

**TENDER SPECIFICATION
BHEL: PSSR: SCT: 1985**

FOR

Erection, Testing & Commissioning including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting of HT Electrical works for Package-A (Unit-1 & 2) and Package-B (Unit-3 & 4) of 5 x 800MW Yadadri Thermal Power Plant at Veerlapalem Village, Dameracherla Mandal, Nalgonda Dt TSGENCO, Telangana

**VOLUME-II
PRICE BID Package B**



BHARAT HEAVY ELECTRICALS LIMITED

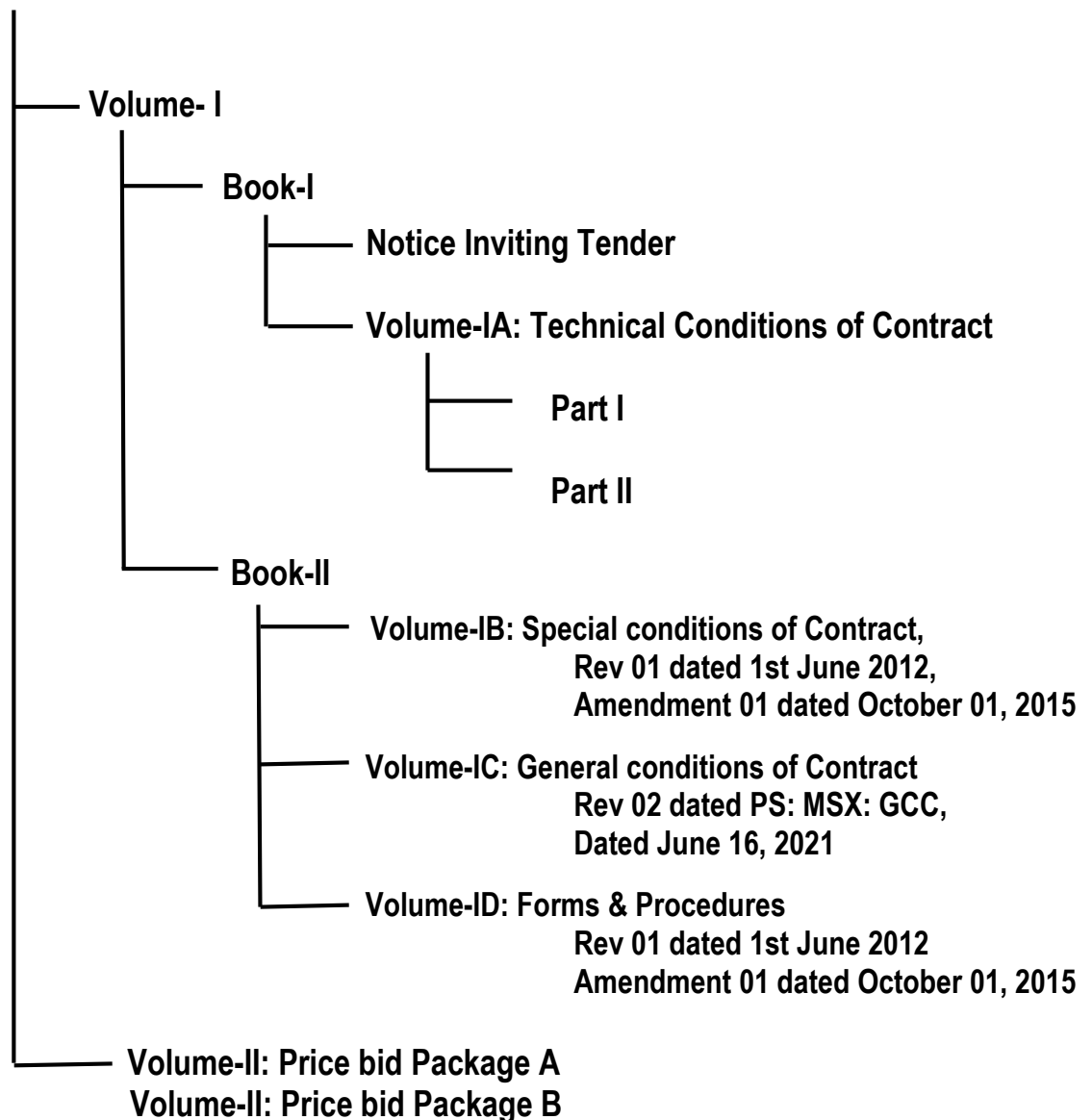
(A Government of India Undertaking)

**Tek Towers, No.11, Old Mahabalipuram Road,
Okkiyam Thoraipakkam, Chennai - 600097.**

PRICE BID Package B

TENDER SPECIFICATION CONSISTS OF

Techno-Commercial Bid



PRICE BID Package B

CONTENTS	
Description	No. of pages
Part A: Instructions to the Bidders	1
Part B: Format for total amount	1
Part C: Bill of quantities with weightage for amount of each items w.r.t. the total quoted price	11

PRICE BID Package B

PART-A-INSTRUCTIONS TO BIDDERS:

1. The 'Price bid contains the consolidated list of BOQ with brief description of items. The quantity indicated in the BOQ / Price bid is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer.
2. Before filling in the Price bid, the bidder shall go through the detailed specification of all items of BOQ as well as Scope of Work as specified in relevant Clause of this document.
3. For Terms of Payment, Bidders to refer Chapter VII of Volume IA Part I, Technical Conditions of Contract.
4. Bidders shall only quote 'Total Amount' in the format given in PART -B of the price bid. Any other entry elsewhere in the price bid shall be treated as Null and Void.
5. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
6. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
7. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
8. Based on the quantities of individual item and the amount arrived in SI No: 7 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
9. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.8 above.
10. Tenderers are requested to affix their company seal and authorized signature in all pages.

Part B: Format to quote Total Amount

**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
at 5 X 800 MW Yadadri TPS**

Total Amount for the entire Bill of Quantities(BOQ) given in Part C

In Figures

In words

Note :

Bidders to quote Total Amount in this format given above, which shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.

Date

SIGNATURE OF BIDDER WITH SEAL

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical at 5 X 800 MW Yadadri TPS

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A	ERECTION AND COMMISSIONING OF TRANSFORMERS	--		
A.1	Generator Transformer (GT#1) 198/264/330 MVA,27/(400/Sq.root(3) kV, 1 phase, ONAN/ONAF/OFAF cooled,YNd11	Set*	6	.1303992
A.3	Station Transformer (ST#2) 81/108/135MVA,400/11.5 kV,3 phaseONAN/ONAF/OFAFcooled,YNyn0yn0,	Set*	1	.0164583
A.8,A.9	Unit Transformer (3A & 3B)(4A & 4B) 52/65MVA,27/11.5 kV,3 phase ONAN/ONAF cooled,Dyn1,Unit Transformer (3A & 3B)	Set*	4	.0468903
B.3,B.4	Unit Aux Transformer (3CAT01 & 3CAT02) (4CAT01 & 4CAT02) 16 MVA, 11/3.6 kV, 3 phase, ONAN/ONAF/Dyn11	Set*	4	.0255091
B.10	CHP Aux.Transformer Stage-I 8 MVA, 11/3.6 kV 3 phase, ONAN/ONAF/Dyn11Overall Dimensions: 6300(L) x4300(B) x5200(H) Total Weight - 25500 kg approx;Insulating Oil Qty - 6500kg approx.	Set*	2	.0091876
B.14	AHP Aux. Transformer 12.5 MVA, 11/3.6 kV 3 phase, ONAN/Dyn11, AHP Aux. TransformerApproximate Dimensions: aTotal Weight - 35400 kg approx;Insulating Oil Qty - 9000kg approx.	Set*	2	.0127546
B.18, B.20, B.22, B.27, B.28, B.32, B.33, B.37, B.38, B.42, B.43	Cast Resin Dry Type Station Service Transformer Approximate Shipping Dimensions:3000(L) x2015(B) x3100(H) Weight of Shipment:8000kg approx each.	Set*	38	.0878136

Part C : Bill of Quantities**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
at 5 X 800 MW Yadadri TPS**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
C	ERECTION AND COMMISSIONING OF HT BUSDUCT	--		
C.1	IPBD	--		
C.1.1	27 kV IP Busduct (Maximum Voltage - 36kV) along with support structures	SET*	1	.0518016
C.1.2	27 kV IP Busduct (Maximum Voltage - 36kV) along with support structures	SET*	1	.0518016
C.2	SPBD	--		
C.2.1	11 kV-4000 A SPBD BUSDUCT, SIZE - 3.15tk x 500 mm (height) x 1500 mm (width) x 3720 mm (length) for standard size, Conductor size - Channel Box (2 x 177.8 x 58.4 x 9.98 tk) mm, aprox weight 150 kg/mtr and includes Seal-off Bushing, Rubber Bellows, Aluminium Splice Plate & Flexibles, Copper Flexibles, Support Steel Structure, Space Heater arrangemnt, Grounding.	--		

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
at 5 X 800 MW Yadadri TPS**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
C.2.1. 11,C.2 .1.12, C.2.1. 13, C.2.1. 14, C.2.1. 15,C.2 .1.16, C.2.1. 17,C.2 .1.18, C.2.1. 19, C.2.1. 20, C.2.1. 21,C.2 .1.22, C.2.1. 23, C.2.1. 24	11 kV, 4000Amp	Mtrs	1,957	.088986
C.2.2.	3.3 kV / 11kV-3150 A SPBD BUSDUCT, SIZE - 3.15tk x 450 mm (height) x 1350 mm (width) x 3720 mm (length) for standard size, Conductor size - Channel Box (2 x 127 x 47.8 x 8 tk) mm, aprox weight 125 kg/mtr and includes Seal-off Bushing, Rubber Bellows, Aluminium Splice Plate & Flexibles, Copper Flexibles, Support Steel Structure, Space Heater arrangemnt, Grounding.	--		

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
at 5 X 800 MW Yadadri TPS**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
C.2.2. 7,C.2. 2.8,C. 2.4.1, C.2.4. 2, C.2.4. 3,C.2. 5.4,C. 2.5.5, C.2.5. 6, C.2.5. 7,C.2. 5.8,C. 2.5.9, C.2.5. 10, C.2.5. 11,C.2 .5.12, C.2.2. 9,C.2. 2.10, C.2.2. 11, C.2.2. 12	3.3 kV, 3150/2500/1600Amp	Mtrs	590	.0256867
D	ERECTION AND COMMISSIONING OF HT SWITCHGEAR	--		
D.1	11 kV Switchgear	--		

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical at 5 X 800 MW Yadadri TPS

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
D.1.3	Unit SWBD (3BA) 4000 A Overall panel sizes 16980 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1220 mm - 1600 kg;1640 mm - 2500 kg;2040 mm - 3500 kg; approx.	set*	1	.0033658
D.1.4	Unit SWBD (4BA) 4000 A Overall panel sizes 16980 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1220 mm - 1600 kg;1640 mm - 2500 kg; approx.	set*	1	.0033658
D.1.8	Unit SWBD (3BB) 4000 A Overall panel sizes 16980 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1220 mm - 1600 kg;1640 mm - 2500 kg; approx.	set*	1	.0033658
D.1.9	Unit SWBD (4BB) 4000 A Overall panel sizes 16980 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1220 mm - 1600 kg;1640 mm - 2500 kg; approx.	set*	1	.0033658
D.1.13	Station SWBD (0BC) 4000 A Overall panel sizes 15320 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1640 mm - 2500 kg;2040 mm - 3500 kg; approx.	set*	1	.0030511
D.1.14	Station SWBD (0BD) 4000 A Overall panel sizes 20240 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1640 mm - 2500 kg;2040 mm - 3500 kg; approx.	set*	1	.0040309
D.1.17	Unit SWBD (0BX-1) 4000 A Overall panel sizes 5900 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1220 mm - 1600 kg;2040 mm - 3500 kg; approx.	set*	1	.001175
D.1.18	Unit SWBD (0BX-2) 4000 A Overall panel sizes 5900 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1220 mm - 1600 kg;2040 mm - 3500 kg; approx.	set*	1	.001175
D.2.	3.3 kV Switchgear	--		
D.2.3	Unit Aux SWBD (3CA) 3150 A 2X12900 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0051383

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
D.2.4	Unit Aux SWBD (4CA) 3150 A2X12900 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0051383
D.2.7	BOP-2 SWBD (0CB) 1600 AOverall panel sizes 12900/14540 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0025691
D.2.10	CHP CRUSHER STAGE-II SWBD (0CE) 3150 AOverall panel sizes 20280 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0040389
D.2.11	CHP STOCK PILE STAGE-II SWBD (0CF) 3150 AOverall panel sizes 22740 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0045288
D.2.13	CHP STOCK BUNKER STAGE-II SWBD (0CH) 2500 AOverall panel sizes 23560 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0046921
D.2.15	AHP AUX SWBD-2 (0CK) 2500 A Overall panel sizes 27660 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0055087
D.2.16	AHP AUX SWBD-3 (0CL) 1250 AOverall panel sizes 17000 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	set*	1	.0033857
D.3.	ERECTION AND COMMISSIONING OF CONTROL PANEL SYSTEM	--		
D.3.1	Fast Bus Transfer System Panels for 11 KV SWGR size 800 (w) x 800 (d) x 2295 (h) weight 300 kg approx, along with accessories computers, printers,table, checking of pre assembled LIUs, communication cables etc.	Set*	4	.0021795

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
D.3.2, D.3.3, D.3.5, D.3.6	Earthing Trucks (feeders and busbars)	Set*	16	.0012287
D.3.8	Protection panel for Generator, Generator Transformer & Unit Transformer with associated loose supplied items	set*	2	.0028969
D.3.9, D.3.11 ,D.3.10,D.3.12	Data concentrator panels along with loose items size 800mm(W) x800mm(D) x 2000mm(H) aprox weight 200kg	set*	7	.0054276
E.7.8	11 kV Neutral Ground Resistor (NGR) with NGR Cubicle of size 3500x3000x2000 and with Supporting Structures.	Set	6	.0032432
E.7.9	3.3 kV Neutral Ground Resistor (NGR) with NGR Cubicle of size 2000x1500x800 and with Supporting Structures.	Set	12	.0064863
E.8.3	Generator circuit breaker (GCB) below generator Rating 22244 A, 27 kV size app. 8500mm x 6175mm x 3457mm along with centralizing cubicle and overall weight - 13000 kg.	set*	2	.0081123
F.6	Unit Control Panel(UCP)- approx panel size 1448(w) x1000(d) x 2355(h) approx weight 900 kg	No.	2	.0010811
F.7	Unit Electrical Control Panel(UECP)- approx panel size 3128(w) x 1000(d) x 2415(h) , approx weight 900 kg	No.	2	.0010811
F.8,F.9	SCADA (CYJ-01) electrical interface system size 800(w) x800(d) x 2067(h) approx weight 400 kg along with accessories	set*	2	.0010897

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical

at 5 X 800 MW Yadadri TPS

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.1,F.2,F.3,F.4,F.5	Digital AVR consisting of 2No. Regulation cubicle, 2 Nos. Thyristor cubicle & 1 No. Field suppression cubicle, and associated loose supplied items including laying & termination of loose supplied power & control cables for DAVR system.DAVR Overall dimension: 4804x 800x 2295 mm Aproximate wt. : 3000 Kg. * Lump sum rate to be quoted.	set*	2	.0034373
E	LAYING OF HT CABLES 11KV (UE) ARMoured; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.	--		
E.1.1	1C x 630 sqmm (AL)	Mtrs	60,000	.0668993
E.1.2	1C x 240 sqmm (AL)	Mtrs	5,600	.003122
E.1.3	3C x 240 sqmm (AL)	Mtrs	26,200	.0337772
E.2	LAYING OF HT CABLES 3.3KV (UE) ARMoured; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.	--		
E.2.1	3C x 185 sqmm (AL)	Mtrs	15,300	.0183921
E.2.2	1C x 240 sqmm (AL)	Mtrs	15,200	.0140349
E.3	Installation of Cable termination and joint kits for 11/11 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.	--		
E.3.1, E.4.1	Termination KIT/Joint KIT 11KV 1C-630 sqmm AL ARM (indoor) AL LUG	Nos.	244	.0155583
E.3.2, E.4.2	Termination KIT/Joint KIT 11KV 1C-240 sqmm AL ARM (indoor) AL LUG	Nos.	270	.0104708
E.3.3, E.4.3	Termination KIT/Joint KIT 11KV 3C-240 sqmm AL ARM (indoor) AL LUG	Nos.	131	.008903
E.5	Installation of Cable termination kits and joint kit for 3.3 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.	--		

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical at 5 X 800 MW Yadadri TPS

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
E.5.1, E.6.1	Termination KIT/Joint KIT 3.3 KV 1C-240 sqmm AL ARM (indoor) AL LUG	Nos.	86	.0051076
E.5.2, E.6.2	Termination KIT/Joint KIT 3.3 KV 3C-185 sqmm AL ARM (indoor) AL LUG	Nos.	146	.0094672
E.7	INSTALLATION OF HOT DIP GALVANIZED STEEL FLATS	--		
E.7.1	GS FLAT 75 X 10 mm	Mtrs	19,120	.0329772
E.7.2	GS FLAT 50 X 6 mm	Mtrs	23,200	.0262719
E.7.3	GS FLAT 25 X 6 mm	Mtrs	3,332	.0034249
E.7.4	GS FLAT 25 X 3 mm	Mtrs	666	.0006846
E.7.5	GS WIRE 8 SWG	Mtrs	10,800	.0007526
E.9	FABRICATION & ERECTION OF STRUCTURAL STEEL	--		
E.9.1, E.9.2, E.9.3, E.9.4	Structural Steel (ISMC, ISMB, ISA, etc)	MT	293	.0766653
E.10.	COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL CONTRACTOR	--		
E.10.1	Generator 800 MW - H.V. testing, meggering of Bushings & Accessories, resistance measurement, meggering including dry out of Generator and as per field quality plan.	set	2	.005328
E.10.2	Exciter dryer / heater	No.	2	.0000991
E.10.3	Generator Air Drier	No.	2	.0000991

Part C : Bill of Quantities

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
E.10.4	CO2 Vaporizer	No.	2	.000084
E.10.5	Exciter Stroboscope	No.	2	.0000839
E.10.6	11 KV HT drives	Nos.	24	.0042088
E.10.8 ,E.10. 10,E.1 0.11	3.3 KV HT motor	Nos.	59	.0054323
F	LAYING OF LT POWER / CONTROL CABLES 1.1KV, XLPE INSULATED, GALVANISED STEEL ARMOURED SINGLE/MULTICORE CABLES FRLS PVC. (AL/CU CABLES)	--		
F.2	3C x 50 sqmm copper (Excitation + power input)	Mtrs	1,600	.0004181
F.4	1Cx 70 sqmm copper (earthing)	Mtrs	200	.0000523
--	END TERMINATION OF LT POWER / CONTROL CABLES -1.1KV PVC/FRLS ARMOURED AL/CU CONDUCTOR PVC INSULATED, FRLS OUTER SHEATHED.	--		
F.3	3C x 50 sqmm copper (Excitation + power input)	Nos.	32	.0001377
F.5	1Cx 70 sqmm copper (earthing)	Nos.	8	.0000074
--	LAYING AND TERMINATION OF INSTRUMENTATION CABLES	--		
D.3.13 ,D.3.1 5	OFC cable includes fixing of fibre optic components and termination kits LIU, face plates,cabinets,SC coupler,grounding etc	Mtrs	4,000	.001324
D.3.14	D link 4 pair PVC, CAT 5 Lan cable	Mtrs	4,000	.0004181

Part C : Bill of Quantities**Tender Specification BHEL:PSSR:SCT:1985-Pkg-B for HT Electrical
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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
D.3.15	Optical Fibre Plicing	Nos.	200	.0003624
G	ERECTION OF MISCELLANEOUS ITEMS	--		
E.7.6, G.1	Earthing with MS earth Rod 40 mm (below ground earthing system) & Gate earthing	Mtrs	344	.0003836
E.7.7	Treated Earth pit of CI pipe 3000 m long with funnel and accessories including all civil works in hardrock by drilling, filling of earth pit with alternate layer of chrcoal & salt as per IE specification and making of brick chamber, with both side plastering, supply and fixing of manhole CI cover plate/RCC Slab etc. complete as per IS 3043 (only 100 mm CI pipe shall be supplied by BHEL)	Set	104	.0136052
TOTAL Weightage				1.0