



Government of India



सं/No.: D-21011/12/2018/PS-NSTIB
भारत सरकार /Government of India
कौशल विकास और उद्यमिता मंत्रालय
Ministry of Skill Development and Entrepreneurship
प्रशिक्षण महानिदेशालय
Directorate General of Training
राष्ट्रीय कौशल प्रशिक्षण संस्थान भुवनेश्वर
National Skill Training Institute Bhubaneswar
मंचेश्वर कैंपस/Mancheswar Campus,
5 वीं और 6 वीं मंजिल NSIC-IMDC बिल्डिंग
5th & 6th Floor NSIC & IMDC Building, IDCO Plot No.06,
मंचेश्वर इंडस्ट्रियल एस्टेट, भुवनेश्वर, ओडिशा - 751010
Mancheswar Industrial Estate, Bhubaneswar Odisha - 751010
दूरभाषा/TELEPHONE NO. : 0674-2974438/98 & 0671-2394317
ई-मेल आई.डी /E-mail ID : atib-msde@gov.in

सं/No.: D-21011/12/2018/PS-NSTIB

TENDER DOCUMENT

FOR

**PROCUREMENT OF TOOL & EQUIPMENTS FOR SOLAR
TECHNICIAN & IoT (SMART AGRICULTURE) UNDER CRAFTS
TRAINING SCHEME**



सं/No.: D-21011/12/2018/PS-NSTIB
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5th & 6th Floor NSIC & IMDC Building, IDCO Plot No.06,
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ई-मेल आई.डी /E-mail ID : atib-msde@gov.in

Dated: 09th January, 2019

TENDER NOTICE

Subject : PROCUREMENT OF TOOL & EQUIPMENTS FOR SOLAR TECHNICIAN & IoT (SMART AGRICULTURE) TRADES UNDER CRAFTS TRAINING SCHEME.

This institute of National Skill Training Institute Bhubaneswar invites sealed limited tenders from the manufacturers/authorized dealers/distributors for procurement of tool & equipment required for different trades of CTS. The terms and conditions, Technical Bid and Financial Bid are given in Annexure I to XI.

1. Sealed tenders in Annexure I to XI each duly filled, signed with seal of the company should be dropped in the Tender Box available at Mancheswar Campus (5th Floor), NSIC Building (Dharmapada Bhawan) Mancheswar Industrial Estate Bhubaneswar latest by **3.30 PM on 21st January 2019**, which shall be opened by tender opening committee at **4.00 PM on 22nd January, 2019** in the presence of the tenderers or their representatives having authorization letter from the Firm concerned. The tenders received after scheduled date and time due to any reason including postal delay will not be considered. All tenders should be addressed to **the Assistant Director, National Skill Training Institute Bhubaneswar, Mancheswar Campus, 5th & 6th Floor NSIC Building, IDCO Plot No.06, Mancheswar Industrial Estate, Bhubaneswar, Odisha – 751010.**

2. No conditional Tenders will be accepted and such Tenders are liable to be summarily rejected. The institute reserves the right to reject or accept any tender without assigning any reason thereto. The decision of the Director, NSTI Bhubaneswar shall be final and binding on the Tenders.

Asst. Director of Training/HOO
For Director

ANNEXURE – I

General Terms and Conditions

1. The tender has been invited under **two bid system i.e. Technical Bid and Financial Bid**. The interested agencies are advised to submit two separate sealed envelopes super scribing “**Technical Bid (Annex-II-X)** and “**Financial Bid (Annex –XI)** for supplying of **Tools & equipment Solar Technician/IoT (Smart Agriculture)** under Crafts Training Scheme. Both sealed envelopes should be kept in a third sealed envelope super scribing “**Tender bid for supplying of Tools & Equipment Solar Technician/IoT (Smart Agriculture)**”.
2. The tenderer shall submit the following document with the bid -:
 - (i) Copy of PAN of the firm.
 - (ii) Copy of TIN No & GST number with latest clearance certificate or challans.
 - (iii) Registration No. of the Firm if any
 - (iv) Three years of experience of supplying of the said items.
 - (v) Income Tax Return for the last 3 preceding years (2015-16, 2016-17 & 2017-18)
3. Detailed specification of the model if any for which the price bid has been submitted. A written undertaking to the effect that the firm is not blacklisted by any institution/Government Department.
4. The bidder should produce the proof of Authorized dealership along with complete address.
5. The bidder should have good track record of supplying such items to Government Departments and have past experience of dealing in these items.
6. The bidder should be registered with GST and any other Central/State authorities as prescribed by law. Copy of the same should be enclosed with the tender documents.
7. The warranty/guarantee conditions shall be clearly mentioned in the tender documents by the bidder.
8. This office reserves the right to increase or decrease the actual quantity required. The Successful Bidder shall have to supply the items or execute the work (installation, testing and demonstration) within 15 days after issue of award letter.
9. The interested bidders can visit the office to understand the scope of work, site of work etc during office hours on any working day from the date of issue of tender to the date of submission of tender.
10. The rates quoted in financial Bid should be inclusive of all charges such as cartage, loading, unloading etc. but excluding GST and other taxes if any. The price/rate should be valid for 90 days from the date of opening of the tender.
11. No advance payment will be made. The Agency is required to submit a Bill for payment after completion of supply of goods and execution of work.

12. The rates should be quoted in figures and words. In case of mismatch between two, the rates quoted in words will be considered.
13. The rates should be quoted excluding taxes. The taxes as applicable from time to time will be paid extra. The lowest tender will be decided on the basis of rates (excluding taxes) mentioned in Financial Bid.
14. The Technical Bid, Financial Bid along with duly accepted terms and conditions should be submitted in prescribed Proforma without addition, alteration and corrections. All cutting and overwriting should be duly attested under signature and seal of the company. No conditional tender will be accepted.
15. The successful Bidders will have to submit Performance Security @ 10% of the contract value. Performance Security may be furnished in the form of an account payee demand draft, fixed deposit receipt from a commercial bank, bank guarantee issued/confirmed from any of the commercial bank in India in an acceptable form, safeguarding the purchaser's interest in all respects in the favour of **“the Drawing & Disbursing Office, National Skill Training Institute Bhubaneswar payable at Bhubaneswar”**.
16. Bidders can submit quotations for items mentioned in single annexure only or all annexures.

Encl : As stated above.

Asst. Director of Training/HOO
For Director

Copy to : E-publishing through MSDE Web site.

For Director

SUBMISSION OF FIRM DETAILS

Sl. No	Particulars	Details to be filled by the organization
01.	Name of the firm (Tel./Mob. Nos)	
02.	Office Address Telephone Number Fax Number e-mail	
03.	Contact Person(s) (Tel./Mob. Nos)	
04.	GST Registration No.	
05.	PAN	
06.	e-mailIncome Tax return of last three years	
08.	Past performance Certificate issued during last three years.	

Authorized Signature of Supplier with stamp

TECHNICAL BID**LIST OF TRAINEES TOOL KIT FOR SOLAR TECHNICIAN**

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Measuring Steel Tape (5 meter)	17 Nos.			
02.	Combination Plier Insulated 200 mm	17 Nos.			
03.	Screw Driver Insulated 4mm X 150mm, Diamond Head	17 Nos.			
04.	Screw Driver Insulated 6mm x 150mm	17 Nos.			
05.	Electrician screw driver thin stem insulated handle 4mm X 100mm	17 Nos.			
06.	Heavy Duty Screw Driver insulated 5mm X 200mm	17 Nos.			
07.	Electrician screw driver thin stem insulated handle 4mm X 250mm	17 Nos.			
08.	Punch Centre 9mm X 150mm	17 Nos.			
09.	Knife Double Bladed Electrician 100 mm	17 Nos.			
10.	Neon Tester 500V	17 Nos.			
11.	Steel Rule Graduated both in Metric and English Unit 300 mm with precision of 1/4th mm	17 Nos.			
12.	Hammer, cross peen with handle	17 Nos.			

LIST OF SHOP TOOLS& EQUIPMENT FOR SOLAR TECHNICIAN

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Electrical Symbol and Accessories Charts	04 Nos.			
02.	Pipe vice Cast Iron with hardened jaw open type 100mm	02 Nos.			
03.	Hand Vice 50 mm jaw	02 Nos.			
04.	Table Vice 100 mm jaw	02 Nos.			
05.	Hacksaw frame (with blade) Adjustable 300mm Fixed 150 mm	02 Nos.			
06.	File flat 200 mm 2 nd cut with handle	02 Nos.			
07.	File half round 200 mm 2 nd cut with handle	02 Nos.			
08.	File round 200 mm 2 nd cut with handle	02 Nos.			
09.	Pliers long nose insulated 150 mm	04 Nos.			
10.	Pliers flat nose insulated 200 mm	04 Nos.			
11.	Pliers, round nose insulated 100 mm	04 Nos.			
12.	D.E. metric Spanner Double Ended 6 - 32 mm	02 Sets			
13.	Gauge, wire imperial stainlees steel marked in SWG & mm Wire Gauge - Metric	02 Nos			
14.	Portable Electric Drill Machine 0-12 mm capacity 750W, 240V with chuck and key	01 No			
15.	Crimping Tool 1.5 sq mm to 16 sq mm	01 No			
16.	Crimping Tool 16 sq mm to 95sq mm	01 No			
17.	Pliers Side Cutting 150 mm	02 Nos			
18.	Wire stripper adjustable length	02 Nos			
19.	Hammer, ball peen With handle	02 Nos			
20.	Scriber (Knurled centre position)	02 Nos			
21.	Tool kit Box/bag portable	05 Nos			
22.	Allen Key	01 Sets			
23.	Scissors blade 150 mm	02 Nos			

Contd.....2/-

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24.	Electrical loads: set of Incandescent lamp, Tube light, CFL, LED light, Heater and Geysers	02 Nos			
25.	Torque wrench 8N-m to 15N-m	01 Sets			
26.	Pipe Cutter to cut pipes upto 5 cm. Dia	01 No			
27.	Pipe Cutter to cut pipes above 5 cm dia	01 No			
28.	Try Square 150 mm blade	02Nos.			
29.	Multi Meter (analog) 0 to 1000 M Ohms, 2V to 500 V,100 Micro A to 10A DC and AC	01 No			
30.	Load Bank (variable) Up to 1.2 KW (Lamp / heater Type)	01 No			
31.	Wire Cutter and Stripper 150 mm	04 Nos			
32.	Earth Plate 60cm X 60cm X 3.15mm Copper Plate	01 No			
33.	Earth Plate 60cm X 60cm X 6mm GI Plate	01 No			
34.	Earth Electrode Primary Electrode 2100x28x3.25mm Secondary Cu Strip 20x5mm	01 No			
35.	Out Side Micrometer 0 - 25 mm least count 0.01mm	02 Nos			
36.	Tap set Different size	02 Sets each			
37.	Trolley for Transportation of Batteries	02 Nos			
38.	Die for Threading Different sizes	02 Sets			
39.	Rooftop Mounting Structure For 4 x 250 W solar panels mounting practice, with tilt adjustment	02 Sets			
40.	Electrical wiring and switch gear rack Electrical control elements suitable for practice of control circuits using V	01 Nos			
41.	Protective relays and contactors rack suitable for practice of control circuits using banana plugs and V	01 Nos			
42.	MCCB 100Amps, Triple pole	01 Nos			
43.	ELCB and RCCB 25Amps, double pole And 25Amps,double pole, IΔn 30 mA	01 Each			
44.	Fuses HRC Glass Rewire Type	04 Nos each			
45.	Twisted Pair Nonmetallic Sheathed Cable Underground Feeder Cable Ribbon Cable Metallic Sheathed Cable Multi-Conductor Cable Coaxial Cable Direct-Buried Cable 1 mt each	01 No each			

Contd.....3/-

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46.	Solar cable (Red) 5 square mm	01 Coil			
47.	Solar cable (Black) 5 square mm	01 Coil			
48.	Three core wire (230 V, 15 A)	01 Coil			
49.	Battery cable 7.5 sq mm	01 Coil			
50.	Resin cored Solder	02 Nos			
51.	Solder wax	04 Nos			
52.	MC – 4 connector	04 Nos			
53.	Lugs 7.5 mm	04 Nos.			
54.	Hacksaw blades 200 mm, 300 mm	500 Nos each			
55.	Bolts, nuts, anchor bolts, washers,				
56.	screws, other pins, lugs etc	04 Nos			
57.	Civil work utensils spade, mixing spoon, leveling plates	02 Sets			
58.	Plumbing tools	02 Sets			

LIST OF EQUIPMENT FOR SOLAR TECHNICIAN

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Multimeter Digital 0 to 1000 M Ohms, 2V to 700 V,100 microA to 10A DC and AC	02Nos.			
02.	Megger Analog - 500 V	01No.			
03.	Hydrometer	04Nos.			
04.	Solar Insulation meter	02Nos.			
05.	Pyranometer	01No			
06.	Pyrheliometer	01No.			
07.	Lux meter Lux meter LCD read out 0.05 to 7000 Lumens with battery.	02 Nos.			
08.	Magnetic Flux Meter 0-500 tesla	02 Nos.			
09.	Tong Tester / Clamp Meter 0 - 100 A (Digital Type)	01 No.			
10.	Soldering Iron 25 Watt, 65 Watt and 120 Watt, 230 volt	02 Nos. Each			
11.	Temperature controlled Soldering iron 50 Watt, 230 Volt	02 Nos.			
12.	Thermometer Digital 0° C - 150° C	01 No.			
13.	Sun Shine recorder	02Nos.			
14.	Weather monitoring station To monitor and record Sunshine, wind velocity, temperature, rainfall etc with software.	01 No.			
15.	Solar cell based sunlight radiation meter For Solar power measurement up to 2000 w/square meter	02 Nos.			
16.	Magnetic compass	04 Nos.			
17.	Cut models of photo voltaic cell assembly	02 Nos.			

Contd.....2/-

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18.	Cut model of Lead acid battery	01 No.			
19.	Lead Acid battery 12V, 40Ah, 75Ah	01 No. each			
20.	Lead Acid battery 12V, 100 Ah	04 Nos.			
21.	Solar simulator for solar cell characteristic study To study IV”curve of a solar cell of minimum 2 watt under variable illumination, temperature and Suitable load	01 No.			
22.	IV Curve tester	01 No.			
23.	Sun path finder	01 No.			
24.	Solar energy trainer with grouping of solar cells To group (series or parallel) at least six solar cells each with minimum 2 W with suitable loads	01 No.			
25.	Solar tracker demonstrator kit To study manual and automatic control of 10 W solar panel in East-west and North-south &back	01 No.			
26.	Solar PV e-learning software using animations for training NA	01 License			
27	Halogen lamp with stand for illumination of solar panels in lab AC mains operated to provide 0 to 1000 watts per meter square	02 Sets			
28.	Motorized Bench Grinder AC mains operated	01 No.			
29.	Battery Charger 0 - 6 - 9 - 12 - 24 - 48 V, 30amp	01 No.			
30.	Solar photovoltaic module 75 W mono crystalline module 75 W Amorphous silicon module 250 W thin film module 5W, 10W, 40W poly Crystalline module	01 No. each			
31.	Solar panels 250 Wp	04 Nos.			
32.	Solar Charge controller with Dusk to Dawn automatic switching 12V, 10A	05 Nos.			
33.	Solar charge controller with manual switch (Day lighting) 12 V 10 A	05 Nos.			
34.	Array junction box for connecting 250W x 4 Nos. Solar panel with DC fuse, DC MCB, and surge Suppressor protection	02 Nos.			
35.	Solar lantern LED type	01 No.			

Contd.....3/-

36.	Solar lantern CFL type	01 No.			
37.	Solar lantern assembly sets	01 No.			
38.	Solar cell kit	01 No.			
39.	Clinometer for Angle measurement	01 No.			
40.	Spirit level For floor level check	01 No.			
41.	Anemometer for wind speed measurement	01 No.			
42.	DC table fan 12 VA.C. Voltmeter M.I 0 – 500V ACA.C. Voltmeter M.I 0 –500V ACA.C. Voltmeter M.I 0 –500V ACA.C.	02 Nos			
43.	Volt meter 0 - 30V	01No			
44.	Volt meter 0 - 100V	01 No			
45.	Ammeter MC 0 - 1A	02 Nos.			
46.	Ammeter MC 0 - 5A	02 Nos.			
47.	Ammeter MC centre zero 0 - 20A	02 Nos.			
48.	Ammeter MC centre zero 0-50A	02 Nos.			
49.	Power Factor Meter	01 No.			
50.	Rheostat 0 -1 Ohm, 5 Amp 0 -10 Ohm, 5Amp 0- 25 Ohm, 1 Amp 0- 300 Ohm, 1 Amp	01 No each			
51.	A.C. Energy Meter Single Phase, 10A, 240 V induction type	01 No.			
52.	A.C. Energy Meter Three Phase, 15A, 440 V induction type	01 No.			
53.	Kilo Wattmeter Analog 0-1.5-3KW, pressure coil rating- 240v/440v, current rating-5A/10A Analog, portable type Housed in Bakelite case	02 Nos.			
54.	Digital Wattmeter 230 V, 1 KW, 50 Hz	02 Nos.			
55.	Phase Sequence Indicator 3 Phase, 415 V	02 Nos.			
56.	Frequency Meter 45 to 55 Hz	02 Nos.			
57.	DC LED Lamp 3W, 5W, 10W	50 Each			
58.	DC Pump 24 V	02 Nos.			
59.	PWM Controller	04 Nos.			
60.	MPPT Charge Controller	04 No.			

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61.	Inverter with Battery 1 KVA with 12 V Battery Input- 12 volt DC,Output-220 volt AC	01 Nos.			
62.	Solar PCU Off grid 1 KW MPPT Sine wave Solar Power Conditioning Unit	04 Nos.			
63.	Solar Grid tied inverter Demonstrator kit 300W KW	01 No.			
64.	Solar Street Light 12V, 75Ah battery, 75 Wp solar panel, 12V, 10A dusk to dawn charge controller, 60 W LED lights and 9 m height pole all dismountable	01 Nos.			
65.	Solar, wind and hybrid power plant 1 KW cumulative	01 No.			
	Solar Traffic Light 12V, 75Ah battery, 75 Wp solar controller, 15 W LED lights with suitable colors and 9 m height pole all dismountable	01 No.			
66.	Used water treatment solar plant demonstrator kit 1 liter capacity	01 No.			
67.	solar DC pump 1 HP	01 No.			
68.	Demonstration kit for wind generation (Wind turbine with blower) 300 W	01 No.			
69.	Rechargeable battery 12 V 100 Ah	01 No			
70.	Rechargeable battery 12 V 7 Ah	10 Nos			
71.	Rechargeable battery 6 V 5 Ah	10 Nos			
72.	LED lights 12 V DC	10 Nos			
73.	LED lights 6 V DC	10 Nos.			

LIST OF SAFETY & PROTECTIVE EQUIPMENTS BOTH FOR SOLAR TECHNICIAN & SMART AGRICULTURE

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Rubber Gloves	10 Pairs			
02.	Cotton Gloves	05 Pairs			
03.	Gum Boots	02 Pairs			
04.	Safety Goggles	10 Nos.			
05.	Safety Helmet	10 Nos.			
06.	First Aid Kit	02 Nos.			
07.	Fire Extinguisher CO2 2 KG	02 Nos.			
08.	Fire Buckets Standard Size	02 Nos.			

TECHNICAL BID**LIST OF TRAINEES TOOL KIT FOR IoT (SMART AGRICULTURE)**

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Connecting screwdriver 10 X 100 mm.	10 Nos			
02.	Neon tester 500 V. 500 V	6 Nos.			
03.	Screw driver set Set of 7	10 Nos			
04.	Insulated combination pliers 150 mm	6 Nos.			
05.	Insulated side cutting pliers 150mm	8 Nos			
06.	Long nose pliers 150mm	6 Nos.			
07.	Soldering iron 25 Watt, 240 Volt	10 Nos			
08.	Electrician knife 100 mm	6 Nos.			
09.	Tweezers 150 mm	10 Nos			
10.	Digital Multimeter (3 3/4 digit) ,4000 Counts	10 Nos.			
11.	Soldering Iron Changeable bits 15 Watt, 240 Volt	6 Nos			
12.	De- soldering pump electrical heated, manual operators 230 V, 40 W	10 Nos.			

LIST OF SHOP TOOLS & INSTRUMENTS FOR IoT (SMART AGRICULTURE)

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Steel rule graduated both in Metric and English Unit 300 mm	04 Nos.			
02.	Precision set of screw drivers T5, T6, T7	02 Nos.			
03.	Tweezers – Bend tip	02 Nos.			
04.	Steel measuring tape 3 meter	4 Nos			
05.	Tools makers vice 100mm (clamp)	01 No.			
06.	Tools maker vice 50mm (clamp)	1 No.			
07.	Crimping tool (pliers) 7 in 1	02 Nos.			
08.	Magneto spanner set 8 Spanners	02 Nos.			
09.	File flat bastard 200 mm	02 Nos.			
10.	File flat second cut 200 mm	02 Nos.			
11.	File flat smooth 200 mm	02 Nos.			
12.	Plier - Flat Nose 150 mm	04 Nos			
13.	Round Nose pliers 100 mm	4 Nos.			
14.	Scriber straight 150 mm	02 No			
15.	Hammer ball pen 500 grams	01 No			
16.	Allen key set (Hexagonal -set of 9) 1 - 12 mm, set of 24 Keys	01 No			
17.	Tubular box spanner Set - 6 - 32 mm	01 set.			
18.	Magnifying lenses 75 mm	02 Nos			
19.	Continuity tester With 4 ½ Digit Display and 20k Count	06 Nos			
20.	Hacksaw frame adjustable 300 mm	02 Nos			
21.	Chisel - Cold - Flat 10 mm X 150 mm	01 No			
22.	Scissors 200mm	01 No.			
23.	Handsaw 450mm Hand Saw - 450 mm	01 No.			
4.	Hand Drill Machine Electric with Hammer Action 13 mm	02 Nos			
25.	First aid kit	01 No.			
26.	Bench Vice Bench Vice - 125 mm Bench Vice - 100 mm Bench Vice - 50 mm	01 No each			

LIST OF TOOLS FOR IoT (SMART AGRICULTURE)

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Multiple Output DC regulated power supply 0-30V, 2 Amps, + 15V Dual Tracking ,5V/5A, Display digital, Load & Line Regulation: \pm (0.05 %+100 mV), Ripple & Noise: 1 mVrms. Constant Voltage & Current operation	04 Nos.			
02.	DC Regulated Variable Programmable DC Power Supply 0-30V/3A with numeric keypad, PC interface and LCD for Voltage, Current & Power	02 Nos.			
03.	LCR meter (Digital) Handheld It can Measure six basic parameters R,C,L equipped with SMD component Test fixture	01 No.			
04.	70 MHz Mixed Signal Oscilloscope (4 Analog + 16 Digital Channel) With more than 20Mpt memory Real time Sampling 1GSa/sec , having LAN Interface with, I2C , SPI, Runt etc .. And RS232/UART, I2C and SPI trigger decoding functions ,two channel 25MHz awg plus math functions like differentiation, integration, abs, AND,OR,NOT etc..an	01 No.			
05.	25 MHz Arbitrary Waveform Generator with Digital Display for Frequency and Amplitude Two Channel , 200MSa/Sec and 2Mpt memory with more than 150 different arbitrary waveforms and built-in 8th order harmonic generation and 150MHz Frequency counter Device/Host and LAN	01 No.			
06.	6 1/2 Digit Digital Multimeter Measurement Functions: DC &AC Voltage, DC&AC Current,2-wire & 4-wire Resistance, CAP, Diode, Connectivity, Frequency, Period, Any Sensor. Temperature: PC Interface USB Host, USBRTD,THERM,TC (B/E/J/K/N/R/S/T) Device, LAN(LXI-C) Measurement Speed 10k readings/sec	1 No.			
07.	3GHz Spectrum Analyzer with built-in Tracking Generator Frequency Range 9 kHz to 3.2GHz Resolution Bandwidth(-3 dB):10 Hz to 1 MHz Built in tracking generator Min. -148 dBm DANL Display 8" TFT or more PC Interface: USB Host & Device, LAN(LXI- C)Device, LAN(LXI)	01 No.			

Contd.....2/-

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08.	<p>Multi Function Test & Measuring Tool for Field Applications and Testing Compatible with Laptop 300 MHz Bandwidth 2 channel Digital Storage Oscilloscopes, Spectrum Analyzer.</p> <p>Arbitrary Waveform Generator Sine 50 MHz, square 15 MHz, Triangle 100 KHz, AM – FM Modulation, 16 Channel Logic Analyzer Frequency and phase Meter USB 2.0/3.0 interface.</p>				
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LIST OF EXPERIMENTATION EQUIPMENTS FOR IoT (SMART AGRICULTURE)

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Electrical Safety Trainer Demonstration of importance of earthing in any electrical device. Arrangement to study role of fuse and types of slow blow, high blow fuse in any electronic circuit. Arrangement to study the importance of MCB and it's working	01 No.			
02.	Analog Component Trainer with following Seven Basic Modules · Diode Characteristics (Si,Zener,LED) · Rectifier Circuits · Diode as Clipper Circuit · Diode as Clamping Circuit · Zener as voltage regulator. · Transistor Type NPN & PNP and CE Characteristics · Transistor as a switch Breadboard for Circuit design DC power supply: +5V,1A (Fixed); +12V, 500mA (Fixed); ±12V, 500mA (Variable) AC power Supply: 9V-0V-9V, 500mA Function Generator: Sine, Square, Triangle (1Hz to 100KHz) Modulating Signal Generator: Sine, Square, Triangle (1Hz to 10KHz). Voltage, current and frequency on board LCD display. PC Interface – Acquisition from two analog input channel Simulation Software	01 No.			
03.	Digital IC Trainer Breadboard: Regular DC Supply: +5 V/1 A +12V/1A Clock Frequency 4 different steps from 1Hz – 100KHz Amplitude: (TTL), 128x64 Graphical LCD, Pulser Switches, Data Switches: 8 Nos, LED: 8 Nos. (TTL),Seven Segment Display, Teaching & Learning simulation software	01 No.			
04.	IT Workbench for computer hardware and networking The bench comprises with Computer Hardware Training System (02 Nos.) The different circuit boards of PC/AT Computer are exposed on a PCB, LAN Training System with Wireless LAN as well to study Peer to Peer, STAR, RING Topology. Protocols: CSMA /CD, CSMA /CA, Stop N Wait, Go back to N, Selective repeat, Sliding Window, Token Bus, Token Ring, Colored representation of data in transmission & reception. Data transmission speed: 10/100 Mbps, Smart managed 3 Layer and 2 Layer Switch, Media converter, POE Switch, Wi-Fi LAN card, IP Camera, Energy meter, LED tube light, Voltmeter and Ammeter will be fitted. Networking Fundamentals Teaching Simulation Software DSO 50MHz 4 Channel , 1GSa/Sec ,more than 20 Mpt memory DSO DMM : 41/2 Digit with LCD Display	01 No.			
05.	Laptop latest configuration	01 No.			

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06.	Electronic circuit simulation software with five user licenses Circuit Design and Simulation Software with PCB Design with Gerber and G Code Generation, 3D View of PCB, Breadboard View, Fault Creation and Simulation.	1 No.			
07.	Different types of electronic and electrical cables, connectors, sockets, terminations				
08.	Different types of Analog electronic components, digital ICs, power electronic components, general purpose PCBs, bread board, MCB, ELCB				
09.	SMD Soldering & Desoldering Station with necessary accessories SMD Soldering & Desoldering Station Digitally Calibrated Temperature Control SMD Soldering & Desoldering Power Consumption : 60 Watts I/P Voltage : 170 to 270 V De-soldering : 70 Watt Temperature Range : 180 to 480° Centigrade Power Consumption : 270 Watts Hot Air Temperature : 200 to 550° Centigrade	01 No..			
10.	SMD Technology Kit SMD component identification board with SMD components Resistors, Capacitors, Inductors, Diodes, Transistors & IC's packages. Proto boards with readymade solder pads for various SMD Components. SMD Soldering Jig.	01 No.			
11.	Microcontroller kits (8051) along with programming software (Assembly level Programming) With six important different application modules 1. Input Interface Switch, Matrix Keypad, ASCII Keypad 2. Display LCD, Seven Segment, LED Matrix 3. ADC & DAC 4. PC Interface module 5. Motor DC, Stepper, Servo 6. DAQ Core 8051 MCU clocked at 11.0592 MHz., supporting both programming modes Keypad and computer ,LCD for both programming and run mode, ready to run programmer to support family of controllers AT89C52 ,DC Power Supplies +12V, 12V, +5V & - 5V, Breadboard to make circuits, Learning content through simulation Software and following application modules 1. Input Interface : 4x4 Matrix Keypad, ASCII Key PAD, Four Input Switch 2. Display 16X2 LCD, Seven Segment, LED Bar Graph 3. ADC/DAC with ADC/DAC0808 4. PC Interface: RS232 & USB 5. Motor Drive: DC, Servo, Stepper 6. DAQ: 4ch analog 10bit, 22 DIO resolution,6MHz Frequency Counter (square wave), DAQ with PC interface software .	01 No.			

Contd.....3/-

12.	<p>Sensor Trainer Kit Containing following Sensors a) Air humidity and Temperature b) RTD c) Atmospheric Pressure d) Air Quality e) Smoke Detector Sensors f) Limit Switch g) Photo sensors h) Capacitive displacement IoT enabled Android based 7" Graphical touch LCD with inbuilt cortex processor & DAQ for acquiring analog data and software for viewing the output waveforms with USB storage and HDMI output. Ethernet port to connect real world. Inverting, Non – Inverting, Power, Current, Instrumentation and Differential Amplifier, F to V, V to F, I to V, V to I Converter, High Pass and Low Pass Filter, Buffer, LED, Buzzer, LED Bar Graph, Touch Switch Included Sensors :RTD,NTC Thermistor,LM35,Photovoltaic, Air humidity and Temperature, Gas(Smoke), Air Quality, Atmospheric Pressure, Limit switch, Capacitive displacement</p>	02 Nos.			
13.	<p>Different types of electronic and electrical cables, connectors, sockets, terminations.</p>				
14.	<p>Different Microcontroller/Processor Training and Development Platform for AVR, PIC, ARM and Arduino. MCU PIC16F877A , 4MHz, Onboard programmer will program PIC Devices, USB Port MCU ATMEGA8515 ,8MHz, onboard programmer will program ATMEGA series microcontroller, USB Port MCU LPC2148 , 12MHz,LED 8Nos, ADC 10 bit 10Nos, DAC 10bit ,USB and RS232, RTOS support, JTAG Connector, USB2.0,Onboard Zigbee, I2C,SPI,RTC,DC motor, PWM, Sensor LM35 , Display 16X2 LCD Display , Motor Drive: L293D 600mA (5-12V),Programmer USB Interface. Microcontroller ATmega328p (Arduino Based), 16MHz, Digital I/O Pins : 14 (of which 6 provide PWM output) , Flash Memory : 16KB (of which 2KB used by boot loader) Each platform should have Bread DC Power Supplies +12V, - 12V, +5V & - 5V, Breadboard to make circuits.</p>	01 No.			

15.	<p>Internet of Things Explorer Processor : 64bit ARMv7 with 1GB RAM , Memory 32GB ,OS: Open source Linux, Connectivity: Wireless LAN, Bluetooth, Zigbee, USB & Ethernet, HDMI interface, 1.77” Color TFT LCD , Driver for Stepper and DC Motor, six 16 bit Analog Input, RTC and 4-20mA input. Zigbee: 2.4GHz, Sensors: Temperature and Humidity, Air Quality, Soil Moisture, Ambient Light, Soil/Water temperature, PIR Sensor. GSM IoT Gateway – Quad Band 850/900/1800/1900 MHz - GPRS multi-slot class, Control via AT commands. Explore physical and application layer protocols like RS232, RS485, GSM, Ethernet and MQTT, CoAP, HTTP, FTP. Cloud/server configuration includes HTML, Java, php and MySQL. IoT Node: Wireless 2.4GHz Zigbee, 5 Analog Inputs and at least 3 Digital Outputs, At least one I2C Channel, support OTA. Online Cloud/Server Services for 2 years. Battery 3.7V/4400mAH with Solar Panel, USB interface.</p>	01 No.			
16.	<p>Field Interface and Protocol Simulation Kit A console including: Any Branded Desktop Computer with Windows Operating System 1. Ethernet Devices with Isolated Supply and port § 4 AI(0.1% FSR), 4 AO (010VDC), Ethernet Port – Qty 1 § 8 Relay Outputs, Ethernet Port – Qty 1 § 8 Pulse Outputs, Ethernet Port – Qty 1 § 8 Digital Inputs, Ethernet Port – Qty 1 4 RS485 Slave ports, 1 Ethernet Port – Qty 4 2. 16 Port Ethernet Switch for networking of field ethernet devices 3. SMPS to power up multiple ethernet based field simulation devices 4. Required Connectors, Switches and LED indicators for Field Interface circuits such as Digital Inputs, Relay Outputs, Analog Inputs, Analog Outputs, Pulse Signals 5. Software § Communication with simulation device on ethernet MODBUS TCP Protocol § Field Interface simulation using HMI replica of Console for easy understanding of students § Port Simulation – Serial Port Terminal, TCP/IP, UDP, HTTP § Protocol Simulation – MODBUS RTU Master/Slave, MODBUS TCP Master/Slave, DLMS Client IoT Protocol Simulations – MQTT topic publish subscribe simulation</p>	01 No.			

LIST OF THE MACHINERIES FOR IoT (SMART AGRICULTURE)

Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
01.	Solar Power Lab Solar PV Modules. Open Circuit Voltage Voc 10V, Short Circuit Current Isc .60m A Maximum Power Voltage (Vmp) 8.80V, Maximum Power Current (Imp): 0.57A, Batteries , Voltage 6V, 4Ah. Buck & Boost Converter, Dusk to Dawn Sensing, LCD for Voltage and Current. Interactive Solar Training Software	01 No.			
02.	Solar PV Module Analyzer Micro-controller Based with 16X2 LCD, PC Interface, mains & battery operated. Capable to measure Open Circuit Voltage and Short Circuit Current, Maximum Voltage and Current at Maximum Power DCV Range 0-50V, DCA Range 10A	01 No.			
03.	Wireless Communication modules for interfacing with microcontrollers a) RFID Card Reader b) Finger Print c) Zigbee d) GPS e) GSM f) Bluetooth g) WiFi Core 8051 MCU clocked at 11.0592 MHz, supporting both programming modes Key Pad and PC ,LCD for both programming mode and run mode, ready to run programmer to support family of controllers AT89C51/52 & 55 ,DC Power Supplies +12V, -12V, +5V & - 5V, Breadboard to make circuits, detailed learning content through simulation Software and following application modules : RFID Card Reader ,Finger Print, Zigbee, GPS, GSM, Bluetooth and WiFi	01 No.			
04.	Sensors for Green House Application All should be compatible with Sensor Training Platform & IOT Explorer mentioned above: CO2: Range: (0-2000ppm), O2 Range: (0- 25%), VOC, Air Temperature & humidity, Atmospheric Pressure, Soil Moisture & Temperature, NO2, Leaf Wetness, Solar Radiation, UV Index	01 No.			
05.	Solar Water Pump 1HP Solar Panel 40W (36Nos) MPPT 400 TO 700V DC Operating Frequency : 30Hz to 50Hz, Protection : Dry Run , Short Circuit Maximum PV Voltage 750V DC Remote Operation through GSM module	01 No.			
06.	Weather Monitoring System Temperature Range : -10°C to 90°C, Relative Humidity Operating Range 0 to 95% ,Wind Speed Sensor Speed : 0 to 20m/S Resolution 1m/S ,Wind Direction, Rainfall Bucket collector, Solar Radiation, UV Index, Atmospheric Pressure, Air Quality, PM2.5, GSM based cloud connectivity, Application Software for Dashboard for remote monitoring and analysis. Power Supply Battery : 12V/42AH Solar Panel : 100W	01 No.			

Contd.....2/-

07.	Sensors & Actuator for Irrigation Application All should be compatible with Sensor Training Platform & IOT Explorer mentioned above: Capacitive Soil Moisture & Temperature, Leaf Wetness, Solar Radiation(0-2000mw/m2), Thermal Imager Actuators :Sprinklers, Relay, Flow sensor	01 No.			
08.	Sensors for Livestock Monitoring All should be compatible with Sensor Training Platform & IOT Explorer mentioned above: Active & Passive RFID tags with reader, Bluetooth tags with application software, GPS and PIR.	01 No.			
09.	DRONE (optional) Including the Flight Controller, and a RF Sensing System that provides reliability during flight. Also It should have spraying system and flow sensor ensures accurate operations. Intelligent Operation Planning System and should have Agriculture Management Platform, User can plan operations, manage flights in real-time, and closely monitor aircraft operating status Spray System : Tank Volume minimum 8L Payload Approx 8 Kg	01 No.			
10.	IoT based Smart Roof Top / Solar Pump system (Application Project) 1. Inverter (can be existing inverter of Solar Kit) 2. IoT based Energy Monitoring DCU with Three Phase 415 VAC input, Two RS485 MODBUS Communication Port, Local Ethernet connectivity, Four Analog Inputs (24-bit ADC, 0.1%FSR) for integration of weather sensors, SD Card Storage, Remote GSM/GPRS connectivity using Quad Band GSM/GPRS Module 3. Embedded Calculations for %CUF (capacity utilization factor), %PR (Performance Ratio) 4. SMC box with IP65 and IK10 ratings. Responsive Web application for Smart Energy management system having with map view based dash board and individual system details with various energy management reports such as load profile, consumption pattern, generation pattern, %CUF (capacity utilization factor), %PR (Performance Ratio) etc.	01 No.			

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Sl. No.	Brief Description of Item	Quantity	Offered specification	Rate	Amount
11.	IoT Data Acquisition Systems & Protocol Converters Connectivity to Cloud (IBM, Microsoft, Amazon)24 VDC Isolated Supply, 4 Analog Inputs (0.1% FSR), 8 Pulse Inputs (up to 1 kHz), 8 Digital Inputs, 4 Relay Outputs Ethernet IOT DAQ, WiFi IoT DAQ, Cellular (GSM / GPRS) IoT DAQ MODBUS RTU to MODBUS TCP 24 VDC Isolated Power Supply, 4 Isolated MODBUS RTU Master Port Serial to Ethernet, Serial to WiFi, Serial to GPRS	01 No.			
12.	IoT EDGE Computing Device Embedded SCADA for 500 Tags, 24 VDC Isolated Power Supply, 4 MODBUS RTU Master, 32 GB Built in SD Card, 1 Wi- Fi Port, 1 Ethernet Port, 1 GPRS Port, 4 Analog Inputs (0.1% FSR), 8 Pulse Inputs (up to 1 kHz), 8 Digital Inputs, 4 Relay Outputs	01 No.			
13.	Cloud Based IoT SCADA 1000 Tag License for Cloud based SCADA to connect IoT Devices and IoT based Smart Systems with Device Manager, IO Server, Alarm Server, Historian and Reporter, Web Server. Cloud Hosting Services for 20 devices for 7 years.	01 No.			

FINANCIAL BID

Sl. No	Technical Specification	Qty	Quoted Unit Rate in INR	Quoted unit rate inclusive of all the duties, taxes, commissioning and training on FOR basis	Total Amount

Authorized Signature of Supplier with stamp

