

Chhatrapati Shahuji Maharaj University, Kanpur

Ref No.:C.S.J.M.U./P.P./29/2016

Dated: 18/01/2016

 Chhatrapati Shahuji Maharaj University, Kanpur
Tender Notice
C.S.J.M.U. P.P. 29/2016 Date: 18/1/16
There is requirement of several basic equipments and advance trainers kits in different labs of Electronics and Communication Department of U.I.E.T., a sealed tender is invited till 17/02/2016 time 4:00 pm, which is to be submitted in the tender box provided at the cabin of estate officer which will be open on 18/02/2016 at 2:00 pm. The applicant can purchase the tender document in cash for Rs. 500/- from the cash counter or can download the tender document from the university official website 'www.kanpuruniversity.org' and attach bank draft of Rs500/-in the favour of the finance Officer,C.S.J.M.U. and can submit it. Tender Performa, terms and condition, and other information are available on the official website.(Sayyed Waqar Hussain),Registrar

CHHATRAPATI SHAHU JI MAHARAJ UNIVERSITY, KANPUR

TENDER NOTICE

Sealed tenders are invited by the undersigned for Department of Electronics and Communication Engineering of University Institute of Engineering and Technology, CSJM University, Kanpur. The prescribed tender documents may be purchased from the cash counter by depositing Rs500 /-in cash or DD favoring Finance Officer, CSJM University, Kanpur upto 01/02/2016 before 04:00 PM.

S.No.	Equipment/kit Name	Qty
01.	LVDT Trainer Kit	03
02.	Strain Gauge Trainer Kit	02
03.	Temperature Transducer Trainer	03
04.	Optical Transducer Trainer	03
05.	Pressure Measurement Trainer Kit	03
06.	Torque Measurement Transducer Kit	03
07.	Water Level Transducer Kit	03
08.	Load Cell Trainer	02
09.	OSCILLOSCOPE 20 Mhz	05
10.	OSCILLOSCOPE 30 Mhz	02
11.	Function Generator (3 mHz – 3 MHz)	06
12.	Multiple Dc Power Supply	08
13.	Digital Multimeter	10
14.	TDM pulse code modulation kit.	02
15.	TDM pulse code demodulation kit.	02
16.	Delta / Sigma delta & adaptive delta modulation / demodulation Kit.	02
17.	PAM-PPM-PWM Modulation-Demodulation Kit	02
18.	Frequency Modulation/Demodulation	02
19.	DSB/SSB AM Transmitter Kit	02
20.	DSB/SSB AM Receiver Kit	02
21.	PCM Generation & Demodulation using CODEC	02
22.	ASK,FSK,BPSK,DBPSK Modulator & Demodulator Kit	02
23.	8085 microprocessor kit	02
24.	Optical Fibre Training kit (Link A)	04
25.	Optical Fibre Training kit (Link B)	04
26.	Voltmeter (Portable, MI Type), 250/500V AC	03
27.	AC Ammeter 10/20 Amp AC	03
28.	Single Phase Watt-meter 300/600V, 10/20A	03
29.	W.W. Rheostats 1 Amp. 500 Ohms	01
30.	W.W. Rheostats 5 Amp. 50 Ohms	01
31.	Multi function meter	01
32.	Digital clamp meter	01
33.	Parallel operation of two single phase transformer (with closed type 1Φ Variac (10A))	01
34.	Optical Laser Source Pocket Sized Dual Wavelength Light	01
35.	Optical Power Meter	01
36.	Optical fiber terminal block	01
37.	Optical fiber (2 km)	01
38.	Optical Fiber (5 km)	01

- Last date of submitting tenders —17/02/16
- Date of opening of tender —18/02/16
(In the presence or absence of tenderer(s)).
- The undersigned reserves the right to cancel all / any tender(s).


Registrar
CSJM University,
Kanpur.

Electronics & Communication Engineering Department
University Institute of Engineering and Technology
CSJM University, Kanpur
TENDER DOCUMENT

Cost of tender- Rs500/-
Last date of Submission: 30/01/2016

Tender No. _____
Up to time 04:00 PM

Eligibility Criteria of vendors

1. The tender should strictly be submitted in the format as per Performa enclosed.
2. If applying on behalf of a company as a dealer, a dealership document should be attached.
3. Original technical literature should be attached.
4. Quotation should be valid for minimum period of three months.
5. Warranty period will be at least one year.
6. Tenders with out the earnest money (**Rs.31,812/-**) shall not be considered. The earnest money will be in the form of DD in favour of Finance Officer, CSJM University, Kanpur payable at Kanpur otherwise tender will not be entertained.
7. The rates offered should be FOR Department of Electronics & Communication Engineering, UIET, CSJM University, Kanpur
8. The University reserves the right to reject all or any of the tenders without assigning any reason.
9. The firms having credential of supplying and installation of substantial variety of electronics and communication engineering kits and equipment in conformity of the items mention in the Bill of Quantities of this tender will be selected. The firms should have valid PAN & VAT / Central Sales tax Registration Number.
10. The firms who have already completed similar nature of work of value Rs. 5 Lakh in a single contract in Govt., Semi Govt., Govt. Undertakings, and Govt. Autonomous Organizations / Institutes will be selected.
11. The firms must have its maintenance services at Kanpur/ Lucknow UP. The firms should satisfy that after sales services would be adequate in the event of placing order with them.
12. Should have had average annual financial turnover of Rs. 1.0 crore on supply works during the last three years ending 31st March, 2015.
13. The bidder shall submit the performance certificate duly issued from the Client for the completed works for the last five years.
14. Even though any bidder may satisfy the above requirements, he/she would be liable to be disqualified if he/she has :
 - (a) Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the eligibility criteria document.
 - (b) Records of poor performance such as abandoning work, not properly completing the contract, or financial failures/weaknesses etc.

Technical Bid and Financial Bid

1. Technical Bid and Financial Bid should be submitted separately.
2. Technical Bid will be first considered by the Technical Committee and when technical bid is found satisfactory in all respects Financial Bid shall be taken in to consideration.

Terms of Payment

1. 80% against installation and after inspection of satisfactory working of the items.
2. 20% against performance Bank guarantee for the same amount for the entire warranty period.

Delivery

1. The delivery of the terms will have to be made within four (4) weeks time from the date of receipt of order. Delivery should be made at Electronics & Communication Engineering Department, University Institute of Engineering and Technology, CSJM University, Kanpur
2. In case of late delivery, penalty shall start after the expiry of the delivery period (i.e. 4 weeks from the date of receiving of order by the supplier).
3. Penalty shall be 0.5% of the total order amount per day for a period of two weeks and 1% of the total order amount per day up to one week after which the order may be cancel.

Installation

1. Installation must be done within one week from the date of delivery of items, failing which penalty shall be imposed.
2. Penalty shall be charged @ 0.5% of the total order amount per day for a period of two weeks and @ 1% per day thereafter for another two weeks. After which the items may be rejected or cancelled.

Performance

1. During the warranty period maintenance shall be made by the vendor within 48 hours from reporting of fault, failing which penalty of Rs. 100/- per day shall be charged.
2. The penalty amount will be recovered by invoking the performance bank guarantee deposited by the vendor.

Registrar

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Electronics & Communication Engineering Department
University Institute of Engineering and Technology
CSJM University, Kanpur

S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
1.	LVDT TRAINER KIT - Range : 0 to 20 mm - Display : 3-1/2 digit LED - Resolution : 0.1 mm - Excitation : 2 Volts RMS 5 KHz, Sinewave - Analog output : 2 Volts FSD - Power supply : 230V +/-10%, 50 Hz. Calibration - Bench with 20mm micrometer. - Test Points : provided on board. - Accessories : Complete with operation manual.	3				
2.	STRAIN GAUGE TRAINER KIT - Range : 0 to 400 microstrain - Display : 3-1/2 digit LED - Resolution : 1 microstrain - Excitation : 5 Volts, DC - Analogue output : 2 Volts, FSD - Power source : 230V +/-10%, 50 Hz. - Cantilever : Strain Cantilever beam past full bridge strain gauges with 4 Nos. Sliding weight of 250 gm. - Test Points : provided on board. - Accessories : Complete with operation manual.	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
3.	TEMPERATURE TRANSDUCER TRAINER -Transducers : 4 nos. (NTC Thermistor, Platinum RTD, Type K Thermocouple, IC Temperature Sensor. - Heat. Source : Wire wound Resistance - Signal Conditioning Circuitry : Instrumentation Amplifier, X100 Amplifier, DC Amplifier, Comparator, Electronic Switch -Input Circuits : Rotary & Slide -Output circuits : Relay & Buzzer -Interconnections : 2/4 mm banana sockets. -Supply : 230 VAC \pm 10% / 50 Hz -Standard Accessories : Detachable Mains Cords, Instruction & Experiment Manual	3				
4.	OPTICAL TRANSDUCER TRAINER -Transducers : 4 nos. (Photo conductive Cell, Photo Transistor, Photovoltaic Cell & Pin photo diode -Light. Source : Onboard light source provided. - Signal Conditioning Circuitry : DC Amplifier, Power Amplifier, Buffer, Comparator, Current Amplifier & Electronics Switch - Input Circuits : Rotary & Slide -Output circuits : Relay & LED. - Interconnections : 2/4 mm banana sockets. -Supply : 230 VAC \pm 10% / 50 Hz - Standard Accessories : Detachable Mains Cords, Instruction & Experiment Manual.	3				






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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
5.	PRESURE MEASUREMENT TRAINER KIT - Range : 0 to 10 kg/cm ² - Display : 3-1/2 digit LED - Resolution : 0.1 kg/cm ² - Excitation : 5 Volts DC - Analog output : 2 Volts, DC - Power source : 230V +/-10%, 50 Hz. - Pump : Hydraulic Pressure Generating Pump with pressure gauge of 10kg/cm ² - Test Points : Provided. - Accessories : Operating manual.	3				
6.	TORQUE MEASUREMENT TRANSDUCER KIT - Range : 0 to 1 Kg-m. - Resolution : 0.01 kg-m - Display : 3-1/2 digit LED - Excitation : 5 Volts DC - Analogue output : 2 Volts, FSD - Power source : 230V +/-10%, 50 Hz. - Weight 4 Nos. Sliding Weight of 250 gm. - Test Points : Provided. - Accessories : Operating manual	3				
7.	WATER LEVEL TRANSDUCER KIT - Range : 0 to 100 mm - Display : 3-1/2 digit LED - Resolution : 0.1 mm - Analogue output : 2 Volts, FSD - Power source : 230V +/-10%, 50 Hz. - Acrylic Jar : Acrylic Jar with scale. - Accessories : Complete with Operating manual.	3				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
8.	LOAD CELL TRAINER - Range : 0 to 5 kg - Display : 3-1/2 digit LED - Resolution : 0.01 kg. - Excitation : 5 Volts DC - Analog output : 2 Volts FSD - Power source : 230V +/-10%, 50 Hz. - Load : 5 Nos. of 1 kg. weight. - Test Points : Provided. - Accessories : Complete with Operating manual.	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
9.	<p>OSCILLOSCOPE 20 MHz</p> <p>Operating Modes Channel I, Channel II, Channel I & II alternate or chopped (approx. 350 KHz), X-Y operation (Ratio 1:1 Input via Ch II), Add/Sub Ch I \pm Ch II, Invert Ch II</p> <p>Vertical deflection (Y)(Identical channels) Bandwidth : DC-20 MHz (-3 dB) DC-28 MHz (-6 dB) Risetime : 17.5 ns (approx.) Deflection coefficients : Micro-controller based 12 calibrated steps 2 mV/Div - 10 V/Div (1 - 2 - 5 sequence) . Adjustable by up-down keys. Step position indicated by glowing LEDs. Accuracy : $\pm 3\%$ Hold-Off : Variable Control for stable triggering Input Impedance : 1 MWII30pF(approx.) Input : Gold plated BNC Input coupling : DC-AC-Gnd Maximum Input voltage : 400 V (DC + Peak AC)</p> <p>Timebase Time coefficients : Micro-controller based 18 calibrated steps, 0.5 ms/ Div-0.2 s / Div (1-2-5 sequence) with magnifier X10 to 50 ns / Div, with variable control to 20 ns / Div. Adjustable by updown keys. Step position indicated by glowing LEDs. Accuracy : $\pm 3\%$ (in Cal position) Ramp output : 5 V_{PP} (approx.)</p> <p>Trigger System Modes : Auto / Level Source : Ch I, Ch II, Alt-Ch 1/Ch 2, Line, Ext.</p>	5				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
	<p>Slope : Positive or Negative Sensitivity : Internal 5 mm, Ext 0.8 V (approx.) Trigger Bandwidth : 40 MHz Horizontal Deflection (CH II - X) Bandwidth : DC-2.3 MHz (-3 dB) X-Y mode : Phase Shift < 3° at 60 KHz Deflection coefficients : Micro-controller based 12 calibrated steps 2 mV/DIV – 10 V/DIV (1 - 2 - 5 sequence) . Adjustable by up-down keys. Step position indicated by glowing LEDs. Input Impedance : 1 MWII30pF(approx.)Input : Gold plated BNC Built-in Single Touch Component Tester Test Voltage : Max 8.6 V_{rms} (Open) Test Current : Max 8 mA_{rms} (Shorted) Test Frequency : 50 Hz, Test circuit grounded to chassis Continuity Tester : Beeper sounds < 75 W approx. Included Accessories : 1. Manual 1 No., 2. BNC-Test Prod Cable 1 No., 3. BNC - Crocodile Cable 1 No., 4. Test Prod 1 Set, 5. PC Control Software 1 CD</p>					

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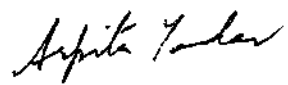


S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
10.	OSCILLOSCOPE 30 MHz Bandwidth 30 MHz Channels 2 Channels Operating Modes CH I/CH II / CH I & CH II, Alt or Chop (freq 0.5 MHz approx.) Add or Sub +CH I + CH II (with invert switch for both channels, Vertical Deflection (Y) Both Channels Deflection Coefficients 1 mV to 20 V/div 12 calibrated steps 5 mV/div to 20 V/div in 1-2-5 seq with variable to 2 mV/div Y-Mag x 5 to 1 mV/div (DC-10 MHz) Accuracy + 2% Bandwidth DC-30 MHz (-3 dB) DC coupled, 10 Hz to 30 MHz (-3 dB) AC coupled Rise Time < 11.6 ns (approx)> Input Voltage (max.) 400 V(DC + AC pk) (CAT II) Y Overscan Indication with 2 LEDs Time Base (T) Time Coefficients 18 calibrated steps in 1-2-5 seq 0.5 us/div to 0.2 s/div, with variable to 0.2 us/div, with x10 to 20 ns/div, LED indication when UNCAL Accuracy + 2% Hold off Time Variable control to approx. 1:10 Sawtooth output 5 Vpp (approx) Sweep Delay 7 decade steps, 0.1 us to 100ms with Modes variable 10:1 control to 1 s Normal, Search, Delay (LED Indication) Trigger System Modes: Auto or variable level with LED indication for stable triggering; Source: CH I, CH II, Alternate, Line, Ext Coupling: AC, DC, HF, LF; Slope: +ve or -ve;	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
	<p>TV Sync: Active TV Sync Separator with TV-V & TV-H values marked on Timebase Sensitivity: Auto & Level : 0.5 div 20 Hz - 40 MHz ; 1 div 20 Hz - 50 MHz, Typically : 60 MHz at 1.5 div; Ext.: 0.5 V 20 Hz-40 MHz Horizontal Deflection (X) Deflection Coefficient: Same as CH II; Bandwidth: DC-3 MHz (-3 dB) X-Y phase shift: < 3 upto 100 kHz Digital Freq. Readout 10 Hz to 40 MHz Display 5 digit 7 seg. LED Component Tester Test Parameters Voltage: max. 8.5 Vrms (open circuit), Current: max 8 mArms (short circuit), Freq.: 50 Hz (line freq) Test Connections 2 banana jacks 4mm dia, One test lead is grounded Continuity Test Continuous beep when < 100 Ω Accessories Standard Manual : 1 no., Test Prods : 1 pair, BNC-BNC : 1 no., BNC - Test Lead : 1 no., Line Cord : 1 no.</p>					

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
11.	FUNCTION GENERATOR Standard Waveforms : Sine, Square, Triangle, Ramp and Pulse Frequency Range : 3 mHz – 3 MHz Frequency Display Accuracy : $\pm 0.5\%$ Sine Wave Distortion : 0.2% (500 KHz), .1% (3MHz) typical Rise / Fall Time : = 35 Triangle Non-Linearity : = 1 % (typical) Pulse Duty Cycle : 5% - 95% Variable Output Level : 10Vpp OC Output Impedance : 50W Attenuation: 20dB or 40dB (Fixed) & 20dB Variable in between (60dB Max.) Level Flatness : ± 1.5 dB typical DC Offset : ± 5 V adjustable General : Mains Supply : 230 V AC $\pm 10\%$, 50Hz Power Consumption : 15VA (approximately) Operating Conditions : 0-40°C, 80% RH Dimensions (mm) : W85 \times H150 \times D 45 Weight : 0.5 Kgs (approximately) Product Tutorial : Online (Operating procedure, Front panel control & Theory) etc.	6				

Amela Gupta Yadav

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
12.	POWER SUPPLY DC Output :Multiple (A)0-30V ,1A continuous variable by means of coarse and fine controls (B)5V,1A Adjustable from 4V-6V (C)0-+/-15 V adjustable by means of coarse and fineControls. Output Control: 1A Current Limit: 20mA-1A Continuously adjustable. Resolution:Voltage: 10mV:Current :2mA Stability:<=2.5mV at 30V,1A Recovery time <=50 microseconds Load regulation <=0.05% Line regulation <=0.05% Ripple noise <=1mVrms Display :Digit Voltage &3-1/2 for current Accuracy: + /-(1%+1 digit) Over Range indication: Overload indication Protection: Overheat, Over voltage	8				
13.	DIGITAL MULTIMETER Display:3-1/2 digit LCD Polarity indication: Automatic DC Voltage :Range -200 mV-1000V AC Voltage: Range ~ 200V-750V Accuracy-+/-0.8% Frequency - 50 Hz DC Current :Range-20mA- !0A AC Current : Range 200mA-!0A Resistance :200Ω -20MΩ	10				

Praveen Ashish Yadav

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
14.	TDM pulse code modulation kit. ON BOARD SIGNALS: Sine Wave: Frequency : 250Hz, 500Hz, 1 KHz, 2KHz Amplitude : 0 – 4 Vpp D.C. : 2 Nos. Amplitude : 0 – 4 V. Input Channels: 4 Channel Time Division Multiplexing with sampling rate of 32 KHz and Pulse Amplitude Modulation technique. Synchronization Signal: Pseudo Random Bit Sequence Sync Code Generation. Serial Data Pattern : 14 bit PRBS & 14 bit Data. Parity Code Facility: Even, Odd, Hamming, None Parity. Modes Of Operation: FAST : 16KHz / channel. SLOW : 0.088Hz (811ms) / channel.	2				
15.	TDM pulse code demodulation kit. Input Channels: 4 Channel Time Division Multiplexing with sampling rate of 32 KHz and Pulse Amplitude Modulation technique. Receiver Clock: Generated by Phase Lock Loop. Parity Check Facility: Even, Odd, Hamming. Error Correction: Hamming Code.	2				

Dr. Anita Yadav

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
17.	PAM /PWM / PPM modulation / demodulation Kit. On Board Signals: Sine Wave: Variable Frequency : 1Hz to 30Hz Amplitude : 0 - 2 Vpp. Fixed Frequency : 500Hz and 1KHz Amplitude : 0 - 4 Vpp. Sampling: Internal sampling clock : 8KHz, and 16KHz. Duty Cycle : 50 %. Modulation Techniques: Pulse Amplitude Modulation (with variable clock 8KHZ, 16KHz). Pulse Width Modulation. Pulse Position Modulation.	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
18.	<p>Frequency Modulation/Demodulation</p> <p>On-board function generator</p> <ul style="list-style-type: none"> • Waveforms : Sine, triangular, square • Amplitude : 0Vpp ~ 2Vpp • Frequency range : 100Hz ~ 10KHz <p>Voltage controlled oscillator (VCO1 /VCO2)</p> <p>Carrier frequency generator frequency modulator</p> <ul style="list-style-type: none"> • Frequency range : 400KHz ~ 500KHz (VCO1), 400KHz ~ 1500KHz (VCO2) • Amplitude : Variable 0Vpp ~ 2Vpp • Inputs to VC01 : Modulating signal, marker, AFC • Inputs to VC02 : Modulating signal <p>FM Demodulator :</p> <p>Limiter</p> <ul style="list-style-type: none"> • Operating frequency : 455KHz • Inputamplitude : From 0.5 ~ 5Vpp • Outputamplitude : 1.5Vpp Maximum <p>Foster-seeley demodulator</p> <ul style="list-style-type: none"> • Operating frequency : 400KHz ~ 500KHz • Input amplitude : 1Vpp <p>Ratio Detector</p> <ul style="list-style-type: none"> • Operating frequency : 400KHz ~ 500KHz • Inputamplitude : 1Vpp <p>Phase Detector and FM Quadrature Detector</p> <ul style="list-style-type: none"> • Phase shifter, product detector and RC filter • Operating frequency : 400KHz ~ 500KHz • Inputamplitude : 1Vpp <p>Switch faults : 4</p> <p>Interconnection : 2mm banana socket</p> <p>Test points : 19</p> <p>Power supply : GND, +5V, +12V, -12V</p>	2				

A. K. Gupta

(Date)

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
19	<p>DSB/SSB AM Transmitter Kit Audio Oscillator : With adjustable Amplitude & Frequency(300 Hz - 3.4 KHz) Audio Output : Amplifier with speaker Modulators : Balanced Modulator with Bandpass Filter(1 MHz) - 2 nos. Balanced Modulator : 1 No. (455 KHz) Ceramic Bandpass Filter :1 No.(455 KHz) Carrier Frequency :1 MHz (Oscillator controlled) Transmitter Amplifier Output: (Gain adjustable) DSB (1 MHz),SSB (1.445 MHz) connected toAntenna/cable Interconnections : 2mm Banana socket Power Supply : 110-220 V AC \pm10%, 50/60Hz Power Consumption : 4 VA approx. Product Tutorial : Online (Theory, procedure,reference results, etc). Included Accessories : Patch Cord 16" : 2 nos. Mains Cord : 1 no. TechBook Power Supply : 1 no. Microphone : 1 no. Earphone : 1 no.</p>	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
20.	<p>DSB/SSB AM Receiver Kit Construction : Superhetrodyne Frequency Range : 980 KHz to 2060 KHz Intermediate Frequency : 455 KHz Input Circuits : 1) RF Amplifier 2) Mixer 3) Local Oscillator 4) Beat Frequency Oscillator 5) IF Amplifier 1 6) IF Amplifier 2 Tuning : With variable capacitor (ganged) Dial marking on board Receiving media : Telescopic antenna / Cable Detectors: 1) Diode detector (for DSB) 2) Product detector (for SSB) Audio Output : Amplifier with speaker Automatic Gain Control : Switchable Interconnections : 2 mm Banana sockets Power Supply : 110-220 V AC $\pm 10\%$, 50/60Hz Power Consumption : 3 VA approx. Product Tutorial : Online (Theory, procedure, reference results, etc). Included Accessories : Patch cord 16" : 2 nos. TechBook Power Supply : 1 no. Mains cord : 1 no. Earphone : 1 no.</p>	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
21.	PCM Generation & Demodulation using CODEC Chip Number of bits per channel : 16 bits (Left and Right) Sampling Rate : 48, 24, 12 and 6 KHz System clock : 256 x (Sampling clock) Clock Source : On-board Analog Signal Source : Sinusoidal Frequency : Up to 3.3 KHz Amplitude : 0 - 5 Vpp Power Supply : 110-220 V \pm 10%, 50 /60 Hz Learning material : CD (Theory, procedure, reference results,etc). Online Learning Material (optional) Included Accessories : Patch cord 8" : 8 nos. DC Power Supply module : 1 no. Microphone : 1 no Ear Phone : 1 no. Learning material (CD) : 1 no.	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
22.	ASK,FSK,BPSK,DBPSK Modulator and Demodulator Kit Modulation & Demodulation : ASK , FSK , BPSK , DBPSK Techniques Internal Data Generator : Digital data Data Pattern : 8-Bit , 16-Bit , 32-Bit , 64-Bit Frequency : 2KHz, 4KHz, 8KHz, 16KHz Internal Carrier Generator : Direct Digital Synthesized Carrier Signal : Sine SMD LED Indicators : 24 nos. for Digital data selection, data frequency selection and technique selection Crystal Frequency : 8MHz Selection Mode : Push switches Power Supply : 110V - 260V AC, 50/60Hz Learning Material : Online (Theory, procedure ,reference results, etc) Included accessories: 2mm Patch cord - 1no. Power Supply module - 1no.	-2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
23.	<p>8085 Microprocessor trainer kit with LCD display,101ASCII keyboard & in built power supply with on board USART 8259 and interrupt controller 8259</p> <p>Based on 8085 CPU operating at 6.144 MHz crystal frequency 8 KB Powerful Monitor EPROM \ 64 KB EPROM 8 KB RAM with Battery Backup (Optional) expandable upto 64 KB 3 Ch. TIMER/COUNTER using 8253 48 I/O lines using two nos of 8255 On-board EPROM Programmer for 27 series On-board Printer Interface On-board Interrupt Controller 8259 On-board USART 8251 On-board 1Ch. Relay & Opto Coupler On-board 8 Ch. 8 bit ADC using ADC 0809 On-board 01 Ch. 8 bit DAC using DAC 0800 RS232 interface through SID/SOD lines 20 × 2 LCD Display 101, ASCII IBM Compitable Keyboard All address/Data/Control lines Power supply of +5 V / 1.5 A, ± 12 V / 250 Ma Facility for Downloading / Uploading files from / to PC</p>	2				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
24.	<p>Optical Fibre Training kit (Link A) Transmitter: 2 Nos. Peak wavelength of emission 660nm visible Red (SFH 756V), Peak wavelength of emission 950nm infrared (SFH 450V).</p> <p>Receiver: 2 Nos. Photo Diode with responsivity of 0.3 uA /uW (SFH 250V), Photo detector with TTL logic output (SFH551V).</p> <p>On-board Function Generator 1Hz to 10KHz. Pulse width modulation, pulse position modulation, Frequency Modulation PC to PC Communication using RS-232 interface up to 115.2 Kbps. Voice Communication using microphone and speaker. RS-232 Port type: Two 9 pin D type connector Baud Rate: Maximum 115.2 Kbps Fiber optic Cable:Type:plastic optical cable, step index, multimode Core Refractive: Index n1:1.492 Numerical aperture:0.5 Acceptance angle:60 degree Fiber diameter: 1000 microns Outer Diameter: 2.2 mm Fiber Length : 3mts</p>	4				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
25.	<p>Optical Fibre Training kit (Link B) Transmitter: 2 Nos. Peak wavelength of emission 660nm visible Red (SFH 756V), Peak wavelength of emission 950nm infrared (SFH 450V). Receiver: 2 Nos. Photo Transistor with responsivity of 80 uA/uW (SFH350V). Photo detector with TTL logic output (SFH551V). Pulse Code Modulation using MC145502 – CODEC Chip. Manchester Coding/ Decoding. 16 Channels Time Division Multiplexing. Bit Error Rate Measurement using 10 bit counter. PRBS Generator 16 bit switch selectable. Eye Pattern. Half duplex voice communication using telephone handset. PC to PC communication using RS-232 Interface up to 115.2Kbps. RS-232 Port type: Two 9 pin D type connector Baud Rate: Maximum 115.2 Kbps Fiber optic Cable: Type:plastic optical cable, step index, multimode Core Refractive: Index n1:1.492, Numerical aperture:0.5 Acceptance angle:60 degree, Fiber diameter: 1000 microns,Outer Diameter: 2.2 mm,Fiber Length : 3mts, No.of fiber: 4</p>	4				

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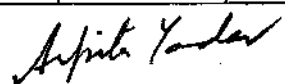


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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
26.	Voltmeter (Portable, MI Type), 250/500V AC PORT MSSB-2 Voltmeter (Portable, MI Type), 250/500V AC Acc. Class 1.5%	3				
27.	AC Ammeter 10/20 Amp AC PORT MSSB-3 AC Ammeter 10/20 Amp AC	3				
28.	Single Phase Watt-meter 300/600V, 10/20A PORT MSMB-4 Single Phase Watt-meter 03 2,945.00 8,835.00 300/600V, 10/20A	3				
29.	W.W. Rheostats 1 Amp. 500 Ohms W.W. Rheostats 1 Amp. 500 Ohms	1				
30.	W.W. Rheostats 5 Amp. 50 Ohms W.W. Rheostats 5 Amp. 50 Ohms	1				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
31.	Multi function meter AE 9000 Multi Function Meter Fully Programmable CT & PT ratio Fully Programmable selection of 3 Ph. 3Wire Or 4 Wire Configuration True RMS Measurement Display and communication of up to 63 parameters Through 30 screens/pages KVA & KW Demand Measurement Simultaneously 3 parameters can be view Total voltage or Current % THD measurement Phase angle & phasor angle measurement With standard Carrying case	1				
32.	Digital clamp meter DCM30A 2000 Count 1000A AC Clamp Meter With set of leads, manual battery and carrying case.	1				
33.	Parallel operation of two single phase transformer(with closed type 1Φ Variac (10A) NVIS Technologies Make NVIS 7012 Parallel Operation of Two Single Phase Transformers 1Φ closed type Variac (10A)	1				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
34.	Optical Laser Source Pocket Sized Dual Wavelength Light a) Emitter type Dual FP laser (laser class 1) b) Wavelength range 1310nm +/- 20nm ; 1550nm +/- 20nm c) Spectral width (rms) Typically <5nm d) Output level (CW) (9/125 m fiber) – 7dBm Typically +/- 1 dB e) Modulated output signal (Rectangular modulation ration 1:1) Selectable 270 Hz, 1 kHz, 2 kHz f) CW Mode Continuous wave signal g) Auto- Mode Output signal includes information (detectable by all JDSU power meters) h) FMODE Mode Modulation for fiber identification 270 Hz, 1 kHz, 2 kHz DUAL Mode Both wavelengths activated	1				

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S.NO.	Name of the Equipment	Quantity	Rate/Unit(Rs.)	Tax	Cost(Rs.)	Remarks
35.	Optical Power Meter a) Calibrated Wavelengths: 850, 980, 1300, 1310, 1490, 1550 nm b) Max. Permitted input level: + 13 dBm c) Display range: -60 to +5 dBm d) Wavelength modulation detection: 270 Hz, 330 Hz, 1 kHz, 2 kHz e) 1300, 1310, 1550 nm: -50 to +5 dBm f) 850 nm: -45 to +5 dBm g) Resolution: 0.01 dB (above - 60 dBm) h) Wavelength range: 780 to 1600 nm i) Fiber type: 9/125 to 100/140 μm	1				
36.	Optical fiber terminal block a) Insertion Loss: Typically < 0.2 dB b) Back Reflection: < -40dB with the index matching oil provided c) Pull strength: > 500 gram when fully clamped d) Fiber Sizes i) Single mode (in microns): 9/125 ii) Multimode (microns): 50/125,62.5/125,100/140 e) Durability: 1000's of connections under normal operating conditions	1				
37.	Optical Fiber (2 km) Glass,single mode,SES	1				
38.	Optical Fiber (5 km) Glass,single mode,SES	1				

