

# BID DOCUMENT

NATIONAL COMPETITIVE BIDDING

FOR

SUPPLY, INSTALLATION, COMMISSIONING & MAINTENANCE OF EQUIPMENTS  
FOR FOOD TECHNOLOGY (NUTRIGENOMICS) LABORATORY AT I.K.G.PTU  
KAPURTHALA AND ITS OTHER CONSTITUENT CAMPUSES (PUNJAB)

Bid No. : EdCIL/PROC/PTU-2017/LAB-MTECH-FOODTECH/FOODTECH-PKG1/1

## PART-II- FINANCIAL BID



**EdCIL (India) Limited**

*(A Govt. of India Mini Ratna Enterprises)*

'EdCIL House', Plot No. 18A, Sector- 16A

NOIDA – 201301 (UP), INDIA

Tel: 0120 – 2512001-006, FAX: 0120-2515372

Dated: 09.05.2017

This document serially numbered from page number 01 to 25.

## **FINANCIAL BID**

### **Instructions to Bidders**

1. Financial Bid shall be submitted with full price details.

Financial Bid shall contain only the prices duly filled in as per the format given in Schedule of Rates provided in the tender document. Price bid should not have any Commercial and/or Technical stipulation in addition to, what is already given in Part I – Technical bid.

Financial Bid Standard Forms (Form-1, Form-2A and /or Form-2B) shall be used for the preparation of the price quote according to the instructions provided.

2. **The Bidder should quote for all the Laboratory items/ equipments listed in this document. In case, the Bidder/s does not quote for all the Laboratory items/Equipments, the Bid shall be treated as incomplete and shall be rejected summarily.**
3. The Items/ equipments to be supplied/ delivered/ installed/ commissioned at various locations of IKGPTU Campuses as shown in the enclosed Annexure VI. The rate shall be inclusive of all taxes, octroi, transportation (as per the location), packing, loading and unloading (as designated location), Insurance etc. and nothing shall be paid extra.
4. The bid shall be evaluated on total value of all Laboratory items/Equipments as shown in summary and supply order shall be placed to a bidder as a composite bid.
5. The prices quoted by the bidder shall be fixed for the quantity mentioned for the duration of the contract and shall not be subject to adjustment on any account. Price should be firm for any positive or negative variation in quantities up to 100%.
6. The changes displayed in the corrigendum/addendum to the bid documents, particularly with the financial bid should be attached with the financial bid submission, in the same packet, duly signed and stamped by the authorized signatory of the Bidder firm.

**FINANCIAL BID SUBMISSION FORM**

To:

Chief General Manager (EIS & EPS)  
EdCIL (India) Limited  
EdCIL House, 18 A, Sector-16 A  
NOIDA – 201301 (U.P.), India

Dated: \_\_\_\_/\_\_\_\_/2017

Dear Sir,

We, the undersigned, offer to provide “SUPPLY, INSTALLATION, COMMISSIONING & MAINTENANCE OF LABORATORY EQUIPMENTS” in accordance with your Request for Proposal dated \_\_\_\_/\_\_\_\_/2017.

Our attached Financial Bid is for the amount of \_\_\_\_\_ *[Indicate the corresponding to the amount(s), currency(ies) {Insert amount(s) in words and figures}]*.

Please note that all amounts shall be the same as in Form-1. Our Financial Bid shall be binding upon by us subject to the modifications resulting from Contract negotiations, if any, up to expiration of the validity period of the Proposal.

We remain,

Yours sincerely,

Authorized Signature {In full and initials}:

Name and Title of Signatory:

In the capacity of:

Address:

E-mail:

# FORM-1

## SUMMARY OF FINANCIAL BID

S. No.	Description	Amount (exclusive of Tax) (Rs.)	Tax (Rs.)	Amount (Inclusive of Tax) (Rs.)
A.	FOOD TECHNOLOGY (NUTRIGENOMICS) LABORATORY EQUIPMENTS (Form-2A and/or Form-2B)			
B.	Comprehensive Annual Maintenance (Annexure-IV)			
	Total (Rs.)			
Total Price Bid (exclusive of taxes) (in Words)				
(Rupees.....)				
Total Price of Bid (Inclusive of taxes) (In Words)				
(Rupees.....)				
Signature of bidder		.....		
Name & Address		..... ..... .....		
Note :	Date	.....		
i)	Discount or any other offers affecting the package price must be mentioned here only. Discount or any other offers affecting the package price mentioned at any other place of the bid will not be considered.			
ii)	In case of discrepancy between unit price and total price, the unit price shall prevail.			
iii)	Bids shall be evaluated based on total price without taxes.			

## FORM-2A (FINANCIAL BID)

ANNEXURE – I

### PRICE SCHEDULED FOR GOODS TO BE IMPORTED FROM ABROAD

Date: .....

Name of the Department:

Name of the Laboratory:

(A) Price Schedule: (Format used for imported items)

S. No.	Currency	Description and Specification of the Item	Qty. in Units	Unit Price	Agency Commission (If applicable)	Discount	Ex-works price	Packing + Handling + DOC + Inland Freight	FOB price	Insurance + Freight	CIF Price	Total Price
			(a)	(b)	(c)	(d)	(e)=(b+c-d)	(f)	(g)=(e+f)	(h)	(i) = (g+h)	(j) = (i*a)
	INR			(i)In Figures: (ii)In words:								

Total Price of Bid (In Words) .....	
Signature of bidder	
Name & Address	
Date	

**Note:**

1. The above financial template should be strictly followed. Any deviation from the above template (in terms of description and specification of the item) may debar the bidder at sole discretion of EdCIL.
2. Discount or any other offers affecting the package price must be mentioned here only. Discount or any other offers affecting the package price mentioned at any other place of the bid will not be considered.
3. In case of discrepancy between unit price and total price, the unit price shall prevail. Bids shall be evaluated based on total price including all charges as CIF Price.



## FORM-2B

## ANNEXURE-II

**PRICE SCHEDULED FOR INDIGENOUS GOODS****Price Schedule: (Format used for indigenous items).**

S. No.	Description and Specification of the Item	Qty. in Units	Unit Price in Rs.	Excise Duty %	CST/ VAT %	Insurance other duties and taxes if any,	Packing and Inland Transportation	CIF Price	Total Price in Rs. (Excluding Taxes)	Total Price in Rs. (Including Taxes)
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)=(b*a)	(i) = (g *a)
			(i)In Figures: (ii)In words:							
<b>Total Price of Bid (In Words) .....</b>										
<b>Signature of bidder</b>				.....						
<b>Name &amp; Address</b>				.....						
<b>Date</b>				.....						
<b>Note:</b> 1. <i>The above financial template should be strictly followed. Any deviation from the above template (in terms of description and specification of the item) may debar the bidder at sole discretion of EdCIL.</i> 2. <i>Discount or any other offers affecting the package price must be mentioned here only. Discount or any other offers affecting the package price mentioned at any other place of the bid will not be considered.</i> 3. <i>In case of discrepancy between unit price and total price, the unit price shall prevail.</i> 4. <i>Bids shall be evaluated based on total price including all charges as CIF Price.</i>										

**ANNEXURE – III**
**COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT PRICES SCHEDULE**

S. No.	Item Description	2 <sup>nd</sup> Yr.	3 <sup>rd</sup> Yr.	Total Comprehensive Annual Maintenance Contract for 2 years(2 <sup>nd</sup> year & 3 <sup>rd</sup> year) after warranty period of 1 year from the date of successful installation. (E= C+D)
A	B	C	D	E
1.	Equipment: Make: Model: Qty.: (Mention Total quantity from Annexure-VI)			
<b>SUB-TOTAL(Rs.)</b> (Carry forwarded to Summary)				
Sub-Total Price Bid (exclusive of taxes) (in Words) (Rupees.....)				
Sub-Total Price of Bid (Inclusive of taxes) (In Words) (Rupees.....)				
Signature of bidder		.....		
Name & Address		..... .....		
Note:	Date	.....		
i)	<i>Discount or any other offers affecting the package price must be mentioned here only. Discount or any other offers affecting the package price mentioned at any other place of the bid will not be considered.</i>			
ii)	<i>In case of discrepancy between unit price and total price, the unit price shall prevail.</i>			
iii)	<i>Bids shall be evaluated based on total price without taxes.</i>			

**Note:**

- The above rates shall be included in computing the total cost of the equipments.*
- Agency to use separate sheet for each equipment/Item/package.*

**ANNEXURE-IV**

**DETAILED TECHNICAL SPECIFICATIONS  
FOOD TECHNOLOGY (NUTRIGENOMICS) LABORATORY EQUIPMENTS**

**1. ELISA Reader:**

S. No.	Technical Specification	
1	Indication Range	0.000 to 3.500 O.D.
2	Resolution	0.001 O.D.
3	Accuracy	±2% or 0.007 O.D. for single wavelength reading ±3.0% or 0.020 O.D. for dual wavelength reading
4	Linearity	±3.0% from 0.000 to 3.000 O.D.
5	Reproducibility	± 1.0% or 0.005 O.D.
6	Printer	Built in Thermal printer
7	Memory Backups	With > 200 Programmes and > 2000 Test results
8	Stability and Drift	Automatic calibration before each plate reading
9	Power	100-240 volts AC
10	Operating Temperature	5° to 35°C or better
11	Photometric Methods	Single and dual wavelength
12	Display & Key Pad	LCD Display with Touch Screen & key pad Operation
13	Photo detector & Optical System	Silicon photodiodes with 8 Channels
14	Light Source	Tungsten halogen lamp
15	Spectral Range	400 nm to 700 nm or better
16	Filters	405nm , 450nm 492nm and 630nm
17	Compatible Plates	Polystyrene flat, U and V bottom
18	Computer Interface	Bi-directional

**2. ELISA Washer:**

S. No.	Technical Specification	
1	Elisa Plate Washer	Automatic with Wash, Waste & Rinse
2	Manifold	Removable 8 way Autoclavable Manifold
3	Incubation	With built in Incubator for 2 Elisa Plates @ 37° C.
4	Shaker & Timer	Multi Step Shaking with Individual Timer
5	Memory	50-100 Open channels for Wash Programming
6	Display	10-16 Digits alphanumerical Display
7	Washing Method	Plate wash Strip Wash Bottom Wash & Over Flow wash.

8	Residual Volume	Less than 1 ml or better
9	Power	230 V / 50 Hz AC Power Supply

### 3. Refrigerated Centrifuge:

S. No.	Technical Specification	
1	Refrigerated Table Top Micro Centrifuge, incl. rotor.	
2	24 position centrifuge for 1.5/2.0 ml tubes	
3	Maximum Rotational Speed	15000-20000 rpm or better
4	Maximum RCF	20000-26000*g or better
5	Temperature	-9°C to +40 °C
6	Noise level	< 55 dB (A)
7	Power supply	230V/50-60Hz
8	Power Consumption	max. 500 W
9	Dimension (WxDxH)	300x 460 x 250 mm
10	LCD digital display for RPM/RCF, timer and temperature setting and actual run conditions should be displayed.	
11	Standard rotor 24 x 1.5/2.0ml with lid pre cooling of the centrifuge	
12	Separate Short-spin button - for fast and short spins	

### 4. Centrifuge:

S. No.	Technical Specification	
1	With standard rotor with Auto Lock rotor system	
2	8x15ml rotor head and 4x50ml rotor head or better	
3	Maximum Rotational Speed: 6,000 /min or better	
4	Relative centrifugal force (RCF): 5,100 g or better	
5	Should operates on 230V/50-60Hz power supply	

### 5. Autoclave:

S. No.	Technical Specification	
1	Microprocessor PID control graphical display	
2	Capacity: 30-35 L	
3	Operational temperature for Sterilization: 100 - 140°C or better	
4	Maximum operating pressure: 35 psi or better	
5	Material of internal chamber: Chamber should be made of 316 grade Stainless steel	

6	Material of enclosure: Steel with melamine resin/ Heat-resistance plastic
7	Outer Dimensions (WXDXH): 550mm x 550mm x 850mm or better
8	Stainless wire basket (30Φ×20cm) two pcs
9	Power: Should operatable on AC 230V, Single phase 50/60 Hz
10	System should have Interlock system, Electro mechanical lock system, Double check system of lid close, over pressure detector, Over Temperature detector, Water lack preventer, Sensor break indicator, Abnormal time indicator, Memory of power failure, Safety valve, Breaker for slight leakage, over current & short circuit
11	All the Alarm should be Audio-visual
12	Safety valve: 35 psi
13	Water test pressure: 70 psi
14	<b><u>Accessories required:</u></b> <ul style="list-style-type: none"> <li>• System should have Drain hose &amp; water supply hose</li> <li>• Temperature Char recorder : 1 nos.</li> <li>• Dressing Drum : 1 nos.</li> <li>• Sterilization Indication Tap : 1 nos.</li> <li>• Autoclave Bag : 1 nos.</li> </ul>

## 6. BOD Incubator:

S. No.	Technical Specification
1	Capacity: 170 ltrs. or better
2	Internal size HxWxD (in mm): 800 x 500 x 400mm or better
3	Internal Chamber: Chamber should be made of Stainless Steel 304 grade or better, appropriately insulated
4	Outer Wall: Should be Rust/ Corrosion free
5	Operating Temperature Range: 5° C to 70°C or better
6	Controller accuracy: ±1°C
7	Air Circulation: Should be provided with two air circulating fans
8	Should have High performance compressor
9	Should have Cooling coils
10	Should have Heating elements
11	Controller: Should have Digital Display Temperature Controller
12	Should have a display fitted with a door operated illumination lamp
13	Should have caster wheels for easy mobility
14	Should have Audio-visual alarms
15	Shelves: System should have adjustable 3 shelves or better
16	Should have CNC free refrigeration system
17	Should have Humidity control for chamber
18	Power: Should operatable on 230 V and 50 Hz

## 7. Laminar Flow (Vertical):

S. No.	Technical Specification
1	Laminar Air Flow Cabinet (Vertical type)
2	Cabinet Type: Stainless steel table top
3	Should have 1 nos. of HEPA filters with 99.99% efficiency for particles $>0.3 \mu\text{m}$
4	Should have 1 nos. of Pre-filters with 85% efficiency for particles $>0.5 \mu\text{m}$ (Washable)
5	Should be provided with U.V. light in work area
6	Should have Auto switch On/Off for U.V. Light/Tube
7	Should have Pre-installed Static pressure manometer
8	System should have Cock for gas and air or vacuum line
9	Working Area : 4'x2'x2'
10	Size of HEPA filter : 4'x2'x6"
11	Illumination 1x20W
12	UV Tube 1-1½x15W
13	Power supply: 220-230 V, 50 Hz

## 8. Laminar Flow (Horizontal):

S. No.	Technical Specification
1	Laminar Air Flow Cabinet (Horizontal type)
2	Cabinet Type: Stainless steel table top
3	Should have 1 nos. of HEPA filters with 99.99% efficiency for particles $>0.3 \mu\text{m}$
4	Should have 1 nos. of Pre-filters with 85% efficiency for particles $>0.5 \mu\text{m}$ (Washable)
5	Should be provided with U.V. light in work area
6	Should have Auto switch On/Off for U.V. Light/Tube
7	Should have Pre-installed Static pressure manometer
8	System should have Cock for gas and air or vacuum line
9	Working Area : 4'x2'x2'
10	Size of HEPA filter : 4'x2'x6"
11	Illumination 1x20W
12	UV Tube 1-1½x15W
13	Power supply: 220-230 V, 50 Hz

## 9. Ultra Sound Bath:

S. No.	Technical Specification
1	Tank Volume Capacity Approx 12 liters
2	Variable frequency 25 and 45kHz

3	Should have cavitations resistant stainless steel tank.
4	Should have variable ultrasonic frequency that is switchable
5	Heating facility up to 80°C should be available
6	Degas, Sweep and pulse mode facility should be available
7	Drain duct should be provided with a stop handle
8	Should have ultrasonic timer
9	System shall be an Ultra Sonic Machine with Ultra sonic Bath
10	Noise emitted should be minimal
11	All the spares like cover, stainless steel basket, power cord etc. should be provided
12	Should work with 230V, 50-60Hz power supply

#### 10. PCR Machine:

S. No.	Technical Specification
1	Should have a sample capacity of 96x0.2 ml tubes, 0.2 ml tube strips or 1x96-well plate
2	Peltier heating and cooling for uniform temp control
3	Should have gradient capability.
4	Should have the feature of dynamic ramping (identical hold times) for all the 8 rows of a gradient
5	Should have touch screen interface which can displays graphics in high resolution for easy programming
6	Should be capable of running reaction volumes from 1-100 µl or better
7	Should have a maximum ramp rate of 4°C/second with an average ramp rate of 3°C/second
8	Should have a temperature range of 4°- 100°C or better
9	Should have a gradient range of 30°- 100°C
10	Should have a temperature accuracy of ±0.2°C and uniformity of ±0.5°C or better
11	Should have a memory of >500 programs with further expansion through a USB Flash drive for transfer of files
12	Should have block and calculated temperature control modes
13	The software should have exportable Run logs and system error logs
14	Should be quiet in operation
15	System should have built in library of standard protocols for long PCR, fast PCR, reverse transcription PCR etc
16	Should have the feature of “instant incubation” to keep samples at constant temp for ligation and restriction digests
17	Should have power save mode
18	Should be compatible with all kind of plastic consumables and reagents especially reusable sealing Mats
19	Should be licensed for both diagnostic and research applications. A copy of license should be attached

### 11. Ice Machine:

S. No.	Technical Specification
1	Bench top model ice making machine with fast temperature function for rapid cooling chamber. The system should have the following features:
2	Stainless steel body and reentering door
3	Max. Product/24hr: 85 Kg Bin or better
4	Capacity: 40 Kg or better
5	Production start time: 5-10 minutes.
6	Type of ice: flakes.
7	Built-in insulated storage bin for maximum ice preservation
8	Designed for continuous production of ice throughout the day.
9	Environmental friendly CFC free cooling.
10	Micro processor based temperature control.
11	Safety protection from water supply
12	Low water and energy consumption

### 12. Refrigerator:

S. No.	Technical Specification	
1	Capacity	300L
2	Temperature Range	+1°C to +10°C
3	Alarm	Audible and visual high and low temperature
4	Shelves	Adjustable 6 or more
5	Door	Single Solid
6	Refrigeration system	Should be CNC free
7	Caster wheels	Should be provided for easy movement
8	Internal Chamber	Should be made of 304 grade SS
9	External Wall	Should be made of Mild Steel with Epoxy powder coated and Rust/ Corrosion free material
10	Power supply	AC 230 V, 50 Hz

### 13. Co<sub>2</sub> Incubator:

S. No.	Technical Specification	
1	Working temperature range	+5°C to +50 °C with ± 0.1°C Accuracy or better
2	Humidity	40 to 93 % RH DISPLAY
3	Capacity	150 - 180 Ltr or better

4	Jacket & Sensor	Air jacketed Heating system with T/c Sensor
5	CO <sub>2</sub> -Concentration	0 to 20 % with $\pm 0.1\%$ Accuracy or better
6	O <sub>2</sub> -Concentration	1 to 20 % or better
7	System should have built-in moist or dry heat decontamination (sterilization) facility to remove bacteria, fungi, spores, mycoplasma etc. without the need of removing sensor, fan or any other fitting.	
8	It should have with minimum 3 nos. or more adjustable height stainless steel perforated shelves	
9	It should be supplied with access port to allow any cable, plug or tubing to be easily inserted into or out of the chamber	
10	Interior chamber should be made of stainless steel with electropolish finish to have highest quality of inner surface with rounded corners on all sides for easy cleaning. The shelves and fan impeller also should be made of stainless steel and should not have nuts or bolts for shelf supports to reduce the scope of growth of contamination. No plastic should be inside to avoid volatile organic compounds (VOC).	
11	Unit should have appropriate filter (HEPA etc.) to eliminate biological organisms/contaminants and VOCs	
12	Built-in audible and visual water level alarm should be available when the water reservoir needs to be refilled to ensure a constant high level of humidity and to prevent cultures from drying out	
13	The system should have digital display for both Temp. & CO <sub>2</sub> simultaneously.	
14	Data storage facility (at least 72 Hr.) to record parameters such as CO <sub>2</sub> /O <sub>2</sub> concentration, Temperature changes, door opening	
15	It should have RS-232 communication port & 25mm access port as standard features	
16	Should be suitable for 230V, single phase 50 Hz operation	

#### 14. Weighing Balance (0.01g Readability):

S. No.	Technical Specification	
1	Readability	0.01g
2	Weighing Capacity	upto 820 g or better
3	Repeatability	0.01g
4	Calibration	Internal with battery back-up
5	Display	Easy to read LCD display with backlight

#### 15. Weighing Balance (0.001g Readability):

S. No.	Technical Specification	
1	Readability	0.001g,
2	Weighing Capacity	upto 420 g or better
3	Repeatability	0.001g
4	Calibration	Internal with battery back-up
5	Display	Easy to read LCD display with backlight

**16. Weighing Balance (0.0001g Readability):**

S. No.	Technical Specification	
1	Readability	0.0001g
2	Weighing Capacity	upto 220 g or better
3	Repeatability	0.0001g
4	Calibration	Internal with battery back-up
5	Display	Easy to read LCD display with backlight

**17. Deep freezer (-20°C):**

S. No.	Technical Specification	
1	Temperature	-20°C or better
2	Mode	Vertical
3	Capacity	150L or better
4	Temperature Controller	Microprocessor digital controller
5	Alarm	Audio-visual alarm should be present for temperature variation
6	Refrigeration system	Should be CNC free
7	Caster wheels	Should be provided for easy movement
8	Internal Chamber	Should be made of 304 grade SS
9	External Wall	Should be made of Mild Steel with Epoxy powder coated and Rust/ Corrosion free material
10	Power supply	AC 230 V, 50 Hz

### TECHNICAL COMPLIANCE REPORT

#### 1. Elisa Reader

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Indication Range	0.000 to 3.500 O.D.		
2	Resolution	0.001 O.D.		
3	Accuracy	±2% or 0.007 O.D. for single wavelength reading ±3.0% or 0.020 O.D. for dual wavelength reading		
4	Linearity	±3.0% from 0.000 to 3.000 O.D.		
5	Reproducibility	± 1.0% or 0.005 O.D.		
6	Printer	Built in Thermal printer		
7	Memory Backups	With > 200 Programmes and > 2000 Test results		
8	Stability and Drift	Automatic calibration before each plate reading		
9	Power	100-240 volts AC		
10	Operating Temperature	5° to 35°C or better		
11	Photometric Methods	Single and dual wavelength		
12	Display & Key Pad	LCD Display with Touch Screen & key pad Operation		
13	Photo detector & Optical System	Silicon photodiodes with 8 Channels		
14	Light Source	Tungsten halogen lamp		
15	Spectral Range	400 nm to 700 nm or better		
16	Filters	405nm , 450nm 492nm and 630nm		
17	Compatible Plates	Polystyrene flat, U and V bottom		
18	Computer Interface	Bi-directional		

## 2. ELISA Washer:

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Elisa Plate Washer	Automatic with Wash, Waste & Rinse		
2	Manifold	Removable 8 way Autoclavable Manifold		
3	Incubation	With built in Incubator for 2 Elisa Plates @ 37° C.		
4	Shaker & Timer	Multi Step Shaking with Individual Timer		
5	Memory	50-100 Open channels for Wash Programming		
6	Display	10-16 Digits alphanumerical Display		
7	Washing Method	Plate wash Strip Wash Bottom Wash & Over Flow wash.		
8	Residual Volume	Less than 1 ml or better		
9	Power	230 V / 50 Hz AC Power Supply		

## 3. Refrigerated Centrifuge:

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Refrigerated Table Top Micro Centrifuge, incl. rotor.			
2	24 position centrifuge for 1.5/2.0 ml tubes			
3	Maximum Rotational Speed	15000-20000 rpm or better		
4	Maximum RCF	20000-26000*g or better		
5	Temperature	-9°C to +40°C		
6	Noise level	< 55 dB (A)		
7	Power supply	230V/50-60Hz		
8	Power Consumption	max. 500 W		
9	Dimension (WxDxH)	300 x 460 x 250 mm		
10	LCD digital display for RPM/RCF, timer and temperature setting and actual run conditions should be displayed.			
11	Standard rotor 24 x 1.5/2.0ml with lid pre cooling of the centrifuge			
12	Separate Short-spin button - for fast and short spins			

#### 4. Centrifuge:

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	With standard rotor with Auto Lock rotor system		
2	8x15ml rotor head and 4x50ml rotor head or better		
3	Maximum Rotational Speed: 6,000 /min or better		
4	Relative centrifugal force (RCF): 5,100 g or better		
5	Should operates on 230V/50-60Hz power supply		

#### 5. Autoclave:

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Microprocessor PID control graphical display		
2	Capacity: 30-35 L		
3	Operational temperature for Sterilization: 100 - 140°C or better		
4	Maximum operating pressure: 35 psi or better		
5	Material of internal chamber: Chamber should be made of 316 grade Stainless steel		
6	Material of enclosure: Steel with melamine resin/ Heat-resistance plastic		
7	Outer Dimensions (WXDXH): 550mm x 550mm x 850mm or better		
8	Stainless wire basket (30Φ×20cm) two pcs		
9	Power: Should operatable on AC 230V, Single phase 50/60 Hz		
10	System should have Interlock system, Electro mechanical lock system, Double check system of lid close, over pressure detector, Over Temperature detector, Water lack preventer, Sensor break indicator, Abnormal time indicator, Memory of power failure, Safety valve, Breaker for slight leakage, over current & short circuit		
11	All the Alarm should be Audio-visual		
12	Safety valve: 35 psi		
13	Water test pressure: 70 psi		
14	<b>Accessories required:</b> • System should have Drain hose & water supply hose		

	<ul style="list-style-type: none"> <li>• Temperature Char recorder : 1 nos.</li> <li>• Dressing Drum : 1 nos.</li> <li>• Sterilization Indication Tap : 1 nos.</li> <li>• Autoclave Bag : 1 nos.</li> </ul>		
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#### 6. BOD Incubator:

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Capacity: 170 ltrs. or better		
2	Internal size HxWxD (in mm): 800 x 500 x 400mm or better		
3	Internal Chamber: Chamber should be made of Stainless Steel 304 grade or better, appropriately insulated		
4	Outer Wall: Should be Rust/ Corrosion free		
5	Operating Temperature Range: 5° C to 70°C or better		
6	Controller accuracy: $\pm 1^{\circ}\text{C}$		
7	Air Circulation: Should be provided with two air circulating fans		
8	Should have High performance compressor		
9	Should have Cooling coils		
10	Should have Heating elements		
11	Controller: Should have Digital Display Temperature Controller		
12	Should have a display fitted with a door operated illumination lamp		
13	Should have caster wheels for easy mobility		
14	Should have Audio-visual alarms		
15	Shelves: System should have adjustable 3 shelves or better		
16	Should have CNC free refrigeration system		
17	Should have Humidity control for chamber		
18	Power: Should be operatable on 230 V and 50 Hz		

#### 7. Laminar Flow (Vertical):

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Laminar Air Flow Cabinet (Vertical type)		
2	Cabinet Type: Stainless steel table top		
3	Should have 1 nos. of HEPA filters with 99.99%		

	efficiency for particles >0.3 µm		
4	Should have 1 nos. of Pre-filters with 85% efficiency for particles >0.5 µm (Washable)		
5	Should be provided with U.V. light in work area		
6	Should have Auto switch On/Off for U.V. Light/Tube		
7	Should have Pre-installed Static pressure manometer		
8	System should have Cock for gas and air or vacuum line		
9	Working Area : 4'x2'x2'		
10	Size of HEPA filter : 4'x2'x6"		
11	Illumination 1x20W		
12	UV Tube 1-1½x15W		
13	Power supply: 220-230 V, 50 Hz		

### 8. Laminar Flow (Horizontal):

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Laminar Air Flow Cabinet (Horizontal type)		
2	Cabinet Type: Stainless steel table top		
3	Should have 1 nos. of HEPA filters with 99.99% efficiency for particles >0.3 µm		
4	Should have 1 nos. of Pre-filters with 85% efficiency for particles >0.5 µm (Washable)		
5	Should be provided with U.V. light in work area		
6	Should have Auto switch On/Off for U.V. Light/Tube		
7	Should have Pre-installed Static pressure manometer		
8	System should have Cock for gas and air or vacuum line		
9	Working Area : 4'x2'x2'		
10	Size of HEPA filter : 4'x2'x6"		
11	Illumination 1x20W		
12	UV Tube 1-1½x15W		
13	Power supply: 220-230 V, 50 Hz		

### 9. Ultra Sound Bath:

S. No.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Tank Volume Capacity Approx 12 liters		
2	Variable frequency 25 and 45kHz		

3	Should have cavitations resistant stainless steel tank.		
4	Should have variable ultrasonic frequency that is switchable		
5	Heating facility up to 80°C should be available		
6	Degas, Sweep and pulse mode facility should be available		
7	Drain duct should be provided with a stop handle		
8	Should have ultrasonic timer		
9	System shall be an Ultra Sonic Machine with Ultra sonic Bath		
10	Noise emitted should be minimal		
11	All the spares like cover, stainless steel basket, power cord etc. should be provided		
12	Should work with 230V, 50-60Hz power supply		

#### 10. PCR Machine:

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Should have a sample capacity of 96x0.2 ml tubes, 0.2 ml tube strips or 1x96-well plate		
2	Peltier heating and cooling for uniform temp control		
3	Should have gradient capability.		
4	Should have the feature of dynamic ramping (identical hold times) for all the 8 rows of a gradient		
5	Should have touch screen interface which can displays graphics in high resolution for easy programming		
6	Should be capable of running reaction volumes from 1-100 µl or better		
7	Should have a maximum ramp rate of 4°C/second with an average ramp rate of 3°C/second		
8	Should have a temperature range of 4°- 100°C or better		
9	Should have a gradient range of 30°- 100°C		
10	Should have a temperature accuracy of ±0.2°C and uniformity of ±0.5°C or better		
11	Should have a memory of >500 programs with further expansion through a USB Flash drive for transfer of files		
12	Should have block and calculated temperature control modes		
13	The software should have exportable Run logs and system error logs		
14	Should be quiet in operation		
15	System should have built in library of standard protocols for long PCR, fast PCR, reverse transcription PCR etc		

16	Should have the feature of “instant incubation” to keep samples at constant temp for ligation and restriction digests		
17	Should have power save mode		
18	Should be compatible with all kind of plastic consumables and reagents especially reusable sealing Mats		
19	Should be licensed for both diagnostic and research applications. A copy of license should be attached		

### 11. Ice Machine:

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Bench top model ice making machine with fast temperature function for rapid cooling chamber. The system should have the following features:		
2	Stainless steel body and reentering door		
3	Max. Product/24hr: 85 Kg Bin or better		
4	Capacity: 40 Kg or better		
5	Production start time: 5-10 minutes.		
6	Type of ice: flakes.		
7	Built-in insulated storage bin for maximum ice preservation		
8	Designed for continuous production of ice throughout the day.		
9	Environmental friendly CFC free cooling.		
10	Micro processor based temperature control.		
11	Safety protection from water supply		
12	Low water and energy consumption		

### 12. Refrigerator:

S. no.	Specification	Numerical values or other specification	Whether comply Yes/No
1	Capacity	300L	
2	Temperature Range	+1°C to +10°C	
3	Alarm	Audible and visual high and low temperature	
4	Shelves	Adjustable 6 or more	
5	Door	Single Solid	

6	Refrigeration system	Should be CNC free		
7	Caster wheels	Should be provided for easy movement		
8	Internal Chamber	Should be made of 304 grade SS		
9	External Wall	Should be made of Mild Steel with Epoxy powder coated and Rust/Corrosion free material		
10	Power supply	AC 230 V, 50 Hz		

### 13. CO<sub>2</sub> Incubator:

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Working temperature range	+5°C to +50 °C with $\pm 0.1^\circ\text{C}$ Accuracy or better		
2	Humidity	40 to 93 % RH DISPLAY		
3	Capacity	150 - 180 Ltr or better		
4	Jacket & Sensor	Air jacketed Heating system with T/c Sensor		
5	CO <sub>2</sub> -Concentration	0 to 20 % with $\pm 0.1\%$ Accuracy or better		
6	O <sub>2</sub> -Concentration	1 to 20 % or better		
7	System should have built-in moist or dry heat decontamination (sterilization) facility to remove bacteria, fungi, spores, mycoplasma etc. without the need of removing sensor, fan or any other fitting.			
8	It should have with minimum 3 nos. or more adjustable height stainless steel perforated shelves			
9	It should be supplied with access port to allow any cable, plug or tubing to be easily inserted into or out of the chamber			
10	Interior chamber should be made of stainless steel with electropolish finish to have highest quality of inner surface with rounded corners on all sides for easy cleaning. The shelves and fan impeller also should be made of stainless steel and should not have nuts or bolts for shelf supports to reduce the scope of growth of contamination. No plastic should be inside to avoid volatile organic compounds (VOC).			
11	Unit should have appropriate filter (HEPA etc.) to eliminate biological organisms/ contaminants and VOCs			
12	Built-in audible and visual water level alarm should be available when the water reservoir needs to be refilled to ensure a constant high level of humidity and to prevent cultures from drying out			

13	The system should have digital display for both Temp. & CO <sub>2</sub> simultaneously.		
14	Data storage facility (at least 72 Hr.) to record parameters such as CO <sub>2</sub> /O <sub>2</sub> concentration, Temperature changes, door opening		
15	It should have RS-232 communication port & 25mm access port as standard features		
16	Should be suitable for 230V, single phase 50 Hz operation		

#### 14. Weighing Balance (0.01g Readability):

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Readability	0.01g		
2	Weighing Capacity	Up to 820 g or better		
3	Repeatability	0.01g		
4	Calibration	Internal with battery back-up		
5	Display	Easy to read LCD display with backlight		

#### 15. Weighing Balance (0.001g Readability):

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Readability	0.001g,		
2	Weighing Capacity	Up to 420 g or better		
3	Repeatability	0.001g		
4	Calibration	Internal with battery back-up		
5	Display	Easy to read LCD display with backlight		

#### 16. Weighing Balance (0.0001g Readability):

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Readability	0.0001g		
2	Weighing Capacity	Up to 220 g or better		

3	Repeatability	0.0001g		
4	Calibration	Internal with battery back-up		
5	Display	Easy to read LCD display with backlight		

### 17. Deep freezer (-20°C):

S. no.	Specification		Numerical values or other specification	Whether comply Yes/No
1	Temperature	-20°C or better		
2	Mode	Vertical		
3	Capacity	150L or better		
4	Temperature Controller	Microprocessor digital controller		
5	Alarm	Audio-visual alarm should be present for temperature variation		
6	Refrigeration system	Should be CNC free		
7	Caster wheels	Should be provided for easy movement		
8	Internal Chamber	Should be made of 304 grade SS		
9	External Wall	Should be made of Mild Steel with Epoxy powder coated and Rust/Corrosion free material		
10	Power supply	AC 230 V, 50 Hz		

**ANNEXURE-VI**
**DETAILS OF EQUIPMENTS TO BE SUPPLIED AT VARIOUS IKGPTU CAMPUSES:**

S. No.	Name of the Equipment	Unit	Kapurthala	Amritsar	Batala	Bhikhiwind	Dinanagar	Hoshiarpur	Total Quantity
1	ELISA Reader	No.	1	-	-	-	-	-	1
2	ELISA Washer	No.	1	-	-	-	-	-	1
3	Refrigerated Centrifuge	No.	1	-	-	-	-	-	1
4	Centrifuge	No.	1	-	-	-	-	-	1
5	Autoclave	No.	1	-	-	-	-	-	1
6	BOD Incubator	No.	1	-	-	-	-	-	1
7	Laminar Flow (Vertical)	No.	1	-	-	-	-	-	1
8	Laminar Flow (Horizontal)	No.	1	-	-	-	-	-	1
9	Ultra Sound Bath	No.	1	-	-	-	-	-	1
10	PCR Machine	No.	1	-	-	-	-	-	1
11	Ice Machine	No.	1	-	-	-	-	-	1
12	Refrigerator	No.	3	-	-	-	-	-	3
13	CO <sub>2</sub> Incubator	No.	1	-	-	-	-	-	1
14	Weighing Balance (0.01g Readability)	No.	1	-	-	-	-	-	1
15	Weighing Balance (0.001g Readability)	No.	1	-	-	-	-	-	1
16	Weighing Balance (0.0001g Readability)	No.	1	-	-	-	-	-	1
17	Deep Freezer (-20°C)	No.	1	-	-	-	-	-	1