INVITATION FOR QUOTATIONS FOR SUPPLY OF GOODS UNDER SHOPPING PROCEDURES

Government of India has received a credit from the International Development Association (IDA) in various currencies towards the cost of the TEQIP-II Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued. The contract shall be for the full quantity as described below.

All duties, taxes and other levies payable by the contractor under the contract shall be included in the total price. The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account. The Prices should be quoted in Indian Rupees only. The last date of submission of quotation is 5th June, 2012. The quotation shall remain valid for a period not less than 90 days after the deadline date specified for submission. The submission of the quotation should be in the format provided below.

Department	Package No.	Equipment Name	Specification	Quantity	Contact Person
Mining Engineering	115	Rock Surface Profiler	 Maximum Sample Size: 150mm × 150mm × 120 mm (L×B×H) Sample weight : 5 KG (max) Resolution: user selectable up to 0.1 mm Connectivity : 1 USB and 1 serial port Power Supply: 230 V AC Output: Data file (.csv format) and 3-D graphical representation of the surface. Technical Specification: Motorised (X) axis: 150 mm scan length (for sample Platform movement) 	1	Prof. Manoj Kumar Mishra, MN Ph.(0661)2462602 E-mail: mkmishra@nitrkl.ac.in

			Guides: Double Linear Motion Guides Ball Screw of 2 m pitch Maximum load: 5 kg Motorised (Y) axis: 150 mm scan length (for laser Sensor movement) Guides: Single Linear Motion Guide Ball Screw of 2mm pitch Maximum load : 0.5 kg Laser Sensor Range: 50mm Standoff: 42 ,, Laser Spot Sixe: 50 to 220 µm Resolution: up to 15 µm Power supply: 230 volts AC, 50Hz		
Mining Engineering	114	Digital Bomb Calorimeter	 An Automatic Isoperibol Calorimeter having memory capacity upto 1000 Tests with capability for rapid testing with good repeatability. A modern operating system with communication and file management. Special communication ports for reporting to a printer, receiving sample weights from analytical balances and bi directional communications with a laboratory computer, via an Ethernet connection to transfer the reports from calorimeter. Removable compact flash memory care for simple program updates 	7	Prof. H.B. Sahu, MN Ph. (0661)2462606 Email: hbsahu@nitrkl.ac.in

Sulfur, Moisture, Ash and Hydrogen, Spiking can be made
 based on as per customer choice. Dynamic and Equilibrium test
Hydrogen, Spiking can be made

			$\begin{array}{c} \text{CO}_2: 100\% \text{ (NDIR)} \\ \text{CO}: 100\% \text{ (NDIR)} \\ \text{O}_2: 25\% \text{ (ECD)} \end{array}$		
Electrical Engineering	87	DTC Vector Control induction.	IIPM Based Power supply (3 phase): 1200V, 25A, 3¢ Squirrel cage induction motor (1 HP) ; DTC & Vector control program: TMS320LF2407A DSP Based controller.	1	Prof. A.K. Panda, EE Ph. (0661)2462407 E-mail akpanda@nitrkl.ac.in
			DSP TMS320LF2407A DSP processor Maximum operating frequency 40MHz DSP chips embedded SRAM word 2.5K DSP chips embedded 32K word FLASH 32k × 16-bit expansion of RAM, 32k × 16-bit data RAM LED display Procedures, data, IO can independently addressable 64k I/O input-output module four buttons control LED RS232 communications interface circuits 4 way 8 serial D/A output A/D conversion module 2, 10 bit A/ D CAN module PWM control module DSP Development System: USB2.0 full use of standard computer interface connector Completely plug-and-play		

Transmission speed of up to 480 Mbps Compatible with USB1.1 agreement 14 Pin JTAG simulation interface. Supports Windows98 / NT/2000/XP operating system. Central Integrated Development Supports C language and assembly language Implementation of the Flash F28x/F240x/F24x/F20x. Code Composer Studio Ver.3.3 <u>Signal Section</u> Voltages in 3 phases Current in 3 phases DC link Current DC Bus Voltage RPM	
IIPM Based Three Phase Inverter IGBT, 7 PACK MOD, 1200V, 25A Transistor Polarity: N Channel DC Collector Current: 25A Built - in over voltage, under voltage, over current & over Temperature protection Single Phase 230VAC in 3 phase out Motor & Load Unit with speed <u>sensor</u> 1 HP THREE PHASE AC MOTOR SPRING BALANCE LOAD SET UP Encoder QEP 512/1024 ppr. <u>Algorithms</u>	

			 Vector Control Direct torque control Programs Data Acquisition Software and Hardware for Analysis 		
Electrical Engineering	89	Process Control Trainer	 A heating process with control interface, heating element controlled by thyristor interface, Thermistor Detector, Air blower, Control interfacing. A temperature control process trainer comprising of: 50W nominal heater mounted in a 60mm diameter duct Remotely Switchable two speed fan blowing air over the heater Two platinum resistance temperature sensors, 0-150°C range, one measuring the heater surface temperature and one measuring the air temperature Capable of demonstrating control of both the heater surface or the air temperature Capable of demonstrating the difference between fast reacting and slow reacting sensors USB interface to PC, plus connection terminals for interfacing to external controllers 	1	Prof. S. Ghosh, EE Ph. (0661)2462403 E-mail:- sghos@nitrkl.ac.in

			as data logging.		
			 Facility for the Curriculum Coverage: Open Loop and Closed loop processes On/off control (Fixed Dead Band) P, PI and PID control This allows two different control implementations to be demonstrated with very different parameters, i.e.: Temperature control of the heater surface (Direct Heating) Temperature control of the air (Indirect Heating) 		
Electrical Engineering	88	Mixed Signal Scope	 Mixed Signal Oscilloscope (MSO) is 1GHz active probe 4 analog and 16 digital channels. 1 GHz bandwidth 2 4 GSa/s sample rate 3 4 analog plus 16 digital channels 4 Standard 8 Mpoints memory 5 12.1" XGA display with 256 levels of intensity 6. Oscilloscope should have Bandwidth and memory upgradeability. 7. Trigger across any combination of Analog and Digital Signals simultaneously. 	1	Prof. S. Das, EE Ph. (0661)2462402 E-mail:- sadas@nitrkl.ac.in

			8. 3-Standard USB, Ethernet / LAN, GP-IB Interface		
Electrical Engineering	90	Solar Energy System	 Photovoltaic solar panels, DC load and battery charger regulator, temperature sensors, computer control interface, data acquisition interface via PCI card with data management software. 1. Photovoltaic solar panels: Polycrystalline Rating: MPP power 200 watts, MPP voltage 90V, 12 V, 24 Watts PV panels with stand 8 nos. 2. DC to DC Bidirectional buck boost converter for charging the battery a. 4 Nos of high speed IGBT or MOSFET semiconductor devices are used b. 4 Nos of isolated high speed driver circuits are used c. 2 Nos of Hall effect Current transducer used for sensing the input and output of the converter current d. 2 Nos of Hall effect voltage transducer used for sensing the input and output of the converter voltage e. In boost mode I/P is 100V and O/P is 300V 	1	Prof. B. Subudhi, EE Ph. (0661)2462416 E-mail:-bidyadhar@nitrkl.ac.in
			f. In buck mode I/P is 300V and O/P		

is 100V g. Power Rating is 200Watts h. dv/dt protection is available for all IGBT (Snubber circuit) j. dsPIC 4011 digital controller is used for generating the gate signal for the IGBT	
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for the IGBT	
with Over load protection	
3 Battery	
8 Nos of 12V, 200Amps per hour	
batteries are connected is sensing	
to get 100V,DC O/P, Battery stand	
to be provided	
4. Inverter Module	
Three Phase IGBT based Power	
Module	
Power Circuit Input: 230VAC/300	
VDC @ 4 amps	
Power Circuit Output: Suitable 750	
watt RL load	
5. Sensors	
i) 3 temperature sensors provided	
signal conditioning circuits	
Input: 0-200° C, Output: 0-5 V	
ii) 3 Nos. of Hall effect current	
transducers with signal conditioning	
circuits. Input: 0-5 A, Output: 0-3 V	
iii) 3 Nos. of Hall effect voltage	
transducers with signal conditioning	
circuits, Input: 0-450 V, Output: 0-3	
V	
6. DC to DC Boost Converter	
Input voltage: 100V DC, Output	
Voltage: 300V DC	

Should consists of high speed IGBT/MOSFET, high speed OPTO isolator, PWM driver circuit, Hall effect current transducer with signal conditioning circuit, Hall effect voltage transducer with signal conditioning circuit, Dspic4011 digital controller 7. Inverter Control System VPE SPARTAN 3A/3A DSP BOARD * Xilinx 3SD1800A-FG676 FPGA * Memory: 2 Nos of 32MB SDRAM *Interface: i) One isolated RS232 Serial port
*Interface:
USB port (TMC protocol compatible) iv) On board Jtag programmer
* 50 PWM outputs 16 PWM outputs are terminated at our standard 34 pin FRC connector 34 PWM outputs are terminated at
a separate connector * 8 capture inputs * 8 digital I/O *Input & output Devices i) 16 User LEDs`
 ii) 8 Dip switches iii) 2 Limit switches iv) One reset switch v) 16 x 2 alphanumeric LCD * Analog I/O 8 channel 12 bit

			2MSPS ADC 4 Channel 14 bit 2MSPS DAC 8.Data Acquisition System Base Board Specification * USB TMC Standards * True plug and play # USB TMC Class Device 12 bit ADC & 14 bit DAC * Analog Input : 8SE/4DI * No. of ADC : Single Dual Channel ADC * Simultaneous Sampling : 2 Channel * Sampling Rate : 2msps * Range : 0to5v * Analog output : 4 Channel * No.of DAC : 2 * Resolution : 14 bit * Speed : 2msps * Range : 5v * USB based Data Acquisition system * Battery voltage and current, PV panel's voltage and current, Inverter output Voltage and Current displayed in a PC through the Data Acquisition system (DAS) 9. 1- phase Grid : Connection facility for PV strings, DC Distribution Board for Battery Bank, Inverter, AC Distribution with necessary switch gears,		
Electrical 92	Power	Transmission	Transmission line(1000 kms) with	1	Prof. S. Karmakar, EE

Engineering	62	FTIR	 fault creator, CT/PT and STATCOM 1. 110 V, 3 Phase station model. 2. Auto transformer in the station side for voltage control. 3. Energy meter in both station and load models to measure the voltage, current, power, power factor, etc. 4. Transmission line model 'pi' and 'Tee' circuits (Minimum 14 each), consisting of series inductor, series resistor and shunt capacitor. (Variable Values of line parameters) 5. Series capacitor model to vary the series compensation from 10% to 50% 6. Autotransformer for voltage control in the loading section 7. Inductive and resistive load. 8. Capacitor bank to improve on the power factor. 9. Upto 1000Km transmission line length. 10. Integrated software & Automation 	Ph. (0661)2462411 E-mail:-karmakars@nitrkl.ac.in
Engineering	02		The instrument will be procured to support the research activity at Department of Chemical Engineering, NIT Rourkela. The instrument must be able to analyze the samples of organic and inorganic compounds in the form of solid powder, nanoparticles, thin films, flat	1 Prof. Santanu Paria, CH Ph. (0661)2462262 E-mail:-sparia@nitrkl.ac.in

smooth or rough plates, aqueous	
and non-aqueous suspensions and	
solutions, micro emulsions etc. For	
detail application information the	
supplier may contact with the	
concern person.	
1. Scan range: minimum 7500-	
350cm ⁻¹ or better.	
2. Long-life sealed and desiccated	
optical unit (at least 5 years or more). The source should have	
Long-life; user replaceable.	
Instrument should not require extra	
dehumidifier or continuous switching	
on.	
3. Signal to noise ratio: Should be	
mentioned with respect to time and	
type (peak-peak or RMS). > 9,000:1	
peak-peak, 5 second scan and >	
32,000:1 peak-peak, 1 minute scan.	
4. Variable spectrum resolution as	
per requirement of sample. Spectral	
resolution with at least 0.5-0.4 cm ⁻¹	
or lower.	
E Would anothe accuracy and	
5. Wavelength accuracy and precision: Should mention at which	
wave length. Wavelength accuracy	
of at least 0.1 cm ⁻¹ and precision of	

at least 0.01 cm ⁻¹ at 3000 cm ⁻¹ .	
 6. A real-time atmospheric vapour correction (AVC) or a comparable utility must be available. This should not require the collection of reference or calibration spectra 	
7. Measurement technique: Transmitted, reflectance, and ZnSe ATR modes. Using KBr pellet and liquid samples, <i>including aqueous</i> <i>solutions</i> .	
8. Accessories for sample analysis (should come with the base instrument): Accessories for analysis of powder, liquid, flat plate, and film type samples.	
9. Sample preparation unit: Standard KBr pellet preparation unit for powder sample.	
10. Computer with standard specification and TFT monitor suitable for the instrument.	
11. Software: User friendly software to record the spectrum as well to identify and edit the recorded spectrum for further processing of data.	

			 12. Warranty: One year or more. 13. User list of the same or similar model in the reputed institutions with the address and phone No. of concern user. If possible, produce customer satisfaction certificate. 14.Supporting information/spectrums of the similar samples mentioned in the application. 		
Chemical Engineering	68	UV Spectrophotometer	UV-Vis spectrophotometer, Band width: - 190 to 1100 nm; wavelength accuracy: ±0.1nm @ 656.1nm D2, wavelength repeatability: ±0.1nm; Double beam photometric system; Abs range: -4 to 4 Abs & Transmittance: 0% to 400%; Photometric accuracy: ±0.002 Abs (0.5Abs) - ±0.006 Abs (2.0Abs); Accessories : Printer with memory.	1	Prof. Susmita Mishra, CH Ph. (0661)2462255 E-mail:-smishra@nitrkl.ac.in
Biomedical Engineering	60	Bio-medical Data Acquisition and Analysis system	1. Should be able to acquire EEG (at least 16 channel), ERS, EMG, ECG, EOG, GSR, PPG, Spirometer, Pulse oxymeter, 02	1	Prof. Amit Biswas, BM Ph. (0661)2462285 E-mail:- amit.biswas@nitrkl.ac.in

			 and CO₂ level, Electrobioimpedance, temperature data. Capable of running multiple applications Necessary user-friendly software (data should be transferable tot third party software) Should have provision for On-line analysis. 		
Civil Engineering	71	Asphalt material Performance Tester	 SPT confining cell assembly SPT Hydraulic power supply assembly SPT Environmental control unit SPT Control & Data Acquisition System Target clamp assembly (X 6) SPT 15 kN Hydraulic actuator assembly SPT Cabinet assembly SPT Transducer kit 	1	Prof. Mahavir Panda, CE Ph. (0661)2462312 E-mail:- mpanda@nitrkl.ac.in
Civil Engineering	93	Liquid level Sensor	OTT Rader Level sensor for water Level with data logger	1	Prof. K.K. Khatua, CE Ph. (0661)2462307 E-mail:-kkkhatua@nitrkl.ac.in
Electronics and Communication Engineering	95	Digital Camera including PC with interfacing Software (bio-medical application and gesture recognition)	 Intel i7 4GHz Processor, 3GB L2 Cache Memory, Intel Q41 Chipset, 1066 MHz FSB, 4GB PC2 6300 DDR2 RAM, 500GB SATA Hard Disk, DVD CD-RW Drive, 18.5" TFT (wide) Colour 	1	Prof. Samit Ari, EC Ph. (0661)2462464 E-mail:-samit@nitrkl.ac.in

Electronics and Communication Engineering	97	Data Acquisition System	•	Monitor, 6USB 2.0 Ports, Gigabit Ethernet, Key board, optical Mouse. The Embedded Vision System Platform FireWire Camera and accessories (IEEE 1394b, 659x490, 71 FPS, Color) GigE Camera and accessories (GigE, 1392x1040, 17 FPS, Color) Power Supply Lenses (8.5mm, 12mm,16mm, 25mm, 35mm) Cables and Accessories	1	Prof. Samit Ari, EC Ph. (0661)2462464 E-mail:-samit@nitrkl.ac.in
			•	BNC analog inputs, four optional single-ended (BNC)/differential (Pod port) analog inputs, two independent stimulator outputs, an external trigger input and signal triggering. proper visualization and analysis software Dual Bio-amplifier/Stimulator ECG 12 lead switch Box Physiology Accessory Kit Plethysmograph-Finger Clip Psychophysiology Kit Wireless Heart Rate Kit		

			Human Respiratory Kit		
			Digital Stethoscope		
Electronics and Communication Engineering	98	Software Defined Radio		1	Prof. Samit Ari, EC Ph. (0661)2462464 E-mail:-samit@nitrkl.ac.in
Electronics and Communication Engineering	100	UPS	On-Line UPS (Rack Mountable Type) suitable for Single Phase AC Input and Single Phase AC Output, Rating of UPS: 30 KVA, Indicative Back-up time: 120 Minutes	1	Prof. Samit Ari, EC Ph. (0661)2462464 E-mail:-samit@nitrkl.ac.in
Electronics and Communication Engineering	101	Synopsis Software		1	Prof. Samit Ari, EC Ph. (0661)2462464 E-mail:-samit@nitrkl.ac.in
Electronics and Communication Engineering	102	Cadence Software		1	Prof. Samit Ari, EC Ph. (0661)2462464 E-mail:-samit@nitrkl.ac.in
Computer Science and Engineering	77	 Biometric Research System consisting of following items. i) Iris recognition and face camera ii) Dual Iris Capture Scanner iii) Finger print live scanner iv) Signature capture pad 		1	Prof. Pankaj Sa, CS Ph. (0661)2462362 E-mail:-PankajKSa@nitrkl.ac.in
Computer Science and Engineering	83	Tablet Mobile workstation		1	Prof. Pankaj Sa, CS Ph. (0661)2462362 E-mail:-PankajKSa@nitrkl.ac.in
Computer	73	Robotic Research		1	Prof. Pankaj Sa, CS

Science and Engineering		Platform					Ph. (0661)2462362 E-mail:-PankajKSa@nitrkl.ac.in
Computer Science and Engineering	72	Test bed for Ad-hoc and sensor Networks with 10 modes including all necessary software and interface				1	Prof. Pankaj Sa, CS Ph. (0661)2462362 E-mail:-PankajKSa@nitrkl.ac.in
Computer Science and Engineering	84	Network Storage Server				1	Prof. Pankaj Sa, CS Ph. (0661)2462362 E-mail:-PankajKSa@nitrkl.ac.in
Mechanical Engineering	104Vibration Analyser cum Dynamic Balancer a)a)FFT analyser (minimum Two Channel)b)Single and Two Plane balancing			The offer should include hardware (PC interface compatible) and all operating software and all the accessories (cables, connectors, sensors, magnetic base, Tachometer, stroboscope etc) General Specification:			Prof. S.C. Mohanty, ME Ph. (0661)2462511 E-mail:-scmohanty@nitrkl.ac.in
			Nos.	Features	Comments		
			1.	Indication	Digital Analyser		
			2.	Display	LCD/LED		
			3.	Frequency	0 Hz 40 KHz		
			4.	Resolution	800 lines (minimum)		
			5.	Dynamic Range	>90 dB		
			6.	A/D Converter	24-bit and above		
			7.	No. of channels	4 & additional		

			8.	Data Storage	1 for Phase measurem ent 1 GB and		
			9.	Sensors Compatibility	above Accelerom eter (CLD & ICP) & Tacho (both Strobes & laser)		
			10.	Analysis	FFT, Waveform, 2 plane 2 channel Balancing		
			11.	RPM	100 to 50000		
			12.	Power Supply	Recharge able battery		
Mechanical Engineering	105	Three Body Abrasion Tester				1	Prof. S.K. Acharya, ME Ph. (0661)2462502 E-mail:-skacharya@nitrkl.ac.in
Mechanical Engineering	103	Wired EDM machine				1	Prof. S.K. Sahoo, ME Ph. (0661)2462520 E-mail:-sks@nitrkl.ac.in
Mechanical Engineering	106	Heat Transfer Measurement Device - Convection heat transfer measuring device	 The experimental set up is required. 1. To investigate the relationship between power input and surface temperature in free convection 			1	Prof. S. Murgan, ME Ph. (0661)2462525 E-mail:-vaahan2k9@nitrkl.ac.in

	 on flat, finned and pinned plates. 2. To investigate the relationship between power input and surface temperature in forced convection on flat, finned and pinned plates 3. To investigate use of extended surfaces to improve heat transfer from the surface. 4. To determine the temperature distribution along an extended surface. 		
Conductive heat transfer measuring device	 The experimental set up should have the following capabilities; Understanding the Fourier rate equation in determining the rate of heat flow through solid materials. Measuring the temperature distribution for steady state conduction of energy through a uniform plane solid and composite plane solid. Determine the constant of proportionality (Thermal conductivity) of different materials (conductors and insulators). Measuring the temperature drop at the contact face between adjacent layers in a composite plane solid. Measuring the temperature distribution for steady state conduction of energy through a 	1	Prof. S. Murgan, ME Ph. (0661)2462525 E-mail:-vaahan2k9@nitrkl.ac.in

	 plane solid of reduced cross sectional area. 6. Understanding the application of poor conductors (insulators) 7. Observing unsteady state conduction (qualitative only) 		
Radiative heat transfer measuring device	 Demonstration of how temperature measurements can be affected by radiant heat transfer to a sensor from its surroundings and to show. Effect of temperature difference between the sensor and its surroundings Effect of air velocity Effect of sensor size Effect of sensor Emissivity Demonstration of methods of reducing the errors in temperature measurement, which are due to radiation from a source that is visible to the sensor, Including: Use of a radiation shield between the sensor and the source of radiation Design of a radiation resistant sensor. 	1	Prof. S. Murgan, ME Ph. (0661)2462525 E-mail:-vaahan2k9@nitrkl.ac.in

Prof. S.S.Mahapatra Nodal Officer (Procurement) TEQIP II

FORMAT OF QUOTATION * SUBMISSION (In letterhead of the supplier with seal)

SI. No.	Description Goods	Specifications	Qty.	Unit	Quoted Unit Rate in Rs.	Total Amo	ount
						In Figures	In Words

Gross Total Cost: Rs.

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs.(amount in figures) (Rs. amount in words) within the period specified in the Invitation for Quotations.

We also confirm that the normal commercial warrantee/guarantee of months shall apply to the offered goods.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: _____

Contact No.____

* Applicable while the bids are being invited for more than one item and would be evaluated for all the items together. <u>Modify</u> where evaluation would be made for each item separately.