

**NAME OF WORK: SITC OF UPS SYSTEM FOR INSTITUTE OF NANO SCIENCE & TECHNOLOGY AT KNOWLEDGE CITY, SECTOR-81, MOHALI, PUNJAB-140306
No. 15(7)/INST-2019/1767 Dated 23/24-12-2019**

S.NO	Document No	Page No	Serial No or Clause No	Specification	Query/clarification	INST Reply/Clarifications
1	UPS-INST-MOHALI PUNJAB-30-12-2019	44	1.3.1 (2)	Modular & Scalable UPS with hot swappable Power Module rating with Hot swappable STS Module, controller & Aux Power Board.	Eaton shall offer field proven model 93PR running from more than 6years in Indian condition. Eaton UPS shall be 200KVA UPS & 25KVA/KW modules. Cabinet of 450KVA is very new to implement on critical application. Eaton UPS shall have hot swappable module with individual controller. It shall eliminate the requirement of Hot swappable controller and also eliminated single point of failure. Hot swappable static modules has no use as it don't have any redundant modules and its less reliable with respect to fix static switch. Kindly allow to quote fix type static switch	No change, Please follow Tender Specifications
2	UPS-INST-MOHALI PUNJAB-30-12-2019	50	TECHNICAL ANNEXURE FOR MODULAR UPS SYSTEM	250KVA UPS in minimum 450KVA cabinet 3phase Input/3phase output	Total module requirement 2X250KVA-500KVA/KW & Total cabinet requirement=2X450KVA=900KVA. So kindly allow us to 4X200KVA/KW cabinet with 4X5X25KVA modules.	No change, Please follow Tender Specifications
3	UPS-INST-MOHALI PUNJAB-30-12-2019	50	TECHNICAL ANNEXURE FOR MODULAR UPS SYSTEM (1)	200KW modular UPS in Minimum 300KW cabinet	Total Module requirement=2X200=400KVA/KW & Total cabinet requirement=2X300=600KVA/KW. Kindly allow us to quote 3X200KVA/KW cabinet with 8X25KVA/KW module. It shall have better redundancy & availability.	No change, Please follow Tender Specifications
4	UPS-INST-MOHALI PUNJAB-30-12-2019	52	TECHNICAL ANNEXURE FOR MODULAR UPS SYSTEM (3.3)	Input voltage range 315-470V	Input voltage shall be 340V-480V. However it shall be 240-480 at 50% load. In case of parallel UPS load on each UPS shall be <50%. Kindly allow us to quote	No change, Please follow Tender Specifications
5	UPS-INST-MOHALI PUNJAB-30-12-2019	53	TECHNICAL ANNEXURE FOR MODULAR UPS SYSTEM (7.1)	Over all peak efficiency 96.5%	Over all efficiency is dependent on load. Maximum efficiency of Eaton UPS shall be >96% at 70-80% load. Kindly allow us to quote	No change, Please follow Tender Specifications
6	UPS-INST-MOHALI PUNJAB-30-12-2019	54	TECHNICAL ANNEXURE FOR MODULAR UPS SYSTEM (7.1)	Over all efficiency at 25% =96%	Over all efficiency at 25 % load shall be 95.5-96% while configured in VMMS mode. Kindly allow to quote	No change, Please follow Tender Specifications
7	UPS-INST-MOHALI PUNJAB-30-12-2019	54	TECHNICAL ANNEXURE FOR MODULAR UPS SYSTEM (8.1)	Overload 125%-10mins % 150%-1Mins	Overload of Eaton UPS 110%-10mins, 125% for 1min, 150% for 3seconds. Kindly allow us to quote	No change, Please follow Tender Specifications
8	UPS-INST-MOHALI PUNJAB-30-12-2019	65	LIST OF APPROVED MAKES	SCHNEIDER, ABB, VERTIV, MITSUBISHI	Kindly add EATON make in Approved List .	INST to Decide
9	UPS Systems	Technical Specifications	Point No 2d Page 2(250 kVA)	Parallel capability up to ten no. of Power Modules for Vertical redundancy & up to six UPS units for capacity	As per industry standards it should be"Parallel capability up to 9 no. of Power Modules for Vertical redundancy & up to 8 UPS units for capacity	No change. Please follow Tender Specification
10	UPS Systems	Technical Specifications	Point No 2d Page 2(200 kVA)	Parallel capability up to 6 no. of Power Modules for Vertical redundancy & up to six UPS units for capacity	As per industry standards it should be"Parallel capability up to 6 no. of Power Modules for Vertical redundancy & up to 8 UPS units for capacity	No change. Please follow Tender Specification

S.NO	Document No	Page No	Serial No or Clause No	Specification	Query/clarification	INST Reply/Clarifications
11	UPS Systems	Technical Specifications	Point No 2d Page 2(40 kVA)	Parallel capability up to 4 no. of Power Modules for Vertical redundancy & up to six UPS units for capacity	As per industry standards it should be"Parallel capability up to 4 no. of Power Modules for Vertical redundancy & up to 8 UPS units for capacity	No change. Please follow Tender Specification
12	UPS Systems	Technical Specifications	Point No 11.3 Page 14	Prismatic , Pouch, cylindrical	Cells can be either Prismatic OR Pouch OR cylindrical.However Prismatic is themally more stable and technically superior	Calls can be either Prismatic or pouch or cylindrical
13	UPS Systems	Specification for LIB	Point No 9.3 Page 18	UL 1642 (Underwriters Laboratories) – Standard for safety for lithium batteries	It should be UL 1642/IEC 62619/EQUIVALENT.Equivalent already mentioned in 11.9 Page 14 of UPS Specifications	UL 1642 is replaced with IEC 62619 wherever mentioned in the tender
14	UPS Systems	Specification for LIB	Point No 9.6 Page 19	The battery system shall be Listed by Underwriters Laboratories in accordance with UL 1973/UL 1642.	It should be UL 1642/IEC 62619/EQUIVALENT.Equivalent already mentioned in 11.9 Page 14 of UPS Specifications	UL 1642 is replaced with IEC 62619 wherever mentioned in the tender
15	UPS Systems	Specification for LIB	Point No 10.4 Page 20	Battery status display: Battery cabinet shall feature a LCD status display. This display shall describe alarms and status conditions.	As per Industry standards Alarms and Status conditions should be available on UPS Display only for better operation,maintainance etc	Battery status display : It shall be available either on battery cabinet or UPS display.
16	Execution	Execution	Point No 11.2 A Page 21	Factory start-up shall be provided on a 5x8 basis (7 x 24 optional).	It should be Start up at site	NO change.
17	List of Approved Makes	Modular UPS	Point No 1 Page 23	Modular UPS makes	We wish to bring to your kind notice that under the List of Acceptable Makes for UPS System, our brand "Delta" i.e Delta Electronics India Pvt Ltd is not mentioned.In this context, we will be submitting herewith our few credentials like satisfactory reports and Appreciation certificates from our esteemed client including few Govt customers. The hard copy of the same are also being furnished here for your ready reference & use. We are also pleased to inform that Delta Electronics India Pvt Ltd is the manufacturer of UPS Systems raging from 1kva to 4800kva in India for more than 10 years. We have our dedicated team of Service engineers with presence all across India to support after Sales & Service support.	VERTIV,SCHNIDER, ABB,MITSUBISHI,BPE,RILLO,DELTA & EATON
18	List of Approved Makes	Modular UPS	Point No 2 Page 23	LITHIUM CELLS		SAMSUNG / LG / PANASONIC / DELTA

S.NO	Document No	Page No	Serial No or Clause No	Specification	Query/clarification	INST Reply/Clarifications
19	List of Approved Makes	Modular UPS	Point No 5 Page 23	LT PANELS		THE PANELS SHALL BE TYPE TESTED ASSEMBLY (TTA) PANELS FROM ANY OF THE AUTHORIZED CHANNEL PARTNERS OF OEMS- ABB, SIEMENS, SCHNEIDER, L&T. THE SUPPLIERS SHALL BE REQUIRED TO SUBMIT TEST CERTIFICATES OF IEC 61439-1&2 FOR ALL RATINGS ALONG WITH TEST CERTIFICATES OF SEISMIC ZONE-IV AS PER IEC.
20	List of Approved Makes	Lithium Cells	Point No 2 Page 23	SAMSUNG/LG/PANASONIC	As per industry standards Lithium battery cells should be of the manufacturer who is providing Lithium Battery systems.	Delta make of cells is added. Revised list of approved makes for cells is SAMSUNG/LG/PANASONIC/DELTA
21	Single Line Diagram UPS Distribution System	SLD		As per I/P and O/P Power Cabling for 200 kW UPS 2 runs of 3.5 Core 300 Sqmm Al Ar Cable XLPE Cable	It is recommended that Cu Flexible of 2 Runs of 4 core of 150 Sqmm Cu Flexible should be used as termination of Al Ar Cable at UPS end will be difficult.	2 Run of 4Core 150 sq.mm Cu. Flexible cable to be provided instead of Aluminium armoured cable.
22	Single Line Diagram UPS Distribution System	SLD		As per I/P and O/P Power Cabling for 300 kW UPS 2 runs of 3.5 Core 400 Sqmm Al Ar Cable XLPE Cable	It is recommended that Cu Flexible of 2 Runs of 4 core of 300 Sqmm Cu Flexible should be used as termination of Al Ar Cable at UPS end will be difficult.	2 Run of 4Core 300sq.mm Cu. Flexible cable to be provided instead of Aluminium armoured cable.
23	Single Line Diagram UPS Distribution System	SLD		In SLD 500 KW Cabinet Mentioned	It should be 450 KW Cabinet as mentioned in the technical specifications	OK, Cabinet size is 450KW
24	Single Line Diagram UPS Distribution System	SLD		40 kVA SLD	Please share SLD for 40 kVA UPS	Shall be provided during the execution of work .
25	Schedule of Quantities		Point No 1.2 Page 1	Battery Rating: Minimum 101 kWhr (Maximum 4 Cabinets)	It should be as per vendors Battery sizing Calculations	Battery Rating size revised to 93kWhr instead of 101kWhr
26	Schedule of Quantities		Point No 1.6 Page 1	Battery Rating: 1 Bank of min 25 kWhr (Maximum 1 Cabinet)	It should be as per vendors Battery sizing Calculations	Battery Rating size revised to 31kWhr instead of 25kWhr
27	Schedule of Quantities		Point No 1.3 Page 1		Completer BOQ not visible	Cabinet size of 300KW or higher to be added BOQ point no 1.3
28	Schedule of Quantities		Point No 1.4 Page 1		Completer BOQ not visible	Battery rating shall be minimum 75kWhr. In item no 1.4 page No-1 of BOQ.

S.NO	Document No	Page No	Serial No or Clause No	Specification	Query/clarification	INST Reply/Clarifications
29	Schedule of Quantities		Point No 1.2 Page 1	Sealed Maintenance Free Li Battery Bank (NMC) with each 250 kVA UPS for 15 Min on 250 kW Load	As per UPS technical specifications battery back up required is 15 min on 300kW as per page 3 point no 1.3.2.4	300kw is replaced with 250KW in page 3 point no.1.3.2.4 in Technical specification
30	Following item to be added					2 Run of 4Core 150 sq.mm Cu. Flexible cable to be provided instead of Aluminium armoured cable.
						2 Run of 4Core 300sq.mm Cu. Flexible cable to be provided instead of Aluminium armoured cable.

Modified Schedule of Quantities for SITC of UPS System for Institute of Nano Science & Technology at Knowledge City, Sector-81, Mohali, Punjab

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
1.0	MODULAR UPS WITH LITHIUM ION BATTERIES				
1.1	250 KVA/250 kW Modular UPS in Parallel Redundant configuration, IGBT/PWM technology based True Online double conversion and fully DSP based UPS system as per specifications enclosed and along with 2 Years Warranty: 1. IGBT Rectifier UPS and IGBT Inverter UPS 2. Hot Swapable modules 3. Input PF >=0.99 4. Overall efficiency of upto 96.5% 5. SNMP Card & BMS Card to be provided 6. Cabinet size of 450kW or higher	Set	2	3621300.00	72,42,600.00
1.2	Sealed Maintenance Free Li Battery Bank (NMC) with each 250 kVA UPS for 15 Min on 250 kW Load as per specifications enclosed and along with 5 Years Warranty: :- 1. Li Battery Cabintes,Breakers and Battery Monitoring System 2. Battery Interconnecting Links 3. Cabling for UPS to Battery Bank Battery Rating: Minimum 93 kWhr (Maximum 4 Cabinets)	Set	2	5677899.00	113,55,798.00
1.3	200 KVA / 200 kW Modular UPS in Parallel Redundant configuration, IGBT/PWM technology based True Online double conversion and fully DSP based UPS system as per specifications enclosed and along with 2 Years Warranty: 1. IGBT Rectifier UPS and IGBT Inverter UPS 2. Hot Swapable modules 3. Input PF >=0.99 4. Overall efficiency of upto 96.5% 5. SNMP Card & BMS Card to be provided 6. Cabinet size of min 300 kW or higher	Set	2	1990300.00	39,80,600.00
1.4	Sealed Maintenance Free Li Battery Bank (NMC) with each 200 kVA UPS for 15 Min on 200 kW Load as per specifications enclosed and along with 5 Years Warranty: 1. Li Battery Cabintes,Breakers and Battery Monitoring System 2. Battery Interconnecting Links 3. Cabling for UPS to Battery Bank Battery Rating: Minimum 75 kWhr (Maximum 3 Cabinets)	Set	2	3649000.00	72,98,000.00
1.5	40 KVA Modular UPS in Stand Alone configuration, IGBT/PWM technology based True Online double conversion and fully DSP based UPS system as per specifications enclosed and along with 2 Years Warranty: : 1. IGBT Rectifier UPS and IGBT Inverter UPS 2. Hot Swapable modules 3. Input PF >=0.99 4. Overall efficiency of upto 96.5% 5. SNMP Card & BMS Card to be provided 6. Cabinet size of min 80 kW or higher	Set	1	663400.00	6,63,400.00
1.6	Sealed Maintenance Free Li Battery Bank with each 40 kVA UPS for 15 Min on 40 kW Load as per specifications enclosed and along with 5Years Warranty: 1. Li Ion Battery Cabintes,Breakers and Battery Monitoring System 2. Battery Interconnecting Links 3. Cabling for UPS to Battery Bank Battery Rating: 1 Bank of min 31 kWhr (Maximum 1 Cabinet)	Set	1	763000.00	7,63,000.00
2.0	LT CABLES				
2.1	Supply of following size of 1.1KV grade multicore Aluminium conductor XLPE insulated & PVC sheathed armoured power cable as per IS: 7098 (Part-1) 1988 complete as required.				
	i) 3.5 core, 400 Sq.mm.	M	100	1597	1,59,700.00
	ii) 3.5 core, 300 Sq.mm.	M	40	1214	48,560.00

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	iii) 3.5 core, 95 Sq.mm.	M	150	431	64,650.00
	iv) 3.5 core, 70 Sq.mm.	M	90	353	31,770.00
	v) 3.5 core, 50 Sq.mm.	M	140	267	37,380.00
	vi) 4 core, 16 Sq.mm.	M	130	133	17,290.00
2.2	Supply of following size of 1.1KV grade Single core Copper conductor XLPE insulated & PVC sheathed flexible cable as per IS: 7098 (Part-1) 1988 complete as required.				
	i) 1 core,300 Sq.mm.	M	40	4132	1,65,280.00
	ii) 1 core, 150 Sq.mm.	M	40	2069	82,760.00
2.3	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size on cable tray as required.				
	i) Upto 35 sq. mm (clamped with 1mm thick saddle)	M	100	33	3,300.00
	ii) Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	M	380	74	28,120.00
	iii) Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	M	190	150	28,500.00
2.4	Suppling and making indoor end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	i) 3.5 core, 400 Sq.mm.	Set	18	1209	21,762.00
	ii) 3.5 core, 300 Sq.mm.	Set	32	936	29,952.00
	iii) 3.5 core, 95 Sq.mm.	Set	4	473	1,892.00
	iv) 3.5 core, 70 Sq.mm.	Set	4	368	1,472.00
	v) 3.5 core, 50 Sq.mm.	Set	6	329	1,974.00
	vi) 4 core, 16 Sq.mm.	Set	8	250	2,000.00
2.5	Suppling and making indoor end termination with brass compression gland and Copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	i) 1 core, 300 Sq.mm.	Set	4	963	3,852.00
	ii) 1 core, 150 Sq.mm.	Set	4	601	2,404.00
2.6	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size in the existing masonry open duct as required.				
	i) Above 35 sq. mm and upto 95 sq. mm	M	30	38	1,140.00
	ii) Above 185 sq. mm and upto 400 sq. mm	M	30	96	2,880.00
2.7	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.				
	i) 300 mm width X 50 mm depth X 1.6 mm thickness	M	30	621	18,630.00
2.8	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
	i) 120 mm dia (OD-120 mm & ID-103 mm nominal)	M	50	341	17,050.00
3.0	MAIN DISTRIBUTION BOARDS				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	Supply, installation, testing and commissioning of Main Distribution Board (IP-54)with cubicle type totally enclosed free standing type, duly compartmentalised, dust free, damp and vermin proof fabricated from 2mm thick CRCA sheet steel duly powder coated painted after metal treatment internally wired, interconnection with copper links / wires, copper busbar and having following incoming & outgoing moulded case circuit breakers, ammeters, voltmeters, selector switch, indicating lamps and termination of incoming & outgoing cable complete as per specifications and drawings.				
Notes :	1) All MCCBs of current rating 250 Amps and above shall be provided with microprocessor based releases and those of rating below 250 Amps shall be provided with thermal magnetic releases or as specified in SOQ.				
	2) All MCCBs shall be having Ics = 100% Icu				
	3) All MCCBs shall be provided with front rotary handle and spreader links.				
3.1	<u>AB/UPS PANEL-LAB BLOCK (TOTAL OF A TO D)</u>	Set	1	387400	3,87,400.00
	<u>(A) INCOMER BREAKERS</u>				
	<ul style="list-style-type: none"> 2 Nos. 800Amp FP Moulded case Circuit Breaker 50KA (Ics value= Icu at 433V) with Microprocessor release for O/L, S/C & E/F Protection with RS 485 port complete as required. 				
	<u>(B) INSTRUMENTS (ON EACH INCOMER BREAKER)</u>				
	<ul style="list-style-type: none"> 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch. 1 No. 0 to 800Amp digital ammeter 96mm x 96mm with selector switch & CT's. 1 Set of Phase indicating lamps with Single Pole MCB. 1 Set of ON / OFF indicating lamps with Single Pole MCB. 1 Set of Multifunction Meter (MFM) 				
	<u>(C) BUSBARS</u>				
	<ul style="list-style-type: none"> TPN (Four Strip) Aluminium busbars of minimum of 1000 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	<u>(D) OUTGOING</u>				
	<ul style="list-style-type: none"> 2 Nos. 630Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Microprocessor release for O/L & S/C Protection with ON/OFF Indicating lamps. 				
3.2	<u>CD/UPS PANEL-LAB BLOCK (TOTAL OF A TO D)</u>	Set	1	493600	4,93,600.00
	<u>(A) INCOMER BREAKERS</u>				
	<ul style="list-style-type: none"> 2 Nos.1000 Amp FP Moulded Case Circuit Breaker 50KA (Ics value= Icu at 433V) with Microprocessor release for O/L, S/C & E/F Protection with RS 485 port complete as required. 				
	<u>(B) INSTRUMENTS (ON EACH INCOMER BREAKER)</u>				
	<ul style="list-style-type: none"> 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch. 1 No. 0 to 1000 Amp digital ammeter 96mm x 96mm with selector switch & CT's. 1 Set of Phase indicating lamps with Single Pole MCB. 1 Set of ON / OFF indicating lamps with Single Pole MCB. 1 Set of Multifunction Meter (MFM) 				
	<u>(C) BUSBARS</u>				
	<ul style="list-style-type: none"> TPN (Four Strip) Aluminium busbars of minimum of 1250 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	(D) OUTGOING				
	<ul style="list-style-type: none"> 2 Nos.800Amp FP Moulded Case Circuit Breaker of 50KA (Ics=Icu upto 433 volt) breaking capacity with Microprocessor release for O/L & S/C Protection with ON/OFF Indicating lamps. 				
3.3	<u>AB/MDB-EQP - UPS (TOTAL OF A TO D)</u>	Set	1	606200	6,06,200.00
	(A) INCOMER BREAKERS				
	<ul style="list-style-type: none"> 2 No.630Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Microprocessor release, O/L, S/C & E/F Protection with RS 485 port complete as required. 				
	(B) INSTRUMENTS (ON EACH INCOMER BREAKER)				
	<ul style="list-style-type: none"> 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch. 				
	<ul style="list-style-type: none"> 1 No. 0 to 630Amp digital ammeter 96mm x 96mm with selector switch & CT's. 				
	<ul style="list-style-type: none"> 1 Set of Phase indicating lamps with Single Pole MCB. 				
	<ul style="list-style-type: none"> 1 Set of ON / OFF indicating lamps with Single Pole MCB. 				
	<ul style="list-style-type: none"> 1 Set of Multifunction Meter (MFM) 				
	(C) BUSBARS				
	<ul style="list-style-type: none"> TPN (Four Strip) Aluminium (200% Neutral) busbars of minimum of 800 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) OUTGOING				
	<ul style="list-style-type: none"> 4 Nos. 200Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps 				
	<ul style="list-style-type: none"> 3 Nos. 125Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps 				
	<ul style="list-style-type: none"> 7 Nos. 100 Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps 				
	<ul style="list-style-type: none"> 6 Nos.63Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps 				
3.4	<u>CD/MDB-EQP-UPS (TOTAL OF A TO D)</u>	Set	1	797600	7,97,600.00
	(A) INCOMER BREAKERS				
	<ul style="list-style-type: none"> 800 Amp FP Moulded Case Circuit Breaker of 50KA (Ics=Icu upto 433 Volt) breaking capacity with Microprocessor release, O/L,S/C & E/F Protection as required. 				
	(B) INSTRUMENTS (ON EACH INCOMER BREAKER)				
	<ul style="list-style-type: none"> 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch. 				
	<ul style="list-style-type: none"> 1 No. 0 to 800Amp digital ammeter 96mm x 96mm with selector switch & CT's. 				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	• 1 Set of Phase indicating lamps with Single Pole MCB.				
	• 1 Set of ON / OFF indicating lamps with Single Pole MCB.				
	• 1 Set of Multifunction Meter (MFM)				
	(C) <u>BUSBARS</u>				
	• TPN (Four Strip) Aluminium (200% Neutral) busbars of minimum of 1250 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.				
	(D) <u>OUTGOING</u>				
	• 3 Nos. 500 Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Microprocessor release, O/L, S/C & E/F Protection with Neutral link & ON/OFF Indicating lamps				
	• 1 Nos. 400 Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Microprocessor release, O/L, S/C & E/F Protection with Neutral link & ON/OFF Indicating lamps				
	• 2 Nos. 300 Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Microprocessor release, O/L, S/C & E/F Protection with Neutral link & ON/OFF Indicating lamps				
	• 1 Nos.200 Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps				
	• 3 Nos. 160 Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps				
	• 4 Nos. 125 Amp TP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps				
	• 2 Nos.100 Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps				
3.5	<u>USDB- SEMINAR BLOCK (TOTAL OF A TO D)</u>	Set	1	172500	1,72,500.00
	(A) <u>INCOMER BREAKERS</u>				
	• 1 No.160 Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection				
	(B) <u>INSTRUMENTS</u>				
	• 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch.				
	• 1 No. 0 to 200Amp digital ammeter 96mm x 96mm with selector switch & CT's.				
	• 1 Set of Phase indicating lamps with Single Pole MCB.				
	• 1 Set of ON / OFF indicating lamps with Single Pole MCB.				
	• 1 Set of KWH Meter (96mm x 96mm) with RS 485 Port				
	(C) <u>BUSBARS</u>				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	<ul style="list-style-type: none"> TPN (Four Strip) Aluminium (200% Neutral) busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) OUTGOING				
	<ul style="list-style-type: none"> 6Nos. 40- 63 Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link & ON/OFF Indicating lamps 				
3.6	<u>UPS PANEL FOR PHYSICAL LAB (TOTAL OF A TO D)</u>	Set	1	152000	1,52,000.00
	(A) INCOMER BREAKERS				
	<ul style="list-style-type: none"> 1 No.200 Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection 				
	(B) INSTRUMENTS				
	<ul style="list-style-type: none"> 1 Set of Phase indicating lamps with Single Pole MCB on incomer. 1 Set of ON / OFF indicating lamps with Single Pole MCB on Incomer. 				
	(C) BUSBARS				
	<ul style="list-style-type: none"> TPN Aluminium busbars of minimum of 250 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) OUTGOING				
	<ul style="list-style-type: none"> 1Nos.80Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 1Nos.63Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 4Nos. 63Amp TP Miniature Circuit Breaker of 10KA 1Nos. 40Amp TP Miniature Circuit Breaker of 10KA 				
3.7	<u>UPS PANEL FOR FEMTO SECOND LAB (TYPICAL FOR MASS LAB / ADVANCE BIO RESEARCH LAB/ ADVANCE MATERIAL SCIENCE RESEARCH) (TOTAL OF A TO D)</u>	Set	4	77100	3,08,400.00
	(A) INCOMER BREAKERS				
	<ul style="list-style-type: none"> 1 No.100 Amp FP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection 				
	(B) INSTRUMENTS				
	<ul style="list-style-type: none"> 1 Set of Phase indicating lamps with Single Pole MCB on incomer. 1 Set of ON / OFF indicating lamps with Single Pole MCB on Incomer. 				
	(C) BUSBARS				
	<ul style="list-style-type: none"> TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	(D) <u>OUTGOING</u>				
	• 5Nos. 63Amp TP Miniature Circuit Breaker of 10KA with Neutral link				
3.8	<u>UPS PANEL FOR NMR LAB (TOTAL OF A TO D)</u>	Set	1	155300	1,55,300.00
	(A) <u>INCOMER BREAKERS</u>				
	• 1 No.200 Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection				
	(B) <u>INSTRUMENTS</u>				
	• 1 Set of Phase indicating lamps with Single Pole MCB on incomer.				
	• 1 Set of ON / OFF indicating lamps with Single Pole MCB on Incomer.				
	(C) <u>BUSBARS</u>				
	• TPN Aluminium busbars of minimum of 250 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.				
	(D) <u>OUTGOING</u>				
	• 1Nos.80Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link				
	• 2Nos.63Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link				
	• 3Nos. 40Amp TP Miniature Circuit Breaker of 10KA with Neutral link				
3.9	<u>UPS PANEL FOR MATERIAL TESTING LAB (TOTAL OF A TO D)</u>	Set	1	75700	75,700.00
	(A) <u>INCOMER BREAKERS</u>				
	• 1 No.63Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection				
	(B) <u>INSTRUMENTS</u>				
	• 1 Set of Phase indicating lamps with Single Pole MCB on incomer.				
	• 1 Set of ON / OFF indicating lamps with Single Pole MCB on Incomer.				
	(C) <u>BUSBARS</u>				
	• TPN Aluminium busbars of minimum of 100Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.				
	(D) <u>OUTGOING</u>				
	• 4Nos. 40Amp TP Miniature Circuit Breaker of 10KA with Neutral link				
3.10	<u>UPS PANEL FOR CD BLOCK (FOR CLEAN ROOM, DEVICE TESTING & FABRICATION FACILITY) (TOTAL OF A TO D)</u>	Set	1	184100	1,84,100.00

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	(A) INCOMER BREAKERS				
	<ul style="list-style-type: none"> 1 No.400 Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection 				
	(B) INSTRUMENTS				
	<ul style="list-style-type: none"> 1 Set of Phase indicating lamps with Single Pole MCB on incomer. 1 Set of ON / OFF indicating lamps with Single Pole MCB on Incomer. 				
	(C) BUSBARS				
	<ul style="list-style-type: none"> TPN Aluminium busbars of minimum of 500Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) OUTGOING				
	<ul style="list-style-type: none"> 1Nos.200Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 1Nos. 160Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 1Nos. 100Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 4Nos.63Amp TP Miniature Circuit Breaker of 10KA with Neutral link 				
3.11	<u>RAW POWER PANEL FOR CD BLOCK (FOR CLEAN ROOM, DEVICE TESTING & FABRICATION FACILITY) (TYPICAL FOR RAW POWER PANEL FOR COMMON FURNACE, SDB PLANT ROOM), (TOTAL OF A TO D)</u>	Set	3	177700	5,33,100.00
	(A) INCOMER BREAKERS				
	<ul style="list-style-type: none"> 1 No.250Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection 				
	(B) INSTRUMENTS				
	<ul style="list-style-type: none"> 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch. 1 No. 0 to 250Amp digital ammeter 96mm x 96mm with selector switch & CT's. 1 Set of Phase indicating lamps with Single Pole MCB. 1 Set of ON / OFF indicating lamps with Single Pole MCB. 1 Set of KWH Meter (96mm x 96mm) with RS 485 Port 				
	(C) BUSBARS				
	<ul style="list-style-type: none"> TPN Aluminium busbars of minimum of 300Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) OUTGOING				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	<ul style="list-style-type: none"> 1Nos.160Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
	<ul style="list-style-type: none"> 1Nos. 100Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
	<ul style="list-style-type: none"> 1Nos. 63Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
	<ul style="list-style-type: none"> 1Nos. 40Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
3.12	<u>UPS PANEL FOR X-RAY LAB (TYPICAL FOR ELECTRON MICROSCOPY) (TOTAL OF A TO D)</u>	Set	2	79700	1,59,400.00
	(A) <u>INCOMER BREAKERS</u>				
	<ul style="list-style-type: none"> 1 No.125Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection 				
	(B) <u>INSTRUMENTS</u>				
	<ul style="list-style-type: none"> 1 Set of Phase indicating lamps with Single Pole MCB on incomer. 1 Set of ON / OFF indicating lamps with Single Pole MCB on Incomer. 				
	(C) <u>BUSBARS</u>				
	<ul style="list-style-type: none"> TPN Aluminium busbars of minimum of 200Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) <u>OUTGOING</u>				
	<ul style="list-style-type: none"> 4Nos.40Amp TP Miniature Circuit Breaker of 10KA with Neutral link 				
3.13	<u>MOULDED CASE CIRCUIT BREAKER IN MS ENCLOSURE</u>				
	Supply, installation, testing and commissioning of Moulded Case Circuit Breaker in MS enclosure made out of 2mm thick, suitable for 3 phase 4 wire 50 Hz AC supply complete with incoming/outgoing terminations, internal connections/ links etc as required.				
	(i) 40-63Amp FP Moulded Case Circuit Breaker (25KA)	No.	1	9010.00	9,010.00
	(i) 125Amp FP Moulded Case Circuit Breaker (25KA)	No.	1	12030.00	12,030.00
3.14	<u>SDB- BASEMENT (SEMINAR BLOCK) (TOTAL OF A TO D)</u>	Set	1	1,90,900.00	190900
	(A) <u>INCOMER BREAKERS</u>				
	<ul style="list-style-type: none"> 1 No.250Amp FP Moulded Case Circuit Breaker of 35KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection 				
	(B) <u>INSTRUMENTS</u>				
	<ul style="list-style-type: none"> 1 No. 0 to 500 Volt digital voltmeter 96mm x 96mm with selector switch. 1 No. 0 to 250Amp digital ammeter 96mm x 96mm with selector switch & CT's. 				

Item No.	Description	Unit	Qty.	Rate (in ₹)	Rate (in ₹)
1	2	3	4	6	8
	<ul style="list-style-type: none"> 1 Set of Phase indicating lamps with Single Pole MCB. 				
	<ul style="list-style-type: none"> 1 Set of ON / OFF indicating lamps with Single Pole MCB. 				
	<ul style="list-style-type: none"> 1 Set of KWH Meter (96mm x 96mm) with RS 485 Port 				
	(C) BUSBARS				
	<ul style="list-style-type: none"> TPN Aluminium busbars of minimum of 300Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required. 				
	(D) OUTGOING				
	<ul style="list-style-type: none"> 2Nos.125Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
	<ul style="list-style-type: none"> 2Nos. 100Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
	<ul style="list-style-type: none"> 2Nos.40Amp TP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 volt) breaking capacity with Thermal Magnetic release, O/L & S/C Protection with Neutral link 				
4.00	EARTHING SYSTEM				
4.1	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 meter long etc. with charcoal/ coke and salt as required.	Set	6	11794	70,764.00
4.2	Supply, Installation, Testing and Commissioning of Maintenance free and Environment Friendly Earth Electrode set comprising of 17.2 mm dia 3 mtrs long solid rod of Low carbon steel , molecular Copper Bonded for a thickness of 250 microns, highly conductive ANSI NSF STD 60 Certified, environment friendly carbon based backfill compound (each bag shall contain 20 pounds) or Equivalent , according to BS 7430 & IEEE 80 and suitable Clamp. The backfill compound should not corrode the electrode. The earth enhancement compound shall have resistivity of less than 0.12 OHM MTR as per requirements of IEEE 80 clause 14.5d. complete as required.	Set	18	15000	2,70,000.00
4.3	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	M	460	1009	4,64,140.00
4.4	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	M	190	1224	2,32,560.00
	TOTAL IN FIGURES				373,50,420.00
	Quoted Rates in Figures (Percentage)	Less(-)/Above(+)			
	Quoted Rates in Words (Percentage)				