



**TENDER DOCUMENTS**

**CHEM LAB EQUIPMENT, CHEMICALS & GLASSWARES**

**NUTECH/SCM/Chem Lab-2019/TD-037**

**NATIONAL UNIVERSITY OF TECHNOLOGY**

## **TENDER NOTICE**

**National University of Technology (NUTECH)**

**NUTECH/SCM/Chem Lab-2019/TD-037**

Sealed bids are invited from Government / FBR Registered Firms for the procurement of Chemistry Laboratory Equipment, Glasswares & Chemicals for NUTECH Technology Labs.

1. Tender documents containing terms & conditions and detailed specifications of items can be downloaded from NUTECH website "<https://nutech.edu.pk/d-p.php>" w.e f **21 Feb 2019**.
2. Quotations shall be submitted as per requirement of the tender documents.
- a. Bidders will be required to submit bank draft/PO equal to 5% of quoted value as Bid Bond in favor of National University of Technology (NUTECH).
3. Sealed bids with detailed specification should reach on the following address latest by **1430 hours on 15 March 2019**. Late submission will not be entertained.
4. Bids will be opened at **1500 hours on 15 March 2019 at SCM Office**.
5. Project is to be completed in 7 days from the date of award of contract.
6. Submit Rs 1500/- as Tender fee in favor of HBL account: **NUTECH Tendering and contracts, 5037-000210755**. Please attach bank receipt with technical offer. Offers will be rejected without payment of processing fee

**Deputy Director (Supply Chain Management Office)**  
**NATIONAL UNIVERSITY OF TECHNOLOGY (NUTECH) UPROAD,SECI-12,**  
**ISLAMABAD**  
**Tel: 0092-51-5476768, Ext :178**



## NATIONAL UNIVERSITY OF TECHNOLOGY

### SUPPLY CHAIN MANAGEMENT OFFICE

#### INVITATION TO TENDER

**Submission Date/Time 15 Mar 2019** at 1430 hours

1. NUTECH desires to procure the list of item(s)/Store(s) as per **Annexure-A** by two envelope method. Interested bidders are requested to send their bids through courier or deliver at NUTECH under two separate sealed envelopes (placed together in third envelope), marked clearly, **"Technical Offer"** and **"Commercial Offer"**, respectively to the undersigned, latest by or before above mentioned due date. If due to any unforeseen circumstances, NUTECH establishment remains closed, then the last date of submission will be extended to next working day.

2. Please also note that Technical Offer should contain Annexes-A & B duly filled in (supported with relevant technical literature /details/ catalogues etc) and receipt of tender processing fee. Commercial Offer will contain Annexure-C and bid bond. Please ensure no space is left blank in the annexes.

3. Following must be noted for this IT (Invitation to Tender):-

- a. 2 x copies of technical offer are to be provided.
- b. Annexes A, B and C must be signed and stamped. Attach only relevant documents.
- c. Please complete all document as per given format. Do not use your format or letter head. Offer may be rejected if given format is not followed.
- d. Validity of offer will be 30 days.
- e. Delivery period will be 7 days from the date of award of contract.
- f. Tender(s) must be accompanied with a Bid Bond in agreement of faithful compliance of the conditions of Contract/Purchase Order. This amount will be equivalent to 5% of the total quoted value. In case of non-acceptance of any offer, the Bid Bond will be returned to the bidder by fastest possible means. The Bid Bond amount submitted by the successful bidder will however, be refunded on effective termination of Contract/ Purchase Order. (The Bid Bond will be forfeited in case of default by the bidder from his commitments made through his offer). Submission of Bid Bond is mandatory, otherwise your offer will be rejected.
- g. 2 years warranty against 5% bank guarantee will be required from the successful bidders

from the date of commissioning.

h. Rates should be quoted on Free Delivery basis at NUTECH Islamabad.

4. We reserve the rights to accept or reject any or all tenders as a whole or in part without assigning any reason whatsoever. The decision in this regard will be firm, final and binding on all bidders.

DD (Supply Chain Management)



**NATIONAL UNIVERSITY OF TECHNOLOGY**

**SUPPLY CHAIN MANAGEMENT OFFICE**

**TECHNICAL OFFER**

**Annex A**

User Reference No **Chemistry Lab -004** Date: **19-02-2019**

**Technical Specification**

Ser	Items	Description	Country of Origin	A/U	Qty Req	Bidder Compliance			Tech Scrutiny to be done by user	
						Yes	No	Alternate Offer	Accepted	Rejected
Reason of Rejection										
<b>CHEMICALS</b>										
1	Ethyl alcohol (Solvent E)	Absolute, reag. ISO reag. 99.8%	Local/All	L	2.5L					
2	Acetaldehyde	ACS reagent 99.5%	Local/All	L	500 ml					
3	Glacial Acetic acid	Pharma Grade USP	Local/All	L	2.5L					
4	Acetic acid	ACS reagent 99.7%	Local/All	L	2.5L					
5	Acetone	HPLC Plus 99.9%	Local/All	L	2.5L					
6	Pyridine	anhydrous, 99.8%	Local/All	L	1L					
7	Ferrocene	98% pure	Local/All	gm	250 g					
8	Potassium bicarbonate	ACS reagent, 99.7%	Local/All	kg	1 Kg					
9	acetonitrile	ACS reagent 99.5%	Local/All	L	4 L					
10	Ammonia solution	ACS reagent 98%	Local/All	L	2.5 L					
11	ammonia	reagent grade 98%	Local/All	L	2.5					

	hydroxide solution				L				
12	ammonium acetate	puriss anhydrous 99.95%	Local/All	Kg	1 Kg				
13	ammonium chloride	ACS reagent 28-30% in NH3	Local/All	Kg	1 Kg				
14	aniline	puriss p.a. ACS reagent 98%	Local/All	L	1 L				
15	L-Ascorbic Acid	puriss p.a. ACS reagent 98%	Local/All	kg	1 Kg				
16	Benzoic acid	puriss p.a. ACS reagent 99%	Local/All	kg	1 Kg				
17	boric acid	ACS reagent 99.5%	Local/All	kg	1Kg				
18	Calcium chloride	99.99% trace metal basis Aldrich	Local/All	kg	1 Kg				
19	carbon disulfide	ACS reagent	Local/All	kg	1Kg				
20	Citric acid	ACS reagent 99.5%	Local/All	kg	1 Kg				
21	Cobaltous acetate tetrahydrate	ACS reagent 99%	Local/All	kg	250 g				
22	Cupric sulfate	ACS reagent 99.5%	Local/All	kg	1 Kg				
23	cyclohexane	ACS reagent 99%	Local/All	L	2.5 L				
24	Dimethyl Sulfoxide	reagent plus 99%	Local/All	L	2.5 L				
25	Dimethyl formamide	ACS reagent 99%	Local/All	L	2.5 L				
26	EDTA	ACS reagent 99.5%	Local/All	L	1 Kg				
27	Ethylendiamine	puriss p.a. ACS reagent 99.8%	Local/All	L	2.5 L				
28	Ferric chloride	desicant ACS reagent 96%	Local/All	kg	1 Kg				
29	Ferrous sulfate heptahydrate	ACS reagent 99.5%	Local/All	kg	1 Kg				
30	Formaldehyde	ACS reagent 99.5%	Local/All	L	2.5 L				
31	Formic Acid	ACS reagent 98%	Local/All	L	2.5 L				
32	Tetrabutylamm onium hexafluorophos	ACS reagent 98%	Local/All	Kg	100 g				

	phate								
33	Hydrochloric acid	ACS reagent 98%	Local/All	L	2.5 L				
34	Hydrogen peroxide	ACS reagent 99%	Local/All	L	1 L				
35	perchloric acid	Reagent plus 99%	Local/All	L	1 L				
36	Iodine	ACS reagent 99%	Local/All	Kg	100 g				
37	Lactic acid	99.50%	Local/All	L	2.5 L				
38	Magnesium chloride	ACS reagent 99.9%	Local/All	Kg	1 Kg				
39	Magnesium oxide	ACS reagent 99.8%	Local/All	Kg	1 Kg				
40	Mercuric nitrate monohydrate	ACS reagent	Local/All	Kg	100 g				
41	methanol	puriss p.a. ACS reagent 99.5%	Local/All	L	2.5 L				
42	Methyl acetate	ACS reagent 99.5%	Local/All	L	1 L				
43	Methyl orange	reagent grade 97%	Local/All	Kg	25 g				
44	Naphthol Blue Black	ACS reagent 99%	Local/All	Kg	500 g				
45	Naphthalene	ACS reagent methanol as stabilizer	Local/All	Kg	1 Kg				
46	Nitric acid	puriss p.a. ACS reagent 98%	Local/All	L	2.5 L				
47	Oxalic acid	99.90%	Local/All	Kg	1 Kg				
48	Phenolphthalein Indicator	puriss p.a. ACS reagent 37%	Local/All	Kg	100 g				
49	Potassium chlorate	ACS reagent 70%	Local/All	Kg	1 Kg				
50	Phosphoric acid	puriss p.a. ACS reagent 99%	Local/All	L	2.5 L				
51	Potassium nitrate	ACS reagent 99.8%	Local/All	Kg	1 Kg				
52	Potassium Chloride	puriss p.a. ACS reagent 98-102%	Local/All	Kg	1 Kg				

53	Potassium dichromate	ACS reagent 85%	Local/All	Kg	1 Kg				
54	Potassium Hydroxide	ACS reagent 99%	Local/All	Kg	1 Kg				
55	Potassium hexacyanoferrate(III)	powder 98%	Local/All	Kg	500 g				
56	Potassium ferrocyanide	anhydrous 98%	Local/All	Kg	1Kg				
57	Potassium nitrite	ACS reagent 97%	Local/All	Kg	1 Kg				
58	Potassium permanganate	ACS reagent 98%	Local/All	Kg	1 Kg				
59	Potassium sulphate	puriss p.a. ACS reagent 99.8%	Local/All	Kg	1 Kg				
60	Silver nitrate	ACS reagent Dye content 85%	Local/All	Kg	100 g				
61	Sodium Acetate	Dye content 80%	Local/All	Kg	1Kg				
62	Sodium bicarbonate	99%	Local/All	Kg	1 Kg				
63	Borax decahydrate	determin. ofNH3 & NH4 comps	Local/All	Kg	1 Kg				
64	di-Sodium Hydrogen Phosphate	ACS reagent 99%	Local/All	Kg	1 Kg				
65	Sodium hydroxide	98% aldrich	Local/All	Kg	1 Kg				
66	Borate buffer	ACS reagent 98%	Local/All	L	100 mL				
67	Phosphate buffer saline pH 4, 7, 10	purum p.a. 99%	Local/All	L	3x1 L				
68	Sodium thiosulfate	ACS reagent 70%	Local/All	Kg	1 Kg				
69	Sulphuric Acid	reagent plus 99%	Local/All	L	2.5 L				
70	Zinc Sulphate heptahydrate	puriss sigma Aldrich	Local/All	Kg	1 Kg				



71	Zinc strips	average Mn 400 Aldrich	Local/All	Kg	500 g				
72	copper foils	GR for analysis Millipore	Local/All	Kg	5 g				
73	MnO <sub>2</sub>	ACS reagent	Local/All	Kg	500 g				
<b><u>GLASSWARE</u></b>									
1	Safety goggles	Plastic	Local/All	Nos	30				
2	Beakers 10 ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
3	Beakers 25ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
4	Beakers 50ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
5	Beaker 100ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
6	Beaker 250ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
7	Beaker 500ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
8	Beaker 1000ml Original Certified Glassware	Pyrex	Local/All	Nos	5				
9	Erlenmeyer flasks 10ml Original	Pyrex	Local/All	Nos	15				

	Certified Glassware								
10	Erlenmeyer flasks 25ml Original Certified Glassware	Pyrex	Local/All	Nos	15				
11	Erlenmeyer flasks 50ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
12	Erlenmeyer flasks 100ml Original Certified Glassware	Pyrex	Local/All	Nos	15				
13	Erlenmeyer flasks 250ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
14	Erlenmeyer flasks 500ml Original Certified Glassware	Pyrex	Local/All	Nos	5				
15	Erlenmeyer flasks 1000ml Original Certified Glassware	Pyrex	Local/All	Nos	3				
16	coiled condenser	Pyrex	Local/All	Nos	2				
17	Liebig condenser	Pyrex	Local/All	Nos	2				
18	Dropper bottles 100 ml	Pyrex	Local/All	Nos	10				
19	distillation flask 250 ml	Pyrex	Local/All	Nos	5				
20	Florence flasks,	Pyrex	Local/All	Nos	5				

	AKA boiling flasks/round bottom flask 50 ml								
21	Florence flasks, AKA boiling flasks/round bottom flask 100 ml	Pyrex	Local/All	Nos	5				
22	Florence flasks, AKA boiling flasks/round bottom flask 250 ml	Pyrex	Local/All	Nos	10				
23	Glass rods	Pyrex	Local/All	Nos	20				
24	Test tubes 16x150mm	Pyrex	Local/All	Nos	100				
25	test tube Tongs	Pyrex	Local/All	Nos	10				
26	Test Tube Racks	Pyrex	Local/All	Nos	10				
27	Watch glasses	Pyrex	Local/All	Nos	20				
28	Crucible holders	Pyrex	Local/All	Nos	15				
29	Crucible stand	Pyrex	Local/All	Nos	15				
30	Crucibles	Pyrex	Local/All	Nos	20				
31	Funnels	Pyrex	Local/All	Nos	10				
32	Graduated cylinders 10 ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
33	Graduated cylinders 25 ml Original Certified Glassware	Pyrex	Local/All	Nos	15				
34	Graduated cylinders 50 ml Original Certified	Pyrex	Local/All	Nos	20				

	Glassware								
35	Graduated cylinders 100 ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
36	Graduated cylinders 250 ml Original Certified Glassware	Pyrex	Local/All	Nos	5				
37	Graduated cylinders 500 ml Original Certified Glassware	Pyrex	Local/All	Nos	3				
38	Graduated cylinders 1000ml Original Certified Glassware	Pyrex	Local/All	Nos	3				
39	Volumetric flasks 5ml Original Certified Glassware	Pyrex	Local/All	Nos	5				
40	Volumetric flasks 10ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
41	Volumetric flasks 25ml Original Certified Glassware	Pyrex	Local/All	Nos	15				
42	Volumetric flasks 50ml Original Certified	Pyrex	Local/All	Nos	15				

	Glassware								
43	Volumetric flasks 100ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
44	Volumetric flasks 250ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
45	Volumetric flasks 500ml Original Certified Glassware	Pyrex	Local/All	Nos	20				
46	Volumetric flasks 1000ml Original Certified Glassware	Pyrex	Local/All	Nos	10				
47	Glass Droppers	Pyrex	Local/All	Nos	100				
48	Pipettes 1ml	Pyrex	Local/All	Nos	5				
49	Pipettes 2ml	Pyrex	Local/All	Nos	5				
50	Pipettes 5ml	Pyrex	Local/All	Nos	10				
51	Pipettes 10ml	Pyrex	Local/All	Nos	10				
52	Burette 50ml	Pyrex	Local/All	Nos	10				
53	Burette Stand	Pyrex	Local/All	Nos	10				
54	Ring stands, rings, and clamps	Stainless Steel	Local/All	Nos	20				
55	crucible Tongs	Stainless Steel	Local/All	Nos	15				
56	Forceps	Stainless Steel	Local/All	Nos	10				
57	Spatulas	Stainless Steel	Local/All	Nos	10				
58	Thermometers( Different temp range)	Glass	Local/All	Nos	5				
59	Bunsen Burners	Stainless Steel	Local/All	Nos	10				
60	Mortar and	Porcelain	Local/All	Nos	5				

	Pestle								
61	Reagent bottle 100 ml	Pyrex	Local/All	Nos	20				
62	Reagent bottles(N/M) 250ml	Pyrex	Local/All	Nos	20				
63	Reagent bottles(W/M) 250	Pyrex	Local/All	Nos	20				
64	Test tube holder	Stainless Steel	Local/All	Nos	6				
65	Sand bath	Stainless Steel	Local/All	Nos	5				
66	Separating funnel 100ml	Pyrex	Local/All	Nos	2				
67	Separating funnel 250ml	Pyrex	Local/All	Nos	2				
68	Separating funnel 500ml	Pyrex	Local/All	Nos	2				
69	suction flask 500ml	Pyrex	Local/All	Nos	5				
70	suction flask 250ml	Pyrex	Local/All	Nos	5				
71	secific gravity bottle 25 cc	Pyrex	Local/All	Nos	5				
72	Buchner funnel	Porcelain	Local/All	Nos	5				
73	Desiccator	Pyrex	Local/All	Nos	2				
74	Clamp & stands	Stainess Steel	Local/All	Nos	10				
75	Pipette bulb 5ml	Pyrex	Local/All	Nos	10				
76	Burette Clamp	Stainless Steel	Local/All	Nos	10				
77	Test Tube stands	Stainless Steel	Local/All	Nos	5				
78	Test Tube Brush	Stainless Steel	Local/All	Nos	6				
79	Corks (Different Sizes)	Rubber	Local/All	Nos	8				
80	gloves /pack	Rubber	Local/All	Nos	10				
81	magnetic bars small 1/2 inch	Teflon coated bars	Local/All	Nos	5				

82	magnetic bars medium 1 inch	Teflon coated bars	Local/All	Nos	5				
83	Masks (Chemical)	Standard	Local/All	Nos	30				
84	Masks (Dust)	Standard	Local/All	Nos	30				
85	viscometer ostwald	Pyrex	Local/All	Nos	5				
86	wash bottles	Plastic	Local/All	Nos	10				
87	Whatmann filter paper No.40, 42, 44, 542	Standard	Local/All	Nos	2 each				
88	Glass Cuvette/pair	Pyrex	Local/All	Nos	2				
89	Quartz Cuvette/pair	Quartz	Local/All	Nos	1				
90	Micro Pipet 10-100 $\mu$ l	Standard	Local/All	Nos	2				
91	Micro Pipet 100-1000 $\mu$ l	Standard	Local/All	Nos	2				
92	Rubber Sucker for Pipette filling	Rubber	Local/All	Nos	10				

### EQUIPMENT

1	<b>Single Beam UV/Vis Spectrometer</b>	Optical system: Single Beam Wavelength range: 200 -1000nm Wavelength accuracy: $\pm 2$ nm Wavelength reproducibility: $\leq 0.2$ nm Spectral bandwidth: 4nm Photometric range: -0.3-3.0Abs Photometric accuracy: 0.002A (0-0.5A) Stray light: $\leq 0.05\%$ T (220nm NaI, 340nm NaNO <sub>2</sub> ) Power supply: Switch mode 95 - 250VAC 50 - 60Hz	Local/All	Nos	1				
1a	<b>Vis Spectrometer Manual</b>	Optical system: Single Beam Wavelength range: 325 -1000nm	Local/All	Nos	1				
2	<b>Electronic</b>	Capacity: 200gm,	Local/All	Nos	1				

	<b>Balance digital top loading</b>	Readability 0.001gm refurbished							
2a	<b>Electronic Balance digital top loading</b>	Capacity: 220gm, Readability 0.001gm, Pan size 100x100mm, Protective plastic draft shield cover as standard accessory, operated on 220 volts	Local/All	Nos	2				
3	<b>pH Meter Digital Bench</b>	Digital Bench Model Microprocessor Controlled with parallel Temperature indication, PH Range -2.0 to 16.0 $\pm$ 0.01pH, PH Resolution 0.01pH, MV Range $\pm$ 2000.0mV, Accuracy mV $\pm$ 0.3mv, Automatic Temperature Compensation, Temperature Range -5 to +105.0°C, Temperature accuracy $\pm$ 0.1°C with two/three Point Calibration System, Battery operated as well as operated With 220 Volts	Local/All	Nos	2				
4	<b>Conductivity Meter Digital</b>	Digital Bench Top Microprocessor Controlled with parallel temperature indication, Conductivity Range 0.0 us/cm to 199.9 mS/cm, Accuracy 0.5%, Temperature Range -5.0 to +105.0°C, Salinity 0.0-70.0, TDS 0-1999 mg/l, Reference Temperature 20 or 25°C Selectable with following accessories. Conductivity Electrode with built in Temperature Sensor Electrode Stand with Base Standard solution 50 ml Complete package Operated on 220 Volts	Local/All	Nos	2				



5	<b>Fume Hood</b>	<p>Industrial grade support frame built with electrogalvanized steel and oven-baked epoxy coated aluminum.</p> <p>Phenolic resin laminate baffle system ensures airflow uniformity throughout the main chamber of the hood Grade 304 stainless steel airfoil sweeps the work surface to maintain superior operator protection</p> <p>Nominal Size 1.2 meter (4')</p> <p>External Dimensions 1200 x 873 x 1500 mm(W x D x H)</p> <p>Internal Dimensions 1120 x 682 x 1435 mm(W x D x H)</p> <p>Main Body: EG steel with aluminum and oven-baked Epoxy-polyester hybrid Isocide™ powder coating</p> <p>Airfoil: Stainless Steel grade 304</p> <p>Sash Material: Tempered Laminated and Framed Sash Glass</p> <p>Sash Configuration: Vertical</p> <p>Complete unit with base storage cabinet</p>	Local/All	Nos	1				
6	<b>Distillation Apparatus</b>	<p>All glass Borosilicate Glass fitted with metal heating element</p> <p>3 KW, capacity 4 Litre per hour, conductivity 4 µs/cm, pH 5.5 to 6.5</p>	Local/All	Nos	1				
7	<b>Magnetic Stirrer with Ceramic Hotplate</b>	<p>Ceramic Top plate, extremely resistant to corrosion</p> <p>Dimension (mm) 180 x 180mm, ceramic coated,</p> <p>Temperature range up to 550°C, Stirring volume up to 15 Lit</p> <p>Electronic speed regulation up to 1500 rpm</p> <p>Control knob for stirrer and digital temperature,</p> <p>operated on 220 Volts, 800W</p>	Local/All	Nos	2				

8	<b>Ultrasonic bath</b>	Ultrasonic frequency: (kHz) 37 / 80 Ultrasonic power effective (W) : 130 / 100 Ultrasonic peak performance max. (W): 520 / 400 Heating power (W): 250 Unit outer dimensions W/D/H (mm): 300 / 179 / 221 Tank internal dimensions W/D/H (mm) :240 / 137 / 100 Basket internal dimensions W/D/H (mm):198 / 106 / 50 Max. Filling volume tank (lit.) :2.75	Local/All	Nos	1				
9	<b>Universal Oven 30 Litre</b>	Adaptive Multifunctional Digital PID-microprocessor Controller with High-Definition TFT-Color Displays Temperature range 5°C above ambient up to +300°C	Local/All	Nos	1				
10	<b>Water Bath</b>	Controller digital display (LED) of set and actual temperature (0,1°C resolution) and of (remaining) programme time Temperature range in °C: min. 5°C above ambient up to +95°C with additional boiling mode (+100°C) Voltage 230 V, 50/60 Hz Electrical load approx. 1200 W (during heating) Dimensions W x H x D : 240 x 140 x 210 mm (7 Liters)	Local/All	Nos	1				

### Special Instructions Chemicals

Description	Bidder			Tech Scrutiny to be done by User		
	Yes	No	Alternate Offer	Accepted	Rejected	Reasons of Rejection
<b>Environment Conditions</b> (a) Temperature range: 0°C to +60°C						

(b) Relative humidity: 0-70% non-condensing						
<p><b>Warranty period</b></p> <ol style="list-style-type: none"> <li>I. The chemicals provided should have a valid expiry date at the time of delivery</li> <li>II. For chemicals with no expiry date mentioned on the containers, the certificate of quality has still to be ensured as in I.</li> <li>III. The chemicals will have to be delivered within established specifications of storage by the company and as required</li> </ol>						
<p><b>Delivery conditions</b></p> <ol style="list-style-type: none"> <li>1. At the time of delivery the container in which the chemical supplied will have to have the original seal with original tamper seal intact.</li> <li>2. Certification of quality will be provided.</li> <li>3. Any specific conditions of storage will be mentioned</li> <li>4. No chemicals will be received if standard conditions to store before delivery and at the time of delivery are violated</li> </ol>						

## Special Instructions Chemistry Lab Equipment

Description	Bidder			Tech Scrutiny to be done by User		
	Yes	No	Alternate Offer	Accepted	Rejected	Reasons of Rejection
<b>Environment Conditions</b> (a) Temperature range: 0°C to +60°C (b) Relative humidity: 0-50% non-condensing						
<b>Warranty period</b> Two years from the date of commissioning. A warranty sticker is to be pasted on each item by the Supplier / OEM highlighting Name of Firm, Contract No and date, Description of Store and Warranty validity						
<b>Training Notes</b> Supplier will provide a set of handouts for training on operation and maintenance of the equipment						
<b>Publications</b> Supplier is to provide hard and soft copies (CD) of following manuals. (a) <b>Operational / Maintenance manual:</b> - Qty 01 with Equipment and additional Qty 02 for record purposes and should consist of following sections:- (1) <b>Equipment Description /Operation:-</b> (a)Specifications (b)Description (c)Operation (2) <b>Servicing:-</b> (a)Maintenance Schedule (b )Adjustment / test (c)Removal / Installation procedure (d)Tools Used (3) Trouble shooting guide (4) Cleaning requirements (5) Shipping and receiving (6) Storage requirements (b) <b>IPB</b> (Illustrated Parts Breakdown Manual)						

<p>should have full parts description along with detailed diagrams (exploded view).</p> <p>(c) <b>Experimental manuals</b> which must contain the list and procedure of the experiments that equipment can perform.</p>						
<p><b>Spares / Technical Support</b></p> <p>(a) ) Supplier to ensure in country spares and technical support / assistance for next 10 years</p> <p>(b) Comprehensive list of spares required for scheduled maintenance of Equipment is to be provided</p> <p>(c) Any software provided must have its license</p> <p>(d) Software upgrade support must be provided free of cost for five years with renewed license at every upgrade</p> <p>(e) Supplier must also provide calibration service for at least five years after commissioning</p>						
<p><b>Additional Spare / Replaceable parts.</b></p> <p>(a) Replaceable spare / parts during scheduled inspections are to be identified (if any) and provided as per requirement along with equipment sufficient to cater five years consumption.</p> <p>(b) All specialized / standard tools (if any) required for inspection / repair / servicing must be supplied along with equipment.</p>						
<p><b>Physical Inspection Criteria:</b> 100% physical inspection of store will be carried out before commissioning of the equipment for following details:-</p> <p>(a) For physical damage, major scratches and deformity.</p> <p>(b) Accessories /components as per contractual specifications.</p>						

<p>(c) Technical Manuals (Operation manual, user guide, IPBs).</p> <p>(f) Brand name and country of origin.</p>						
<p><b>Commissioning</b></p> <p>(a) Commissioning of the equipment will be carried out by the company at his own cost and risk at designated place at NUTECH.</p> <p>(b) Any special requirement for installation, operation and commissioning must be specified in the offer by the supplier.</p>						
<p><b>Training</b></p> <p>01 week maintenance training at NUTECH</p>						
<p><b>Improvement and Safety Measures</b></p> <p>Any improvement and safety measures suggested by NUTECH during commissioning are to be resolved by the supplier / manufacturer at no extra cost.</p>						
<p><b>Liability of Supplier</b></p> <p>(a) Supplier has to provide certificate for origin of country.</p> <p>(b) In case the equipment supplied is not compatible with specifications, the supplier will be obliged to call his representatives at his own cost for consultation and corrective action</p>						

<p>Firm Name_____</p> <p>Signature_____</p> <p>Name_____</p> <p>Designation_____</p>
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**NATIONAL UNIVERSITY OF TECHNOLOGY**  
**SUPPLY CHAIN MANAGEMENT OFFICE**

**TECHNICAL OFFER**

**Annex B**

User Reference No **Chemistry Lab -004** Date: **19-02-2019**:

**Please fill in the following essential parameters:**

1. Validity of Offer: \_\_\_\_\_ Days (Should not be less than 30 days)
2. Delivery Period: \_\_\_\_\_ Days (After Placement of order)
3. Country of Origin: \_\_\_\_\_
4. Warranty/Guarantee: \_\_\_\_\_ Months from the date of final acceptance of the stores.

**General**

GST No: \_\_\_\_\_ (Please enclose copy)

NTN/CNIC: \_\_\_\_\_ (if exempted, please provide valid exemption certificate)

**Payment Terms:**

1. 50 % advance payment (Against valid bank Guarantee)
2. 50% Payment after delivery, installation /commissioning, user satisfaction certificate

**Details of Payment Recipient**

(1) Name/Title: \_\_\_\_\_

(2) Address: \_\_\_\_\_

Signature: \_\_\_\_\_

Official Seal: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_



**NATIONAL UNIVERSITY OF TECHNOLOGY**  
**SUPPLY CHAIN MANAGEMENT OFFICE**

**FINANCIAL OFFER**

**Annex C**

User Reference No **Chemistry Lab -004** Date: **19-02-2019**

Ser	Items	Description	A/U	Qty Req	Unit Price (Rs) (excluding GST)	GST (If applicable)	Gross price per unit (with taxes) Rs	Total amount of total quantity (Rs)
<b>CHEMICALS</b>								
1	Ethyl alcohol (Solvent E)	Absolute, reag. ISO reag. 99.8%	L	2.5L				
2	Acetaldehyde	ACS reagent 99.5%	L	500 ml				
3	Glacial Acetic acid	Pharma Grade USP	L	2.5L				
4	Acetic acid	ACS reagent 99.7%	L	2.5L				
5	Acetone	HPLC Plus 99.9%	L	2.5L				
6	Pyridine	anhydrous, 99.8%	L	1L				
7	Ferrocene	98% pure	gm	250 g				
8	Potassium bicarbonate	ACS reagent, 99.7%	kg	1 Kg				
9	acetonitrile	ACS reagent 99.5%	L	4 L				
10	Ammonia solution	ACS reagent 98%	L	2.5 L				
11	ammonia hydroxide solution	reagent grade 98%	L	2.5 L				
12	ammonium acetate	puriss anhydrous 99.95%	Kg	1 Kg				
13	ammonium chloride	ACS reagent 28-30% in NH3	Kg	1 Kg				



14	aniline	puriss p.a. ACS reagent 98%	L	1 L				
15	L-Ascorbic Acid	puriss p.a. ACS reagent 98%	kg	1 Kg				
16	Benzoic acid	puriss p.a. ACS reagent 99%	kg	1 Kg				
17	boric acid	ACS reagent 99.5%	kg	1Kg				
18	Calcium chloride	99.99% trace metal basis Aldrich	kg	1 Kg				
19	carbon disulfide	ACS reagent	kg	1Kg				
20	Citric acid	ACS reagent 99.5%	kg	1 Kg				
21	<b>Cobaltous acetate tetrahydrate</b>	ACS reagent 99%	kg	250 g				
22	<b>Cupric sulfate</b>	ACS reagent 99.5%	kg	1 Kg				
23	<b>cyclohexane</b>	ACS reagent 99%	L	2.5 L				
24	Dimethyl Sulfoxide	reagent plus 99%	L	2.5 L				
25	Dimetyl formamide	ACS reagent 99%	L	2.5 L				
26	<b>EDTA</b>	ACS reagent 99.5%	L	1 Kg				
27	Ethylendiamine	puriss p.a. ACS reagent 99.8%	L	2.5 L				
28	Ferric chloride	desicant ACS reagent 96%	kg	1 Kg				
29	<b>Ferrous sulfate heptahydrate</b>	ACS reagent 99.5%	kg	1 Kg				
30	Formaldehyde	ACS reagent 99.5%	L	2.5 L				
31	Formic Acid	ACS reagent 98%	L	2.5 L				
32	Tetrabutylammonium hexafluorophosphate	ACS reagent 98%	Kg	100 g				
33	Hydrochloric acid	ACS reagent 98%	L	2.5 L				
34	Hydrogen peroxide	ACS reagent 99%	L	1 L				
35	perchloric acid	Reagent plus 99%	L	1 L				
36	Iodine	ACS reagent 99%	Kg	100 g				
37	Lactic acid	99.50%	L	2.5 L				
38	Magnesium chloride	ACS reagent 99.9%	Kg	1 Kg				
39	Magnesium oxide	ACS reagent 99.8%	Kg	1 Kg				

40	Mercuric nitrate monohydrate	ACS reagent	Kg	100 g				
41	methanol	puriss p.a. ACS reagent 99.5%	L	2.5 L				
42	Methyl acetate	ACS reagent 99.5%	L	1 L				
43	Methyl orange	reagent grade 97%	Kg	25 g				
44	Naphthol Blue Black	ACS reagent 99%	Kg	500 g				
45	Naphthalene	ACS reagent methanol as stabilizer	Kg	1 Kg				
46	Nitric acid	puriss p.a. ACS reagent 98%	L	2.5 L				
47	Oxalic acid	99.90%	Kg	1 Kg				
48	Phenolphthalein Indicator	puriss p.a. ACS reagent 37%	Kg	100 g				
49	Potassium chlorate	ACS reagent 70%	Kg	1 Kg				
50	Phosphoric acid	puriss p.a. ACS reagent 99%	L	2.5 L				
51	Potassium nitrate	ACS reagent 99.8%	Kg	1 Kg				
52	Potassium Chloride	puriss p.a. ACS reagent 98-102%	Kg	1 Kg				
53	Potassium dichromate	ACS reagent 85%	Kg	1 Kg				
54	Potassium Hydroxide	ACS reagent 99%	Kg	1 Kg				
55	Potassium hexacyanoferrate(III)	powder 98%	Kg	500 g				
56	Potassium ferrocyanide	anhydrous 98%	Kg	1Kg				
57	Potassium nitrite	ACS reagent 97%	Kg	1 Kg				
58	Potassium permanganate	ACS reagent 98%	Kg	1 Kg				
59	Potassium sulphate	puriss p.a. ACS reagent 99.8%	Kg	1 Kg				
60	Silver nitrate	ACS reagent Dye content 85%	Kg	100 g				
61	Sodium Acetate	Dye content 80%	Kg	1Kg				
62	Sodium bicarbonate	99%	Kg	1 Kg				

63	Borax decahydrate	determin. of NH <sub>3</sub> & NH <sub>4</sub> comps	Kg	1 Kg				
64	di-Sodium Hydrogen Phosphate	ACS reagent 99%	Kg	1 Kg				
65	Sodium hydroxide	98% aldrich	Kg	1 Kg				
66	Borate buffer	ACS reagent 98%	L	100 mL				
67	Phosphate buffer saline pH 4, 7, 10	purum p.a. 99%	L	3x1 L				
68	Sodium thiosulfate	ACS reagent 70%	Kg	1 Kg				
69	Sulphuric Acid	reagent plus 99%	L	2.5 L				
70	Zinc Sulphate heptahydrate	puriss sigma Aldrich	Kg	1 Kg				
71	Zinc strips	average Mn 400 Aldrich	Kg	500 g				
72	copper foils	GR for analysis Millipore	Kg	5 g				
73	MnO <sub>2</sub>	ACS reagent	Kg	500 g				

### GLASSWARE

1	Safety goggles	Plastic	Nos	30				
2	Beakers 10 ml Original Certified Glassware	Pyrex	Nos	10				
3	Beakers 25ml Original Certified Glassware	Pyrex	Nos	10				
4	Beakers 50ml Original Certified Glassware	Pyrex	Nos	20				
5	Beaker 100ml Original Certified Glassware	Pyrex	Nos	20				
6	Beaker 250ml Original Certified Glassware	Pyrex	Nos	20				
7	Beaker 500ml Original Certified	Pyrex	Nos	10				

	Glassware							
8	Beaker 1000ml Original Certified Glassware	Pyrex	Nos	5				
9	Erlenmeyer flasks 10ml Original Certified Glassware	Pyrex	Nos	15				
10	Erlenmeyer flasks 25ml Original Certified Glassware	Pyrex	Nos	15				
11	Erlenmeyer flasks 50ml Original Certified Glassware	Pyrex	Nos	20				
12	Erlenmeyer flasks 100ml Original Certified Glassware	Pyrex	Nos	15				
13	Erlenmeyer flasks 250ml Original Certified Glassware	Pyrex	Nos	10				
14	Erlenmeyer flasks 500ml Original Certified Glassware	Pyrex	Nos	5				
15	Erlenmeyer flasks 1000ml Original Certified Glassware	Pyrex	Nos	3				
16	coiled condenser	Pyrex	Nos	2				
17	Liebig condenser	Pyrex	Nos	2				
18	Dropper bottles 100 ml	Pyrex	Nos	10				
19	distillation flask 250 ml	Pyrex	Nos	5				
20	Florence flasks, AKA boiling	Pyrex	Nos	5				

	flasks/round bottom flask 50 ml							
21	Florence flasks, AKA boiling flasks/round bottom flask 100 ml	Pyrex	Nos	5				
22	Florence flasks, AKA boiling flasks/round bottom flask 250 ml	Pyrex	Nos	10				
23	Glass rods	Pyrex	Nos	20				
24	Test tubes 16x150mm	Pyrex	Nos	100				
25	test tube Tongs	Pyrex	Nos	10				
26	Test Tube Racks	Pyrex	Nos	10				
27	Watch glasses	Pyrex	Nos	20				
28	Crucible holders	Pyrex	Nos	15				
29	Crucible stand	Pyrex	Nos	15				
30	Crucibles	Pyrex	Nos	20				
31	Funnels	Pyrex	Nos	10				
32	Graduated cylinders 10 ml Original Certified Glassware	Pyrex	Nos	10				
33	Graduated cylinders 25 ml Original Certified Glassware	Pyrex	Nos	15				
34	Graduated cylinders 50 ml Original Certified Glassware	Pyrex	Nos	20				
35	Graduated cylinders 100 ml Original Certified Glassware	Pyrex	Nos	10				
36	Graduated	Pyrex	Nos	5				

	cylinders 250 ml Original Certified Glassware							
37	Graduated cylinders 500 ml Original Certified Glassware	Pyrex	Nos	3				
38	Graduated cylinders 1000ml Original Certified Glassware	Pyrex	Nos	3				
39	Volumetric flasks 5ml Original Certified Glassware	Pyrex	Nos	5				
40	Volumetric flasks 10ml Original Certified Glassware	Pyrex	Nos	10				
41	Volumetric flasks 25ml Original Certified Glassware	Pyrex	Nos	15				
42	Volumetric flasks 50ml Original Certified Glassware	Pyrex	Nos	15				
43	Volumetric flasks 100ml Original Certified Glassware	Pyrex	Nos	20				
44	Volumetric flasks 250ml Original Certified Glassware	Pyrex	Nos	20				
45	Volumetric flasks 500ml Original Certified Glassware	Pyrex	Nos	20				
46	Volumetric flasks 1000ml Original	Pyrex	Nos	10				

	Certified Glassware							
47	Glass Droppers	Pyrex	Nos	100				
48	Pipettes 1ml	Pyrex	Nos	5				
49	Pipettes 2ml	Pyrex	Nos	5				
50	Pipettes 5ml	Pyrex	Nos	10				
51	Pipettes 10ml	Pyrex	Nos	10				
52	Burette 50ml	Pyrex	Nos	10				
53	Burette Stand	Pyrex	Nos	10				
54	Ring stands, rings, and clamps	Stainless Steel	Nos	20				
55	crucible Tongs	Stainless Steel	Nos	15				
56	Forceps	Stainless Steel	Nos	10				
57	Spatulas	Stainless Steel	Nos	10				
58	Thermometers(Different temp range)	Glass	Nos	5				
59	Bunsen Burners	Stainless Steel	Nos	10				
60	Mortar and Pestle	Porcelain	Nos	5				
61	Reagent bottle 100 ml	Pyrex	Nos	20				
62	Reagent bottles(N/M) 250ml	Pyrex	Nos	20				
63	Reagent bottles(W/M) 250	Pyrex	Nos	20				
64	Test tube holder	Stainless Steel	Nos	6				
65	Sand bath	Stainless Steel	Nos	5				
66	Separating funnel 100ml	Pyrex	Nos	2				
67	Separating funnel 250ml	Pyrex	Nos	2				
68	Separating funnel 500ml	Pyrex	Nos	2				
69	suction flask 500ml	Pyrex	Nos	5				
70	suction flask 250ml	Pyrex	Nos	5				

71	secific gravity bottle 25 cc	Pyrex	Nos	5				
72	Buchner funnel	Porcelain	Nos	5				
73	Desiccator	Pyrex	Nos	2				
74	Clamp & stands	Stainess Steel	Nos	10				
75	Pipette bulb 5ml	Pyrex	Nos	10				
76	Burette Clamp	Stainless Steel	Nos	10				
77	Test Tube stands	Stainless Steel	Nos	5				
78	Test Tube Brush	Stainless Steel	Nos	6				
79	Corks (Different Sizes)	Rubber	Nos	8				
80	gloves /pack	Rubber	Nos	10				
81	magnetic bars small 1/2 inch	Teflon coated bars	Nos	5				
82	magnetic bars medium 1 inch	Teflon coated bars	Nos	5				
83	Masks (Chemical)	Standard	Nos	30				
84	Masks (Dust)	Standard	Nos	30				
85	viscometer ostwald	Pyrex	Nos	5				
86	wash bottles	Plastic	Nos	10				
87	Whatmann filter paper No.40, 42, 44, 542	Standard	Nos	2 each				
88	Glass Cuvette/pair	Pyrex	Nos	2				
89	Quartz Cuvette/pair	Quartz	Nos	1				
90	Micro Pippet 10-100µl	Standard	Nos	2				
91	Micro Pippet 100-1000µl	Standard	Nos	2				
92	Rubber Sucker for Pipette filling	Rubber	Nos	10				

### EQUIPMENT

1	<b>Single Beam UV/Vis Spectrometer</b>	Optical system: Single Beam Wavelength range: 200 -1000nm Wavelength accuracy: ±2nm	Nos	1				
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		Wavelength reproducibility: $\leq 0.2\text{nm}$ Spectral bandwidth: 4nm Photometric range: -0.3-3.0Abs Photometric accuracy: 0.002A (0-0.5A) Stray light: $\leq 0.05\%T$ (220nm NaI, 340nm NaNO <sub>2</sub> ) Power supply: Switch mode 95 - 250VAC 50 - 60Hz						
1a	<b>Vis Spectrometer Manual</b>	Optical system: Single Beam Wavelength range: 325 -1000nm	Nos	1				
2	<b>Electronic Balance digital top loading</b>	Capacity: 200gm, Readability 0.001gm refurbished	Nos	1				
2a	<b>Electronic Balance digital top loading</b>	Capacity: 220gm, Readability 0.001gm, Pan size 100x100mm, Protective plastic draft shield cover as standard accessory, operated on 220 volts	Nos	2				
3	<b>pH Meter Digital Bench</b>	Digital Bench Model Microprocessor Controlled with parallel Temperature indication, PH Range -2.0 to 16.0 $\pm 0.01\text{pH}$ , PH Resolution 0.01pH, MV Range $\pm 2000.0\text{mV}$ , Accuracy mV $\pm 0.3\text{mv}$ , Automatic Temperature Compensation, Temperature Range $-5$ to $+105.0^\circ\text{C}$ , Temperature accuracy $\pm 0.1^\circ\text{C}$ with two/three Point Calibration System, Battery operated as well as operated With 220 Volts	Nos	2				

4	<b>Conductivity Meter Digital</b>	<p>Digital Bench Top Microprocessor Controlled with parallel temperature indication,  Conductivity Range 0.0 us/cm to 199.9 mS/cm,  Accuracy 0.5%,  Temperature Range -5.0 to +105.0°C,  Salinity 0.0-70.0, TDS 0-1999 mg/l,  Reference Temperature 20 or 25°C  Selectable with following accessories.  Conductivity Electrode with built in Temperature Sensor  Electrode Stand with Base  Standard solution 50 ml  Complete package Operated on 220 Volts</p>	Nos	2				
5	<b>Fume Hood</b>	<p>Industrial grade support frame built with electrogalvanized steel and oven-baked epoxy coated aluminum.  Phenolic resin laminate baffle system ensures airflow uniformity throughout the main chamber of the hood  Grade 304 stainless steel airfoil sweeps the work surface to maintain superior operator protection  Nominal Size 1.2 meter (4')  External Dimensions 1200 x 873 x 1500 mm(W x D x H)  Internal Dimensions 1120 x 682 x 1435 mm(W x D x H)  Main Body: EG steel with aluminum and oven-baked Epoxy-polyester hybrid Isocide™ powder coating  Airfoil: Stainless Steel grade 304  Sash Material: Tempered Laminated and Framed Sash Glass</p>	Nos	1				

		Sash Configuration: Vertical Complete unit with base storage cabinet						
6	<b>Distillation Apparatus</b>	All glass Borosilicate Glass fitted with metal heating element 3 KW, capacity 4 Litre per hour, conductivity 4 µs/cm, pH 5.5 to 6.5	Nos	1				
7	<b>Magnetic Stirrer with Ceramic Hotplate</b>	Ceramic Top plate, extremely resistant to corrosion Dimension (mm) 180 x 180mm, ceramic coated, Temperature range up to 550°C, Stirring volume up to 15 Lit Electronic speed regulation up to 1500 rpm Control knob for stirrer and digital temperature, operated on 220 Volts, 800W	Nos	2				
8	<b>Ultrasonic bath</b>	Ultrasonic frequency: (kHz) 37 / 80 Ultrasonic power effective (W) : 130 / 100 Ultrasonic peak performance max. (W): 520 / 400 Heating power (W): 250 Unit outer dimensions W/D/H (mm): 300 / 179 / 221 Tank internal dimensions W/D/H (mm) :240 / 137 / 100 Basket internal dimensions W/D/H (mm):198 / 106 / 50 Max. Filling volume tank (lit.) :2.75	Nos	1				
9	<b>Universal Oven 30 Litre</b>	Adaptive Multifunctional Digital PID-microprocessor Controller with High-Definition TFT-Color Displays Temperature range 5°C above ambient up to +300°C	Nos	1				

10	<b>Water Bath</b>	Controller digital display (LED) of set and actual temperature (0,1°C resolution) and of (remaining) programme time Temperature range in °C: min. 5°C above ambient up to +95°C with additional boiling mode (+100°C) Voltage 230 V, 50/60 Hz Electrical load approx. 1200 W (during heating) Dimensions W x H x D : 240 x 140 x 210 mm (7 Liters)	Nos	1				
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Bid Bond Ref \_\_\_\_\_

Total Gross Value \_\_\_\_\_

\*\*Bid Bond to be attached with Annex C. Copy of Bid Bond be attached with

Technical offer without showing its value. Exposure of bid bond in technical offer may lead to rejection of offer.

Firm Name _____ Signature _____ Name _____ Designation _____
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