



Tender No – CCC/DSTFIST/2015/6

PURCHASE OF LAB EQUIPMENTS FOR CHEMISTRY

[Kindly enclose a signed copy of this document along with the TENDER Document]

ITEMS

1. Refractometer
2. Polarimeter
3. Muffle furnace
4. Hot air oven&accessories
5. RotaryVaccum evaporator with vacuum pump
6. P^H meter with electrode (Digital)
7. Conductivity meter
8. Potentiometer
9. Electronic balance 3digit
10. Electronic balance 4 digit
11. Electronic balance 2 digit
12. Magnetic Stirrer with hotplate
13. Heating mantle
14. Refrigerator & accessories
15. AC &accessories
16. Kipps apparatus
17. Colorimeter
18. Distillation unit and power supply
19. Deioniser
20. Molecular model
21. Bunsen Burner
22. Water bath
23. Manual Centrifuge
24. Electrical centrifuge
25. UPS
26. Vacuum Pump
27. Pen type pH meter
28. Stainless steel Autoclave with Teflon beaker

Contact Person Technical Clarification: Dr. Sujesh Baby, Assistant Professor – Mob: 9446963119, email: sujeshbaby@gmail.com

To purchase Tender form contact Dr. Hysen Thomas, Assistant Professor, mob: 9446974398, email: hysenthomas@gmail.com

The soft copy of TENDER FORMS can be obtained by contacting Dr. Hysen Thomas. . In such cases separate DD for the cost of Tender forms and EMD drawn in favour of Principal, Christian College, Chengannur payable at CANARA Bank Chengannur, Alappuzha District Kerala should be enclosed with the Tender Document.

Tendered Amount: Rs. 10.66 Lakhs.

Cost of Tender Form: Rs. 1,600/- + Rs. 80/- (VAT)

EMD: Rs. 10,660/- (1 % of Tendered Amount)

Last Date of Sale of Tender Forms: 10/10/2015 02:00 pm

Last Date of Submission of Tenders 10/10/2015 04:00 pm

Date of Opening Tender: 11/10/2015 10:00 am at IQAC Room, Christian College, Chengannur

EQUIPMENTS TO BE PURCHASED UNDER FIST GRANT

Sl.No	Equipment	Specification
1	Refractometer	<ul style="list-style-type: none"> • Brix Range : 0-95 (%) • BrixMin. Div. : 0.25 (%) • Refractive Index (nD) Range : 1.300-1.700 • Refractive Index (nD) Accuracy : 0.0002 • Refractive Index (nD) Min. Div : 0.0005 • Temperature Range : 0°C-70°C • LED display option also to be quoted
2	Polarimeter	<ul style="list-style-type: none"> • Measuring range : $\pm 180^\circ$ • Division value of dial : 1° • Minimum indication value by vernier : 0.05° • Light source : LED • Test tube : 200mm and 100mm
3	Muffle furnace	<ul style="list-style-type: none"> • Rectangular electric furnace with light weight and fast heating system, • Body made of thick mild steel sheet duly powder coated with iron angles. • Maximum Temperature of 1000°C fitted with thermal fuse and thermocouple with ceramic wool insulation. • Chamber size – 15 x15 x23 cm • Should have Digital temperature controller
4	Hot air oven&accessories	<ul style="list-style-type: none"> • Outer body made of M.S sheet • powder coated, • inner Chamber choice of Stainless steel, • Temp: range Ambient $+5^0$ to 200^0C • Accuracy: $\pm 1^0\text{C}$ at higher Temp:

		<ul style="list-style-type: none"> • Glass wool 63mm.thick. • ThremostaticControll • Bottom Heated. • Chamber size 350 X350 X350 mm , stainless steel • Should have Digital temperature controller • Should have air circulation fan
5	RotaryVaccum evaporator with vacuum pump	<p>This model should have</p> <ul style="list-style-type: none"> • Geared drive unit offering smooth speed control byanalog knob • Jack arrangement fitted on base unit for positioning glass assembly • Double walled water baththermostatically controlled temp. • Glass condenser double coiled with three opening for vacuum and cooling, • Round botttom shaped evaporating flask capacity ofone litre, receiver flask capacity one litre fitted with a ball joint, feeding tube and vapour path tube a complete working unit.
6	P ^H meter with electrode (Digital)	<ul style="list-style-type: none"> • pH range 0 to 14.00 pH • Repeatability ± 0.01 pH ± 1 digit for pH • Resolution 0.01 pH, 1 mV in mV mode • Standardization range ± 1 pH • Millivolt range 0 to ± 1999 mV • Repeatability $\pm mV \pm 1$ digit for mV • Temperature compensation 0 to 100 °C • Display : 3 1/2- digit red LCD seven segment with automatic polarity and decimal point • Polarization current :10 μA • Recorder output : ± 10 mV/ pH in PH mode ± 10 mV/100 mV in mV mode • Accessories Combined electrode Stand and clamp
7	Conductivity meter	<ul style="list-style-type: none"> • Combining conductivity & TDS in single instrument by selection. • Measurement of the solution for both TDS & Conductivity are done using conductivity cell common for both. • Frequency: In built automatically selected,1 KHz. • Selectable Ranges(for TDS): 0-20ppm, 200ppm,2ppt & 200ppt • Selectable Ranges(for Conductivity): 0-20 micro /Mhos,200 micro/mhos 2 milli/mhos & 200 milli/mhos • Measuring Accuracy: $\pm 1\%$ of F.S in all ranges ± 1 count • LED display • Calibration : Single point, Manual • Decimal : Automatic selection • Conductivity cell : Approx. 1.0 Cell

		<p>Constant</p> <ul style="list-style-type: none"> • Power requirement : 230V \pm 10%,50Hz single phase • Standard Accessories including Conductivity cell, Stand, Rod and Clamp
8	Potentiometer	<ul style="list-style-type: none"> • Input Configuration: Bipolar • mV –Range : 0 to \pm1999V • Resolution : 1mV • Control-Set Zero Range: 0 to \pm1500mV input • Stirrer speed : 0 to full speed • Polarization current : 10 uA for metal to metal electrode Polarity : automatic • Magnetic stirrer : In-built with variable control • Display: LED • Power 230V AC\pm10%,50Hz • Dimensions: 235(w)\times185(D) \times85(H) mm • Accessories: Combined Pt & Ref Electrode or Pt & Ref Electrode, Electrode stand & Clamp, Stirrer pedal
9	Electronic balance 3digit	<ul style="list-style-type: none"> • Make : SARTORIUS /Schimadzu • Capacity : 220g • Readability : 1mg (0.001g) • Pan Size : 115mm dia • Repeatability : 1mg • Response Time (avg.) : 1.3 Sec • Housing (W x D x H) : 230x310x305mm • Weighing Chamber Height: 230mm • LED display
10	Electronic balance 4 digit	<ul style="list-style-type: none"> • Make : SARTORIUS /Schimadzu • Capacity : 220g • Readability : 0.0001g (0.1mg) • Tare Range : 220g • Repeatability : $< \pm$ 0.0001g • Linearity : $< \pm$ 0.0002g • Pan Diameter : 90mm • Dimensions : 230x310x305 mm • Weighing Chamber Height : 225mm • LED display
11	Electronic balance 2 digit	<ul style="list-style-type: none"> • Make : SARTORIUS /Schimadzu • with Capacity 300gm • Readability : 10mg • Pan Diameter : 90mm • resolution 10 Mg • LED display
12	Magnetic Stirrer with hotplate	<ul style="list-style-type: none"> • Magnetic stirrer with electronic speed regulator and Hot plate with Energy regulator. • Temp: up to 100°C, • Capacity 1litre. • Make : Remi/ Kemi /Rotek

13	Heating mantle	<ul style="list-style-type: none"> • Mantle should be made from fibre glass yarn and good quality nichrome wire element. • Stainless steel / Aluminium body with glass wool insulation. • Energy regulator . • Capacity of flask :500 mL, 1Litre &2 Litres • Make : Remi/ Kemi /Rotek •
14	Refrigerator & accessories	<ul style="list-style-type: none"> • Make :Whirlpool /LG/Samsung • Capacity 245/ 255 Litre • Colour : Red /black • Double door • Atleast four star • Stabiliser and stand should also be provided
15	AC &accessories	<ul style="list-style-type: none"> • Make : Whirlpool /Voltas • Capacity 1tonAC • Colour : white/ silver • Atleast four star • stabiliser • stand • installation charges also to be quoted
15	Kipps apparatus	<ul style="list-style-type: none"> • Should be made up of Borosil glass. • Gas Generator • Interchangable joints • Capacity 1 litre, 2.5 litres
16	Colorimeter	<ul style="list-style-type: none"> • Wavelength : 400-700nm with 8 optical filters • Filters peak wavelength : 420nm,440nm,490nm,520nm, 540nm, 570nm, 600nm, 700nm • Measuring modes : %T, Abs, Con & K-factor • Photometric Resolution : 0.1%T,0.001Abs to1.999Abs(o.d) • Display : 2 line 16 character • K-factor Range : 0 to 1999 • Concentration : 0 to 2 times the absorbance • Memory : Data can be stored in the memory • Sample volum : 1ml in 4ml test tube /cuvette • Source : White LED • Detector : Hermetically sealed Photodiode • Power : 230v±10% , 50hz • Dimension : 160 (w) * 200 (D) * 100 (H) mm • Weight : 1.5kg (approx)

		<ul style="list-style-type: none"> Accessories : a).Four test tubes b).Two glass cuvette Make : Systronics
17	Distillation unit and power supply	<ul style="list-style-type: none"> Distillation unit should be made up of borosil glass. It should have double walled condensing unit and separate condensation of vapors from both the boilers. Borosilicate boiler and condenser Quartz Heater horizontal or vertical Type tubes Dist. Water output Capacity : 1.5Ltr Electrical Requirements : 230 – 250 volts Distillate temperature : 65 – 75° C <p><u>Distillation Apparatus Power Supply</u> should be automatic working by switching off the heater in case water level falls below the heating coil. The sensor rods are adjusted above heater levels and work on 12v power supply. It should give buzzer sound alert or any other type indication in low water situation.</p>
18	Deioniser	<ul style="list-style-type: none"> It should produce De mineralized water and to bring down the dissolved solid to less than 1 mg/lit. De-ionized water will have the conductivity of less than 1 ms/cm and pH of 6.8 to 7. Water output/hour : 50litres/hour.
19	Molecular model	<ul style="list-style-type: none"> It should contain moulded balls of different colours and sizes along with connecting lugs of different sizes. The kit can be used to make model for most of the chemistry problems. for example , structures of organic molecular network , inorganic molecular structure , isomerism, solid models etc.
20	Bunsen Burner	<ul style="list-style-type: none"> Stainless steel body. Stop cock required for temperature control.
21	Water bath	<ul style="list-style-type: none"> Stainless steel double walled & single walled water baths. Should have temperature controller. Number of holes on the top of the water bath may be 6, 10 or 12 holes.
22	Manual Centrifuge	<ul style="list-style-type: none"> Hand driven centrifuge Two, four and six tube models required.
23	Electrical centrifuge	<ul style="list-style-type: none"> Multipurpose electrical centrifuge with microprocessor based memory is required. Four or six tube models required. Digital timer.

		<ul style="list-style-type: none"> • Digital RPM with LCD indicator.
24	UPS	<ul style="list-style-type: none"> • 1kva ups with Exide tubular battery 100ah 2nos and rack
25	Vacuum Pump	<ul style="list-style-type: none"> • OIL FREE VACUUM PUMP • double stage in parallel • Max low 251.PM • Motor 1X16 HP
26	Pen type pH meter	<ul style="list-style-type: none"> • Pen type P^H meter • Battery operation • Measuring range 0-14 • LCD display • Repeatability ± 0.01 pH ± 1 digit for pH • Resolution 0.01 pH, 1 mV in mV mode • Standardization range ± 1 pH • Millivolt range 0 to ± 1999 mV • Repeatability $\pm mV \pm 1$ digit for mV • Temperature compensation 0 to 100 °C
27	Stainless steel Autoclave with Teflon beaker	<ul style="list-style-type: none"> • Body should be fabricated with stainless steel. • Beaker should be made up of Teflon. • Capacity of the beakers needed are 25mL, 50mL, 100mL & 200mL.

For any clarification regarding tendering process kindly contact

Dr. Hysen Thomas

Assistant Professor in Physics

Convenor – DST FIST Project

Christian College

Chengannur 689 122

Kerala, India

Email hysenthomas@gmail.com

Mobile: 9446974398