

**HARYANA POWER GENERATION CORPORATION LIMITED**

**1X800 MW EXPANSION UNIT  
DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT  
YAMUNA NAGAR, HARYANA**

**EPC PACKAGE TENDER SPECIFICATION**

**SPECIFICATION #**

**SECTION - VII**

**BOOK 2 OF 3**

BID FORM			
BID FORM PART-II PRICE BID			
Name of Package:	<b>EPC Package for</b> <b>"1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA,</b> <b>Bidding Document No. : 03/EPC/DCRTPP/800 MW</b>		
BIDDER'S NAME			
	Bid Proposal No		
	Dated		
1.0	Having examined the Bidding Document No. <b>03/EPC/DCRTPP/800 MW</b> including subsequent amendments and clarifications if any, the receipt of which is hereby acknowledged, we the undersigned, offer to design, manufacture, test, deliver, construct, install and commission (including carrying out Guarantee Test) the facilities under the above-named Contract in full conformity with the said Bidding Documents for the sum (excluding taxes & duties indicated by us in Schedule-7& 7A) as mentioned in Bid invitation at e-tender site <a href="https://etenders.hry.nic.in">https://etenders.hry.nic.in</a> or such other sums as may be determined in accordance with the terms and conditions of the Contract.		
2.0	<b>ATTACHMENTS TO THE BID FORM PART-II (PRICE) BID:</b>		
2.1	In line with the requirements of the Bidding Documents, we enclose herewith the following Attachments & Price Schedules, duly filled-in as per your proforma:		
	(a)	Attachment-1(P)	<b>Deleted</b>
	(b)	Attachment-2 (P)	A power of attorney duly notarized by a Notary Public indicating that the person(s) signing the bid have the authority to sign the bid and thus that the bid (price bid) is binding upon us during the full period of its validity in accordance with the ITB Clause No.13. As required, the Attachment-2(P) (i.e. Power attorney) has been furnished in physical form in a separate sealed envelope.
	(c)	Attachment-3 (P)	Certificate of Compliance to all provisions of bid documents
	(d)	Attachment-4 (P)	Declaration regarding Import Content as per your format enclosed in the Bidding Documents.
	(e)	Attachment-4A (P)	The declaration regarding Custom duty benefits for import of Construction Equipment considered in the Bid.
	(f)	Attachment-5 (P)	<b>Deleted</b>
	(g)	Attachment-6 (P)	Declaration on Guaranteed value of parameters as per format in this Attachment for bid evaluation
2.2	<b>PRICE SCHEDULES</b>		
	In line with the requirements of the Bidding Documents, we enclose herewith the following Price Schedules, duly filled-in as per your proforma:		
	(a)	Schedule1	Plant and Equipment including type Test and Mandatory Spares to be supplied from Abroad
	(b)	Schedule2	Plant and Equipment including type Test and Mandatory Spares to be supplied from within the Owner's Country
	(c)	Schedule3	Local Transportation including Port Handling, Port Clearance & Port Charges, Inland Transit Insurance and other local costs incidental to delivery of plant & equipment and mandatory spares at site.
	(d)	Schedule4	Installation Services [Erection, Civil, Steel Structural works (Site fabricated structures as permitted as per Specifications), Factory Fabricated Steel Structural Works (Erection) & Allied works] including insurance (other than transit insurance and other services as specified in the Bidding Documents).
	(e)	Schedule5	Grand Summary
	(f)	Schedule6	Recommended Spare Parts
	(g)	Schedule7	GST as applicable on schedule 2, 3 & 4, not included in Bid Price
	(h)	Schedule7A	GST as applicable on schedule 1, not included in Bid Price
	(i)	Schedule 8A & 8B	Breakup of TypeTest Charges in Schedule 1 & 2 respectively.
	(j)	Schedule 9	<b>Deleted</b>
	(k)	Schedule10	<b>Deleted</b>
	(l)	Schedule11	<b>Deleted</b>
	(m)	Schedule12	Schedule of Optional Items/ Works
3.1	We are aware that the Price Schedules do not generally give a full description of the work to be performed under each item and we shall be deemed to have read the Technical Specifications, Drawings and other sections of the Bidding Documents to ascertain the full scope of work included in each item while filling in the rates and prices. We agree that the entered rates and prices shall be deemed to include the full scope as aforesaid, including overheads and profit.		
3.2	We declare that as specified in the General Conditions of Contract (Clause 14.1) prices quoted by us in the Price Schedule shall be subject to adjustment in accordance with Price Adjustment, Annexure-K (Price Adjustment) to the GCC.		
3.3	We understand that in the price schedules, where there are discrepancy between the unit price and the total price, which is obtained by multiplying the unit price and quantity, or between subtotals and the total price, (even in case of carry forward of prices) the unit or subtotal price shall prevail and the total price shall be corrected accordingly. Similarly, in case of any discrepancies between the total bid price and the summation of Schedule prices (price indicated in a Schedule indicating the total of that Schedule), the total bid price shall be corrected to reflect the actual summation of the Schedule prices.		
3.4	We declare that prices left blank in the Schedules will be deemed to have been included in the prices of other items. The TOTAL for each Schedule and the TOTAL of Grand Summary shall be deemed to be the total price for executing the Facilities in complete accordance with the Contract, whether or not each individual item has been priced.		
4.0	We confirm that except as otherwise specifically provided, our Bid Prices include all taxes, duties, levies and charges including GST, assessed on us, our Sub-Contractor / Sub-Vendor, or their employees by all Municipal, State or National Government authorities in connection with the Facilities, in and outside of India.		
4.1	We understand that notwithstanding 4.0 above, you shall bear and promptly pay/reimburse all custom duties and GST, if imposed on the Plant and Equipment including Mandatory Spares to be supplied from abroad and specified in Schedule No.1 (and on recommended spare parts to be supplied from abroad and specified in Schedule No.6, if awarded) to be incorporated into the Facilities, by the Indian Laws. Further you will reimburse the above custom duties and GST subject to furnishing of documentary evidence by us. However, we understand that if we choose to ship the equipment in Shipper's Containers, then the custom duty, GST and any other tax/duty levied on the cost of such empty Containers shall not be borne by you and shall be borne and payable/reimbursable by us. Further, in case any additional duties under Customs like Anti-dumping duty, Countervailing duty on subsidised articles, Safeguard duty etc. and any other tax including GST, levies, cess etc. applicable in such additional duties, is imposed on Plant and Equipment including Mandatory Spares/ Recommended Spares, the same shall be borne and paid/reimbursed by us. Further, payment of custom duty, custom clearances, any wharf age /demurrage /penalty, if levied on account of non fulfillment of contractual obligation /documentation shall be to Contractor's account		

4.2	<p>"We further understand that notwithstanding 4.0 above, you shall also bear and pay/reimburse to us GST applicable on: (a) Plant and Equipment (including Type Test Charges) and Mandatory Spares to be supplied from within the Owner's country specified in Price Schedule 2 (and also on locally supplied Recommended Spare Parts quoted in Price Schedule 6, when awarded) to be incorporated in the Facilities, by the law of country where the site is located, (b) local transportation &amp; insurance, other local costs incidental to delivery of plant &amp; equipment including mandatory spares specified in Price Schedule 3 (and also of locally supplied Recommended Spare Parts quoted in Price Schedule 6, when awarded) and (c) Installation Services including Erection, Civil &amp; Allied Works and other services specified in Price Schedule 4. However, all other taxes, duties &amp; levies as may be applicable on goods and services specified in Price Schedules 2, 3 &amp; 4 and on the materials used for civil construction works and erection &amp; commissioning shall be to our account and no separate claim in this regard will be entertained by you. Taxes and Duties which are payable by the Owner under the Contract shall be reimbursed by the Owner to the Contractor after receipt of equipment/spares at site and on production of satisfactory documentary evidence by the Contractor. <b>However, GST as applicable on Advance sanctioned to Contractor shall be paid to the Contractor alongwith the Advance sanctioned.</b> We undertake that the amount of this GST shall be progressively adjusted against Tax Invoices at the time of supply/dispatch of equipment.</p>
4.3	We confirm that we shall get registered as per relevant GST laws
4.4	<p>INCOME TAX We hereby declare that if any Indian Income Tax, surcharge on Income Tax and any other tax is attracted under the law, we agree to pay the same to the concerned authorities and you shall have no additional tax liabilities whatsoever irrespective of the mode of contracting.</p>
<b>5.0</b>	<b>COMPLIANCE TO THE PROVISIONS OF THE BIDDING DOCUMENTS</b>
5.1	<p>We have read all the provisions of the Bidding Documents and confirm that notwithstanding anything stated anywhere in our bid to the contrary, the provisions of the Bidding Documents are acceptable to us and we further confirm that we have not taken any deviation to the provisions of the Bidding Documents anywhere in our bid.</p> <p><b>We have furnished our compliance to the provisions of the Bidding Documents and its subsequent Amendment(s)/Clarification(s)/Addenda/Errata by submitting Attachment-3P(certIFICATE of compliance to all provisions of Bid Document).</b></p> <p><b>Submission of above Attachment-3P shall be considered as our confirmation that any deviation to the Provisions of Bidding Documents found anywhere in our Bid Proposal, implicit or explicit, shall stand unconditionally withdrawn, without any cost implication whatsoever to the Owner, failing which our bid security shall be forfeited.</b></p>
5.2	We further declare that additional conditions, variations, deviations, if any, found in the Price Bid, save those pertaining to any rebates offered, shall not be given effect to.
<b>6.0</b>	We declare that we have quoted the plant and equipment including spares to be supplied from abroad on CIF (Indian port-of-entry) basis.
6.1	<b>For payments related to Erection/Civil/Site Fabricated Structural Works</b>
	<p>We confirm that a single designated ESCROW account shall be opened by us in any scheduled bank of India under intimation to Owner. All payments related to Erection/Civil/Site Fabricated Structural works by the Owner due under the contract to us shall be released into above mentioned ESCROW account set up as per the Tri-Partite ESCROW Agreement between us, Owner, and Escrow Bank. The payment shall be disbursed in accordance with the mechanism set out in the Contract and Escrow Agreement. The purpose of the Escrow Account would be to ensure that payments received under the contract are solely used for implementation of the Contract. Under Tri-partite Escrow Agreement, the Escrow Bank will agree to ensure that amounts received in the ESCROW Account are utilized for making payments only to suppliers of goods and services related to Erection/Civil/Site Fabricated Structural Works, Statutory Authorities, establishment expenses etc. as may be required in the performance of the contract.</p> <p>We further confirm that all expenses/charges for opening/operation (including Annual Fee) of the Escrow Account shall be paid by us.</p> <p>The draft agreement as annexed as <b>Annexure-D , GCC</b> shall be followed for executing Escrow Account Agreement.</p> <p>The detailed Operative Procedure and Terms and Conditions of Escrow Account (Schedule-III of Draft agreement) shall be finalized between us, the Owner, and the Escrow Bank within 15 days of the placement of award.</p>
<b>7.0</b>	We undertake, if our bid is accepted, to commence work on the facilities immediately upon your Letter of Intent (LOI) to us and to achieve <b>Completion of Facilities, Trial operation, conduct Guarantee Tests and achieve Final taking Over</b> within the time specified in the Bidding Documents
7.1	We confirm that, in terms of the requirement of <b>Clause 44.0 of Erection Conditions of Contract of Vol-I, Section-5, the 'Safety Plan'</b> shall be submitted within 60 days from the <b>date of award of contract</b> for approval of Engineer-in-charge (EIC) / Project Manager of Owner.
7.2	<b>Deleted</b>
<b>8.0</b>	<b>Deleted</b>
<b>9.0</b>	If our bid is accepted, we undertake to provide Advance Payment Security, Contract Performance Securities, Performance Securities for Phase manufacturing program and securities for Deed(s) of Joint Undertaking (as applicable) in the form and amounts and within the time specified in the Bidding Documents.
<b>10.0</b>	We agree to abide by this Part-II (Price) Bid for a <b>period of 180 days</b> from the date of opening of price bids as stipulated in the Bidding Documents and it shall remain binding upon us and may be accepted by you at any time before the expiration of that period. Techno - Commercial Bid (Part-I) including this Price Bid (Part-II) shall remain valid and <b>open for acceptance for One Hundred Eighty (180) days from the date of opening of price bid.</b> Further, the prices of recommended spares contained in our Bid shall remain valid for a period of 18 months from the date of LOI.
<b>11.0</b>	Until a formal Contract is prepared and executed between us, this bid, together with your written acceptance thereof in the form of your Letter of Intent (LOI) shall constitute a binding contract between us.
<b>12.0</b>	We understand that you are not bound to accept the lowest or any other bid you may receive.
<b>13.0</b>	We confirm that cost of Special Tools & Tackles furnished by us in Attachment-4A of our Part-I (Techno-Commercial) Bid is included in lumpsum price quoted in this Price Bid.
<b>14.0</b>	We, hereby, declare that only the persons or firms interested in this proposal as principals are named here and that no other persons or firms other than those mentioned herein have any interest in this proposal or in the Contract to be entered into, if the award is made on us, that this proposal is made without any connection with any other person, firm or party likewise submitting a proposal, is in all respects for and in good faith, without collusion or fraud.
	<b>Name</b>
	<b>Designation</b>

EPC Package for  
"1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA,  
Bidding Document No. : 03/EPC/DCRTPP/800 MW

BIDDER'S NAME

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Bidding Document No. : 03/EPC/DCRTPP/800 MW

BIDDER'S NAME

0

POWER OF ATTORNEY

Bidder to Attach the Power of Attorney in accordance with Clause 2.1(b) of Bid Form Part-II (Price Bid)

(To Be Submitted in PHYSICAL MODE)

**EPC Package for  
“1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR” HARYANA,**

**Bidding Document No. : 03/EPC/DCRTPP/800 MW**

**Certificate of Compliance To All Provisions of Bid Document**

**BIDDER'S NAME**

0

**(To Be Submitted in PHYSICAL MODE)**

EPC Package for  
 “1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR” HARYANA,  
 Bidding Document No. : 03/EPC/DCRTPP/800 MW

**Declaration regarding Import Content**

BIDDER'S NAME	0	Bid Currency (Only one bid currency to be specified by Bidder)	
1.0	We confirm the details of CIF value of Import Content included in our bid in respect of Ex-works (India) price quoted in Schedule-2 are as follows:		
2.0	These details are furnished for the purpose of issuance of Essentiality Certificate by the Owner as per Clause 10.6 Section-II, ITB. We further confirm that we shall be solely responsible for availing such benefits and benefits shall be restricted to the value indicated above		
S.No.	Description of item to be supplied	Quantity	Value
<b>Name:</b>			
<b>Designation:</b>			
<b>Note</b>			
1.0	Bidder can insert more rows, as required		
2.0	Bidders to note that the Plant & Equipment including Mandatory Spares quoted on CIF basis under Schedule-1, which are to be imported by the Owner directly, should not be included in the value of import content indicated in this Attachment. The value of import content to be indicated in this Attachment shall be only in respect of Ex-works (India) price quoted in Schedule-2.		

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 Bidding Document No. : 03/EPC/DCRTPP/800 MW

Declaration regarding Customs Duty Benefits for import of Construction Equipment

BIDDER'S NAME	0	Bid Currency (Only one bid currency to be specified by Bidder)	
1.0	We confirm that we are solely responsible for obtaining the Customs Duty Benefits for import of Construction Equipment which we have considered in our bid and in case of failure to receive such benefits, Owner will not compensate us in any manner whatsoever.		
2.0	We further confirm that we will not claim for adjustment in Contract Price on account of variation in or withdrawal of Custom Duty Benefits for Import of Construction Equipment.		
3.0	We are furnishing below the information required by the Owner for issue of relevant Certificates in terms of the Customs Act & Notification of the Govt. of India:		
A	CIF Value in figures (as per bid currency selected above) of Construction Equipment to be imported by the Bidder/including its sub-contractor(s) of the Bidder		
	We further confirm that aforesaid CIF value has not been included in Attachment- 4(P).		
B	Description and quantities of the Construction Equipment to be imported by the Bidder / sub-contractor(s) for deployment to site under the package.		
S. No.	To be imported by	Description of the item to be imported	Quantity (No.)
(i)	Bidder		
(ii)	Sub-contractor(s)		
4.0	We confirm that the Construction Equipment being imported as per 'B' above shall be deployed at the Project Site for the purpose of execution of subject Package.		
Name:			
Designation:			
Note			
1	Bidder can insert more rows, as required		



EPC Package for  
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BIDDER'S NAME

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Deleted

**EPC Package for**  
**“1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR” HARYANA,**  
**Bidding Document No. : 03/EPC/DCRTPP/800 MW**

<b>BIDDER'S NAME</b>	0
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We declare that the ratings, capacities and performance figures of the equipment furnished by us under the package are guaranteed. We further declare that in the event of any deficiencies in meeting the guaranteed figures indicated below as established after conducting the guarantee tests, you may at your discretion accept the equipment/system after assessing the liquidated damages as specified in Clause No. 3.2 (Category-I) of Chapter 08 ,“FUNCTIONAL GUARANTEES & LIQUIDATED DAMAGES”, Volume-II of the Bidding Documents, or reject the equipment/system and recover payments already made.

S. No.	Guaranteed Parameters	Guaranteed Figures	Units
a)	<b>Turbine Heat Rate</b> in kcal/kwhr under rated steam conditions at guaranteed optimized condenser pressure with zero make-up at 440MW Unit Load (i.e. at 55% TMCR)		kcal/kwhr
b)	<b>Turbine Heat Rate</b> in kcal/kwhr under rated steam conditions at guaranteed optimized condenser pressure with zero make-up at 800 MW Unit Load (i.e. at 100% TMCR)		kcal/kwhr
c)	<b>Efficiency of the Steam Generator at 105% TMCR (840 MW unit load)</b> with zero make up while firing the design coal at rated steam parameters, rated coal fineness and rated excess air at economizer outlet.		%
d)	<b>Efficiency of the Steam Generator at 100% TMCR (800 MW unit load)</b> with zero make up while firing the design coal at rated steam parameters, rated coal fineness and rated excess air at economizer outlet.		%
e)	<b>Turbine Generator Output of 800 MW (100% rated load)</b> under rated steam conditions, 70 mm Hg (abs) condenser pressure with 0% makeup.		kW
f)	<b>Condenser pressure in mm Hg (abs)</b> measured at 300 mm above top row of condenser tube at 840 MW of unit load, 1% make up, design CW inlet temperature & design CW flow as specified elsewhere.		mm Hg
g)	<b>Steam Generator Capacity</b> at rated steam parameters at Superheater outlet & rated steam temperature at reheater outlet (with any combination of mills working as per Owner's choice) with the coal being fired from within the range specified		T/Hr
h)	<b>ESP Efficiency</b>		%
i)	<b>Unit Auxiliary Power Consumption</b> comprising of all Unit Auxiliaries and Station Auxiliaries required for continuous Unit operation at 800 MW (i.e. 100% rated load of the unit) under rated steam conditions and at guaranteed optimized condenser pressure with 0% make-up		kW
j)	<b>SCR Efficiency</b> for control of NOx emission		%
k)	<b>Catalyst Life</b>		Hours
l)	<b>Ammonia Consumption Rate</b> (in kg/hr, 99.5 wt%) at 100% TMCR load		kg/hr
m)	<b>FGD - SO<sub>2</sub> Removal Efficiency</b>		%
n)	<b>Limestone Consumption Rate</b> of FGD system at 100% TMCR load		kg/hr
o)	<b>NDCT - Cold water temperature</b>		°C
p)	<b>Transformer Losses</b> (Refer Annexure-II to Attachment-6 (P) for list of transformers)	0	kW
i	<b>Iron Losses</b> For every kW increase or part thereof from the Guaranteed value	0	kW
ii	<b>Copper Losses</b> For every kW increase or part thereof from the Guaranteed value	0	kW
iii	<b>Cooler Losses</b> For every kW increase or part thereof from the Guaranteed value	0	kW
<b>Name:</b>			
<b>Designation:</b>			
<b>Note</b>			
1	Bidder to furnish the breakup of the quoted Auxiliary Power Consumption and Transformer Losses as per Annexure-I and Annexure-II to Attachment-6 (P) respectively.		

**EPC Package for  
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**Break up of Guaranteed Unit Auxiliary Power Consumption (Unit Auxiliaries & Station Auxiliaries)  
 Quoted as per S. No. (i) of Attachment-6 (P) of Bid Form**

<b>BIDDER'S NAME</b>	0		
<b>S. No.</b>	<b>Name of Auxiliaries</b>	<b>Nos. in operation</b>	<b>Power Consumption (in kW)</b>
<b>Note</b>			
1.0	Bidder can insert more rows, as required		
<b>Name:</b>			
<b>Designation:</b>			

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**Transformer Losses (as per list below)**  
**Quoted as per Sr. No. (p) of Attachment-6 (P) of Bid Form**

S. No	Transformer	Quantity (No)	Iron Losses (Max)		Copper Losses (Max) at 75 °C & full load including IS tolerance		Cooler Losses (Max) including IS tolerance	
			For 1 transformer	For all transformers	For 1 transformer	For all transformers	For 1 transformer	For all transformers
0								
a)	Generator Transformer (GT)	4						
b)	Station Transformer (ST)	2						
c)	Unit Transformer (UT)	2						
d)	Interconnecting Transformer	2						
e)	Excitation Transformer (if applicable)	1						
f)	Auxiliary Power Transformers 11/6.9 KV	2						
i)	UAT	2						
ii)	SAT	2						
iii)	CHPAT	2						
iv)	AHPAT	2						
v)	BKTAT	2						
vi)	FGDAT	2						
vii)	DMPAT	2						
viii)	BWAT	2						
g)	Service Transformer	Lot						
	<b>Total Losses (kW)</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Name:</b>								
<b>Designation:</b>								

EPC Package for "1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA, Bidding Document No. : 03/EPC/DCRTPP/800 MW			
SCHEDULE OF RATES AND PRICES			
BIDDER'S NAME			Bid Currency (Only one bid currency to be specified by Bidder)
<b>SCHEDULE-1 : Plant and Equipments including Type Test and Mandatory Spares to be supplied from Abroad</b>			
Item	Description	Total Price in Bid Currency specified above CIF (Indian port of entry)	
1	2	3	
A	<b>Main Equipments</b>	0	
1	All Equipments & Material for Steam Generator and Auxiliaries (including Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]		
2	All Equipments for Steam Turbine Generator and Auxiliaries (including Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]		
3	All Equipments for Balance of Plant (including FGD & Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]		
4	All Equipments for Electrical System and C&I Systems [For ONE(1) no. Power Generating Unit having rated output of 800MW]		
5	Any other Equipment(s) not covered in 1 to 4 above but required for the Scope of Work under the Package		
	<b>Sub Total (A) [(1) + (2) + (3) + (4) +(5)]</b>	<b>0</b>	
B	MANDATORY SPARES [BOQ AS SPECIFIED IN Chapter-9, Vol II] (Bidder is required to fill the prices of all the items serially as specified in Chapter-9, Vol-II)		
C	SUB-TOTAL OF TYPE TEST CHARGES (AS PER FURTHER BREAK-UP OF TYPE TEST CHARGES GIVEN IN SCHEDULE-8A)	0	
	<b>GRAND TOTAL (A+B+C)</b>	<b>0</b>	
<b>NOTE</b>			
1	The details of main equipments under Sr. No. 1 to 5 comprises of the equipments / systems / facilities as detailed in various technical specifications (Refer Vol- II to VII). Any other system comprising of equipments in addition to above mentioned equipments which is required to complete the scope of work for one (1) no. power generating unit having rated output of 800MW and for its reliable operation shall be deemed to be included in the quoted prices.		
2	Bidders are required to indicate the Break up of Type Test Charges in the respective head of equipment as per Schedule-8A.		
3	<b>Interchangeability and Packings:</b> All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended for replacements. These spares include all mounted accessories like components, boards, add or items, fitting, connectors etc. and complete in all respects so that the replacement of the main items by these spares does not require any additional item. The vendors must conform the pair to pair compatibility of each electrical spares modules with the modules supplied in the original package. All electronic modules shall be pre set and/or preprogrammed for ready use at site. Alternatively, suitable instruction sheet indicating the details of required PCB jumper position, BCD which is setting, EPROM/PROM listing etc., shall be packed along with each module. Also a caution mark sign should be put on all such module which needs pre-setting/pre-programming before putting them into service.The spare shall be treated and properly packed for long term storage		
4	<b>Identification:</b> Each spare shall be clearly marked and labeled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.		
5	In case the description/ Quantity for any item mentioned in schedule is at variance from what has been stated in technical specifications and its subsequent amendments/ clarifications, the stipulations of technical specifications and its subsequent amendment and clarification shall prevail.		
6	Schedule-1 and/or Schedule-2 & Schedule-4 shall cover all the requirement of supply & erection of factory fabricated steel structure & Site fabricated steel structure required for the complete 01 no. Power generating Unit having rated output of 800 MW.		
7	Only factory fabricated items and not the raw material is quoted in Schedule-1 and/or Schedule-2.		

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SCHEDULE OF RATES AND PRICES		
BIDDER'S NAME		0
SCHEDULE-2 : Plant and Equipments including Type Test and Mandatory Spares to be supplied from within the Owner's Country		
Item	Description	Total Ex-works (India) Price (in INR)
1	2	3
A	<b>Main Equipments</b>	
1	All Equipments for Steam Generator and Auxiliaries (including Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
2	All Equipments for Steam Turbine Generator and Auxiliaries (including Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
3	All Equipments for Balance of Plant (including FGD & Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
4	All Equipments for Electrical System and C&I System [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
5	Any other Equipments not covered in 1 to 4 above but required for the Scope of Work under the Package	
	<b>Sub Total (A) [(1) + (2) + (3) + (4) +(5)]</b>	<b>0</b>
B	MANDATORY SPARES [BOQ AS SPECIFIED IN Chapter-9, Vol II] (Bidder is required to fill the prices of all the items serially as specified in Chapter-9, Vol-II)	
C	SUB-TOTAL OF TYPE TEST CHARGES (AS PER FURTHER BREAK-UP OF TYPE TEST CHARGES GIVEN IN SCHEDULE-8B)	0
	<b>GRAND TOTAL (A+B+C) (In Figures)</b>	<b>0</b>
NOTE		
1	The details of main equipments under Sr. No. 1 to 5 comprises of the equipments / systems / facilities as detailed in various technical specifications (Refer Vol- II to VII). Any other system comprising of equipments in addition to above mentioned equipments which is required to complete the scope of work for one (1) no. power generating unit having rated output of 800MW and for its reliable operation shall be deemed to be included in the quoted prices.	
2	Bidders are required to indicate the Break up of Type Test Charges in the respective head of equipment as per Schedule-8B.	
3	<b>Interchangeability and Packings:</b> All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended for replacements. These spares should include all mounted accessories like components, boards, add or items, fitting, connectors etc. and complete in all respects so that the replacement of the main items by these spares does not require any additional item. The vendors must conform the pair to pair compatibility of each electrical spares modules with the modules supplied in the original package. All electronic modules shall be pre set and/or preprogrammed for ready use at site. Alternatively, suitable instruction sheet indicating the details of required PCB jumper position, BCD which is setting, EPROM/PROM listing etc., shall be packed along with each module. Also a caution mark sign should be put on all such module which needs pre-setting/pre-programming before putting them into service.The spare shall be treated and properly packed for long term storage.	
4	<b>Identification:</b> Each spare shall be clearly marked and labeled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases,containers and other packages must be suitably marked and numbered for the purpose of identification.	
5	In case the description/ Quantity for any item mentioned in schedule is at variance from what has been stated in technical specifications and its subsequent amnedments/ clarifications, the stipulations of technical specifications and its subsequent amendment and clarification shall prevail.	
6	Schedule-1 and/or Schedule-2 & Schedule-4 shall cover all the requirement of supply & erection of factory fabricated steel structure & Site fabricated steel structure required for the complete 01 no. Power generating Unit having rated output of 800 MW.	
7	Only factory fabricated items and not the raw material is quoted in Schedule-1 and/or Schedule-2.	

**EPC Package for  
“1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR” HARYANA,**

**Bidding Document No. : 03/EPC/DCRTPP/800 MW**

**SCHEDULE OF RATES AND PRICES**

**BIDDER'S NAME**

0

**Schedule-3: Local Transportation including Port Handling, Port Clearance & Port Charges, Inland Transit Insurance and other local costs incidental to delivery of plant & equipment and mandatory spares at site.**

ITEM	Description	Total Price INR
1	2	3
I.	MAIN EQUIPMENTS	
II.	MANDATORY SPARES	
<b>TOTAL (I + II)</b>		<b>0</b>

**EPC Package for  
 "1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA,  
 Bidding Document No. : 03/EPC/DCRTPP/800 MW**

**SCHEDULE OF RATES AND PRICES**

<b>BIDDER'S NAME</b>		0
<b>Schedule-4: Installation Services [Erection, Civil, Steel Structural works (Site fabricated structures permitted as per Specifications), Factory Fabricated Steel Structural Works (Erection) &amp; Allied works] including Insurance (other than transit insurance and other services as specified in the Bidding Documents).</b>		
<b>ITEM</b>	<b>Description</b>	<b>Total Price (in INR)</b>
<b>1</b>	<b>2</b>	<b>3</b>
<b>A Installation/ Erection of Main Equipments</b>		
1	All Equipments for Steam Generator and Auxiliaries (including Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
2	All Equipments for Steam Turbine Generator and Auxiliaries (including Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
3	All Equipments for Balance of Plant (including FGD & Factory Fabricated Steel Structures and excluding Electrical Systems and C&I Systems) [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
4	All Equipments for Electrical System and C&I Systems [For ONE(1) no. Power Generating Unit having rated output of 800MW]	
5	Any other Equipments not covered in 1 to 4 above but required for the Scope of Work under the Package	
	Sub Total (A) [(1) + (2) + (3) + (4) +(5)]	<b>0</b>
<b>B</b>	<b>Civil, Structural (Other than steel structures) &amp; Architectural works</b>	
<b>C</b>	<b>Site Fabricated Steel Structures</b> Supply, fabrication & erection of site fabricated steel structural works (structural works other than factory fabricated structures) permitted for fabrication at site.	
<b>D</b>	<b>Training Charges (Refer Chapter-5, Vol-II, General Technical Requirements)</b>	
	<b>GRAND TOTAL (A+B+C+D)</b>	<b>0</b>
<b>NOTE</b>		
1	Only factory fabricated items and not the raw material is quoted in Schedule-1 and/or Schedule-2.	
2	Schedule-1 and/or Schedule-2 & Schedule-4 shall cover all the requirement of supply & erection of factory fabricated steel structure & Site fabricated steel structure required for the complete 01 no. Power generating Unit having rated output of 800 MW.	
3	The works related to Sr. No. A, B, C & D above shall include the equipments / systems / facilities as detailed in various technical specifications (Refer Vol- II to VII). Any other system comprising of equipments in addition to above mentioned equipments which is required to complete the scope of work for one (1) no. power generating unit having rated output of 800MW and for its reliable operation shall be deemed to be included in the quoted prices.	



EPC Package for  
 “1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR” HARYANA,

Bidding Document No. : 03/EPC/DCRTPP/800 MW

**BIDDER'S  
NAME**

0

**Schedule-5: Grand Summary**

S. No.	Description	Currency	Total Price
1	2	3	4
1	SCHEDULE-1 : Plant and Equipments including Type Test and Mandatory Spares to be supplied from Abroad		0
	Bid Currency (as quoted by Bidder)	0	
2	SCHEDULE-2 : Plant and Equipments including Type Test and Mandatory Spares to be supplied from within the Owner's Country	INR	0
3	Schedule-3: Local Transportation including Port Handling, Port Clearance & Port Charges, Inland Transit Insurance and other local costs incidental to delivery of plant & equipment and mandatory spares at site.	INR	0
4	Schedule-4: Installation Services [Erection, Civil, Steel Structural works (Site fabricated structures permitted as per Specifications), Factory Fabricated Steel Structural Works (Erection) & Allied works] including Insurance (other than transit insurance and other services as specified in the Bidding Documents).	INR	0
5	Schedule-7: Goods and Service Tax (GST), applicable on Schedule-2, 3 & 4	INR	0
6	Schedule-7A: Goods and Service Tax (GST), applicable on Schedule-1	INR	0
7	Schedule-12: Schedule of Optional Items/ Works (Including GST)	INR	0

**EPC Package for  
 "1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA,**

Bidding Document No. : 03/EPC/DCRTPP/800 MW

**SCHEDULE OF RATES AND PRICES**

BIDDER'S NAME	0	Bid Currency for spares to be supplied from abroad (Bid currency as per Schedule-1)	0
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**Schedule-6: Recommended Spare Parts**

S. No.	Item Description	Qty.	Unit Price		Total price		GST Amount	Local transportation charges (including inland insurance, port clearance & port charges)
			CIF (Indian port of Entry) <small>(For spares to be supplied from abroad)</small>	Ex-works (India) <small>(For spares to be supplied from within the Owner's country)</small>	CIF (Indian Port of Entry)	Ex-works (India)		
			0	In INR	0	In INR		
1.	2.	3.	4.	5.	6=3x4	7=3x5	8	9

<b>NOTE</b>	
1	Bidder can insert more rows, as required
2	Bidder to ensure that Recommended Spares with same specification having same identification number but with different item code shall be quoted by them at the same price. Further all such items of spares shall be clubbed together.
3	Domestically manufactured spares shall be quoted on Ex-works (India) basis and the spares to be supplied from abroad shall be quoted on CIF (Indian Port of Entry) basis.

**EPC Package for  
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 Bidding Document No. : 03/EPC/DCRTPP/800 MW**

<b>BIDDER'S NAME</b>	0
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**Schedule-7: Goods and Service Tax (GST), applicable on Schedule-2, 3 & 4**

The details of Goods and Services Tax (as on seven (07) days prior to the last date for submission of bid applicable on the price of goods and services quoted in Schedule-2, 3 & 4, not included in the Bid Price and which may be payable by the Owner in accordance with the provisions of Bidding Documents are as under:-

S. No.	Bid Price Component	GST Amount (INR)
1	2	3
1	Ex-Works-Main Equipment (Schedule-2)	
2	Ex-Works-Mandatory Spares (Schedule-2)	
3	Type Test Charges (Schedule-2)	
4	F&I-Main Equipment (Schedule-3)	
5	F&I-Mandatory Spares (Schedule-3)	
6	Erection Services of Main Equipment including Factory Fabricated Steel structures (Schedule-4)	
7	Erection services for Civil, Structural (other than steel structures) and architectural Works (Schedule-4)	
8	Site fabricated Steel Structural works (Schedule-4)	
9	Training Charges (Schedule-4)	
	<b>Total GST Amount</b>	<b>0</b>

**NOTE**

1	Bidder shall quote the GST as applicable in the Owner's country as on Seven (7) days prior to the last date of submission of Bid.
2	The GST shall be paid at actuals against documentary evidence subject to maximum Total GST amount indicated above.

**EPC Package for  
 “1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR” HARYANA,  
 Bidding Document No. : 03/EPC/DCRTPP/800 MW**

<b>BIDDER'S NAME</b>	0
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**Schedule-7A: Goods and Service Tax (GST), applicable on Schedule-1**

The details of Goods and Services Tax as on seven (07) days prior to the last date for submission of bids applicable on the price of goods and services quoted in Schedule-1, not included in the Bid Price and which may be payable by the Owner in accordance with the provisions of Bidding Documents are as under:-

S. No.	Bid Price Component	GST Amount (INR)
1	2	3
1	CIF Main Equipment (Schedule-1)	
2	CIF Mandatory Spares (Schedule-1)	
	<b>Total GST Amount</b>	0

**NOTE**

1	Bidder shall quote the GST as applicable in the Owner's country as on Seven (7) days prior to the last date of submission of Bid.
2	The GST shall be paid at actuals against documentary evidence subject to maximum Total GST amount indicated above.

EPC Package for "1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA, Bidding Document No. : 03/EPC/DCRTPP/800 MW				
SCHEDULE OF RATES AND PRICES				
BIDDER'S NAME	0	Bid Currency (Bid currency as per Schedule-1)	0	
Schedule-8A: Break up of Type Test Charges for Equipment Priced in Schedule-1				
Sl. No.	Description of Test	Charges for oneType/ Rating	No.of Type/ Rating	Total Charges
1	2	3	4	5 = 3 x 4
<b>LIST OF TYPE TESTS ON ELECTRICAL EQUIPMENTS</b>				
<b>1.0</b>	<b>Generator and its Auxiliary Systems</b>			
1.1	Instantaneous Sudden Short Circuit			0
1.2	Determination of negative sequence and zero sequence impedance			0
1.3	Determination of voltage wave form and Total Harmonic Factor			0
1.4	Short circuit heat run test at 2/3 of rated stator current, at rated pressure and cooling parameters with one cooler out of circuit and 10% of tubes plugged is remaining coolers. In case of unsymmetrical cooler configuration, test with all possible variants of one cooler out of service shall be carried out.			0
1.5	Vibration measurement of stator end winding for the following conditions			0
	(a) Open circuit operation			0
	(b) Short circuit operation			0
	(c) Sudden short circuit conditions			0
	(d) Stand still condition with hammer test (separate charges for each condition (a, b, c & d) shall be indicated)			0
1.6	Brushless excitation system (if applicable)			0
(a)	Exciter			0
(b)	Temperature rise test at peak rating of excitation system, including ceiling duty condition			0
	Permanent magnet Generator			0
(c)	Temperature rise test at peak rating of excitation system, including ceiling duty condition			0
	Converter Assembly (of the excitor field) Temperature rise test at peak rating of excitation system including ceiling duty condition			0
(d)	Input and output surge withstand capacity test			0
	(i) The Oscillatory SWC tests shall be conducted as per ANSI / IEEE C37.90.1-2002.			0
	(ii) The Fast transient SWC tests shall be conducted as per ANSI / IEEE C37.90.1-2002 / IEC 60255-22-04-2008.			0
(e)	Impulse withstand voltage test on terminal Bushings			0
1.7	Static excitation system (if applicable)			0
(a)	Excitation Transformer as per IEC-60076-11			0
	i. Short circuit Test			0
	ii. Lighting Impulse Test			0
	iii. Temperature rise Test			0
	iv. Noise level Test			0
	(separate charges for each test (i, ii, iii & iv) shall be indicated)			
(b)	Type tests on field breaker as per IEEE/ANSI C-37-18/IEC 60947-2			0
(c)	Temperature rise test of converter panel at MCR rating and demonstration of ceiling duty condition			0
(d)	Excitation Busduct as per IS:8084 / ANSI / IEEE-37.23 / IEC 60439-2,60529 & 62271			0
	i. Temperature rise Test			0
	ii. Dynamic and short time current Test			0
	iii. Degree of protection Test			0
	iv. one minute power frequency high voltage withstand Test			0
	(separate charges for each test (i, ii, iii & iv) shall be indicated)			
(e)	Test for estimating the dis-charging capability of the field discharge resistors in succession for atleast two discharges			0
(f)	Input and Output withstand capability test			0
	i. The fast transient SWC Tests as per ANSI/IEEE C 37.90.1-2002/IEC60255-22-04-2008			0
	ii. The Oscillatory SWC tests shall be conducted as per ANSI / IEEE C37.90.1-2002.			0
(g)	Degree of protection test of excitation system panels.			0
<b>2.0</b>	<b>Gas Insulated Switchyard</b>			
(A)	The following type tests on typical 400kV (As Applicable) GIS bay module as per IEC 62271-203. The components forming parts of the GIS which are covered by other standards shall comply with and shall be type tested according to those standards.			0
	(i) Lightning impulse voltage dry tests. 1No.			0
	(ii) Switching impulse voltage dry tests. 1No.			0
	(iii) Power frequency voltage dry tests. 1No.			0
	(iv) Partial discharge tests. 1No.			0
	(v) Radio Interference Voltage test 1No.			0
	(vi) Test to prove the temperature rise of any part of the equipment and measurement of the resistance of the main circuit. 1No.			0
	(vii) Test to prove the ability of the main circuit and earthing circuit to carry the rated peak and the rated short time with stand current. 1No.			0
	(viii) Test to verify the making and breaking capacity of the included switching devices. 1No.			0
	(ix) Test for satisfactory operation of the included switching devices. 1No.			0
	(x) Test to prove the strength of enclosures. 1No.			0
	(xi) Gas tightness test 1No.			0
	(xii) Electromagnetic capability test (if applicable) 1No.			0
	(xiii) Test on partitions 1No.			0
	(xiv) Internal arc tests 1No.			0
	(xv) Mechanical operation tests. 1No.			0
	(xvi) Test to prove the satisfactory operation at limit temperature. 1No.			0
	(xvii) Verification of degree of protection of auxiliary and control circuits. 1No.			0
	(xviii) Test to prove performance under thermal cycling and gas tightness test on gas barrier insulators 1No.			0
	(xix) Capacitive Current switching test 1No.			0
	(xx) Shunt reactor current switching test 1No.			0
(B)	For surge arrester and Bus VT following type tests as per relevant IEC. 400kV (As Applicable) Surge Arrester (As per IEC60099-4)			0
	(a) Insulation withstand test on housing 1No.			0
	(b) Residual voltage test 1No.			0
	(c) Long duration current impulse with stand test 1No.			0
	(d) Operating duty test 1No.			0
	(e) Partial Discharge Test 1No.			0
	(f) Leakage Test 1No.			0
(C)	400kV (As Applicable) Bus VT (As per IEC60044-2)			0
	(a) Temperature rise test 1No.			0

	(b) Lighting Impulse test	1No.			0
	(c) Switching Impulse	1No.			0
	(d) Determination of errors	1No.			0
	(e) Short circuit with stand capability	1No.			0
	(f) Chopped lighting impulse test	1No.			0
<b>3.0</b>	<b>Transformers</b>				
<b>(A)</b>	<b>Generator Transformer</b>				
(a)	Short circuit test as per IEC-60076-5	1No.			0
(b)	Determination of transient voltage transfer characteristics	1No.			0
(c)	Measurement of harmonics of the no load current	1No.			0
(d)	Measurement of acoustic noise level as per NEMATR-1	1No.			0
(e)	Dielectric type tests.	1No.			0
(f)	Temp. rise test	1No.			0
(g)	LTAC test.	1No.			0
(h)	Tank vacuum test.	1No.			0
(i)	Measurement of power taken by fans & pumps	1No.			0
<b>(B)</b>	<b>Station Transformer/Stand-by Transformer</b>				
(a)	Short circuit test as per IEC-60076-5	1No.			0
(b)	Temperature rise test	1No.			0
(c)	Zero sequence impedance measurement test	1No.			0
(d)	Measurement of the power taken by fans & pumps (if applicable)	1No.			0
(e)	Measurement of harmonics of the no load current	1No.			0
(f)	Measurement of acoustic noise level as per NEMATR-1	1No.			0
(g)	IPVD test as per IEC-60076-3	1No.			0
(h)	Dielectric type tests.	1No.			0
(i)	LTAC test.	1No.			0
(j)	Tank vacuum test.	1No.			0
<b>(C)</b>	<b>Unit Transformer</b>				
(a)	Lighting impulse (Full & chopped wave) test on HV & LV winding (as per IEC-60076-3)	1No.			0
(b)	Lighting impulse test on neutral	1No.			0
(c)	Short circuit test as per IEC-60076-5	1No.			0
(d)	Temperature rise test	1No.			0
(e)	Zero sequence impedance measurement test	1No.			0
(f)	Measurement of the power taken by fans & pumps (if applicable)	1No.			0
(g)	Measurement of harmonics of the no load current	1No.			0
(h)	Measurement of acoustic noise level as per NEMATR-1	1No.			0
(i)	Dielectric type tests.	1No.			0
(j)	LTAC test.	1No.			0
(k)	Tank Vacuum test.	1No.			0
<b>(D)</b>	<b>Reactor for each type /rating</b>				
(a)	Temperature rise test	1No.			0
(b)	Measurement of harmonics	1No.			0
(c)	Measurement of acoustic noise level	1No.			0
(d)	Lighting impulse test on neutral.	1No.			0
(e)	Measurement of zero sequence reactance.	1 No.			0
<b>(E)</b>	<b>Startup Transformer</b>				
(a)	Temperature rise test	1No.			0
(b)	Zero sequence impedance measurement test	1No.			0
(c)	Measurement of harmonics of the no load current	1No.			0
(d)	Measurement of acoustic noise level as per NEMATR-1	1No.			0
<b>(F)</b>	<b>11/6.9 KV transformer (For each type and rating):</b>				
(a)	Chopped wave Lightning impulse test	1No.			0
(b)	Lightning impulse on Neutral	1No.			0
(c)	Short circuit test	1No.			0
(d)	Temperature rise test	1No.			0
(e)	Noise level test	1No.			0
(f)	Tank vacuum test.	1No.			0
(g)	DGA test.	1No.			0
(h)	Frequency response analysis.	1No.			0
(i)	RSO measurement.	1No.			0
(j)	DOP test.	1No.			0
(k)	Power taken by cooling fans & pumps.	1No.			0
(l)	No load harmonics.	1No.			0
(m)	Zero sequence impedance.	1No.			0
<b>(G)</b>	<b>Aux./LT transformer (For each type/ rating):</b>				
(a)	Chopped wave Lightning impulse test	1No.			0
(b)	Short circuit test	1No.			0
(c)	Temperature rise test	1No.			0
(d)	Noise level test	1No.			0
(e)	Impulse test.	1No.			0
(f)	Heat run test.	1No.			0
(g)	Partial discharge test.	1No.			0
<b>(H)</b>	<b>Neutral Grounding Reactor (For each type/rating):</b>				
(a)	Lightning Impulse voltage with stand test (as per IEC-76)	1No.			0
(b)	Temp. rise test	1No.			0
(c)	Short time current test & measurement of impedance at Short time current.	1No.			0
(d)	Measurement of acoustic sound level.	1No.			0
<b>(I)</b>	<b>Tie Transformer</b>				
(a)	Short circuit test	1No.			0
(c)	Harmonics Measurement	1No.			0
(d)	Measurement of the power taken by fans	1No.			0
(e)	Determination of transient voltage transfer characteristics	1No.			0
(f)	Measurement of acoustic sound level	1No.			0
<b>4.0</b>	<b>HT CABLES</b>				
<b>(A)</b>	<b>The following type tests shall be carried out on one size of 11/11KV, Grade Cable</b>				
1	Conductor				0
	(i) Resistance test				0
2	<b>For Armour Wires/formed Wires</b>				
(a)	Measurement of Dimensions	01 No.			0
(b)	Tensile Test	1No.			0
(c)	Elongation Test	1No.			0
(d)	Torsion Test	1No.			0
(e)	Wrapping Test	1No.			0
(f)	Resistance Test	1No.			0
(g)	Mass & uniformity of Zinc Coating tests	1No.			0
(h)	Adhesion test	1No.			0
3	<b>For XLPE insulation &amp; PVC Sheath</b>				
(a)	Test for thickness	1No.			0
(b)	Tensile strength and elongation test before ageing and after ageing	1No.			0
(d)	Loss of mass test	1No.			0

(e)	Hot deformation test	1No.			0
(f)	Heat shock test	1No.			0
(g)	Shrinkage test	1No.			0
(h)	Thermal stability test	1No.			0
(i)	Hot set test	1No.			0
(j)	Water absorption test	1No.			0
(k)	Oxygen index test	1No.			0
(l)	Smoke density test	1No.			0
(m)	Acid gas generation test	1No.			0
(n)	Flamability test as per IEC-332 Part-3 (Category-B)	1No.			0
<b>(B)</b>	<b>The following type tests shall be carried out on all sizes of 11/11kV cable</b>				
1	Insulation resistance test (Volume Resistivity method)				0
2	High voltage test				0
3	Partial discharge test				0
4	Bending test				0
5	Dielectric power factor test				0
	(a) As a function of voltage				0
	(b) As a function of temperature				0
6	Heating cycle test				0
7	Impulse withstand test				0
8	Anti termite & Rodent Test				0
9	Temperature Index				0
10	Swedish Chimney Test				0
<b>(C)</b>	<b>The following type tests shall be carried out on one size of 6.6/6.6 kV Cable</b>				
1	<b>Conductor</b>				
	(i) Resistance test	1No.			0
2	<b>For Armour Wires/Formed Wires</b>				
	(a) Measurement of Dimensions				0
	(b) Tensile Test	1No.			0
	(c) Elongation Test	1No.			0
	(d) Torsion Test	1No.			0
	(e) Wrapping Test	1No.			0
	(f) Resistance Test	1No.			0
	(g) Mass & uniformity of Zinc Coating tests	1No.			0
	(h) Adhesion test	1No.			0
3	<b>For XLPE Insulation &amp; PVC Sheath</b>				
	(a) Test for thickness	1No.			0
	(b) Tensile strength and elongation test before ageing and after ageing	1No.			0
	(c) Ageing in air oven	1No.			0
	(d) Loss of mass test	1No.			0
	(e) Hot deformation test	1No.			0
	(f) Heat shock test	1No.			0
	(g) Shrinkage test	1No.			0
	(h) Thermal stability test	1No.			0
	(i) Hot set test	1No.			0
	(j) Water absorption test	1No.			0
	(k) Oxygen index test	1No.			0
	(l) Smoke density test	1No.			0
	(m) Acid gas generation test	1No.			0
	(n) Flamability test as per IEC-332 Part-3 (Category-B)	1No.			0
<b>(D)</b>	<b>The following type tests shall be carried out on all sizes of 6.6/6.6 kV cable.</b>				
1	Insulation resistance test (Volume Resistivity method)				0
2	High voltage test				0
3	Partial discharge test				0
4	Bending test				0
5	Dielectric power factor test				0
	(a) As a function of voltage				0
	(b) As a function of temperature				0
6	Heating cycle test				0
7	Impulse withstand test				0
8	Anti termite & Rodent Test				0
9	Temperature Index				0
10	Swedish Chimney Test				0
<b>(E)</b>	<b>The following type tests shall be carried out on LT Cables and Control Cables</b>				
1	Test on conductor				0
2	Thickness of insulation & sheath				0
3	Physical test on Insulation				0
4	Physical Test on Outer Sheath				0
5	Ins. Resistance				0
6	HV Test at Room Temp				0
7	Test on Armour Wire/ Strip				0
8	Flammability Test				0
9	Anti Termite & Rodent Test				0
10	FRLSH Properties (For FRLSH PVC Only)				0
	i) Oxygen Index				0
	ii) Temperature Index				0
	iii) Smoke Density Rating				0
	iv) Acid Gas Generation				0
	v) Flammability Test				0
	vi) Swedish Chimney test				0
<b>5.0</b>	<b>BUS DUCT</b>				
<b>5.1</b>	<b>Heat Run Test</b>				
(i)	Generator Bus duct				0
	a) Main run				0
	b) Delta run				0
	c) Tap off run				0
(ii)	Medium Voltage Bus duct				0
	a) 11 KV Bus duct				0
	b) 6.6 KV Bus duct				0
<b>5.2</b>	<b>Short circuit with stand test</b>				
(i)	Generator Bus duct				0
	a) Main run				0
	b) Delta run				0
	c) Tap off run				0
(ii)	Medium Voltage Bus duct				0
	a) 11 KV Bus duct				0
	b) 6.6 KV Bus duct				0
<b>5.3</b>	<b>Impulse withstand test followed by HV test</b>				
(i)	Generator Bus duct				0
	a) Main run				0

	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>5.4</b>	<b>One minute high voltage Power frequency withstand test</b>			
(i)	Generator Bus duct			0
	a) Main run			0
	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>5.5</b>	<b>Water Tightness Test</b>			
(i)	Generator Bus duct			0
	a) Main run			0
	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>5.6</b>	<b>Air Leakage Test</b>			
(i)	Generator Bus duct			0
	a) Main run			0
	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>6.0</b>	<b>MOTORS</b>			
<b>(A)</b>	<b>HT MOTORS</b>			
6.1	No load saturation and loss curves upto approximately 115% of rated voltage			0
6.2	Measurement of noise at no load			0
6.3	Momentary overload test (subject to test bed constraint)			0
6.4	Full load test (Subject to test bed constraint)			0
6.5	Temperature rise test at rated condition			0
6.6	Lightning Impulse withstand test on the sample coil shall be as per IEC-60034, part-15			0
6.7	Surge-withstand test on interturn insulation shall be as per clause no. 5.1.2 of IEC60034, part-15			0
6.8	Degree of protection test for the enclosure followed by IR, HV and no load run test.			0
6.9	Terminal box-fault level withstand test for each type of terminal box			0
<b>(B)</b>	<b>LT MOTORS</b>			
	a) Measurement of resistance of windings of stator and wound rotor.			0
	b) No load test at rated voltage to determine input current power and speed.			0
	c) Open circuit voltage ratio of wound rotor motors ( in case of Slip ring motors)			0
	d) Full load test to determine efficiency power factor and slip.			0
	e) Temperature rise test.			0
	f) Momentary excess torque test.			0
	g) High voltage test.			0
	h) Test for vibration severity of motor.			0
	i) Test for noise levels of motor			0
	j) Test for degree of protection			0
	k) Over speed test.			0
	l) Type test reports for motors located in fuel oil area having flame proof enclosures as per IS 2148 / IEC 60079-1			0
<b>7.0</b>	<b>LED LIGHTING FIXTURE</b>			
(i)	High bay fixture 1No.			0
(ii)	well glass fixture 1No.			0
(iii)	Street light fixture 1No.			0
(iv)	Surface mounted indoor type fixture 1No.			0
(v)	Recessed mounted indoor type fixture 1No.			0
(vi)	Rain-proof test for outdoor type luminaries and respective control gearbox as type test.			0
(vii)	Temperature rise test on ballast/choke as type test. Dust proof test as type test.			0
<b>8.0</b>	<b>ESP (Electrical)</b>			
<b>(A)</b>	<b>TR Set</b>			
1	Temperature rise test at rated DC current at 1:1 charge ratio			0
2	Lightning Impulse voltage test			0
3	Measurement of harmonic current in no load current			0
4	PRD operation test			0
5	Short circuit test (To be conducted as described below) This short circuit test shall be performed on TR set along with the TR panel and controller with a spark gap connected across the output. The gap is adjusted to get the spark at required peak voltage which is the Short circuit condition and the controller will control the voltage to quench the spark.			0
6	Vacuum test on tank			0
7	Pressure test on tank			0
8	Induced over voltage test			0
9	Measurement of no load losses and current			0
10	Measurement of impedance voltage/short circuit impedance and losses			0
11	Measurement of IR			0
12	Measurement of acoustic sound level			0
13	Degree of protection test			0
14	Measurement of capacitance and tan delta			0
15	Jacking test on Transformer load bearing member			0
16	Oil leakage test for 24 hours			0
<b>(B)</b>	<b>Insulators</b>			
(1)	Compression test on support insulator			0
(2)	Torsion test on shaft insulator			0
(3)	Lightning impulse test and one minute dry power frequency test on each type of insulators.			0
<b>(C)</b>	<b>Disconnecting Switch</b>			
(1)	Lightning impulse test and one minute dry power frequency test			0
(2)	Impulse test on any one transformer of each type selected by the Owner.			0
(3)	Heat run (Temperature rise) Test on any one transformer of each type selected by the Owner.			0
<b>(D)</b>	<b>Switch Mode Power Supply / TR set controller</b>			
(1)	Temperature rise			0
(2)	Measurement of line current harmonics			0
(3)	Degree of protection.			0
(4)	Dry heat test as per IEC-68-2-2 or equivalent for electronic modules.			0
(5)	Damp heat test as per IEC-68-2-2 or equivalent for electronic modules.			0
<b>9.0</b>	<b>Deleted</b>			
<b>10.0</b>	<b>Generator Circuit Breaker</b>			
(a)	Rated dielectric strength tests			0



	(i) Rated low frequency with stand voltage dry test			0
	(ii) Rated full wave impulse withstand voltage level			0
(b)	Short circuit rating and transient recovery voltage tests			0
	(i) Test for rated symmetrical short circuit current interrupting capability, duty cycle and rated transient recovery voltage parameters			0
	(ii) Test for rated closing, latching and short time current carrying capability			0
	(iii) Test for rated Generator source asymmetrical short circuit interrupting capability			0
(c)	Load current switching test			0
(d)	Out of phase switching current tests			0
(e)	Rated excitation current switching tests			0
(f)	Type tests and oscillographic test records for closing and tripping timings for generator circuit breaker of the rating offered			0
<b>11.0</b>	<b>VFD system for condensate transfer pump motor</b>			
(a)	<b>Reactor (if applicable)</b>			
	(i) Lightning impulse test			0
	(ii) Heat run test			0
	(iii) Short time current test			0
	(iv) Noise Level test			0
(b)	<b>Transformer</b>			
	(i) Short circuit test on transformer			0
	(ii) Noise level			0
	(iii) Measurement of harmonics of no load current			0
	(iv) PRD operation test			0
	(v) Degree of protection test on marshalling box			0
	(vi) Zero sequence Impedance (not applicable for Delta-delta transformer)			0
	(vii) Temperature rise test			0
	(viii) Chopped Wave Lightning impulse test on HV & LV winding as per Cl. 14 of IEC 60076-3			0
(c)	<b>Complete VFD System</b> Overall efficiency determination of VFD system including transformer/ Harmonic filters etc at motor full load			0
(d)	<b>For VFD, following type tests to be carried out:-</b>			
1	Allowable full load current versus speed.			0
2	Overall Efficiency determination of VFD system including transformer/ Harmonic Filters etc at motor full load.			0
3	Temperature rise.			0
4	EM immunity.			0
5	EM emission.			0
6	Current sharing.			0
7	Voltage division.			0
8	Line side current distortion content			0
9	Power factor			0
10	Audible noise			0
11	Torque pulsation			0
12	Motor vibration			0
13	Dynamic performance			0
14	Current limit and current loop test			0
15	Speed loop test capability to ride through voltages less than 80%			0
16	Test capability to restart the system and resynchronize converter onto running motor after a voltage interruption.			0
17	Harmonics of No Load Current (Input / Output)			0
<b>12.0</b>	<b>11 kV/6.6kV switchgear, following type tests to be carried out:-</b>			
1	Short circuit duty test on circuit breaker, mounted inside the panel all test duties			0
2	Short time current rating withstand test on circuit breaker mounted inside panel. (50 kA for 1 sec for 11 kV and 40 kA for 1 sec for 6.6 kV)			0
3	Power frequency voltage withstand test on breaker and panel.			0
4	Lightning impulse withstand test on breaker and panel.			0
5	Temperature rise test on breaker and panel together. Temperature rise test shall be done on a section of switchgear assembly that involves bus coupler panels and adjacent breaker panels on both the sides.			0
6	Temperature rise measuring points shall include but not limited to the following:-			0
	a) Incoming/outgoing terminal for bus coupler circuit breaker			0
	b) Main bus tap offs for bus coupler circuit breaker.			0
7	Switching over-voltage test on motor substitute circuit as per IEC draft on each rating of breaker used for motor switching duty.			0
8	Measurement of resistance of main circuit.			0
9	Mechanical endurance test of breaker as per IEC.			0
10	Degree of enclosure protection test for IP-42.			0
<b>13.0</b>	<b>SUB STATION AUTOMATION SYSTEM</b>			
(a)	DC Supply Interruption			0
(b)	AC Ripple on DC supply			0
(c)	AC voltage dips and short Interruptions			0
(d)	High Frequency Disturbance			0
(e)	Fast Transient Disturbance			0
(f)	Surge Withstand Capability			0
(g)	Electrostatic.			0
(h)	Surge Immunity			0
(i)	Control IEDs and Communication Equipment (Power Input)			0
	a. Auxiliary Voltage			0
	b. Current Circuits			0
	c. Voltage Circuits			0
	d. Indications			0
(j)	Accuracy tests:			0
	a) Operational Measured Values			0
	b) Currents			0
	c) Voltages			0
	d) Time resolution			0
(k)	Insulation Tests			0
	a) Dielectric Tests			0
	b) Impulse Voltage withstand Test			0
(l)	Influencing Quantities:			0
	a) Limits of operation			0
	b) Permissible ripples			0
	c) Interruption of input voltage			0
(m)	Electromagnetic Compatibility Test:			0
	a) 1 MHZ. Burst disturbance test			0
	b) Electrostatic Discharge Test			0
	c) Radiated Electromagnetic Field Disturbance Test			0
	d) Electrical Fast transient Disturbance Test			0
	e) Conducted Disturbances Tests induced by Radio Frequency Field			0
	f) Magnetic Field Test			0
	g) Emission (Radio interference level) Test.			0
	h) Conducted Interference Test			0
<b>14.0</b>	<b>EMERGENCY DG SET</b>			
1	Measurement of resistance			0
2	Phase sequence test			0

3	Regulation test			0
4	Measurement of open circuit and short circuit characteristics			0
5	Efficiency test			0
6	Temperature Rise Test			0
7	Momentary overload test			0
8	Over speed test			0
9	High Voltage test			0
10	Insulation resistance test (both before and after High Voltage Test)			0
11	Noise level as per IS:12065			0
12	Vibration as per IS: 12075.			0
13	Determination of Deviation of voltage waveform from sinusoidal.			0
14	Degree of protection test on control panel for IP-52			0
15	Battery and battery charger as per relevant standards			0
16	Type test on Engine			0
17	Type test on Alternator			0
15.0	220kV AIS Switchyard			
1	<b>220 kV Circuit Breaker :</b>			
	All type tests as per latest standard performed on an identical breaker design and rating, with dimensional drawings shall be submitted for approval			0
2	<b>245kV Disconnect Switch (Isolator)</b>			
	All type tests as per latest standard shall be performed			0
3	<b>245kV Current Transformer</b>			
	All type tests certificates conforming to latest standard shall be performed			0
4	<b>198kV Surge Arrestors (SAs)</b>			
	All type tests as per latest standard shall be performed			0
16.0	<b>Main Turbine Oil Purification System</b>			
16.1	Particle size impurities test on one oil purification system of main turbine			0
17.0	<b>BFP/BP</b>			
	<b>(A) TDBFP</b>			
	(i) Dry Running withstand capability Test on One BFP and Preferably with corresponding BP			0
	(ii) Visual Cavitation Test on One BFP			0
	(iii) Pressure Pulsation Test on One BFP			0
	(iv) Axial Thrust Measurement on One BFP			0
	(v) NPSH (R) Test on One BFP and One BP			0
	(vi) Complete strip down test of BFP which undergone above tests			0
	(vii) Pressure drop test on one strainer for each type and size			0
	<b>(B) MDBFP</b>			
	(i) Dry Running withstand capability Test on One BFP and Preferably with corresponding BP			0
	(ii) Visual Cavitation Test on One BFP			0
	(iii) Pressure Pulsation Test on One BFP			0
	(iv) Axial Thrust Measurement on One BFP			0
	(v) NPSH (R) Test on One BFP and One BP			0
	(vi) Complete strip down test of BFP which undergone above tests			0
	(vii) Pressure drop test on one strainer for each type and size			0
18.0	<b>Drive turbine oil Purification system</b>			
18.1	Particle size impurities tests as detailed out in the technical specification, is to be carried out on one oil purification system of BFP drive turbine			0
19.0	<b>Metallic expansion Bellows</b>			
(a)	One number of each type & size			
	(i) Life Cycle Test			0
	(ii) Meridional yield rupture test			0
	(iii) Squirm test			0
(b)	One number of each type & size as per clause mentioned in Power Cycle Piping, Vol-III			
	(i) Life Cycle Test			0
	(ii) Meridional yield rupture test			0
	(iii) Squirm test			0
<b>Note:</b>	Bidder to indicate price for each type & size separately.			
20.0	<b>Vacuum pump type test (One pump)</b>			
	(i) Wet Air Test			0
	(ii) Cavitation Test			0
21.0	<b>CEP TypeTest</b>			
	(i) NPSH (R) test on one CEP			0
	(ii) Pressure drop test on one CEP suction strainer			0
22.0	<b>Drip Pump Type Test (if envisaged)</b>			
22.1	NPSH (R) test on one drip pump			0
23.0 (I)	<b>Performance Test on actual fan of the size &amp; type offered at Works</b>			
	(a) ID Fan			0
	(b) FD Fan			0
	(c) PA Fan			0
	(d) Seal air fan			0
	(e) GR Fan (If applicable)			0
	(f) Booster Fan (If applicable)			0
(II)	Leak tightness testing of dampers at shop for each type & size of dampers			0
(III)	Following tests for Steam Generator/ Startup drain recirculation pump at shop			
	(a) Test to establish unit functioning of pump at temp. & pressure			0
	(b) Hot stand still and start-up test			0
(IV)	Coal feeders			
	(a) Explosion proof test at 50 PSI: as per NFPAcodes			0
	(b) Weighing accuracy, and repeatability test at various speeds with coal flow			0
24.0	<b>Type test on C&amp;I equipments as per Chapter-13 (Type Test Requirements), Part-B, Vol-V</b>			0
25.0	<b>Any other type test not covered above, but required for the Scope of Work under the Package</b>			0
26.0	Bidder to note that in case for the balance C&I systems /equipment, the type test certificates furnished by the Bidder is (are) not acceptable to the Owner on the grounds indicated in the C&I section of technical specifications the relevant test(s) shall be conducted without any price repercussion to the Owner.			
	<b>TOTAL (TO SCHEDULE-1)</b>			<b>0</b>
<b>Note :</b>				
1	The currency for type test charges shall be same as the currency in which the corresponding equipment is being offered in Schedule-1.			
2	Any Type Test found applicable/ considered essential during detailed Engineering for any of the offered Equipment but not indicated above shall be deemed to be included in the above quoted price.			

**EPC Package for**  
**"1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA,**  
**Bidding Document No. : 03/EPC/DCRTPP/800 MW**

**SCHEDULE OF RATES AND PRICES**

<b>BIDDER'S NAME</b>	0
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**Schedule-8B: Break up of Type Test Charges for Equipment Priced in Schedule-2**

Sl. No.	Description of Test	Charges for one Type/ Rating (in INR)	No. of Type/ Rating	Total Charges (in INR)
1	2	3	4	5 = 3 x 4
<b>LIST OF TYPE TESTS ON ELECTRICAL EQUIPMENTS</b>				
<b>1.0</b>	<b>Generator and its Auxiliary Systems</b>			
1.1	Instantaneous Sudden Short Circuit			0
1.2	Determination of negative sequence and zero sequence impedance			0
1.3	Determination of voltage wave form and Total Harmonic Factor			0
1.4	Short circuit heat run test at 2/3 of rated stator current, at rated pressure and cooling parameters with one cooler out of circuit and 10% of tubes plugged is remaining coolers. In case of unsymmetrical cooler configuration, test with all possible variants of one cooler out of service shall be carried out.			0
1.5	Vibration measurement of stator end winding for the following conditions			0
	(a) Open circuit operation			0
	(b) Short circuit operation			0
	(c) Sudden short circuit conditions			0
	(d) Stand still condition with hammer test			0
	(separate charges for each condition (a, b, c & d) shall be indicated)			
1.6	Brushless excitation system (if applicable)			0
(a)	Exciter			0
	Temperature rise test at peak rating of excitation system, including ceiling duty condition			0
(b)	Permanent magnet Generator			0
	Temperature rise test at peak rating of excitation system, including ceiling duty condition			0
(c)	Converter Assembly (of the excitor field) Temperature rise test at peak rating of excitation system including ceiling duty condition			0
(d)	Input and output surge withstand capacity test			0
	(i) The Oscillatory SWC tests shall be conducted as per ANSI / IEEE C37.90.1-2002.			0
	(ii) The Fast transient SWC tests shall be conducted as per ANSI / IEEE C37.90.1-2002 / IEC 60255-22-04-2008.			0
(e)	Impulse withstand voltage test on terminal Bushings			0
1.7	Static excitation system (if applicable)			0
(a)	Excitation Transformer as per IEC-60076-11			0
	i. Short circuit Test			0
	ii. Lighting Impulse Test			0
	iii. Temperature rise Test			0
	iv. Noise level Test			0
	(separate charges for each test (i, ii, iii & iv) shall be indicated)			
(b)	Type tests on field breaker as per IEEE/ANSI C-37-18/IEC 60947-2			0
(c)	Temperature rise test of converter panel at MCR rating and demonstration of ceiling duty condition			0
(d)	Excitation Busduct as per IS:8084 / ANSI / IEEE-37.23 / IEC 60439-2,60529 & 62271			0
	i. Temperature rise Test			0
	ii. Dynamic and short time current Test			0
	iii. Degree of protection Test			0
	iv. one minute power frequency high voltage withstand Test			0
	(separate charges for each test (i, ii, iii & iv) shall be indicated)			
(e)	Test for estimating the dis-charging capability of the field discharge resistors in succession for atleast two discharges			0
(f)	Input and Output withstand capability test			0
	i. The fast transient SWC Tests as per ANSI/IEEE C 37.90.1-2002/IEC60255-22-04-2008			0
	ii. The Oscillatory SWC tests shall be conducted as per ANSI / IEEE C37.90.1-2002.			0
(g)	Degree of protection test of excitation system panels.			0
<b>2.0</b>	<b>Gas Insulated Switchyard</b>			
(A)	The following type tests on typical 400kV (As Applicable) GIS bay module as per IEC 62271-203. The components forming parts of the GIS which are covered by other standards shall comply with and shall be type tested according to those standards.			0
	(i) Lightning impulse voltage dry tests. 1No.			0
	(ii) Switching impulse voltage dry tests. 1No.			0
	(iii) Power frequency voltage dry tests. 1No.			0
	(iv) Partial discharge tests. 1No.			0
	(v) Radio Interference Voltage test 1No.			0
	(vi) Test to prove the temperature rise of any part of the equipment and measurement of the resistance of the main circuit. 1No.			0
	(vii) Test to prove the ability of the main circuit and earthing circuit to carry the rated peak and the rated short time with stand current. 1No.			0
	(viii) Test to verify the making and breaking capacity of the included switching devices. 1No.			0
	(ix) Test for satisfactory operation of the included switching devices. 1No.			0
	(x) Test to prove the strength of enclosures. 1No.			0
	(xi) Gas tightness test 1No.			0
	(xii) Electromagnetic capability test (if applicable) 1No.			0
	(xiii) Test on partitions 1No.			0
	(xiv) Internal arc tests 1No.			0
	(xv) Mechanical operation tests. 1No.			0
	(xvi) Test to prove the satisfactory operation at limit temperature. 1No.			0
	(xvii) Verification of degree of protection of auxiliary and control circuits. 1No.			0
	(xviii) Test to prove performance under thermal cycling and gas tightness test on gas barrier insulators 1No.			0
	(xix) Capacitive Current switching test 1No.			0
	(xx) Shunt reactor current switching test 1No.			0
(B)	For surge arrester and Bus VT following type tests as per relevant IEC. 400kV (As Applicable) Surge Arrester (As per IEC60099-4)			0
	(a) Insulation withstand test on housing 1No.			0
	(b) Residual voltage test 1No.			0
	(c) Long duration current impulse with stand test 1No.			0
	(d) Operating duty test 1No.			0
	(e) Partial Discharge Test 1No.			0
	(f) Leakage Test 1No.			0
(C)	400kV (As Applicable) Bus VT (As per IEC60044-2)			0
	(a) Temperature rise test 1No.			0
	(b) Lighting Impulse test 1No.			0

	(c) Switching Impulse	1No.			0
	(d) Determination of errors	1No.			0
	(e) Short circuit with stand capability	1No.			0
	(f) Chopped lighting impulse test	1No.			0
<b>3.0</b>	<b>Transformers</b>				
<b>(A)</b>	<b>Generator Transformer</b>				
(a)	Short circuit test as per IEC-60076-5	1No.			0
(b)	Determination of transient voltage transfer characteristics	1No.			0
(c)	Measurement of harmonics of the no load current	1No.			0
(d)	Measurement of accoustic noise level as per NEMATR-1	1No.			0
(e)	Dielectric type tests.	1No.			0
(f)	Temp. rise test	1No.			0
(g)	LTAC test.	1No.			0
(h)	Tank vacuum test.	1No.			0
(i)	Measurement of power taken by fans & pumps	1No.			0
<b>(B)</b>	<b>Station Transformer/Stand-by Transformer</b>				
(a)	Short circuit test as per IEC-60076-5	1No.			0
(b)	Temperature rise test	1No.			0
(c)	Zero sequence impedance measurement test	1No.			0
(d)	Measurement of the power taken by fans & pumps (if applicable)	1No.			0
(e)	Measurement of harmonics of the no load current	1No.			0
(f)	Measurement of accoustic noise level as per NEMATR-1	1No.			0
(g)	IPVD test as per IEC-60076-3	1No.			0
(h)	Dielectric type tests.	1No.			0
(i)	LTAC test.	1No.			0
(j)	Tank vacuum test.	1No.			0
<b>(C)</b>	<b>Unit Transformer</b>				
(a)	Lighting impulse (Full & chopped wave) test on HV & LV winding (as per IEC-60076-3)	1No.			0
(b)	Lighting impulse test on neutral	1No.			0
(c)	Short circuit test as per IEC-60076-5	1No.			0
(d)	Temperature rise test	1No.			0
(e)	Zero sequence impedance measurement test	1No.			0
(f)	Measurement of the power taken by fans & pumps (if applicable)	1No.			0
(g)	Measurement of harmonics of the no load current	1No.			0
(h)	Measurement of accoustic noise level as per NEMATR-1	1No.			0
(i)	Dielectric type tests.	1No.			0
(j)	LTAC test.	1No.			0
(k)	Tank Vacuum test.	1No.			0
<b>(D)</b>	<b>Reactor for each type /rating</b>				
(a)	Temperature rise test	1No.			0
(b)	Measurement of harmonics	1No.			0
(c)	Measurement of accoustic noise level	1No.			0
(d)	Lighting impulse test on neutral.	1No.			0
(e)	Measurement of zero sequence reactance.	1 No.			0
<b>(E)</b>	<b>Startup Transformer</b>				
(a)	Temperature rise test	1No.			0
(b)	Zero sequence impedance measurement test	1No.			0
(c)	Measurement of harmonics of the no load current	1No.			0
(d)	Measurement of accoustic noise level as per NEMATR-1	1No.			0
<b>(F)</b>	<b>11/6.9 KV transformer (For each type and rating):</b>				
(a)	Chopped wave Lightning impulse test	1No.			0
(b)	Lightning impulse on Neutral	1No.			0
(c)	Short circuit test	1No.			0
(d)	Temperature rise test	1No.			0
(e)	Noise level test	1No.			0
(f)	Tank vacuum test.	1No.			0
(g)	DGA test.	1No.			0
(h)	Frequency response analysis.	1No.			0
(i)	RSO measurement.	1No.			0
(j)	DOP test.	1No.			0
(k)	Power taken by cooling fans & pumps.	1No.			0
(l)	No load harmonics.	1No.			0
(m)	Zero sequence impedance.	1No.			0
<b>(G)</b>	<b>Aux./LT transformer (For each type/ rating):</b>				
(a)	Chopped wave Lightning impulse test	1No.			0
(b)	Short circuit test	1No.			0
(c)	Temperature rise test	1No.			0
(d)	Noise level test	1No.			0
(e)	Impulse test.	1No.			0
(f)	Heat run test.	1No.			0
(g)	Partial discharge test.	1No.			0
<b>(H)</b>	<b>Neutral Grounding Reactor (For each type/rating):</b>				
(a)	Lightning Impulse voltage with stand test (as per IEC-76)	1No.			0
(b)	Temp. rise test	1No.			0
(c)	Short time current test & measurement of impedance at Short time current.	1No.			0
(d)	Measurement of accoustic sound level.	1No.			0
<b>(I)</b>	<b>Tie Transformer</b>				
(a)	Short circuit test	1No.			0
(c)	Harmonics Measurement	1No.			0
(d)	Measurement of the power taken by fans	1No.			0
(e)	Determination of transient voltage transfer characteristics	1No.			0
(f)	Measurement of accoustic sound level	1No.			0
<b>4.0</b>	<b>HT CABLES</b>				
<b>(A)</b>	<b>The following type tests shall be carried out on one size of 11/11KV, Grade Cable</b>				
1	Conductor				0
(i)	Resistance test				0
2	<b>For Armour Wires/ Formed Wires</b>				
(a)	Measurement of Dimensions	01 No.			0
(b)	Tensile Test	1No.			0
(c)	Elongation Test	1No.			0
(d)	Torsion Test	1No.			0
(e)	Wrapping Test	1No.			0
(f)	Resistance Test	1No.			0
(g)	Mass & uniformity of Zinc Coating tests	1No.			0
(h)	Adhesion test	1No.			0
3	<b>For XLPE Insulation &amp; PVC Sheath</b>				
(a)	Test for thickness	1No.			0
(b)	Tensile strength and elongation test before ageing and after ageing	1No.			0
(d)	Loss of mass test	1No.			0
(e)	Hot deformation test	1No.			0

	(f) Heat shock test	1No.			0
	(g) Shrinkage test	1No.			0
	(h) Thermal stability test	1No.			0
	(i) Hot set test	1No.			0
	(j) Water absorption test	1No.			0
	(k) Oxygen index test	1No.			0
	(l) Smoke density test	1No.			0
	(m) Acid gas generation test	1No.			0
	(n) Flammability test as per IEC-332 Part-3 (Category-B)	1No.			0
<b>(B)</b>	<b>The following type tests shall be carried out on all sizes of 11/11kV cable</b>				
1	Insulation resistance test (Volume Resistivity method)				0
2	High voltage test				0
3	Partial discharge test				0
4	Bending test				0
5	Dielectric power factor test				0
	(a) As a function of voltage				0
	(b) As a function of temperature				0
6	Heating cycle test				0
7	Impulse withstand test				0
8	Anti termite & Rodent Test				0
9	Temperature Index				0
10	Swedish Chimney Test				0
<b>(C)</b>	<b>The following type tests shall be carried out on one size of 6.6/6.6 kV Cable</b>				
1	<b>Conductor</b>				
	(i) Resistance test	1No.			0
2	<b>For Armour Wires/ Formed Wires</b>				
	(a) Measurement of Dimensions				0
	(b) Tensile Test	1No.			0
	(c) Elongation Test	1No.			0
	(d) Torsion Test	1No.			0
	(e) Wrapping Test	1No.			0
	(f) Resistance Test	1No.			0
	(g) Mass & uniformity of Zinc Coating tests	1No.			0
	(h) Adhesion test	1No.			0
3	<b>For XLPE insulation &amp; PVC Sheath</b>				
	(a) Test for thickness	1No.			0
	(b) Tensile strength and elongation test before ageing and after ageing	1No.			0
	(c) Ageing in air oven	1No.			0
	(d) Loss of mass test	1No.			0
	(e) Hot deformation test	1No.			0
	(f) Heat shock test	1No.			0
	(g) Shrinkage test	1No.			0
	(h) Thermal stability test	1No.			0
	(i) Hot set test	1No.			0
	(j) Water absorption test	1No.			0
	(k) Oxygen index test	1No.			0
	(l) Smoke density test	1No.			0
	(m) Acid gas generation test	1No.			0
	(n) Flammability test as per IEC-332 Part-3 (Category-B)	1No.			0
<b>(D)</b>	<b>The following type tests shall be carried out on all sizes of 6.6/6.6 kVcable.</b>				
1	Insulation resistance test (Volume Resistivity method)				0
2	High voltage test				0
3	Partial discharge test				0
4	Bending test				0
5	Dielectric power factor test				0
	(a) As a function of voltage				0
	(b) As a function of temperature				0
6	Heating cycle test				0
7	Impulse withstand test				0
8	Anti termite & Rodent Test				0
9	Temperature Index				0
10	Swedish Chimney Test				0
<b>(E)</b>	<b>The following type tests shall be carried out on LT Cables and Control Cables</b>				
1	Test on conductor				0
2	Thickness of insulation & sheath				0
3	Physical test on Insulation				0
4	Physical Test on Outer Sheath				0
5	Ins. Resistance				0
6	HV Test at Room Temp				0
7	Test on Armour Wire/ Strip				0
8	Flammability Test				0
9	Anti Termite & Rodent Test				0
10	FRLSH Properties (For FRLSH PVC Only)				0
	i) Oxygen Index				0
	ii) Temperature Index				0
	iii) Smoke Density Rating				0
	iv) Acid Gas Generation				0
	v) Flammability Test				0
	vi) Swedish Chimney test				0
<b>5.0</b>	<b>BUS DUCT</b>				
<b>5.1</b>	<b>Heat Run Test</b>				
	(i) Generator Bus duct				0
	a) Main run				0
	b) Delta run				0
	c) Tap off run				0
	(ii) Medium Voltage Bus duct				
	a) 11 KV Bus duct				0
	b) 6.6 KV Bus duct				0
<b>5.2</b>	<b>Short circuit with stand test</b>				
	(i) Generator Bus duct				0
	a) Main run				0
	b) Delta run				0
	c) Tap off run				0
	(ii) Medium Voltage Bus duct				
	a) 11 KV Bus duct				0
	b) 6.6 KV Bus duct				0
<b>5.3</b>	<b>Impulse withstand test followed by HV test</b>				
	(i) Generator Bus duct				0
	a) Main run				0
	b) Delta run				0

	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>5.4</b>	<b>One minute high voltage Power frequency withstand test</b>			
(i)	Generator Bus duct			0
	a) Main run			0
	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>5.5</b>	<b>Water Tightness Test</b>			
(i)	Generator Bus duct			0
	a) Main run			0
	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>5.6</b>	<b>Air Leakage Test</b>			
(i)	Generator Bus duct			0
	a) Main run			0
	b) Delta run			0
	c) Tap off run			0
(ii)	Medium Voltage Bus duct			
	a) 11 KV Bus duct			0
	b) 6.6 KV Bus duct			0
<b>6.0</b>	<b>MOTORS</b>			
<b>(A)</b>	<b>HT MOTORS</b>			
6.1	No load saturation and loss curves upto approximately 115% of rated voltage			0
6.2	Measurement of noise at no load			0
6.3	Momentary overload test (subject to test bed constraint)			0
6.4	Full load test (Subject to test bed constraint)			0
6.5	Temperature rise test at rated condition			0
6.6	Lightning Impulse withstand test on the sample coil shall be as per IEC-60034, part-15			0
6.7	Surge-withstand test on interturn insulation shall be as per clause no. 5.1.2 of IEC60034, part-15			0
6.8	Degree of protection test for the enclosure followed by IR, HV and no load run test.			0
6.9	Terminal box-fault level withstand test for each type of terminal box			0
<b>(B)</b>	<b>LT MOTORS</b>			
	a) Measurement of resistance of windings of stator and wound rotor.			0
	b) No load test at rated voltage to determine input current power and speed.			0
	c) Open circuit voltage ratio of wound rotor motors ( in case of Slip ring motors)			0
	d) Full load test to determine efficiency power factor and slip.			0
	e) Temperature rise test.			0
	f) Momentary excess torque test.			0
	g) High voltage test.			0
	h) Test for vibration severity of motor.			0
	i) Test for noise levels of motor			0
	j) Test for degree of protection			0
	k) Over speed test.			0
	l) Type test reports for motors located in fuel oil area having flame proof enclosures as per IS 2148 / IEC 60079-1			0
<b>7.0</b>	<b>LED LIGHTING FIXTURE</b>			
(i)	High bay fixture 1No.			0
(ii)	well glass fixture 1No.			0
(iii)	Street light fixture 1No.			0
(iv)	Surface mounted indoor type fixture 1No.			0
(v)	Recessed mounted indoor type fixture 1No.			0
(vi)	Rain-proof test for outdoor type luminaries and respective control gearbox as type test.			0
(vii)	Temperature rise test on ballast/choke as type test. Dust proof test as type test.			0
<b>8.0</b>	<b>ESP (Electrical)</b>			
<b>(A)</b>	<b>TR Set</b>			
1	Temperature rise test at rated DC current at 1:1 charge ratio			0
2	Lightning Impulse voltage test			0
3	Measurement of harmonic current in no load current			0
4	PRD operation test			0
5	Short circuit test (To be conducted as described below) This short circuit test shall be performed on TR set along with the TR panel and controller with a spark gap connected across the output. The gap is adjusted to get the spark at required peak voltage which is the Short circuit condition and the controller will control the voltage to quench the spark.			0
6	Vacuum test on tank			0
7	Pressure test on tank			0
8	Induced over voltage test			0
9	Measurement of no load losses and current			0
10	Measurement of impedance voltage/short circuit impedance and losses			0
11	Measurement of IR			0
12	Measurement of acoustic sound level			0
13	Degree of protection test			0
14	Measurement of capacitance and tan delta			0
15	Jacking test on Transformer load bearing member			0
16	Oil leakage test for 24 hours			0
<b>(B)</b>	<b>Insulators</b>			
(1)	Compression test on support insulator			0
(2)	Torsion test on shaft insulator			0
(3)	Lightning impulse test and one minute dry power frequency test on each type of insulators.			0
<b>(C)</b>	<b>Disconnecting Switch</b>			
(1)	Lightning impulse test and one minute dry power frequency test			0
(2)	Impulse test on any one transformer of each type selected by the Owner.			0
(3)	Heat run (Temperature rise) Test on any one transformer of each type selected by the Owner.			0
<b>(D)</b>	<b>Switch Mode Power Supply / TR set controller</b>			
(1)	Temperature rise			0
(2)	Measurement of line current harmonics			0
(3)	Degree of protection.			0
(4)	Dry heat test as per IEC-68-2-2 or equivalent for electronic modules.			0
(5)	Damp heat test as per IEC-68-2-2 or equivalent for electronic modules.			0
<b>9.0</b>	<b>Deleted</b>			
<b>10.0</b>	<b>Generator Circuit Breaker</b>			
(a)	Rated dielectric strength tests			0
	(i) Rated low frequency with stand voltage dry test			0

	(ii) Rated full wave impulse withstand voltage level			0
(b)	Short circuit rating and transient recovery voltage tests			0
	(i) Test for rated symmetrical short circuit current interrupting capability, duty cycle and rated transient recovery voltage parameters			0
	(ii) Test for rated closing, latching and short time current carrying capability			0
	(iii) Test for rated Generator source asymmetrical short circuit interrupting capability			0
(c)	Load current switching test			0
(d)	Out of phase switching current tests			0
(e)	Rated excitation current switching tests			0
(f)	Type tests and oscillographic test records for closing and tripping timings for generator circuit breaker of the rating offered			0
<b>11.0</b>	<b>VFD system for condensate transfer pump motor</b>			
<b>(a)</b>	<b>Reactor (If applicable)</b>			
	(i) Lightning impulse test			0
	(ii) Heat run test			0
	(iii) Short time current test			0
	(iv) Noise Level test			0
<b>(b)</b>	<b>Transformer</b>			
	(i) Short circuit test on transformer			0
	(ii) Noise level			0
	(iii) Measurement of harmonics of no load current			0
	(iv) PRD operation test			0
	(v) Degree of protection test on marshalling box			0
	(vi) Zero sequence Impedance (not applicable for Delta-delta transformer)			0
	(vii) Temperature rise test			0
	(viii) Chopped Wave Lightning impulse test on HV & LV winding as per Cl. 14 of IEC 60076-3			0
<b>(c)</b>	<b>Complete VFD System</b> Overall efficiency determination of VFD system including transformer/ Harmonic filters etc at motor full load			0
<b>(d)</b>	<b>For VFD, following type tests to be carried out:-</b>			
1	Allowable full load current versus speed.			0
2	Overall Efficiency determination of VFD system including transformer/ Harmonic Filters etc at motor full load.			0
3	Temperature rise.			0
4	EM immunity.			0
5	EM emission.			0
6	Current sharing.			0
7	Voltage division.			0
8	Line side current distortion content			0
9	Power factor			0
10	Audible noise			0
11	Torque pulsation			0
12	Motor vibration			0
13	Dynamic performance			0
14	Current limit and current loop test			0
15	Speed loop test capability to ride through voltages less than 80%			0
16	Test capability to restart the system and resynchronize converter onto running motor after a voltage interruption.			0
17	Harmonics of No Load Current (Input / Output)			0
<b>12.0</b>	<b>11 kV/6.6kV switchgear, following type tests to be carried out:-</b>			
1	Short circuit duty test on circuit breaker, mounted inside the panel all test duties			0
2	Short time current rating withstand test on circuit breaker mounted inside panel. (50 kA for 1 sec for 11 kV and 40 kA for 1 sec for 6.6 kV)			0
3	Power frequency voltage withstand test on breaker and panel.			0
4	Lightning impulse withstand test on breaker and panel.			0
5	Temperature rise test on breaker and panel together. Temperature rise test shall be done on a section of switchgear assembly that involves bus coupler panels and adjacent breaker panels on both the sides.			0
6	Temperature rise measuring points shall include but not limited to the following:-			0
	a) Incoming/outgoing terminal for bus coupler circuit breaker			0
	b) Main bus tap offs for bus coupler circuit breaker.			0
7	Switching over-voltage test on motor substitute circuit as per IEC draft on each rating of breaker used for motor switching duty.			0
8	Measurement of resistance of main circuit.			0
9	Mechanical endurance test of breaker as per IEC.			0
10	Degree of enclosure protection test for IP-42.			0
<b>13.0</b>	<b>SUB STATION AUTOMATION SYSTEM</b>			
(a)	DC Supply Interruption			0
(b)	AC Ripple on DC supply			0
(c)	AC voltage dips and short interruptions			0
(d)	High Frequency Disturbance			0
(e)	Fast Transient Disturbance			0
(f)	Surge Withstand Capability			0
(g)	Electrostatic.			0
(h)	Surge Immunity			0
(i)	Control IEDs and Communication Equipment (Power Input)			0
	a. Auxiliary Voltage			0
	b. Current Circuits			0
	c. Voltage Circuits			0
	d. Indications			0
(j)	Accuracy tests:			0
	a) Operational Measured Values			0
	b) Currents			0
	c) Voltages			0
	d) Time resolution			0
(k)	Insulation Tests			0
	a) Dielectric Tests			0
	b) Impulse Voltage withstand Test			0
(l)	Influencing Quantities:			0
	a) Limits of operation			0
	b) Permissible ripples			0
	c) Interruption of input voltage			0
(m)	Electromagnetic Compatibility Test:			0
	a) 1 MHZ. Burst disturbance test			0
	b) Electrostatic Discharge Test			0
	c) Radiated Electromagnetic Field Disturbance Test			0
	d) Electrical Fast transient Disturbance Test			0
	e) Conducted Disturbances Tests induced by Radio Frequency Field			0
	f) Magnetic Field Test			0
	g) Emission (Radio interference level) Test.			0
	h) Conducted Interference Test			0
<b>14.0</b>	<b>EMERGENCY DG SET</b>			
1	Measurement of resistance			0
2	Phase sequence test			0
3	Regulation test			0

4	Measurement of open circuit and short circuit characteristics			0
5	Efficiency test			0
6	Temperature Rise Test			0
7	Momentary overload test			0
8	Over speed test			0
9	High Voltage test			0
10	Insulation resistance test (both before and after High Voltage Test)			0
11	Noise level as per IS: 12065			0
12	Vibration as per IS: 12075.			0
13	Determination of Deviation of voltage waveform from sinusoidal.			0
14	Degree of protection test on control panel for IP-52			0
15	Battery and battery charger as per relevant standards			0
16	Type test on Engine			0
17	Type test on Alternator			0
15.0	220kV AIS Switchyard			
1	220 kV Circuit Breaker :			
	All type tests as per latest standard performed on an identical breaker design and rating, with dimensional drawings shall be submitted for approval			0
2	245kV Disconnect Switch (Isolator)			
	All type tests as per latest standard shall be performed			0
3	245kV Current Transformer			
	All type tests certificates conforming to latest standard shall be performed			0
4	198kV Surge Arrestors (SAs)			
	All type tests as per latest standard shall be performed			0
16.0	Main Turbine Oil Purification System			
16.1	Particle size impurities test on one oil purification system of main turbine			0
17.0	BFP/BP			
	(A) TDBFP			
	(i) Dry Running withstand capability Test on One BFP and Preferably with corresponding BP			0
	(ii) Visual Cavitation Test on One BFP			0
	(iii) Pressure Pulsation Test on One BFP			0
	(iv) Axial Thrust Measurement on One BFP			0
	(v) NPSH (R) Test on One BFP and One BP			0
	(vi) Complete strip down test of BFP which undergone above tests			0
	(vii) Pressure drop test on one strainer for each type and size			0
	(B) MDBFP			
	(i) Dry Running withstand capability Test on One BFP and Preferably with corresponding BP			0
	(ii) Visual Cavitation Test on One BFP			0
	(iii) Pressure Pulsation Test on One BFP			0
	(iv) Axial Thrust Measurement on One BFP			0
	(v) NPSH (R) Test on One BFP and One BP			0
	(vi) Complete strip down test of BFP which undergone above tests			0
	(vii) Pressure drop test on one strainer for each type and size			0
18.0	Drive turbine oil Purification system			
18.1	Particle size impurities tests as detailed out in the technical specification, is to be carried out on one oil purification system of BFP drive turbine			0
19.0	Metallic expansion Bellows			
(a)	One number of each type & size			
	(i) Life Cycle Test			0
	(ii) Meridional yield rupture test			0
	(iii) Squirm test			0
(b)	One number of each type & size as per clause mentioned in Power Cycle Piping, Vol-III			0
	(i) Life Cycle Test			0
	(ii) Meridional yield rupture test			0
	(iii) Squirm test			0
Note:	Bidder to indicate price for each type & size separately.			
20.0	Vacuum pump type test (One pump)			
	(i) Wet Air Test			0
	(ii) Cavitation Test			0
21.0	CEP Type Test			
	(i) NPSH (R) test on one CEP			0
	(ii) Pressure drop test on one CEP suction strainer			0
22.0	Drip Pump Type Test (if envisaged)			
22.1	NPSH (R) test on one drip pump			0
23.0 (I)	Performance Test on actual fan of the size & type offered at Works			
	(a) ID Fan			0
	(b) FD Fan			0
	(c) PA Fan			0
	(d) Seal air fan			0
	(e) GR Fan (If applicable)			0
	(f) Booster Fan (If applicable)			0
(II)	Leak tightness testing of dampers at shop for each type & size of dampers			0
(III)	Following tests for Steam Generator/ Startup drain recirculation pump at shop			
	(a) Test to establish unit functioning of pump at temp. & pressure			0
	(b) Hot stand still and start-up test			0
(IV)	Coal feeders			
	(a) Explosion proof test at 50 PSI: as per NFPA codes			0
	(b) Weighing accuracy, and repeatability test at various speeds with coal flow			0
24.0	Type test on C&I equipments as per Chapter-13 (Type Test Requirements), Part-B, Vol-V			
25.0	Any other type test not covered above, but required for the Scope of Work under the Package			0
26.0	Bidder to note that in case for the balance C&I systems/equipment, the type test certificates furnished by the Bidder is (are) not acceptable to the Owner on the grounds indicated in the C&I section of technical specifications the relevant test(s) shall be conducted without any price repercussion to the Owner.			
	TOTAL (TO SCHEDULE-2)			0
Note :				
1	Any Type Test found applicable/ considered essential during detailed Engineering for any of the offered Equipment but not indicated above shall be deemed to be included in the above quoted price.			



**EPC Package for  
 "1X800 MW SUPER CRITICAL EXPANSION UNIT, DEEN BANDHU CHHOTU RAM THERMAL POWER PLANT, YAMUNA NAGAR" HARYANA,  
 Bidding Document No. : 03/EPC/DCRTPP/800 MW**

<b>BIDDER'S NAME</b>	0
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**Schedule-12: Schedule of Optional Items/ Works**

S. No.	Item Description	Amount (in INR)
1	2	3
1	New Raw Water Reservoir as per Chapter -24, Vol-VI	
2	GST for above	
	<b>Total</b>	<b>0</b>

<b>Note</b>	
1	Bidders are requested to refer Clause 10.4 (j) of Section-II, ITB of Vol-I.