BHS HIGHER EDUCATION SOCIETY

VIJAYA COLLEGE

R V ROAD, BASAVANAGUDI, BANGALORE – 560 004

(ACCREDITED BY NAAC WITH 'B'GRADE & RECOGNIZED BY UGC AS CPE)

Ph : 080 – 26933221

EMAIL ID : principal@vijayacollege.ac.in

DATED : 23rd AUGUST 2018

SUBJECT : Tender Enquiry for supply and installation of Laboratory Equipment in Vijaya College, R V Road, Basavanagudi, Bangalore – 560 004

NOTICE INVITING TENDER

The Principal, Vijaya College, R V Road, Basavanagudi invites sealed tenders from the eligible agencies / firms under two bid system consisting of Technical and Financial Bids for supply and installation of equipment for different laboratories as per the details given below.

Last Date for Submission of Tender : **19th September 2018, 11:00 am**

Date and Time of opening the Technical Bid :

20th September 2018,11:30 am

Date and Time of opening the Financial Bid :

20th September 2018, 12:00 noon

Tender Details of different lab departments

I. PHYSICS DEPARTMENT

A. TENDER NO. : VC/EQUIPMENT-LAB/2018-19/CPE/01

B. EQUIPMENT SPECIFICATIONS

1. MILLIKAN' OIL DROP APPARATUS : 2 Nos.

Required for determining terminal velocities of olive oil droplets with and without an applied electric field and the charges carried by the droplets from which the fundamental electronic charge is determined.

A parallel plate capacitor with 5mm space between them, An atomizer of 50 ml capacity to spray oil in to the space between the parallel plates through a 3mm hole at the center of the upper plate, hole covering by an ebonite cork, illumination of dust particles in capacitor by a light source.

Power supply : 6.3V/3A ; 0-300V DC power supply with three position knobs to select +ve, zero and –ve voltages to control the movement of oil drops.

Microscope with a vertical graduated scale 0 – 100 over 3 mm length and magnification of 10x/50x to observe the movement of the charged droplets.

2. **LORENZ NUMBER Apparatus : 2 Nos.**

Constant current source, copper tube, DC differential amplifier and a multimeter to read DC upto 200mV range.

A 3/8" OD copper tube of length 15 cm; heater of 2 W, 22 ohm resistor inside the tube near its center; maximum current should not exceed 260 mA; distance between the junctions of each thermocouple must be 4 cm;

3. ATWOOD'S MACHINE : 2 Nos.

Atwood's machine with a heavy base on a 1.75 m long, 30 mm diameter aluminum fixed pipe; light weight aluminum pulley; scale graduated in cm; synchronized clock to reset and start/stop when the weight just crosses with appropriate optical LED sensors;

4. **MEASUREMENT OF VISCOSITY BY STOKES'S METHOD. (2 NOS.)**

Viscosity apparatus with photogates, digital clock for time interval measurement, Aluminium spheres (standard diameters 1 mm, 2mm, 3mm, 4mm, 5mm, 6 mm), acrylic and marble . Digital Screw Gauge and digital scale (up to 200gm).

5. END WINDOW GM DETECTORS. GM 120 (2 NO) AND ALUMINIUM ABSORBERS AA 270. : (2 NOS.)

Halogen quenched end window detector suitable for α , β , Υ counting. Operating voltage range 450 to 600V .Tube length is 2.125 inches, diameter 0.59 inches. Aluminium absorbers of different thicknesses (0.05 mm,0.1 mm,0.15 mm, 0.2 mm, 0.25 mm, 0.30 mm, 0.35 mm, 0.40 mm, 0.45 mm)

6. EXP-EYES.

A PHOENIX project by Inter University Accelerator Centre to use simulation experiments with Python Language

C. Please Note : Technical & Financial bids should be submitted separately in sealed cover and both these sealed covers should be put in a big cover which should also be sealed and super-sealed with caption '**Quotation for Physics Laboratory Equipment**'.

II. CHEMISTRY DEPARTMENT

A. TENDER NO. : VC/EQUIPMENT-LAB/2018-19/CPE/02

B. EQUIPMENT SPECIFICATIONS

1. U V – VIS spectro Photometer : Quantity – 01

Optics-250 nm ; Wavelength-200-1100 nm; Photometric-0-2.5 A

Stray Light- 220-370 nm; Automatic Baseline Correction

Measuring Modes- % T ABS, Conc by K-factor & multi standards

Data Processing- interfacing to PC must be available

Sample holder- 5 position for 10 mm cuvette; 2-4 ml cuvette

Source- Tungsten – halogen Lamp.

Detector-UV enhanced wide range solid state photo diode.

Standard accessories- two 10 mm path length quartz cuvettes matched within ±3%

2. Multi Parameter Analyser : Quantity – 01

pH : 0-14 with 5 point calibration; MV/ORP: ± 1999 mV

Temp: 0 to 100^0C ; Conductivity: 0.2 µ S to 200 mS

TDS: 0.2 PPM to 100 PPT ; Salinity: 0.1 to 40 PPT

Display:240x128 monochrome graphic LCD; Calibration Backup

Data backup; Printer port

Accessories-pH combined electrode

Glass conductivity cell

Temperature probe

Clamp and stand

C. PLEASE NOTE : Technical & Financial bids should be submitted separately in sealed cover and both these sealed covers should be put in a big cover which should also be sealed and super-sealed with caption '**Quotation for Chemistry Laboratory Equipment**'.

III. BOTANY DEPARTMENT

A. TENDER NO. : VC/EQUIPMENT-LAB/2018-19/CPE/03

B. Equipment Specifications

Sl. No.	Name of the Item	Quantity	Specifications
1.	**"MiaCam", CMOS HD Camera**	01	Camera with 3-in-1 output (HDMI, SD Card Slot & USB Interface)
2.	**Scan Marker Air-Digital Scanner**	01	Battery operated, blue tooth, wireless connectivity, compatible with Windows, IOS, Android OS.

C. PLEASE NOTE : Technical & Financial bids should be submitted separately in sealed cover and both these sealed covers should be put in a big cover which should also be sealed and super-sealed with caption '**Quotation for Botany Laboratory Equipment**'.

IV. ZOOLOGY DEPARTMENT

A. TENDER NO. : VC/EQUIPMENT-LAB/2018-19/CPE/04

B. EQUIPMENT SPECIFICATIONS

1. **Trinocular inverted biological phase contrast microscope :**
   - **Head**
     Trinocular 360°rotating 30° inclined
   - **Eyepieces**
     Wide Field 10X/20 mm
   - **Objectives**
     IOS PLAN 10xPh, 20xPh, 40xPh, 100xPh (oil)
   - **Nosepiece**
     Quintuple nosepiece, reversed
   - **Stage**

Double layer mechanical sliding stage, 216x150mm, moving range 78x54mm, Belt-drive in X direction

   - **Focusing**
     Coaxial coarse and fine focusing with limit stop
   - **Condenser**

Phase condenser (10x/20x, 40x, 100x) with darkfield (dry) and brightfield

   - **Illuminator**
     X-LED^3, with manual brightness control

Quantity – 01 number;

2. **Metal distillation unit 3-4 ltrs : Quantity – 01 Number**

C. **PLEASE NOTE :** Technical & Financial bids should be submitted separately in sealed cover and both these sealed covers should be put in a big cover which should also be sealed and super-sealed with caption '**Quotation for Zoology Laboratory Equipment**'.

V. ELECTRONICS DEPARTMENT

A. TENDER NO. : VC/EQUIPMENT-LAB/2018-19/CPE/05

B. EQUIPMENT SPECIFICATIONS

Sl. No.	Name of the Item	Quantity	Specifications
1.	Microcontroller Trainer kit (8051)	02	1
2.	Digital Storage Oscilloscope	02	2
3.	Function Generator (APLB FG3M /JS903)	01	3
4.	Digital IC Trainer Kit	01	4
5.	Arduino IoT Starter Kit	01	5
6.	Specifications of IoT Trainer kit using Cortex M4	01	6
7.	IoT Starter Kit using FPGA	01	7
8.	IoT trainer kit for conducting specified experiments	01	8
9.	advanced IoT Trainer Kit	01	9
10.	Basic Raspberry Pi3 Kit	01	10

1)Microcontroller Trainer kit (8051)

ALS Make or eqivalent

CPU	8031 / 8051 operating at 11. 0592 mhz
MEMORY	Eprom1 32kb bytes with monitor software
EPROM 2	Optional – 32kb rom
RAM 1	32 kb data ram
RAM 2	32 kb program/data ram
I/O PARALLEL	48 i/o lines using two 8255
I/O SERIAL	0ne RS232 compatible interface
TIMER	Three 16 bit counter /timer using 8253
KEYBOARD	External pc-at keyboard
DISPLAY	Alphanumeric lcd module(2 lines x 16 characters)
BUS SIGNALS	All bus signals are terminated in FRC connectors. On chip port lines p1. 0 to p1. int1, into are also terminated

MONITOR SOFTWARE	32kb of system monitor, which allows the user to enter, verify, debug or execute program either from the on-board pc keyboard and display or through serial mode On-line assembler using pc keyboard and lcd display

2) Digital Storage Oscilloscope

Digital Storage CRO's:

40MHz Dual Channel, Digital Storage Oscilloscope with minimum 5" TFT Display, 500MS/s on each channels RTS, should be compatible with Lab – view signal express software, should have probe check wizard facility – (Tektronix Model NoTBS2001 or Equivalent)

3) Function Generator APLAB FG 3M or JS803 with short circuit protection and frequency fine control or equivalent)

Function generator 0-3MHz with 20, 40, 60 dB attenuator

Technical Specifications

Operating Modes : Sine, Square, Triangle, Ramp, Pulse and TTL
Frequency Range : 0.3 Hz - 3 MHz in 7 steps
Display : LCD controlled by keys
Output impedance : 50 Ω
Output Voltage : 20 Vpp (Open circuit)
Attenuation : 20dB & 40dB (fixed) 20dB (variable) Total 60dB
DC Offset : ± 5V (approximately) adjustable
Modulation : Frequency Modulation
Modulation Frequency Range : DC to 20 KHz
Modulation Input : 2Vpp maximum
Frequency Counter - :inbuilt DC to 40 MHz
Frequency Display : Counter operation selected by Menu key
Input Impedance : 1 M ohm

4) Digital IC Trainer Kit

Digital IC trainer kit

Complete set up for studying digital circuits with Onboard DC Power Supply: +5V, ±12V, Om board Pulse Generator-Frequency : 1Hz to 1MHz with 10 data switches, 10 LED indicators and 2 Seven Segment Displays. Should be supplied with experimental Manual and BTI15 terminals with 50 no. patch cords (AS-1002 or equivalent)

5)Specifications of arduino IoT Starter Kit

- 8 Nos. Point LEDs (Logic Output)
- 8 Nos. Digital Input (Slide Switches)
- 4x4 Matrix Keypad
- 2X16 Character LCD (Background Light)
- 2 Nos. 7-Segment Display
- Stepper Motor Interface
- MEMS
- RTC with Batter-Backup
- UART(RS232)
- USB(Power Supply Only)
- Buzzer (Alarm)
- Humidity
- Ultrasonic
- LM35 Temperature
- WIfi Module

Supported Sensors

- Humidity
- Temperature
- Gas
- Soil Mositure

Supporting Cloud

- Thingspeak

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6) Specifications of IoT Trainer kit using Cortex M4

- Processor : LPC4088
- 8 Nos. Point LEDs (Logic Output)
- 8 Nos. Digital Input(SLIDE Switch)
- 2 Nos. Analog Input (Potentiometer)
- 2x16 Char LCD Interface (Optional)
- Temperature Sensor(LM35)
- Internal RTC with Battery-Backup
- 1 No. UART(RS232)
- 1 No. USB UART USB 2.0 device (Virtual Port)
- Digital / Analog Output Interrupts Study,
- Reset Button

- 4x4 Matrix Keyboard
- 40-Pin Expansion Connector JTAG (Program/Debug)
- ISP Programming
- 2 Nos. 20pin- I/O Expansion Connector
- PWM Terminations
- Stepper Interface Optiona
- Onboard Zigbee Interface
- Onboard Square wave Generator
- SPI/I2C Expansion Connector
- MicroSD card Interface

Sensors

- Humidity
- Temperature
- Gas
- RFID
- Soil Mositure

Supporting Cloud

- Thingspeak
- Caynne
- Amazon

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7) Key Features of IoT Starter Kit using FPGA

- 16 Nos. DIP Switch (Digital Input)
- 16 Nos. Point LEDs (Logic Output)
- 2 Nos. of Push Buttons
- Two UART(RS232)
- 12-Bit SPI ADC (2 channel)
- 12-Bit SPI DAC
- Temperature Sensor LM35
- 5V SPDT Relay
- Buzzer (Alarm)
- Reset Button | Power-on Indication
- JTAG (Program/Debug)
- 40 Pin and 20 Pin I/O Expansion Connector
- On-Board Voltage regulators +5V | +3V3 | +1V2

Sensors

- Humidity
- Temperature
- Gas
- RFID
- Soil Mositure

Supporting Cloud

- Thingspeak
- Caynne

- Amazon

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8) IoT trainer kit for conducting following experiments

1.Embedded Programming

- Toggling LEDs
- Transmitting a string through UART
- Controlling LEDs blinking pattern through UART
- Echo each character typed on serial terminal.
- Digital IO configuration.
- Timer based LED Toggle.
- On-chip Temperature measurement through ADC.

2.ZIGBEE experiments

- Point to point communication of two Motes over the radio frequency.
- Multi-point to single point communication of Motes over the radio frequency.

3.Bluetooth experiments

- Point to point communication of two Motes over the radio frequency.
- Multi-point to single point communication of Motes over the radio frequency.

4.Experiments on interfacing with Iot Trainer kit

- I2C protocol study
- Reading Temperature and Relative Humidity value from the sensor.
- Reading Light intensity value from light sensor.
- Reading of atmospheric pressure value from pressure sensor.
- Proximity detection with IR LED.
- Generation of alarm through Buzzer.
- Transmitting the measured physical value from the IoT Kit over the Air.

5.Experiments on interfacing with DAC

- Timestamp with RTC
- IO Expander
- Relay control.
- I2C based 12-channel ADC
- EEPROM read and write

6.IoT applications

- Zigbee and Wifi based Sensor Monitoring through cloud
- Bluetooth and Wifi based Sensor Monitoring through cloud
- Wifi based sensor monitoring through cloud
- GSM based Monitoring through the cloud

7.WSN Applications

- Demonstration of peer to peer communication between Coordinator and end device through Router.
- Establishing Many to one Communication (Star Network Topology)
- Establishing Tree Network Topology
- Establishing Cluster Tree Network

8.IoT Applications

- Smart Dustbin-Garbage Monitoring

- Gas sensor monitoring
- RFID based Asset Monitoring
- Temperature ,Humidity and Soil Moisture sensor Monitoring

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9) Specifications of advanced IoT Trainer Kit

- 8 Nos. Point LEDs (Logic Output)
- 8 Nos. Digital Input(SLIDE Switch)
- 2 Nos. Analog Input (Potentiometer)
- 2x16 Char LCD Interface (Optional)
- Temperature Sensor(LM35)
- Internal RTC with Battery-Backup
- 1 No. UART(RS232)
- 1 No. USB UART
- USB 2.0 device (Virtual Port)
- Digital / Analog Output
- Interrupts Study, Reset Button
- 4x4 Matrix Keyboard
- 40-Pin Expansion Connector
- JTAG (Program/Debug) |ISP Programming
- 2 Nos. 20pin- I/O Expansion Connector
- PWM Terminations
- Stepper Interface
- Optional Onboard Zigbee Interface
- Onboard Square wave Generator
- SPI/I2C Expansion Connector
- MicroSD card Interface

Supported Sensors

- GAS Sensor
- Soil Moisture sensor
- PIR
- Humidity
- Ultrasonic

Kit Includes

- LPC2148 IoT Trainer Kit
- Wifi Module
- Power Adaptor
- RS232 Cable
- User Guide HW/SW
- USB Cable
- CD Contains: Examples, ISP Programmer, IDE, Datasheets

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10) The Basic Raspberry Pi3 Kit should contain

- Raspberry Pi 3 B+ (Model B Plus) 1.2GHz

- Black (or) Clear ABS Enclosure Box Case For Raspberry Pi 3 Model B with access to gpio pins on raspberry pi.
- SanDisk Ultra 16 GB SD Class 10 Card with NOOBS PreInstalled
- 5 Volt 2.4 Ampere Robust Micro USB Power Supply which will ensure that your Pi never runs into Power Issues.
- LAN Cable
- HDMI Cable
- Aluminium Heatsink

Product Description

Raspberry Pi 3 Model B Plus – Dual Band WiFi + Bluetooth 64bit 1.4GHz Quad-Core

- New Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
- Dual Band Wi-Fi – 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN.
- Bluetooth 4.2, BLE – Bluetooth Low Energy
- Upgraded Ethernet speed from 100 Mb/s to 300 MB/s Gigabit speed over USB 2.0.
- Certified Dual-band Wi-Fi for an easier prototype.
- Power-over-Ethernet (PoE) support (requires separate PoE HAT)

Other Technical features in Pi 3B+

- 1GB LPDDR2 SDRAM
- Extended 40-pin GPIO header
- Full-size HDMI
- 4 USB 2.0 ports
- CSI camera port for connecting a Raspberry Pi camera
- DSI display port for connecting a Raspberry Pi touchscreen display
- 4-pole stereo output and composite video port
- Micro SD port for loading your operating system and storing data
- 5V/2.5A DC power input

ABS Plastic Case

Clear ABS Enclosure Box Case For Raspberry Pi 3B and Pi 3B+, will provide your Raspberry Pi quite good cover. With easy access to power, audio/video, USB, LAN, microSD, DSI display adaptor and camera connector. It features feet and vents to ensure the board gets proper cooling and plus-shaped wall mounting slots.

5V 2.4A Power Supply Charger + USB Cable

The universal USB micro power supply for Raspberry Pi. We've tested this supply in all kinds of situations, and it's as solid as a rock. It will keep feeding your Pi the steady 2.4A it needs for proper performance.

Aluminium Heatsink

Its function is to cool down the board and make your Raspberry operate safely and reduce the risk of hardware failure because of overheating.

High-Speed HDMI Cable

16GB Class 10 Micro SD Card

SanDisk Ultra microSDHC UHS-1 is the best in Performance for Pi for both Read&Write. The Memory Card is Pre-Installed with Noobs.

C. **PLEASE NOTE :**Technical & Financial bids should be submitted separately in sealed cover and both these sealed covers should be put in a big cover which should also be sealed and super-sealed with caption '**Quotation for Electronics Laboratory Equipment**'.

Instructions to Tenderers

A. The scope of this tender is to invite quotations for supply and installation of equipment detailed above.

B. The items supplied should remain in warranty for atleast a period of one year from the date of installation.

C. The company should be able to rectify or replace the items as and when required within the stipulated time.

D. Tenders must be submitted duly filled in and signed by authorized person in ink pen or ball pen. Tenders written in pencil or erased /over-written will not be considered.

E. The bidders shall not be at liberty to offer his/her terms and conditions with regard to the tendered work which means that the bidder cannot deviate from the terms and conditions given herein. Otherwise, the tenders are liable to be summarily rejected.

F. Tenderer shall keep their tender valid for acceptance for a period of 45 days from the date of opening. Tenders with shorter validity period will not be considered.

G. GST No. of the firm as applicable while submitting the tender, must be indicated. A tender lacking this will not be considered.

H. The rates are to be quoted on the company's letter head. Each page of the quotation/tender must be signed & stamped by the authorized Signatory. Unsigned quotations may not be considered.

I. Technical & Financial bids should be submitted separately in sealed cover and both these sealed covers should be put in a big cover which should also be sealed and super-sealed with caption '**Quotation for ……. Laboratory Equipment**'.

J. A vendor may quote for a single department or multiple departments or all. Such vendors quoting for more than one department should address their letters to each department separately.

K. NO EMD and PERFORMANCE SECURITY DEPOSIT EXPECTED.

L. It should be certified that the tenderer is not blacklisted.

M. Tender Documents not properly sealed will not be considered.

N. Principal, Vijaya College, R V Road, Basavanagudi, Bangalore -4, reserves the right to accept or reject any or all the bids in full or in part including the lowest, without assigning any reason thereof or incurring any liability thereby.

O. The quotation should be addressed to Principal, Vijaya College, R V Road, Basavanagudi, Bangalore – 560 004

Principal, Vijaya College,
R V Road, Basavanagudi,
Bangalore – 560 004

ANNEXURE – I

INFORMATION ABOUT THE TENDERER

No.	PARTICULARS	TO BE FILLED BY THE TENDERER
1.	OF THE COMPANY	
2.	OF ESTABLISHMENT	
3.	JS OF THE COMPANY 'NERSHIP, LIMITED, ETC.)	
4.	AL ADDRESS	
5.	E NUMBERS	
6.	L – ID	
7.	ITE ADDRESS	
8.	UTHORIZED DEALERS. IF YES, GIVE DETAILS	
9.	OF THE PROPRIETOR, MANAGING DIRECTOR, ETC.	
10.	RE OF THE FIRM UFACTURER, DEALER, DISTRIBUTOR, AGENT, ETC.)	
11.	ILS OF PRODUCTS DEALT BY THE COMPANY LOGUE MAY BE ENCLOSED)	
12.	OVER FOR THE LAST THREE YEARS : YEAR WISE	
13.	)F EXISTING CLIENTS (GOVT., PSU, MAJOR CLIENTS, ETC.)	
14.	'HER ENLISTED WITH CENTRAL PROCUREMENT OR E – PROCUREMENT PORTAL OF KARNATAKA?	

15.	OUR COMPANY BEEN BLACKLISTED? IF YES, GIVE DETAILS	
16.	ACKLISTED & REVOKED, GIVE DETAILS	
17.	TAN NO. (copy to be enclosed)	
18.	EGISTRATION NO.	
19.	OF INCOME TAX RETURN FOR THE LAST TWO YEARS	

Declaration

I/We do hereby declare that the entries made in this quotation are true to the best of my/our knowledge and belief. I/We do also confirm that I/We have read and understood General conditions of Contract as contained in these tender documents and agree to abide by the same in all respect.

I/We undertake to communicate promptly all the subsequent changes in condition affecting the accuracy of the details given above. Further I/We undertake that in case the
facts/information furnished, as above is/has been found false, the Principal, Vijaya College may at its absolute discretion reject/cancel any assignment, if any, awarded/agreed to be awarded to me/us and in such case I/We shall not be entitled to claim any damages/whatsoever in regard to that assignment.

Signature of Proprietor/Director/
Managing Director/Constituted authority

Place :

Name :

Date :

Designation :

ANNEXURE – II

FINANCIAL BID

I. NAME OF THE SUPPLIER :

II. ADDRESS :

III. PHONE NUMBER :

IV. AUTHORIZED CONTACT PERSON WITH CONTACT NO. :

V. Rates quoted are all inclusive and no separate claims will be made towards any cess, GST, delivery charges, installation charges, testing charges etc.

VI. Terms of payment for supply of computers will be claimed only after delivery and successful installation of the same as per supply order and no advance will be claimed by this firm.

VII. The applicant should submit their bids in sealed envelopes to the PRINCIPAL, VIJAYA COLLEGE

VIII. Total Quoted Price (Both in words and figures) (All inclusive).

lo.	escription	ecification	it Price n Rs.)	GST	uantity	l Price n Rs.)

DECLARATION

I hereby declare that the information furnished above is true and correct to the best of my /our knowledge.

Signature of Authorized Signatory with date.