secretary to Vice Chancellor, MUET, Jamshoro.
2. All members of Procurement / Assessment Committee.

**Technical Evaluation Report of the tender,
"Procurement of Equipment for Alternate Energy / Renewable Energy Lab at MUET, Jamshoro"**

Minimum score required to qualify is: 70

EVALUATION CRITERIA

The Technical Bids have been Evaluated on the basis of following parameters:

S. No.	Evaluation Parameters		Brief	M/s Al-Waqas Associates, Lahore	M/s Paktech Instruments Company, Karachi	M/s Nordtec International, Karachi	M/s Athar & Sons, Karachi
	Company / Firm / Individual Information	Marks					
1	Experience of the firm	5	1 mark for each year in business. Max. 5 marks (Documentary proof-NTN / letter of incorporation / Company registration letter)	5	5	5	5
BREAK UP OF 15 MARKS							
2	Contract Experience	10	<ul style="list-style-type: none"> ➤ 50% marks will be given if bidder have similar nature of project worth of Rs. 10 - 20 Million (Proof Required) ➤ 100% marks will be given if bidder have similar nature of project worth of 50 - above Million (Proof Required) 	10	10	5	5
3	Financial Criteria	10	<ul style="list-style-type: none"> ➤ 10 marks will be given if details of bank account (supported by Banks's Letter & statement of last 05 year) is provided with account balance amounting to minimum of Rs. 135,000 Million to Ascertain the cash flow of the vender. ➤ 05 marks will be given if details of bank account (supported by Banks's Letter & statement of last 05 years) is provided with account balance to amounting to minimum of Rs. 70,000 Million ascertain the cash flow of the bidder. ➤ No marks will be given if no account detail relevant documents / evidence is not provided. 	5	5	5	5

Evaluation Parameters		Brief	M/s Al-Waqas Associates, Lahore	M/s Paktech Instruments Company, Karachi	M/s Nordtec International, Karachi	M/s Athar & Sons, Karachi
S. No.	Company / Firm / Individual Information					
4	Annual Turnover of last 05 years	<p>➤ 10 marks are given if the available average annual turnover for last three years is equal to or above PKR 135,000 Million</p> <p>➤ 05 marks are given if the available average annual turnover for last three years is equal to or above PKR 70,000 Million</p> <p>➤ No marks shall be given if available average annual turnover for last three years is below 70,000 Million</p>	10	10	10	10
5	Annual Income Tax Returns of Last 03 Years	<p>➤ 05 Marks of 03 years GST & Income Tax Paid Returns</p> <p>➤ 03 Marks of 02 years GST & Income Tax Paid Returns</p> <p>➤ 01 Marks of 01 year GST & Income Tax Paid Returns</p>	5	5	5	5
6	Audited Financial Statements of Last 03 years	<p>➤ 05 Marks of 03 years Financial Statement Report</p> <p>➤ 03 Marks of 02 years Financial Statement Report</p> <p>➤ 01 Marks of 01 year Financial Statement Report</p>	5	5	5	5
7	OEM manufacturer / Distributors authorization Letter	<p>➤ Letter of authorization of manufacturer, dealer / agent.</p>	15	15	15	15
8	Technical Evaluation of offered lab equipment	<p>Will be evaluated by the Technical Experts of concerned department for required specifications of Lab Equipment given in the bidding document</p> <p>Marks will be allocated:</p> <ul style="list-style-type: none"> • Fully complied 100% • Partial complied 60% • Less complied 30% 	20	12	12	12

Evaluation Parameters		Brief	M/s Al-Waqas Associates, Lahore	M/s Paktech Instruments Company, Karachi	M/s Nordtec International, Karachi	M/s Athar & Sons, Karachi
S. No.	Company / Firm / Individual Information					
10	Completed Projects of Similar nature	<p>BREAK UP OF 15 MARKS</p> <p>➤ 10% marks will be given if the bidder have similar nature of project worth of Rs. 30,000 Million (Proof Required)</p> <p>➤ 25% marks will be given if bidder have similar nature of project worth of Rs. 50,000 Million (Proof Required)</p> <p>➤ 50% marks will be given if bidder have similar nature of project worth of Rs. 70,000 Million (Proof Required)</p> <p>➤ 75% marks will be given if bidder have similar nature of project worth of Rs. 100,000 Million (Proof Required)</p> <p>○ 100% marks will be given if bidder have similar nature of project worth of 130,000 & above Million (Proof Required)</p>	15	15	8	8
11	Litigation history of the firm	<ul style="list-style-type: none"> No history in litigation (03 marks) One Case pending against (02 marks) More than one cases against (0 / Zero marks) <p>(An Undertaking to this effect will be required)</p>	3	3	3	3
12	Head Office / Establishment	Head office of the bidder with establishment / staff details (Postal address / Landline / Mobile phone number / email / website)	2	2	2	2
Total Marks			87	87	75	73

Mr. Nadeem Soomro,
Deputy Director (Procurement)
MUEIT, Jamshoro,
Member / Secretary

Engr. Mukesh Kumar,
Project Director,
SABS University of Arts, Design & Heritages,
Jamshoro / Member

Prof. Dr. Nayyar Hussain,
Associate Professor,
Electrical Engineering Department,
MUEIT, Jamshoro / Member

Mr. Javaid Riaz,
Project Director,
HEJ Research Institute of Chemistry,
University of Karachi / Member

Mr. Saghi Ahmed Memon,
Director (Works & Strategic Planning),
MUEIT, Jamshoro / Convener



MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO

EVALUATION REPORT

(As per Rule-35 of PP Rules, 2004)

- 1 Name of Procuring Agency: Mehran University of Engineering & Technology, Jamshoro, Sindh, Pakistan
- 2 Method of Procurement: Single Stage - Two Envelope Procedure
- 3 Title of Procurement: Procurement of Equipment for Alternate Energy / Renewable Energy Lab at MUET, Jamshoro
- 4 Tender Inquiry No.: DD(Proc.)/MUET/JAM/-214, Dated: 20-12-2023
- 5 PPR Reference No. (TSE): TSS528618E dated 26-12-2023
- 6 Date & Time of Bid Closing: January 16, 2024 @ 10:30 a.m. (Technical Proposal)
- 7 Date & Time of Bid Opening: March 15, 2024 @ 11:30 a.m. (Financial Proposal)
- 8 No. of Bid Received: 04 Nos
- 9 Criteria for Bid(s) Evaluation: Single Stage - Two Envelope Procedure and as per Evaluation Criteria defined in bidding Document.
- 10 Details of Bid(s) Evaluation: After evaluation of bids by the Procurement / Assessment Committee, the recommendations are made as under:

Compliance of Bidders with Technical Proposals			
S. No	Name of Firm	Max. Marks	Remarks
1	2	3	9
1	M/s Al-Waqas Associates, Lahore	100	87
2	M/s Paktech Instruments Company, Karachi	100	87
3	M/s Athar & Sons, Karachi	100	75
4	M/s Nordtec International, Karachi	100	73

* Maximum Score for qualifying is: 70

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The financial proposals of the Technically Qualified Bidders were opened and the recommendations were made as under:


S. No.	Name of Bidder	Items	Qty	Evaluated Cost (PKR)	Rule / Regulation / SBD/Policy/ Basis for Rejection / Acceptance as per Rule 35 of PP Rules, 2004
1	M/s Paktech Instruments Company, Karachi	AE/RE-01 LED Based Class A++A++ Sun Simulator-ECOSUN PLUS A Ecoprogetti's Sun Simulator represents a new generation of sun simulator, thanks to the use of LED as light source. The use of LED, more than consenting a supply of radiation in triple class A+ (A++A++), fully respecting IEC 60904-09 Ed.3, gives more benefits	1	115,550,000.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
		AE/RE-07 Fluke 1775 Three Phase Power Quality Analyzer	1	5,250,000.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
		AE/RE-09 Fluke TiS20+9 MAX 9Hz Specifications Key Specifications Infrared Resolution 120 x 90 (10,800 pixels) IFOV (Spatial Resolution) 7.6 mRad, D:S 130:1 Field of View 50 x 38° Minimum Focus Distance 20" (50 cm)	1	1,575,000.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
		AE/RE-11 SMFT-1000 Solar Tools Kit: Fluke Multifunction PV Tester, IV Curve Tracer with Truest™ Software and MC4 Leads.	1	3,833,333.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
		AE/RE-18 Free of Cost	1	FOC	--

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S. No.	Name of Bidder	Items	Qty	Evaluated Cost (PKR)	Rule / Regulation / SBD/Policy/ Basis for Rejection / Acceptance as per Rule 35 of PP Rules, 2004
2	M/s Al-Waqas Associates, Lahore	AE/RE-10 Thermal Imaging Software Fluke Smart View R&D AE/RE-12 Solar Pathfinder for Pakistan latitude AE/RE-14 PV Panel Canadian Solar N Type Bifacial LONGI HIMO-6 580W mono-perc panel	1 2 3	1,920,000.00 320,000.00 750,000.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
3	M/s Athar & Sons, Karachi	AE/RE-17 Consumables as per tender specifications	1	959,576.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
4	M/s Nordtec International, Karachi	AE/RE-15 100 AH 12 V Brand: LONG		521,500.00	Evaluation / Selection of Equipment has been made in accordance with the Evaluation Criteria by the Departmental Technical Experts as mentioned in the Bidding Documents
Item Nos. AE/RE-06 & 16 were not Quoted by any vender					
Item Nos. AE/RE-02, 03, 04, 05, 8, 13 & 19 have been dropped due to Financial Constraints					

11 Any other additional / supporting information, the procuring agency may like to share: _____



Mr. Nadeem Soomro,
Deputy Director (Procurement)
MUET, Jamshoro, Member / Secretary,


Engr. Mukesh Kumar,
Project Director,
SABS University of Arts, Design & Heritages,
Jamshoro / Member


Prof. Dr. Nayyar Hussain,
Associate Professor,
Electrical Engineering Department,
MUET, Jamshoro / Member


Mr. Javaid Riaz,
Project Director,

HEJ Research Institute of Chemistry,
University of Karachi / Member


Mr. Saghr Ahmed Memon,
Director (Works & Strategic Planning),
MUET, Jamshoro / Convener



MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO

ATTENDANCE SHEET

Name of work: **Procurement of Equipment for Alternate Energy / Renewable Energy Lab at MUET, Jamshoro.**

NIT No. DD(Proc)/MUET/JAM/-214 dated 20-12-2023
PPRA ID No. TS528618E dated 26-12-2023

FINANCIAL PROPOSALS

OPENED ON 15-03-2024

S. No.	Name of Consultant / Firm	Contact No.	Signature
1.	M/s Al-Waqas Associates, Lahore		
2.	M/s Athar & Sons, Karachi		
3.	M/s Paktech Instruments Company, Karachi	0331-3586876	
4.	M/s Nordtec International, Karachi	0336-1357465	

Nadeem Soomro,
Deputy Director (Procurement)
MUET, Jamshoro, Member / Secretary,

Engr. Mukesh Kumar,
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SABS University of Arts, Design & Heritages,
Jamshoro / Member

Mr. Javaid Riaz,
Project Director,
HEJ Research Institute of Chemistry,
University of Karachi / Member

Dr. Nayyar Hussain Mirjat,
Associate Professor,
Department of Electrical Engineering,
MUET, Jamshoro / Member

Mr. Saghir Ahmed Memon,
Director (Works & Strategic Planning),
MUET, Jamshoro / Convener



MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO

ATTENDANCE SHEET

Name of work: **Procurement of Equipment for Alternate Energy / Renewable Energy Lab at MUET, Jamshoro.**

NIT No. DD(Proc)/MUET/JAM/-214 dated 20-12-2023
PPRA ID No. TS528618E dated 26-12-2023


TECHNICAL PROPOSALS


OPENED ON 16-01-2024

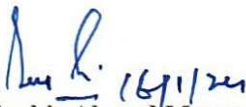
S. No.	Name of Consultant / Firm	Contact No.	Signature
1.	M/s Al-Waqas Associates, Lahore	03018484102	Al Waqas
2.	M/s Athar & Sons, Karachi	0300 30 34 364	Athar & Sons
3.	M/s Paktech Instruments Company, Karachi	0331-3586876	Paktech
4.	M/s Nordtec International, Karachi	0333-2868132	Nordtec


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MUET, Jamshoro / Convener



MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO

Name of Work: PROCUREMENT OF EQUIPMENT FOR ALTERNATE ENERGY / RENEWABLE ENERGY LAB AT MUET, JAMSHORO.

MINUTES OF MEETING:

A meeting for opening of the Financial Proposals of the tender for the work, "Procurement of Equipment for Alternate Energy / Renewable Energy Lab at MUET, Jamshoro" was held on **15-03-2024 at 11:30 a.m.** in the Office of the Director (Works & Strategic Planning), MUET, Jamshoro. The following members of Procurement/ Assessment Committee were present.

- | | |
|---|-------------------|
| 1. Mr. Saghir Ahmed Memon,
Director (W&SP, MUET, Jamshoro. | Convener |
| 2. Prof. Dr. Nayyar Hussain,
Associate Professor, Department of Electrical Engineering,
MUET, Jamshoro. | Member |
| 3. Mr. Javaid Riaz,
Project Director,
HEJ Research Institute of Chemistry,
University of Karachi. | Member |
| 4. Mr. Mukesh Kumar,
Project Director,
SABS University of Arts, Design & Heritages, Jamshoro. | Member |
| 5. Mr. Nadeem Soomro,
Deputy Director (Procurement), MUET, Jamshoro. | Member/ Secretary |

The Deputy Director (Procurement) briefed the Committee members that the sealed percentage/ Item Rate Tender was invited as per PP Rules 2004, Govt. of Pakistan for the said work vide NIT No. & Dated: DD(Proc.)/MUT/JAM/-214, 20-12-2023, by adopting Single Stage – Two Envelope Procedure. Purchasing Date starting from 26-12-2023 to 15-01-2024, whereas; submission Date on 16-01-2024 upto 11:00 A.M, whereas, Opening Date of the bid was 16-01-2024 @ 11:30 A.M. The Deputy Director (Procurement) further briefed that Four (04) bidders purchased the Bidding Documents and submitted the same in-time. Accordingly; the Technical Proposals of the bidders were opened in presence of bidders. Lateron, the said proposals were sent to Dr. Nayyar Hussain, Associate Professor, Electrical Engineering Department vide letter No. DD(Proc)/MUET/JAM/-19 dated 24-01-2024 for technical evaluation of equipment alongwith the departmental technical experts which should fulfill requirements. After thorough evaluation of all bidders in accordance with Technical Evaluation Criteria given in the bidding document and it was observed that all bidders were technically qualified. (**Technical Report attached**). Subsequently, the date for opening of the Financial Proposals of the technically qualified bidders was fixed on 15-03-2024 @ 11:30 A.M. Then the bidders were called in the Office of Director (W&SP), so that financial proposals can be opened in their presence under **Rule-28(02) of PP Rules 2004, Govt. of Pakistan**. The following Bidders took part in the bidding process as under:

1. M/s Paktech Instruments Company, Karachi
2. M/s Al-Waqas Associates, Lahore
3. M/s Nordtec International, Karachi
4. M/s Athar & Sons, Karachi

Copy of Attendance Sheet attached

The Committee started the proceedings of opening of financial proposals in-front of aforementioned bidders and read aloud the names of each bidder one by one by opening their respective financial proposal and also read aloud bid amount and other details as depicted under:

1.	M/s Paktech Instruments Company, Karachi	Comparative Statement Attached
2.	M/s Al-Waqas Associates, Lahore	
3.	M/s Nordtec International, Karachi	
4.	M/s Athar & Sons, Karachi	

In the light of above, the committee resolved that the final item-wise recommendations be got prepared by the Departmental Technical Experts within the available provision of funds in the PC-I scheme and agreed to procure equipment to be selected by the departmental Technical Evaluation Committee / Experts and award the work to most advantageous bidders on item-rate basis. Further it was resolved that Rule – 38B of PP Rules, 2004 be followed for the items quoted by single vender.

The meeting ended with the vote of thanks to all members.



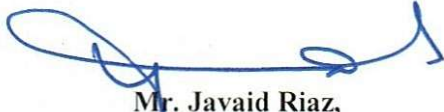
Mr. Nadeem Soomro
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Prof. Dr. Nayyar Hussain,
Associate Professor,
Electrical Engineering Department
MUET, Jamshoro/
Member



Mr. Javaid Riaz,
Project Director,
HEJ Research Institute of Chemistry,
University of Karachi /
Member



Mr. Saghir Ahmed Memon,
Director (Works & Strategic Planning),
MUET, Jamshoro/
Convener

**COMPARATIVE STATEMENT FOR
PROCUREMENT OF EQUIPMENT FOR ALTERNATE ENERGY / RENEWABLE ENERGY LAB AT MUET, JAMSHORO**

Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al Wagas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordtec International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
AE/RE-01	<p>Photovoltaic Power Standard Test Condition</p> <p>Mainly used in automatic test and result record of solar mono-crystalline silicon, poly-crystalline silicon solar cell module and thin-film module.</p> <p>Products Features:</p> <ol style="list-style-type: none"> 1. Flash impulse continuous adjustable range 10-100ms 2. Four-line measurement: 14-bit 4-channel high-speed synchronous acquisition card, 80000 data collecting point; 3. 10 parameters display; measured parameter display in tabulation and graphic way; 4. Irradiance automatically compensating; temperature automatically compensating; 5. Voice counts off and prompts of flash time; counting prompts of flash time 6. 24 consecutive hours of work, working life of imports Xenon lamp is 300,000 times of flash. <p>Technical Data:</p> <p>Lamp Spectrum In line with IEC60904-9 and JISC8933(A Grade)</p> <p>Light Intensity 100m W/cm²</p> <p>Light intensity non-uniformity $\leq \pm 2\%$[A] $\pm 3\%$ Instability degree of irradiation $\leq \pm 2\%$[A] $\pm 2\%$</p> <p>Test results consistency $\leq 0.5\%$[A] $\pm 1\%$</p> <p>Test error of electrical properties $\leq 2\%$</p> <p>Single flash time 10ms-30ms</p> <p>Effective Test Range 1200*2000mm /SW-300W</p> <p>Measuring Voltage 0-100V(Resolution 1mV)</p> <p>Measuring current 0-20A (Resolution 1mA)</p> <p>Environmental temperature 15 °C ~ 30 °C</p> <p>Test Parameters Isc, Voc, Pmax, Vm, Im, FF, EFF, Tem</p> <p>Equipment, machine configuration: 1. Test Host(With electronic load); 1 set 2. Light source (With optical system); 2 Pieces 3. PC; 1 set 4. High-speed data collection A/D plant; 1 piece 5. Dedicated measurement software; 1 set 6. Test bench; 1 set 7. Standard Battery(Compensation and correction for the irradiance uniformity measurements); 1 piece</p>	1	115,550,000.00	115,550,000.00	31,000,000.00	31,000,000.00	N/Q	-	N/Q	-	

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Item Code	Description of Items	Qty	M/s. Patech Instruments Company, Karachi		M/s. Al-Maqas Associates, Lahore		M/s. Athar & Sons, Karachi		M/s. Noorjee International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
42	STERLING MOTOR Bench top unit Modified aluminum structure and panels of painted steel Magnet on the front panel with similar distribution to the magnets in the real unit All type Nyring motor hot and cold cylinders made of stainless steel and piston made of bronze Device to control the flame of the heating element, to cover it and be secure it Alcohol lamp as heating element Heating system Electrical generator with a pulley for converting the potential mechanical energy into electrical energy. Equipped with an electrical lead and current and voltage measurement system. Instrumentation: Two temperature sensors "T" type, one in the hot cylinder and the other in the cold cylinder Two pressure meters (manometers), one in the hot cylinder and the other in the cold cylinder, range: from -1 to 2.8 bar Speed sensor (rpm), range: 0 to 3000 rpm Dynamometer to measure the force, range: from 0 to 2Nw Current and voltage sensors Electronic console Metallic box Temperature sensors connectors, Digital display for the temperature sensors, Selector for the temperature sensors Voltage sensor connector, Digital display for the voltage sensor Current sensor connector, Digital display for the current sensor Speed sensor connector, Digital display for the speed sensor Switches to open and close the flame device MECH: Structure Machine The machine is suitable for unbalance detection of disc rotors without journal, such as clutch pressure plate, brake disc, brake drum, pulley, saw blade, fan rotor, chock, flange etc. 1. The machine designed can transmit mechanical force, which is firm and reliable, with small vibration damping and good rigidity 2. High sensitivity sensor, good linearity, durable and reliable 3. Calibration measurement principle, allowing high initial unbalance 4. Equipped with a special fixture, more convenient for changing 5. Electronic measurement system, friendly HMI, powerful functions 6. The weight reduced device can be equipped as customer's request. Technical Specs:	1	6,194,125.00	6,194,125.00	3,960,000.00	3,960,000.00	N/Q	-	9,490,000.00	9,490,000.00	
	MECH: Structure Machine The machine is suitable for unbalance detection of disc rotors without journal, such as clutch pressure plate, brake disc, brake drum, pulley, saw blade, fan rotor, chock, flange etc. 1. The machine designed can transmit mechanical force, which is firm and reliable, with small vibration damping and good rigidity 2. High sensitivity sensor, good linearity, durable and reliable 3. Calibration measurement principle, allowing high initial unbalance 4. Equipped with a special fixture, more convenient for changing 5. Electronic measurement system, friendly HMI, powerful functions 6. The weight reduced device can be equipped as customer's request. Technical Specs:	1	7,237,500.00	7,237,500.00	6,400,000.00	6,400,000.00	N/Q	-	N/Q	-	








Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordtec International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
AL/RR-04	<p>Frequency 50 Hz Micro Grid including Wind and Solar Energy Trainer with data acquisition</p> <p>Photovoltaic Solar Energy Unit with data acquisition of customized parameters having Mono crystalline Polycrystalline panels that uses the photo conversion law for the direct conversion of solar radiation into electricity. The absorbed energy is provided by simulated solar radiation, which in our case is supplied by a panel with powerful light sources. The panel is mounted on movable stand and may expose on sun to observe actual solar radiation parameters if needed for optional system. Panels are directly connected with inverter to utilize electrical energy which may embedded charged controller or integrated with separate charged controller. The energy is being facilitated through battery connected to inverter to provide uninterrupted power supply to load. However AC and DC load will be a part of complete unit to analyze immediate energy responses on both cases from Solar Panel.</p> <p>It is very important to have complete information of Solar Panel orientation, Tiling Angle, Direction of sun, irradiance status, Short Circuit Current, Open Circuit Voltages, array resistance and many more which are also discussed in last to investigate correct status of Energy. Because Energy has its own parameters to optimize system reliability and savings. Though analyzing of voltage, current, power, harmonics and associated power quality values to make critical power quality and energy decisions in real-time.</p> <p>Apart from hardware the most important part is to save our data though in one shot which can be analyze instantly or later thanks to software which enables us to monitor and save data directly online through mobile application or look on screen after installation of software.</p> <p>Photovoltaic Solar Panels:</p> <ul style="list-style-type: none"> • STC Power Rating 200W • PTC Power Rating data not available • STC Power per unit of area 11.5W/m² (123.8W/m²) • Peak Efficiency 12.38% • Power Tolerances -3%/+3% • Number of Cells 60 • Nominal Voltage not applicable • Imp 7.12A • Vmp 28.16V 	1	15,000,000.00	15,000,000.00	25,816,000.00	25,816,000.00	N/Q	-	N/Q	-	

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Item Code	Description of Items	Qty	M/s Pakreth Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordtec International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
	<ul style="list-style-type: none"> • Iec 77A • Vcc 36.38V • Temp. Coefficient of Power -0.4%/K • Temp. Coefficient of Voltage -0.114V/K • Series Fuse Rating 15A • Maximum System Voltage 1000V • Mechanical Characteristics • Type Polycrystalline Silicon • Output Terminal Type Multicontact Connector Type 4 • Frame Color Black • Backsheet Color data not available • Length 64.4in (1.637mm) • Width 38.9in (987mm) • Depth 1.6in (40mm) • Weight 46.3lb (21kg) • Installation Method Rack-Mounted • Warranty and Certifications • 80% Power Output Warranty Period 25yrs • 90% Power Output Warranty Period 10yrs <p>Solar Panel Installation Analyzer: The comprehensive tester conducts all of the electrical tests required by IEC 62446 at the touch of a button. connectivity between the tester and the Solar Survey 200R irradiance meter enables irradiance to be displayed and for irradiance, module and ambient temperature to be recorded within the TESTER in real-time as electrical tests are conducted.</p> <ul style="list-style-type: none"> • USB download of stored test results and irradiance measurements • speeds up the completion of documentation and improves traceability of results. • Solar Survey 200R measures irradiance using a monocrystalline PV cell for a more representative reading over real operating conditions. <p>If combined with SolarCert Elements software, the Test Kit represents the complete solution in PV commissioning, containing all that is needed for testing and documenting installations to the requirements of IEC 62446.</p> <p>Suitable for both photovoltaic and solar thermal installations</p> <ul style="list-style-type: none"> • Measures irradiation as required by IEC 642446 • 200R features for simultaneous measuring TM • Built-in compass and inclinometer • measure roof orientation and pitch • Dual channel temperature measurement • Built-in data logger and USB interface (Solar Survey 200R model only) 										

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Item Code	Description of Items	QTY	M/s Paktech Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordtec International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
	<p>n Rugged, robust and hand held EARTH/GROUND CONTINUITY</p> <p>Display Range 0.000 to 1990</p> <p>Measuring Range 0.010 to 1990</p> <p>Resolution 0.010 maximum</p> <p>Open Circuit Test Voltage 4VDC, nominal</p> <p>Short Circuit Test Current >2000mA (as per IEC 61557-4)</p> <p>Test Lead Compensation Null out up to 100</p> <p>User Protection Warning and test inhibited if = 30V AC/DC INSULATION RESISTANCE</p> <p>Display Range 0.05MO to 199MO</p> <p>Measuring Range 0.05MO to 199MO</p> <p>Resolution 0.01MO maximum</p> <p>Open Circuit Test Voltage 250V, 500V, 1000VDC (as per IEC 61557-2)</p> <p>Short Circuit Test Current >1mA, <2mA s/c as per IEC 61557-2</p> <p>Visible Warning = 30V AC or DC at inputs</p> <p>OPEN CIRCUIT VOLTAGE</p> <p>Display Range 0.0VDC to 1000VDC</p> <p>Measuring Range 5.0VDC to 1000VDC</p> <p>Resolution 0.1V maximum</p> <p>Emulators DC voltage polarity correct or reversed</p> <p>SHORT CIRCUIT CURRENT</p> <p>Display Range 0.0A – 15.00A</p> <p>Measurement Range 0.5A – 15.00A</p> <p>Resolution 0.01A</p> <p>OPERATING CURRENT (USING AC/DC CURRENT CLAMP)</p> <p>Display Range 0.0A – 40A</p> <p>Measurement Range 0.5A – 40A</p> <p>Resolution 0.1A max</p> <p>DC OPERATING POWER</p> <p>Display range 0.0kW – 40.0kW</p> <p>Measurement ranges 0.1kW – 40.0kW</p> <p>Resolution 0.1kW</p> <p>GGING AND CONNECTIVITY</p> <p>Datalogging Up to 200 complete test datasets</p> <p>Download utility software included</p> <p>Compatible with SolarCert Elements software (version 1.1)</p> <p>Connectivity USB download to PC</p> <p>Wireless * to Solar Survey 200R (range c. 100m / 330 ft)</p> <p>GENERAL SPECIFICATIONS</p> <p>Display Custom LCD with backlight</p> <p>Power Supply 6 x 1.5V Alkaline LR06</p> <p>Battery Life >1000 test sequences</p> <p>Auto Power Down After 1 minute</p> <p>Solar Irradiance Specification:</p> <p>IRRADIANCE</p> <p>Display Range 0 – 1500 W/m²</p> <p>M</p> <p>Measurement Range 100 – 1250 W/m²</p> <p>Resolution 1 BTU/hr-ft²</p> <p>TEMPERATURE</p> <p>Display Range -30°C to +125°C</p>										

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Item	Description of Item	Q's	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Remarks
	<p>Measurement Range: ACV to +125V Resolution: 1V</p> <p>TEMPERATURE: Display Range 0° to 500° Measurement Range 0° to 500° Resolution: 1°</p> <p>INTEGRATED: Display Range 0° to 90° Measurement Range 0° to 90° Resolution: 1°</p> <p>2.4A 2.1W</p> <p>2.1W</p> <p>DATA LOGGING AND CONNECTIVITY (SURVEY 2008 ONLY) 1 or 50 - 600 RTU/A-B 2 Channels 5000</p> <p>Sample Rate 1 to 60 minutes (user definable) Scheduling Download utility software included Compatible with SolarCort Elements software (version 1.1) Compatibility USB download to PC</p> <p>GENERAL SPECIFICATIONS Interface</p> <p>Display: Custom LCD Power Supply: 2AA Alkaline Batteries Battery Life: >20,000 Readings Auto power down After 2 minutes to TESTER (range c: 00m / 110 B)</p> <p>Analogue Solar Power Specification: ACTIVE POWER</p> <p>Function Range Accuracy ACV / DCV: 0.00% W - 99.9% W A, error *V, reading * V, error * A, reading VOLTAGE</p> <p>Function Range Accuracy DCV: 0.00 - 99.9% V ± (0.2% + 2dgt) ACV: 0.00 - 99.9% V ± (1.0% + 5dgt) AP (ACV): 0.00 - 99.9% V ± (1% + 5dgt) Resolution (dgt) 0.01 V</p> <p>THERMIST</p> <p>Function Range Accuracy 0: 5000 - 50000 ± 0.5% + 5dgt) 0: 50000 - 600000 ± 0.5% + 5dgt) DC A 0.00A - 99.99A ± (1.5% + 0.2 A) 0.00 A - 299.9 A ± (1.5% + 5dgt) AC A 0.01A - 299.9 A ± (1.5% + 5dgt) 5000 - 6010 ± 0.5% + 5dgt) ± 0.5% + 5dgt) ± 0.5% + 5dgt) LPR 0.00A - 299.9 A ± (1.5% + 5dgt) 5000 - 6010 AC A ± 0.5% + 5dgt) 5000 - 599.9A</p>												

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Item Code	Description of Items	Qty	M/s Pakteeh Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordlee International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
	PEAK HOLD : PEAK MAX / PEAK MIN Function Range Accuracy ACV 140.0V ± (3.0% + 15dgt) 140.0V ACA 140.0A ± (3.0% + 15dgt) 850A FREQUENCY Function Range Accuracy Frequency 20.00Hz - 9.999kHz ± (0.5% + 3dgt) TOTAL HARMONIC DISTORTION Function Range Accuracy ACA /ACV 0.1 - 99.9% ± (3.0% + 10dgt) Resolution 0.1% Harmonic Order Range Accuracy H01 - H12 0.1 - 99.9% ± (3% + 10dgt) H13 - H25 0.1 - 99.9% ± (10% + 10dgt) Resolution 0.1% INRUSH CURRENT Function Range Accuracy ACA 0.00A - 99.99A ± (2.5% + 0.2A) 100.0A - 599.9A ± (2.5% + 5dgt) POWER FACTOR Range -1.00 - 1.00 Resolution 0.01 Basic Accuracy ± 3% ± 1dgt RESISTANCE, CONTINUITY & DIODE Function Range Accuracy Resistance 0.00 - 999.90 ± (1.0% + 5dgt) 1.00kΩ - 99.99 kΩ ± (1.0% + 3dgt) Continuity 0.00 - 999.90 ± (1.0% + 5dgt) Diode 0.40 - 0.80V ± 0.1V CAPACITANCE Function Range Accuracy Capacitance 0.000 μF - 4000 μF ± (1.9% + 8dgt) Resolution 0.001 μF max GENERAL Safety IEC 61010 Power Requirement Single 9V battery Battery life - 100 hours (alkaline battery) Size 87 mm (W) x 239 mm (L) x 51 mm (H)										

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Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordice International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
AE-RE-05	<p>COMPUTER CONTROLLED ANAEROBIC DIGESTER WITH SCADA AND PID CONTROL.</p> <p>Bench-top unit.</p> <p>Associated aluminum frame and panels made of painted steel.</p> <p>Main metallic elements made of stainless steel.</p> <p>Diagram on the front panel with distribution of the elements similar to the real one.</p> <p>Two packed bed reactors (Anaerobic digesters) that may be operated in series or parallel flow arrangement.</p> <p>Capacity: 5</p> <p>Heating jacket.</p> <p>Reactor packing: 25 mm diameter BioBalls.</p> <p>Two food computer controlled peristaltic pumps.</p> <p>Water circulation computer controlled pump of the thermostatic bath.</p> <p>Computer controlled thermostatic bath up to 60 °C. PID control.</p> <p>Two volumetric tanks to measure and store the volume of gas generated.</p> <p>Dumping vessel, capacity: 1</p> <p>Two water flow meter, range: 0 - 50 cm³/min.</p> <p>Five temperature sensors "J" type.</p> <p>Two pH sensors, range: 0 - 14.</p> <p>The complete unit includes as well:</p> <p>Advanced Real-Time SCADA and PID Control.</p> <p>Open Control + Multicontrol + Real-Time Control.</p> <p>Specialized Control Software based on LabVIEW.</p> <p>National Instruments Data Acquisition board (250 KS/s, kilo samples per second).</p>	1	21,533,750.00	21,533,750.00	22,936,000.00	22,936,000.00	N/Q	-	8,490,000.00	8,490,000.00	
AE-RE-	<p>CELL TESTER</p> <p>Battery Load Tester Key Features</p> <ul style="list-style-type: none"> - Performs load and discharge testing on battery systems to determine actual capacity - Allows batteries to be tested while still in service - Dynamic discharge technology gives full power at all voltages - Maximum current of 110A - Maximum voltage of 500V - Built-in touchscreen for easy operation - Safety built-in with emergency stop button, spark-free - Real-time monitoring of battery status during the testing - BVM battery voltage monitoring, possible using optional - Integrated auxiliary storage with transfer to PC using USB - Charging measurement - Application Field intended for use in high voltage - Temperature Operating: 0 to +50°C (32 to +122°F), power storage -40 to +70°C (-40 to +158°F) - Humidity: 5 to 95% RH, non-condensing - Shock/Vibration: Full Instrument only, ETSI EN 300 019-2-7 class TM2 - Treatment in transport case: IIS A 2A - Power Consumption: 200W max 	1	N/Q	-	N/Q	-	N/Q	-	N/Q	-	

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Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordtec International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
	Power Interruption 40ms max Battery Impedance Test Equipment FEATURES AND BENEFITS On-line testing requiring no downtime. Enhanced printing and memory functions. Calculates impedance automatically and stores results for on-site review. Requires no battery discharge. Receiver can download stored data to PowerDB software for quick, easy analysis. Reduced test time: less than 3 seconds for each cell. Measures impedance and dc voltage values for all lead-acid and nickel-cadmium cells up to 7000 Ah. Stores more than 2000 sets of readings in up to 300 tests. Checks charger condition by measuring ac ripple current Internal Charger Supply Voltage 100 to 130 V, 50/60 Hz, 14 VA 210 to 250 V, 50/60 Hz, 14 VA Output 6.50 V dc @ 1.10 A dc charging (max) 9.60 V dc open circuit Operating Temperature 50 to 95° F (10 to 35° C) Receiver Accuracy ac impedance 5% +1 LSD dc voltage ±(1.5% of rdg +1 LSD) Precision Better than 0.5% one sigma Supply 4.8 V dc, 800 mAh, quick charge NiMH battery pack Battery Pack Life, Full Charge 5 hours continuous Maximum Cell/Ar Test Voltage 25 V dc between receiver and potential probe PV reference cell 66mm										


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Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al-Waraj Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordics International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
AE/RE-07	THREE PHASE POWER QUALITY ANALYZER Range 1000 V Resolution 0.1 V Intrinsic Accuracy at Reference Conditions (% of Reading + % of Full Scale) ±(0.2% + 0.01%) Current: Direct Input II7xx-flex 1500 12" Range 150 A 1500 A Resolution 0.1 A 1:00 AM Intrinsic Accuracy at Reference Conditions (% of Reading + % of Full Scale) Frequency ±(1% + 0.02%) ±(1% + 0.02%) 42.5 to 69 Hz (0.01Hz)	1	5,250,000.00	5,250,000.00	8,000,000.00	8,000,000.00	3,426,720.00	3,426,720.00	N/Q	-	
AE/RE-08	3D Printer (Fusion3 Edge 3D Printer OR Equivalent)	1	N/Q	-	8,000,000.00	8,000,000.00	1,652,749.00	1,652,749.00	N/Q	-	
AE/RE-09	Flixe TIS20+ MAX Thermal Imaging Camera OR Equivalent	1	1,575,000.00	1,575,000.00	1,680,000.00	1,680,000.00	714,705.00	714,705.00	N/Q	-	
AE/RE-10	Flixe Smart View R&D Thermal Imaging Software (OR Equivalent)	1	2,250,000.00	2,250,000.00	1,920,000.00	1,920,000.00	Price included in Item 09	-	N/Q	-	
AE/RE-11	SMFT-1000 Solar Tools Kit: Flixe Multifunction PV Tester and Performance Analyzer, IV Curve Tracer (OR Equivalent)	1	3,833,333.00	3,833,333.00	4,400,000.00	4,400,000.00	N/Q	-	N/Q	-	
AE/RE-	Solar Pathfinder for Pakistan latitude	4	N/Q	-	160,000.00	640,000.00	N/Q	-	N/Q	-	
AE/RE-	Multichannel Data Loggers	2	750,000.00	1,500,000.00	225,000.00	450,000.00	N/Q	-	N/Q	-	
AE/RE-	PV Panels Array Mono and Poly 250 W each	10	N/Q	-	250,000.00	2,500,000.00	N/Q	-	N/Q	-	
AE/RE-	100 AH Batteries (Long 12V 100AH Dry Maintenance Battery KPH100-12AN) or Equivalent	5	N/Q	-	190,000.00	950,000.00	116,159.20 Opt. Warranty 120,000.00	580,796.00 600,000.00	104,300.00	521,500.00	
AE/RE-16	Converter and Inverters (DC-AC, DC-DC, AC-DC, AC-AC) 3KW each	1	N/Q	-	N/Q	-	N/Q	-	N/Q	-	
AE/RE-	Consumables - AA, AAA, AAAA batteries (50 pc Each) - Soldering Wire and Flux (20 pc each) - Soldering Iron (10 pc) - Soldering gun (5 pc) - Desoldering Station (with all accessories) (2 pc) - Desoldering Station (2 pc) - Bzane soldering Iron with butane (10 pc) - Solder Flux Pen (20 pc) - Solder Seal Wire Connectors (20 pc) - Soldering Wick (20 pc) - Solder Paste (20 pc) - Solder Sucker (15 pc) - Soldering Preheaters (2 pc) - Soldering Helping Hands (5 pc) - Soldering Magnifying Glass (10 pc) - Smoke Absorber (5 pc) - Solder Tape (20 pc) - Tweezers Set (10 pc) - Soldering Iron Tip Cleaner (Brass Wool) (10 pc)	1	4,150,000.00	4,150,000.00	2,750,000.00 As per list	2,750,000.00	959,576.00	959,576.00	N/Q	-	


Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Athar & Sons, Karachi		M/s Nordlee International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
	Solder Stand (5 pc) Solder Tips (50 pc) Solder iron coils (50 pc) Soldering Tip Tinner (10 pc) Wire Cutter (5 pc) Pluss Tool (5) Multiple Gauge wires Coils (10 pc) Bread Boards (20 pc) Multi Color LEDs (50pc each) Re-chargeable 1.5 volt batteries (50pc and chargers (5 pc) Screwdriver set 32 in one. (2 pc) DBL-600 HQ 5 in 1 Screwdriver set (2 pc) Interchangeable Screwdriver set 9 in 1 tester kit (2 pc) 40-piece Toolkit Combination Socket Ratchet wrench set (2 pc) HP 3015 printer cottages (5 pc) HP 2055 printer cottages (5 pc) A4 70gm Paper Kim (20 pc) Digital Multimeter Repair and Maintenance										
A/E/R-	Capacity Development of Faculty	1	Free of cost	--	4,900,000.00	4,900,000.00	N/Q	--	N/Q	--	
A/E/R-19	Softwares: RET Screen Homer PRO PV SYST PV SOL METRONORM SketchUP	1 1 1 1 1 1 1	N/Q	--	4,500,000.00 As per list	4,500,000.00	N/Q	--	N/Q	--	


Mr. Nadeem Soomro,
 Deputy Director (Procurement)
 MUET, Jamshoro, Member / Secretary


Engr. Mukesh Kumar,
 Project Director,
 SABS University of Arts, Design & Heritages,
 Jamshoro / Member


Mr. Javaid Riaz,
 Project Director,
 HEJ Research Institute of Chemistry,
 University of Karachi / Member


Dr. Nayyar Hussain Mirjat,
 Associate Professor,
 Department of Electrical Engineering,
 MUET, Jamshoro / Member


Mr. Saghir Ahmed Memon,
 Director (Works & Strategic Planning),
 MUET, Jamshoro / Convener

**LIST OF SELECTED EQUIPMENT BY DEPARTMENTAL EXPERTS / TECHNICAL EVALUATION COMMITTEE FOR
PROCUREMENT OF EQUIPMENT FOR ALTERNATE ENERGY / RENEWABLE ENERGY LAB AT MUET, JAMSHORO**

Item Code	Description of Items	Qty	M/s Paktech Instruments Company, Karachi		M/s Al-Waqas Associates, Lahore		M/s Ather & Sons, Karachi		M/s Nordtec International, Karachi		Remarks
			Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	Unit Rate	Amount Rs.	
AE/RE-01	Photovoltaic Power Standard Test Condition Mainly used in automatic test and result record of solar mono-crystalline silicon, poly-crystalline silicon solar cell module and thin-film module.	1	115,550,000.00	115,550,000.00	-	-	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-02	STABILING MOTOR	1	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
AE/RE-03	Balancing Machine	1	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
AE/RE-04	Micro Grid including Wind and Solar Energy Trainer with data acquisition	1	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
AE/RE-05	COMPUTER CONTROLLED ANAEROBIC DIGESTER, WITH SCADA AND PID CONTROL.	1	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
AE/RE-06	CELL TESTER	1	N/Q	-	N/Q	-	N/Q	-	N/Q	-	Not quoted by any vendor
AE/RE-07	THREE PHASE POWER QUALITY ANALYZER	1	5,250,000.00	5,250,000.00	-	-	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-08	3D Printer (Fusion3 Edge 3D Printer OR Equivalent)	1	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
AE/RE-09	Fuke TIS20+ MAX Thermal Imaging Camera	1	1,575,000.00	1,575,000.00	-	-	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-10	Fuke Smart View R&D Thermal Imaging Software	1	-	-	1,920,000.00	1,920,000.00	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-11	SMFT-1000 Solar Tools Kit: Fuke Multifunction PV Tester and Performance Analyzer, IV Curve Tracer	1	3,833,333.00	3,833,333.00	-	-	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-12	Solar Pathfinder for Pakistan latitude	2	-	-	160,000.00	320,000.00	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-13	Multichannel Data Loggers	2	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
AE/RE-14	PV Panels Array Mono and Poly 250 W each	3	-	-	250,000.00	750,000.00	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-15	109 All Batteries (Long 12V 100AH Dry Maintenance Battery KPI1100-12AN) or Equivalent	5	-	-	-	-	-	-	104,300.00	521,500.00	As recommended by Technical Evaluation Committee
AE/RE-16	Converter and Inverters (DC-AC, DC-DC, AC-DC, AC-AC) 3KW each	1	N/Q	-	N/Q	-	N/Q	-	N/Q	-	Not quoted by any vendor
AE/RE-17	Consumables (As per list given in BID)	1	-	-	-	-	959,576.00	959,576.00	-	-	As recommended by Technical Evaluation Committee
AE/RE-18	Capacity Development of Faculty	1	Free of cost	-	-	-	-	-	-	-	As recommended by Technical Evaluation Committee
AE/RE-19	Softwares: RET Screen Homer PRO PV SYST PV SOL. METRONORM SketchUP	1 1 1 1 1 1 1	-	-	-	-	-	-	-	-	Item dropped due to financial constraints
Total Amount Rs.				126,208,333.00	2,990,000.00	959,576.00	521,500.00				

Mr. Nadeem Soomro,
Deputy Director (Procurement)
MUET, Jamshoro, Member / Secretary

Engr. Mukesh Kumar,
Project Director,
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Jamshoro / Member

Mr. Javid Riaz,
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HEJ Research Institute of Chemistry,
University of Karachi / Member

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MUET, Jamshoro / Member

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