INVITATION FOR QUOTATION

TEQIP-III/2017/gbec/Shopping/4

Sub: Invitation for Quotations for supply of Goods

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Brief Description	Quantity	Delivery Period(In days)	Place of Delivery	Installation Requirement (if any)
1	Modernization of Control System Lab	1	45	The Direcotor,GBPEC Ghurdauri ,Pauri	Yes

2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme[TEQIP]-Phase III** 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.
3. Quotation,
   3.1 The contract shall be for the full quantity as described above.
   3.2 Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
   3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit price.
   3.4 Applicable taxes shall be quoted separately for all items.
   3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
   3.6 The Prices should be quoted in Indian Rupees only.
4. Each bidder shall submit only one quotation.

5. Quotation shall remain valid for a period not less than **45** days after the last date of quotation submission.
6. Evaluation of Quotations,

   The Purchaser will evaluate and compare the quotations determined to be substantially responsive i.e. which

   6.1 are properly signed ; and

   6.2 confirm to the terms and conditions, and specifications.
7. The Quotations would be evaluated for all items together.
8. Award of contract:

   The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

   8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

   8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the purchase order.
9. Payment shall be made in Indian Rupees as follows:

   Delivery and Installation - 80% of total cost

   Satisfactory Acceptance - 20% of total cost

10. All supplied items are under warranty of **36** months from the date of successful acceptance of items.
11. You are requested to provide your offer latest by **15:00** hours on **15-Dec-2017 .**
12. Detailed specifications of the items are at Annexure I.
13. Training Clause (if any) **Yes. After installation testing and training has to be provided to the faculty, staff and students.**
14. Testing/Installation Clause (if any) **Yes**

15. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
16. Sealed quotation to be submitted/ delivered at the address mentioned below,The Director, Govind Ballabh Pant Engineering College Ghurdauri, Pauri Garhwal, Uttarakhand
17. **The manufacturer /Authorized dealer should submit three purchase order alongwith satisfactory work completion certificate for similar types of items supplied to other engineering college.**
18. **All manufacture/authorized dealer need to mention the make and model no for the item quoted and if authorized dealer , he has to submit the recent valid authorization certificate from the original manufacturer.**
19. **The manufacturer/ Authorized dealer has to provided three years warranty and free service /maintenance if required at the college site.**
20. We look forward to receiving your quotation and thank you for your interest in this project

Technical Specification

1. **Analog/ digital PID as well as PC based PID with computer interface system. The system must offer different experiment s as well as must have a standard PID based**

The system must have a good smps power ·DC supply +/- 12V, 500m**:**

A) DPM – 2nos. LCD 16X2 DISPAY

a) For temp upto 100ºC & intensity in Lux (2000), b) For temp upto 500ºC

Operating voltage: selectable 220-240Vac +10% 50Hz

Operating modes: Online monitoring / Data acquisition / PID Software should be provided.

a) Simulator Mode, b) Process Monitoring Mode, c) PID controller Mode.

Built in function generator:

O/p waveform selectable sine, triangular & square, O/p freq. range from 0 Hz to kHz, 4 steps & frequency control pot, Variable amplitude using potentiometer from ±9V max.

Computer Interface Adapter: 4 ADC Channel, 1 DAC channel WITH USB interface.

Controller selection P, PI, PD, PID with slide switch

2. Process Simulator Panel

Functional blocks for Lag (3No.), Integrator (3No.), Transport Lag (1No.), Summer (2No.), Gain (1No.), Inverter (2No.) for constructing simulated Type 0,1,2,3 & 1st, 2nd, 3rd Order processes to work under PID.

• Experiments with Lead / Lag / Lead - Lag compensators to control behaviors

3. Thyristor actuator panel with real life process setup for temperature & light

ThyristorBridge based 0-200V/3A cosine firing circuit. Supports signal conditioning of RTD (PT100), Thermocouple K type & Photodiode to output 0-2.5Vdc (FS). Should facilitates closed loop control experiments based on temperature, light intensity, speed measurement

Should have following real life process

- **Process Temperature /Light**

Process box contains 3 high wattage (60W) bulbs under aluminum plate heater.

Built in fan, lamp as disturbance generator.

Sensor: RTD for temperature control upto 100 degree C with built in CAL facility, Photodiode for light intensity control upto 2000lux.

4. Thruster actuator panel with real life process of high temperature

ThyristorBridge based 0-200V/3A cosine firing circuit. Supports signal conditioning of RTD (PT100), Thermocouple K type & Photodiode to output 0-2.5Vdc (FS). Should facilitates closed loop control experiments based on temperature, built in P/PI controller as well as external Analog / Digital PID controller.

Should have following real life process

- **High Temperature**

Electric Bunsen burner) with 50cc heating volume.

Sensor: K type stainless tube encapsulated TC for temp control .

5. Servo interface with DC Servo Position Control Set up

Control Interface circuit for AC & DC servo motor, signal conditioning circuit for speed sensor to output 0 - 2.5V dc (2500RPM) with speed direction. Level shifter 0 - 2.5V to $\pm$ 9V (2nos).

Hystersis,Dead band & Relay control circuit (2term & 3 term), process block for 2Nos. of 1st order lag / integral + transport lag, error and gain block for process simulation.

Should have following real life process

i) DC servo position Control

PMDC motor 12Vdc, 40W, ND RPM 2000RPM

Loading: Servo amplifier with built in 12V / 3A Power Supply

Sensor: Photo reflective speed sensor with dir detects using 2 nos. of photodiodes.

6. Servo interface) with Servo Position Control Set up

Control Interface circuit for DC servo motor, signal conditioning circuit for speed sensor to output 0 - 2.5V dc (2500RPM) with speed direction.

Relay control circuit process

AC servo position control

AC geared (50:1) servo motor. Main winding 230VAC, control winding 6VAC/3A O/P shaft RPM 25 (D), ND RPM 2500.

Servo amplifier with built in 12V/3A Power Supply.

Sensor: Servo pot as position feedback for position control.

7. Stepper Motor Demonstrator with Stepper Motor position feedback Set up

Direction, speed, auto, manual operations of Stepper Motor, Position control by step operation, Position control by continuous operation, Angle control by step operation, Speed control by control switch,Angle control by software, **Stepper Motor**

Stepper (3kgcm / 12V)

Sensor: Servo pot as position feedback.

8. AC Voltage servo stabilizer Trainer Model Process IX

Table Top/240VAC100mA assembly/ accessories: "AC synchronous 2 Phase Motor 60 rpm, 2kgcm Torque.

Variac 0-270VAC/0.75Amp."

Panel: "CIP"

Sensor: "PT (270 VAC Prim./12 VAC 100mA Sec.) followed by Precision Rectifier O/P 0-2.5V DC"

9. Inverted Pendulum Trainer Model Process XI

Table Top assembly/ accessories: "DC Servo motor 12VDC/2A, 1800 RPM, 8N/cm, 15W, Standalone servo amplifier with built in power supply 12V/3A, Table Top Set up using 30mm X 30mm alluminium profile"

Panel: "SIP (CE3)

Feedback Sensor: "Servo pot to indicate vertical standing position"

TECHNICAL SPECIFICATION	
Robotics Trainers	
10	**Robotic ARM** 5 Axis Robotic ARM · Base rotation, Single plane shoulder, Elbow · Wrist motion, Functional gripper, · Optional wrist rotate · The kit consists of black anodized aluminum brackets, · Aluminum tubing and hubs, custom injection molded components, and precision laser-cut Lexan components. ☐ Arm Hardware, Gripper and Gripper Attachment Kit. ☐ AVR (Atmega328) based Servo Controller, · SERVO MOTOR which includes Standard Size Servo. · Serial port-based version with powerful PC software. · Software controlled Feature and reprogrammable using GUI . ☐ Reprogramming Facility available Using USB ☐ IR based object detection. ☐ Camera based colour detection on conveyor belt mechanism .image processing application through compatibility using Matlab software ☐ Android based control of robotic ARM learning kinematic and Inverse Kinematics ☐ Open platform for Android Application through Bluetooth. ☐ Force sensor /IR sensor ☐ On Board DC motor Interface For conveyor based application ☐ Object detection Conveyor Belt for Material Pick up and place. ☐ All reading of unit must be connected to system in excel file. ☐ Image based process alert on particular mail id
11	**Wireless Robotic Baggy** I. The smart robotics system must have the following features like the hardware setup, processor setup, wireless communication etc, Robotics, with wireless robots etc. II. The system must be supplied with wireless Zigbee based remotes, with facility to program **Robot Mechanism** Robotic wheels • Motors: 2 metal geared 12V DC motor, 150rpm • 6 x 12mm key way aluminum coupling **III. Robotic processor board** The system must be supplied with Arduino processor with on board zigbee With motor driver ICs l293d with FT232, for USB programming.

	All must be one PCB – Atmel At mega 328 controller IC (Arduino controller) • On board xbee 2.4 GHz facility available for robotic control • Sensor interfacing PCB, PLUGABLE on main board. The system must be supplied with sensor interface PCB with facility (ultrasonic, accelerometer, gyro scope, 4 analog sensor, 6 PWM servomotors optional) Gyroscopes range: +/- 250 500 1000 2000 degree/sec Acceleration range: +/- 2g, +/-4g, +/-8g, +/-16g USB 2.0 compatible for programming of PCB 16 MHz CRYSTAL OSCILLATOR FACILITY Separate reset switch facility for xbee, controller • On board 4 SMD LEDs for digital output indicator The system must be supplied with rechargeable batteries 7.4v DC (Lithium Polymer battery) 200mAh.
12	**Quadcopter design and development** Suitable for Aerial videographers for whom high-quality UHD 4K video capabilities are a requirement • Return Home Button • Video Recoding Button • Shutter Button • Playback Button • Flight Mode Switch • Gimbal Dial • 2 Dedicated Customizable buttons **Max Transmission: -** Distance Up to 5 km or 3.1 miles (unobstructed, free of interferences) when it is FCC compliant; Up to 3.5 km or 2.1 miles (unobstructed, free of interferences) when it is CE compliant. **Video Transmission System: -** Built-in DJI Lightbridge Video Downlink **Max FPV Preview Quality: -** HD 720P @ 30fps (depending on conditions and mobile device) Weight: (Including Battery and Propellers): - 1280 g Charger and charging time 100 W charger for both Remote Controller and Intelligent Flight Battery included Intelligent Flight Battery charging time: 63 minutes **Flight Time: -** About 23 mins. **Outdoors Positioning Module: -** GPS+GLONASS Dual Positioning Module (Provides accurate positioning when GPS satellite signal is weak) **Vision Positioning Module: -** Vision Positioning System with ultrasonic sensors (Capable of positioning without GPS) Indoor hovering [Flight height lower than 3 meters, surface with clear pattern and adequate lighting (Lux > 15)] **Video Resolution: -** Maximum UHD 4K/30fps **Filter Ring: -** Detachable UV Filter, ND Filter (Optional) **Supported SD Card Types: -** 16GB Micro SD Card included Max capacity: 64 GB. Class 10 or UHS-1 rating required

13	**Advance Programming Logic Control System with Real Time application and display** **TECHNICAL SPECIFICATION** Real Time Applications ■ PLC module density based traffic light control system Specifications. PLC real time application trainer (density based traffic control) trainer consists of a traffic light system ■ PLC Module conveyor control system. Specifications. PLC real time application trainer-conveyor control ■ PLC Module bottle filling system specifications: PLC real time application trainer. With lift and temp control system It consists of all necessary components to study the concept of bottle filling system stepper motor control rotary mechanism, solenoid valve, tank proximity sensor and optical sensor should be provided Processor PLC controllers THE PLC (wago / semiens) must have 4 analog input . 2 analog output as well as 8 digital i/o, with Modbus interface modules. Interface as well as energy interface , It must be provided with a app for android mobile , for real time control applications etc Facility for real time AC CONTROL modules as well as Motion sensors . • Controllers for all standard field bus systems and ETHERNET standards • High processing speed • Programmable with CODESYS per IEC 61131-3 • Can be combined with high-level languages • Linux® 3.6 real-time operating system • Robust and maintenance-free • SSH and SSL provide a high security level PERSPECTO® Panels PERSPECTO® is 's comprehensive panel system for operating and monitoring process data for machines, systems and control technology. Benefits at a glance: Compatible with the -I/O-SYSTEM, Expert support. Short boot time, Outstanding energy efficiency, Screen sizes from 3.5" – 15", Flat design, Multiple interfaces. \ Optional IEC-61131-compatible control functionality I/O-PRO based on CODESYS 2.3 • Highly efficient translation between programming languages • Automatic declaration of variables • Library management • Online status indication in the program code • Offline simulation and integrated process visualization • Recording and graphical display of project variables

	Digital Input Modules :- 2-Channel Digital Input Modules 24, 48, 60, 110, 220 VDC. 120, 230 VAC. NPN/ PNP, 0.2 ms/3.0 ms filter, diagnostics. 2-Channel Digital Specialty Modules:- NAMUR, Pulse extension, Intruder detection, Up/down counter, 500 Hz, 100 kHz. 4-Channel Digital Input Modules: - 5, 24, 42 VDC, 24, 42, 110-230 VAC. 8-Channel Digital Input Modules: - 24 VDC, 5-14 VDC, NPN/PNP, 0.2/3.0 ms filter, PTC. 16-Channel Digital Input Modules: - CAGE CLAMP® S, 24 VDC, NPN/PNP, Ribbon cable, 24 VDC, NPN/PNP Digital Output Modules :- 1-Channel Digital Output Module:- 440 VAC, 16 A. Manual operation, bistable, isolated output. 2-Channel Digital Output Modules: - 24 VDC, 0.5 A/2 A, diagnostics, (broken wire/ short circuit), 230 VAC, SSR, 3.0 A, diagnostics. 4-Channel Digital Output Modules: - 5 VDC, 24 V, 0.5 A, 120-230 VAC, 0.25 A, NPN/ PNP, diagnostics. 8-Channel Digital Output Modules: - 5-14 VDC, 1 A, 24 VDC, 0.5 A, NPN/ PNP, diagnostics. 16-Channel Digital Output Modules :- CAGE CLAMP® S, 24 VDC, 0.5 A, NPN/ PNP, Ribbon cable, 24 VDC, 0.5 A, NPN/ PNP 2-Channel Relay Output Modules :- 0-230 V AC/ DC, 2 make contacts/ 2 changeover contacts, isolated outputs/ non-floating Analog Input Modules :- 1-Channel Analog Input Modules, Resistor bridge (strain gauge) , 2-Channel Digital Specialty Modules, Differential/ single-ended input, Measurement input (electrical isolation) , 12-/14-/16-bit resolution, 0(4)-20 mA, 0-1(5) A AC/DC, Diagnostics. 4-Channel Analog Input Modules: - Single-ended input, 0(4)-20 mA, 0-10 V, ±10 V, RTD. 8-Channel Analog Input Modules: - RTD. Analog Specialty Functions: - HART modules, RTD measurement module (adjustable), Thermocouple measurement module, diagnostics, 3-phase power measurement modules: 480/690 V, 1 A/ 5 A/ Rogowski coil.

Annexure-2

FORMAT FOR QUOTATION SUBMISSION

(In letterhead of the supplier with seal)

Date: _____

To:

_____

_____

Sl. No.	Description of goods (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	GST (CGST/ SGST/IGST) and other taxes payable(if any)	
						In %	In figures (B)
Total Cost							

Gross Total Cost (A+B): Rs. _____

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

We confirm that the normal commercial warranty/ guarantee of ——————— months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

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: _____

Address: _____

Contact No: _____