



**ORISSA POWER TRANSMISSION CORPORATION LTD
OFFICE OF THE SR. GENERAL MANAGER,
CENTRAL PROCUREMENT CELL,
JANPATH, BHUBANESWAR - 751022**

**TENDER SPECIFICATION
NO. SR.G.M.-CPC -TENDER-VT-15/ 2010-11**

**FOR
PROCUREMENT OF**

- LOT-I- 33KV INDUCTIVE VOLTAGE TRANSFORMER- 49 NOS.**
LOT-II-132KV INDUCTIVE VOLTAGE TRANSFORMER- 68NOS.
LOT-III-132 KV CAPACITIVE VOLTAGE TRANSFORMER- 11 NOS.
LOT-IV-220 KV CAPACITIVE VOLTAGE TRANSFORMER- 11NOS.

Sale of tender paper - From dt-09.08.2010 (10.00 AM) to dt-13.09.2010(1.00 PM)

Last date of submission of tender parer- dt-14.09.2010(1.00 PM)

Date of opening of Tender - 14.09.2010(4.00 PM)



ORISSA POWER TRANSMISSION CORPORATION LTD.
REGD. OFFICE: JANPATH, BHUBANESWAR - 751 022,
ORISSA

TENDER NOTICE NO. 14/ 2010-11

For and on behalf of ORISSA POWER TRANSMISSION CORPORATION LTD., Sr. G.M. [C.P.C.] invites Tenders from reputed manufacturers for supply of 1) 33KV, 132KV & 220KV C.Ts; 2) 33KV, 132KV & 220KV IVTs/ CVTs; 3) 30KV, 120 KV & 216KV Surge Arresters; 4) 220V Battery & Battery chargers. Tender papers shall be sold at the office of the undersigned during working hours (from 10.00am to 1.00PM) from dt: 09.08.2010 to dt: 13.09.2010. Interested manufacturers may visit OPTCL's official web site <http://www.optcl.co.in> for detail specification..

SR. GENERAL MANAGER [C.P.C.]



NOTICE INVITING TENDER
ORISSA POWER TRANSMISSION CORPORATION LTD.,
REGD. OFFICE: JANPATH, BHUBANESWAR - 751 022,
ORISSA, INDIA.

TENDER NOTICE NO-14/2010-11

For and on behalf of the ORISSA POWER TRANSMISSION CORPORATION LTD., the undersigned invites bids under two-part bidding system in double-sealed cover, duly super scribed with tender specification number and date of opening, from manufacturers for supply of the following equipments, as required under the following specifications.

Sl. No	Tender Specification No.	Description of equipments/materials	Quantity	Earnest Money Deposit (In Rs.)	Cost of Tender Spec. document (in Rs.)	Last date of receipt & opening of tender
5.	Sr. GM-CPC-Tender-CT-14/2010-11	<p><u>LOT-I-33KV C. T.</u> a) Ratio-800-400-200A/1-1-1A b) Ratio-400-200-100A/1-1-1A</p> <p><u>LOT-II-132KV C.T.</u> a) Ratio-800-400-200A/1-1-1-1A b) Ratio-600-300-150A/1-1-1-1A c) Ratio-400-200-100A/1-1-1-1A</p> <p><u>LOT-III-220KV C.T.</u> Ratio-1200-600-300A/1-1-1-1-1A.</p> <p><u>LOT-IV- N.C.T.</u> a)Ratio -800/1A b)Ratio -600/1A c)Ratio -400/1A d)Ratio -200/1A e)Ratio -100/1A</p>	152 Nos } 305 Nos } 10 Nos. } 20 Nos. } 198 Nos. } 36 Nos } 16 Nos } 09 Nos } 30 Nos } 21 Nos } 21 Nos }	1,33,000/- 2,28,000/- 1,23,000/- 14,000/-	10,000/- + 400./- (VAT)	13.09. 2010
6.	Sr.GM-CPC-Tender-VT-15/2010-11	<u>LOT-I- 33KV IVT</u> <u>LOT-II- 132KV IVT</u> <u>LOT-III-132KV CVT</u> <u>LOT-IV-220KV CVT</u>	49 Nos. 68 Nos. 11 Nos. 11 Nos.	11,000/- 94,000/- 16,000/- 27,000/-	10,000/- + 400/- (VAT)	14.09. 2010
7.	Sr.GM-CPC-Tender- SA-16/2010-11	<u>LOT-I-216KV Surge Arrester</u> <u>LOT-II-120KV Surge Arrester</u> <u>LOT-III-30 KV Surge Arrester</u>	50 Nos. 119 Nos. 180 Nos.	24,000/- 36,000/- 14,000/-	10,000/- + 400/- (VAT)	15.09. 2010
8.	Sr.GM-CPC-Tender-B&C-17/2010-11	<u>LOT-I-220V, 350AH Plante Battery</u> <u>LOT-II-220V, Battery Charger.</u>	13 Sets 14 Nos.	1,93,000/- 54,000/-	10,000/- + 400/- (VAT)	16.09. 2010

The tender specification documents can be had from the office of the undersigned on payment of non-refundable cost of tender specification documents in the shape of cash from 10 A.M to 1 P.M during any working day from dt.09.08.2010 to 13.09.2010 (both days inclusive) either in person or by remitting demand draft payable to Drawing & Disbursing Officer, ORISSA POWER TRANSMISSION CORPORATION LTD., Regd. Office: Janpath, Bhubaneswar- 751 022. No tender documents will be sold on any other day except as indicated.

The specification can also be down loaded from OPTCL'S official web site and the same may be submitted along with the cost of tender document by way of demand draft/pay order payable to D.D.O., OPTCL Ltd. Janapath, Bhubaneswar at the time of submission of tender document. In case, any deviation is found in the tender document, submitted by the tenderer from the content mentioned in our web site and/or non-submission of the cost of tender documents, the tender shall be liable to be rejected at any stage of the contract. The tenderer has to indemnify OPTCL for any loss accruing due to such alteration in the terms and conditions of the tender document &/ or for such alternation, resulting, in the cancellation of the contract.

The intending bidders, who want to get a copy of the tender specification document by post, are required to deposit an additional amount of Rs.100/- (Rupees one hundred) only over and above the cost of the tender specification, mentioned against each Tender Specification under heading "Cost of tender specification". Complete bids for different items will be received upto 1.00 P.M. only and the same will be opened at 04.00 P.M. on the date mentioned in the notice inviting tender. Date and time of opening of price bids shall be intimated to the techno-commercially responsive bidders only. In the event of any specified date for the sale, submission or opening of bids being declared a holiday for purchaser, the bids will be sold/ received/ opened upto the appointed times on the next working day. Only one representative of each bidder will be allowed to participate in the bid opening with valid identification certificate. OPTCL also reserves the right to accept or reject any or all tenders without assigning any reason thereof, if the situation so warrants. OPTCL shall not be responsible for any postal delay or loss at any stage.

Minimum qualification criteria of bidders: AS STIPULATED IN SECTION-II, PART-I (G.T.C.C) OF THE TENDER SPECIFICATION.

SR. GENERAL MANAGER

CENTRAL PROCUREMENT CELL



FAX NO.: 0674 - 2542964
TELEPHONE NO.: 0674 - 2541801

**ORISSA POWER TRANSMISSION CORPORATION LTD.
OFFICE OF THE SR. GENERAL MANAGER
CENTRAL PROCUREMENT CELL**

JANAPATH, BHUBANESWAR - 751022

TENDER SPECIFICATION NO.SR.G.M.-CPC -TENDER-VT-15/2010-11

CONTAINING

PART - I

- SECTION - I : INSTRUCTION TO TENDERERS**
- SECTION - II : GENERAL TERMS AND CONDITIONS OF CONTRACT (G.T.C.C.) (COMMERCIAL)**
- SECTION - III : LIST OF ANNEXURES (COMMERCIAL)**
- SECTION - IV : TECHNICAL SPECIFICATION**

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COMMERCIAL SPECIFICATION.
PART-I
SECTION-I
INSTRUCTIONS TO TENDERER

1. **Submission of Bids: -**

Sealed tenders in triplicate on two part bid basis, each complete in all respects, in the manner hereinafter specified are to be submitted in the office of Sr.General Manager [Central Procurement cell], OPTCL, Bhubaneswar on or before the date and time specified against the relevant tender Specification in the notice inviting the tenders. Each copy of the bids [Original, duplicate and triplicate] shall be in separate double sealed envelopes, superscribed on each of the covers, the relevant tender specification number and the due date of opening of the bids on the top right hand side of the envelopes. On the top left sides, original/duplicate/triplicate as is relevant, shall be written. The participants to the tender should be registered under Orissa Sales Tax, 1947 as stipulated in Industrial policy-2001 of Government of Orissa.

2. **Division of Specification.**

The specification is mainly divided into two parts viz. Part-I & Part-II.

Part-I Consists of

[i] Section-I	Instruction to Tenderers.
[ii] Section-II	General Terms & conditions of contract.
[iii] Section-III	Schedules and forms etc.
[iv] Section-IV	Technical Specification.

Part-II Consists of

- [i] Abstract of price components as per Annexure-IV
- [ii] Schedule of prices as per Annexure-V

3. **Tenders shall be in Two Parts**

The Tenderers are required to submit the tenders in two parts each in separate double sealed covers. Part-I shall be superscribed as "E.M.D"., technical and commercial and Part-II shall be superscribed as "Price Bid"

4. **Opening of Bids.**

[a] The part-I shall be opened in the Office of the Senior General Manager [Central Procurement Cell] in presence of such of the Tenderers or their authorized representatives [limited to one person only] on the due date of opening of tender. After scrutiny of the technical particulars and other commercial terms, clarifications, if required, shall be sought for from the bidders. The Tenderers shall be allowed 15 days time for such activity.

[b] On receipt of technical clarification, the bids shall be reviewed, evaluated and those not in conformity with the technical Specification / qualifying experience, shall be rejected. If any of the technical proposal requires modification to make them comparable, discussion will be held with the participating bidders.

All the responsive bidders shall be given opportunity to submit the revised technical and revised price proposals as a follow up to the clarification (modification if any) on the technical proposals. The qualified bidders shall be given opportunity to submit revised price proposals within 15 days from the date of such discussion or within time frame mutually agreed, whichever is earlier.

- [c] When the revised price proposals are received, the original price proposals will be returned to the bidders unopened along with their original technical proposals. Only the revised technical and price proposals will be considered for bid evaluation. The price bids [Part-II] of such of the Tenderers, whose tenders have been found to be technically and commercially acceptable, including those supplementary revised price bids, submitted subsequently, shall be opened in the presence of the bidder's representative on a date and time which will be intimated to all technically and commercially acceptable Tenderers.
- [d] The bidders are required to furnish sufficient information to the Purchaser to establish their qualification, capacity to manufacture and/or supply the materials/perform the work. Such information shall include details of bidder's experience, its financial, managerial and technical capabilities.
- [e] The bidders are also required to furnish details of availability of appropriate technical staff and capability to perform after sales services. The above information shall be considered during scrutiny and evaluation of bids and any bid which does not satisfactorily meet these requirements, shall not be considered for price bid evaluation.
- [f] The price bids of the technically and otherwise acceptable bids shall only be evaluated as per the norms applicable in terms of this Specification.

5 **Purchaser's Right Regarding Alteration of Quantities Tendered:**

The Purchaser may alter the quantities of materials/equipment at the time of placing orders. Initially the purchaser may place orders for lesser quantity with full freedom to place extension orders for further quantity under similar terms and conditions of the original orders. Orders may also be split among more than one tenderer for any particular item, if considered necessary in the interest of the Purchaser to get the goods/equipment earlier.

6 **Procedure and opening time of tenders.**

Tenders will be opened in the office of the Senior General Manager [C.P.C.] on the specified date and time in presence of the Tenderers or their authorized representatives [limited to one person only] in case of each bidder who may desire to be present, at the time of opening the bids. The Senior General manager [C.P.C.] or his authorized representatives will, on opening each bid, read aloud the name of the bidder. He shall also read aloud the attested and unattested corrections and shall record the number of such corrections on each page of the Techno-Commercial Bid over his dated initials and also initial all such corrections.

7. **Bidder's Liberty to deviate from Specification.**

The Tenderer may deviate from the specification while quoting, if in his opinion, such deviation is in line with the manufacturer's standard practice and conducive to a better and more economical offer. All such deviations should however be clearly indicated giving full justifications for such deviation. [Read with Clause-9, Section-II of the Specification].

8. **Eligibility for submission of bids.**

Only those manufacturers who have deposited the cost of tender specification are eligible to participate in the tender. They should submit the money receipt as a proof of such payment. Further, the tender specification can also be downloaded from OPTCL's website and the cost of tender specification, in such a case, shall have to be remitted alongwith the submission of tender papers. Tenders submitted by others will be rejected. Also tender specification downloaded from OPTCL website may not be taken as 100% correct due to

website technical difficulties. So it is advisable to purchase hard copies from the office of the Sr. General Manager (C.P.C.), OPTCL Bhubaneswar.

9. Purchaser's right to accept/reject bids:

The purchaser reserves the right to reject any or all the tenders without assigning any reasons what so ever if it is in the interest of OPTCL, under the existing circumstances. [Read with clause-10, Section-II of the specification].

10. Mode of submission of Tenders.

[A] Tenders shall be submitted in person or by Registered Post with AD. Any other means of delivery shall not be accepted. When delivered in person, the tenders shall be received by a responsible officer of the office of the Senior General Manager [C.P.C.], OPTCL who shall officially acknowledge the receipt of the same. Tenders received after due date and time shall be returned un-opened.

[B] Telegraphic or FAX tenders shall not be accepted under any circumstances.

11. Earnest money deposit:

The tender shall be accompanied by Earnest Money deposit of value specified in the notice inviting tenders against each lot /bid. Tenders without the required EMD as indicated at Annexure-VIII will be rejected outright and their Part-II envelope will be returned to them, unopened.

The earnest money deposit shall be furnished in one of the following forms subject to the conditions mentioned below:

- (a) Cash:- Payable to drawing & disbursing Officer, OPTCL (Hd.qrs. Office), Bhubaneswar - 751022
- (b) Bank Draft: -To be drawn in favour of Drawing & Disbursing Officer, OPTCL [H.Qrs.Office], Bhubaneswar-751 022.
- (c) Bank Guarantee from any Nationalized/Scheduled Bank strictly as per enclosed proforma vide Annexure-VI to be executed on non-judicial stamp paper worth Rs.29.00 or as applicable, as per prevailing laws in force and also to be accompanied by the confirmation letter of the issuing Bank Branch.
- (d) National saving certificate, duly pledged in favour of Senior General Manager [Central Procurement Cell] OPTCL [H.Qrs.Office], Bhubaneswar-751 022.

NOTE:

- (i). The validity of the EMD in the form of Bank Guarantee shall be atleast for 240 days from the date of opening of tender failing which the tender will be liable for rejection.
- (ii) No interest shall be paid on the Earnest Money Deposit.
- (iii) E.M.D. in shape of cash may be submitted upto Rs. 25,000/- (Rupees Twenty-fiveThousand)only. Above Rs. 25,000/- (Rupees Twenty-five thousand) the Earnest Money Deposit shall be furnished in any one of the forms indicated above (i.e. Through Bank Draft, Bank Guarantee/ National Savings Certificate).
- (iv) No adjustment towards EMD shall be permitted against any outstanding amount with the ORISSA POWER TRANSMISSION CORPORATION LTD..
- (v) The chart showing particulars of EMD to be furnished by Tenderers of different categories is placed at Annexure-VIII.
- (vi) In the case of un- successful tenderer, the EMD will be refunded after the tender is decided. In the case of successful Tenderer, this will be refunded only after furnishing of security money referred to at clause-19of Section-II. Suits, if any, arising out of this clause shall be filed in a Court of law to which the jurisdiction of High Court of Orissa extends.
- (vii) EMD will be forfeited if the tenderer fails to accept the letter of intent and/or purchase order issued in his favour or to execute the order, placed on them.

(viii) Tenders not accompanied by Earnest Money shall be disqualified.

12. **Validity of the Bids: -**

The tenders should be kept valid for a period of **180** days from the date of opening of the tender, failing which the tenders will be rejected.

13. **PRICE: -**

Tenderers are requested to quote-‘FIRM’ Price. No deviation from FIRM PRICE will be entertained irrespective of deviation clause No.7 of this part of the specification.

14. **Revision of tender price by Bidders: -**

[a] After opening of tenders and within the validity of period, no reduction or enhancement in price will be entertained. If there is any change in price, the tender shall stand rejected and the EMD deposited shall be forfeited.

[b] If required, the tenderers may be asked to extend the validity period of bids under the same terms and conditions as per the original tender except for the change in delivery period. In such an event, the Tenderers are free to change any or all conditions of their bids including price at their own risk.

15. **Tenderers to be fully conversant with the clauses of the Specification:**

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Tenderers are expected to be fully conversant with the meaning of all the clauses of the specification before submitting their tenders. In case of doubt regarding the meaning of any clause, the tenderer may seek clarification in writing from the Senior General Manager (Central Procurement Cell) OPTCL. This, however, does not entitle the Tenderer to ask for time beyond due date, fixed for receipt of tender.

16. **Documents to Accompany Bids.**

Tenderers are required to submit tenders in the following manner:

Part-I of the Tender shall Contain the following documents.

[i] Declaration Form. [As per Annexure-I]

[ii] Earnest Money. [As per Annexure-VIII]

[iii] Technical specification and Guaranteed Technical Particulars conforming to the Purchaser’s Specification alongwith drawings, literatures and all other required Annexures, duly filled in.

[iv] Photostat copies of type test certificates of materials/equipments offered as stipulated in the Technical Specification.

[v] Abstract of Terms & conditions in prescribed proforma as per **Annexure-II.**

[vi] General Terms & Conditions of supply offer as per Section-II of the Specification.

[vii] List of orders executed for similar materials/equipments during preceding 2 (two) years indicating the customer’s name, Purchase Order No. & Date, date of supply and date of commissioning etc.

[viii] Data on past experience **as per Clause-7 of Section-II** of the Specification.

[ix] Sales tax clearance certificate for the previous year. The permanent account number [PAN] of the firm is required under Income tax Act.

[x] Audited Balance sheet & profit loss accounts of the bidder, for past (3) three years.

[xi] Schedule of quantity and delivery in the prescribed Proforma vide **Annexure, as appended.**

[xii] List of Orders in hand to be executed.

17. **Documents/Papers to accompany Part-II Bid.**

(a) Part – II of the tender shall consist of the following

- (i) Abstract of Price Component, as per Annexure-IV
- (ii) Schedule of prices in the prescribed proforma as per Annexure-V

18. Conditional Offer

Conditional offer shall not be accepted.

19. General: -

- (i) Over writing shall be avoided.
- (ii) Erasures and other changes shall bear the dated initial of the person signing the tender.
- (iii) In the event of discrepancy or arithmetical error in the schedule of price, the decision of the purchaser shall be final and binding on the Tenderer.
- (iv) For evaluation, the price mentioned in words shall be taken if there is any difference in figures and words in the price bid.
- (v) Notice inviting tender shall form part of this specification.
- (vi) The price bids of the technically and otherwise acceptable bids shall only be evaluated. The price bids of others along with EMD, if any, shall be returned to the bidders un-opened.
- (vii) Tenderer can offer any lot or all the lots of the tender, if there are any lots. But the tender (bid) must be furnished separately for each lot. For each lot, the tenderer has to submit PART-I & PART-II of the bids separately.
- (viii) The person signing the tender should sign on each page of the Tender paper in acknowledgement of having gone through the entire Tender Specification and in agreement thereof. Tender papers, not signed on each page with official seal by the bidder(s), shall not be considered.
- (ix) It should be distinctly understood that the part-II of the bid shall contain only details/documents relating to price, as outlined in clause-17 mentioned herein above. Inclusion of any of the documents/information etc. shall render the bid liable for rejection.

PART-I

SECTION-II

GENERAL TERMS AND CONDITIONS OF CONTRACT [G.T.C.C.]

1. **Scope of the contract:**

The scope of the contract shall be to design, manufacture, supply of equipments as per the specification at the consignee's site, and rendering services in accordance with the enclosed technical specification and bill of quantity.
- 2.0 **Definition of terms:**

For the purpose of this specification and General Terms and Conditions of contract [GTCC], the following words shall have the meanings hereby indicated, except where otherwise described or defined.
- 2.1 "The Purchaser" shall mean the Senior General Manager[Central Procurement Cell] for and on behalf of ORISSA POWER TRANSMISSION CORPORATION LTD., Bhubaneswar.
- 2.2 "The Engineer" shall mean the Engineer appointed by the Purchaser for the purpose of this contract.
- 2.3 "Purchaser's Representative" shall mean any person or persons or consulting firm appointed and remunerated by the Purchaser to supervise, inspect, test and examine workmanship and materials of the equipment to be supplied.
- 2.4 "The supplier" shall mean the bidder whose bid has been accepted by the purchaser and shall include the bidder's executives, administrators, successors and permitted assignees.
- 2.5 "Equipment" shall mean and include all machinery, apparatus, materials, and articles to be provided under the contract by the suppliers.
- 2.6 "Contract Price" shall mean the sum named in or calculated the bid.
- 2.7 "General Condition" shall mean these General Terms and Conditions of Contract.
- 2.8 "The Specification" shall mean both the technical as well as commercial parts of the specification annexed to or issued with GTCC and shall include the schedules and drawings, attached thereto as well as all samples and pattern, if any.
- 2.9 "Month" shall mean "Calendar month".
- 2.10 "Writing" shall include any manuscript, type written, printed or other statement reproduction in any visible form and whether under seal or under hand.
- 2.11 "FOR Destination costs" shall mean the cost of equipment and material at the consignee's store/site. The cost is inclusive of Excise duty, Sales tax and other local taxes, packing, forwarding and insurance and freight charges.
- 2.12 The term "Contract document" shall mean and include GTCC, specifications, schedules, drawings, form of tender, Notice Inviting Tender, covering letter, schedule of prices or the final General Conditions, any special conditions, applicable to the particular contract.
- 2.13 Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian Contract Act, failing that in the Orissa General Clauses Act.
3. **Manner of execution:**

All equipments supplied under the contract shall be manufactured in the manner, set out in the specification or where not set out, to the reasonable satisfaction of the Purchaser's representative.
4. **Inspection and Testing:**

- [i] The purchaser's representative shall be entitled at all reasonable times during manufacture to inspect, examine and test at the supplier's premises, the materials and workmanship of all equipments/materials to be supplied under this contract and if part of the said equipment/material is being manufactured in other premises, the supplier shall obtain for the purchaser's representative permission to inspect, examine and test as if the equipment/material were being manufactured in the contractor's premises. Such inspection, examination and testing shall not relieve the supplier from his obligations under the contract.
 - [ii] The Supplier shall give to the purchaser adequate time/notice (at least clear 15 days for inside the state suppliers and 20 days for outside the state suppliers) in writing for inspection of materials indicating the place at which the equipment/material is ready for testing and inspection and shall also furnish the shop Routine Test Certificate, Calibration certificates of Testing instruments, calibrated in Govt. approved laboratory with authenticity letter of that laboratory alongwith the offer for inspection. A packing list alongwith the offer, indicating the quantity which can be delivered in full truck load/Mini truck load to facilitate issue of dispatch instruction shall also be furnished.
 - [iii] Where the contract provides for test at the Premises of the supplier or any of his sub-vendors, the supplier shall provide such assistance, labour, materials, electricity, fuel and instruments, as may be required or as may be reasonably demanded by the Purchaser's representative to carryout such tests efficiently. The supplier is required to produce shop routine test Certificate, calibration certificates of Testing Instruments before offering their materials/equipment for inspection & testing. The test house/laboratory where tests are to be carried out must be approved by the Govt. A letter pertaining to Govt. approved laboratory must be furnished to the purchaser alongwith the offer for inspection.
 - [iv] After completion of the tests, the Purchaser's representative shall forward the test results to the Purchaser. If the test results conform to the specific standard and specification, the Purchaser shall approve the test results and communicate the same to the supplier in writing. The supplier shall provide atleast five copies of the test certificates to the Purchaser.
 - [v] The Purchaser has the right to have the tests carried out at his own cost by an independent agency whenever there is dispute regarding the quality of supply.
 - [vi] If the firm fails to present the offered items for inspection/testing as per their inspection call due to any reason(s) during the visit of inspecting officer at the testing site ,the firm shall have to bear all expenses towards repetition of inspection and testing of the total offered quantity or part thereof.
5. **Training facilities.**
The supplier shall provide all possible facilities for training of Purchaser's Technical personnel, when deputed by the Purchaser for acquiring first hand knowledge in assembly of the equipment, its erection, commissioning and for it's proper operation and maintenance in service, wherein it is thought necessary by the purchaser.
6. **Rejection of Materials.**
In the event any of the equipments/material supplied by the manufacturer is found defective due to faulty design, bad workmanship, bad materials used or otherwise not in conformity with the requirements of the Specification, the Purchaser shall either reject the equipment/material or ask the supplier in writing to rectify or replace the defective equipment/material free of cost to the purchaser. The Supplier on receipt of such notification shall either rectify or

replace the defective equipment/material free of cost to the purchaser within 15 days from the date of issue of such notification by the purchaser. If the supplier fails to do so, the Purchaser may:-

- [a] At its option replace or rectify such defective equipments/materials and recover the extra costs so involved from the supplier plus fifteen percent and/or.
- [b] Terminate the contract for balance work/supplies, with enforcement of penalty Clause as per contract for the un-delivered goods and with forfeiture of Performance Guarantee/ Composite Bank guarantee.
- [c] Acquire the defective equipment/materials at reduced price, considered equitable under the circumstances.

7. **Experience of Bidders:**

The bidders should furnish information regarding experience particularly on the following points:

- [i] Name of the manufacturer:
- [ii] Standing of the firm and experience in manufacture of equipment/material quoted:
- [iii] Description of equipment/material similar to that quoted, supplied and installed during the last two years with the name(s) of the Organisations to whom supplies were made wherein, at least one (1) certificate shall be from a state/central P.S.U.
- [iv] Details as to where installed etc.
- [v] Testing facilities at manufacturer's works.
- [vi] If the manufacturer is having collaboration with another firm [s], details regarding the same.
- [vii] A list of purchase orders of identical material/equipments offered as per technical specification executed during the last two years alongwith users certificate. User's certificate shall be legible and must indicate, user's name, address, designation, place of use, and satisfactory performance of the equipment/materials for at least two years from the date of commissioning. Wherein at least one (1) certificate shall be from a State/Central or P.S.U. Bids will not be considered if the past manufacturing experience is found to be unsatisfactory or is of less than 2 (two) years on the date of opening of the bid and bids not accompanying user's certificate will be rejected.

8. **Language and measures:**

All documents pertaining to the contract including specifications, schedule, notices, correspondence, operating and maintenance instructions., drawings or any other writing shall be written in English language. The metric system of measurement shall be used exclusively in this contract.

9. **Deviation from specification:**

It is in the interest of the tenderers to study the specification, specified in the tender schedule thoroughly before tendering so that, if any deviations are made by the Tenderers,(both commercial and Technical), the same are prominently brought out on a separate sheet under heading "Deviations Commercial" and "Deviations Technical".

A list of deviations shall be enclosed with the tender. Unless deviations in scope, technical and commercial stipulations are specifically mentioned in the list of deviations, it shall be presumed that the tenderer has accepted all the conditions, stipulated in the tender specification, not withstanding any exemptions mentioned therein.

10. **Right to reject/accept any tender:**

The purchaser reserves the right either to reject or to accept any or all tenders if the situation so warrants in the interest of the purchaser. Orders may also be split up between different Tenderers on individual merits of the Tenderer. The purchaser has exclusive right to alter the quantities of materials/ equipment at the time of placing final purchase order. After placing of the order, the purchaser may defer the delivery of the materials. It may be clearly understood by the Tenderer that the purchaser need not assign any reason for any of the above action [s]

11. **Supplier to inform himself fully:**

The supplier shall examine the instructions to tenderers, general conditions of contract, specification and the schedules of quantity and delivery to satisfy himself as to all terms and conditions and circumstances affecting the contract price. He shall quote price [s] according to his own views on these matters and understand that no additional allowances except as otherwise provided there in will be admissible. The purchaser shall not be responsible for any misunderstanding or incorrect information, obtained by the supplier other than the information given to the supplier in writing by the purchaser.

12. **Patent rights Etc.**

The supplier shall indemnify the Purchaser against all claims, actions, suits and proceedings for the infringement of any patent design or copy right protected either in the country of origin or in India by the use of any equipment supplied by the manufacturer. Such indemnity shall also cover any use of the equipment, other than for the purpose indicated by or reasonably to be inferred from the specification.

13. **Delivery:-**

- [a] Time being the essence of the contract; the equipment shall be supplied within the delivery period, specified in the contract. The Purchaser, however, reserves the right to reschedule the delivery and change the destination if required. The delivery period shall be reckoned from the date of placing the Letter of Intent/Purchase order, as may be specified in LOI/Purchase order.
- [b] The desired delivery period shall be as indicated at Appendix-II (Quantity & Delivery Schedule) of Section-IV (Technical Specification). .

14. **Despatch instructions.**

I] The equipments/ materials should be securely packed and dispatched directly to the specified site at the supplier's risk by Road Transport only.

II] **Loading & unloading of Ordered Materials.**

It will be the sole responsibility of the supplier for loading and unloading of materials both at the factory site and at the destination site/store.

The Purchaser shall have no responsibility on this account.

15. **Supplier's Default Liability.**

- [i] The Purchaser may, upon written notice of default to the supplier, terminate the contract in circumstances detailed hereunder.
- [a] If in the judgement of the Purchaser, the supplier fails to make delivery of equipment/material within the time specified in the contract or within the period for which if extension has been granted by the Purchaser in writing in response to written request of the supplier.
- [b] If in the judgement of the Purchaser, the supplier fails to comply with any of the provisions of this contract.

- [ii] In the event, Purchaser terminates the contract in whole or in part as provided in Clause-15 (I) of this section, the Purchaser reserves the right to purchase upon such terms and in such a manner as he may deem appropriate in relation to the equipment/material similar to that terminated and the supplier will be liable to the Purchaser for any additional costs for such similar equipment/material and/or for penalty for delay as defined in clause-22 of this section until such reasonable time as may be required for the final supply of equipment.
- [iii] In the event the Purchaser does not terminate the contract as provided in clause 15(I) of this Section, supplier shall be liable to the Purchaser for penalty for delay as set out in Clause-22 of this section until the equipment is accepted. This shall be based only on written request of the supplier and written willingness of the Purchaser.
16. **Force Majeure:**
The supplier shall not be liable for any penalty for delay or for failure to perform the contract for reasons of force majeure such as acts of god, acts of the public enemy, acts of Govt., Fires, floods, epidemics, Quarantine restrictions, strikes, Freight Embargo and provided that the supplier shall within Ten (10)days from the beginning of delay on such account notify the purchaser in writing of the cause of delay. The purchaser shall verify the facts and grant such extension, if facts justify .
17. **Extension of time:-**
If the delivery of equipment/material is delayed due to reasons beyond the control of the supplier, the supplier shall without delay give notice to the purchaser in writing of his claim for an extension of time. The purchaser on receipt of such notice may or may not agree to extend the contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract.
18. **Guarantee period: -**
- [i] The stores covered by this specification should be guaranteed for satisfactory operation and against defects in design, materials and workmanship for a period of atleast 18 [eighteen] months from the last date of delivery or 12 [twelve] months from the date of commissioning whichever is earlier. The above guarantee certificate shall be furnished in triplicate to the purchaser for his approval. Any defect noticed during this period should be rectified by the supplier free of cost to the purchaser provided such defects are due to faulty design, bad workmanship or bad materials used, within one month upon written notice from the purchaser failing which provision of clause 22 (ii) shall apply.
- [ii] Equipment/material failed or found defective during the guarantee period shall have to be guaranteed after repair/replacement for a further period of 12 months from the date of commissioning or 18 months from the date of receipt at the store/site after such repair/replacement which ever is earlier. The Bank Guarantee is to be extended accordingly. Date of delivery as used in this clause shall mean the date on which the materials are received in OPTCL'S stores/site in full & good condition which are released for Despatch by the purchaser after due inspection
19. **B.G. towards security deposit, payment and performance:**
- [i] **For manufacturers situated Inside & out side the state of Orissa.**
A Composite Bank Guarantee as per the Proforma enclosed at Annexure-VII of the specification for 10% [ten percent] of the total FORD cost of the purchase

order, shall be furnished from any nationalized/scheduled bank having a place of business at Bhubaneswar, to the office of Sr.General Manager [Central Procurement Cell] OPTCL within 15 days from the date of issue of the purchase order,. The BG shall be executed on non judicial stamp paper worth of Rs.29.00 [Rupees twenty nine] only or as per the prevalent rules, valid for a period of 20 months from the last date of stipulated delivery period, for scrutiny and acceptance, failing which the supply order will be liable for cancellation without any further written notices. The BG should be accompanied by a confirmation letter from the concerned bank and should have provision for encashment at Bhubaneswar, before the Bank Guarantee is accepted and all concerned intimated. The B.G should be revalidated as and when intimated to you to cover the entire guarantee period.

- (ii) No interest is payable on any kind of Bank Guarantee.
- [iii] In case of non-fulfillment of contractual obligation, as required in the detailed purchase order/Specification, the composite Bank guarantee shall be forfeited.

20. Import License

In case imported materials are offered, no assistance will be given for release of Foreign Exchange. The firm should arrange to import materials from their own quota. Equipment of indigenous origin will be preferred.

21. (A) Terms of Payment.

- (i) 100% value of each consignment with 100% Excise duty, Entry Tax, if any, and sales tax in full as applicable along with freight & Insurance charges will be paid on receipt of materials in good condition at stores/desired site and verification thereof, subject to furnishing and approval of Composite Bank Guarantee at the rate of 10% (Ten percent) of the cost of supplied materials, as stipulated under clause-19 of this specification & on prior approval of guarantee certificate & Test certificate by the Purchaser.

(ii) **Payment of Freight & Insurance charges and Entry Tax.**

Freight & Insurance Charges & Entry Tax, incorporated in the Purchase contract shall be paid after receipt of materials at stores/desired site in good condition and on production of authenticated documentary evidence, otherwise no Freight, Insurance charges & entry taxes shall be payable.

[B] The supplier shall furnish Composite Bank Guarantee of appropriate amount to OPTCL covering 10% of F.O.R. Destination cost of the purchase order well in advance (within 15 days from the date of issue of the purchase order) before despatch of materials.

22. Penalty for Delay in Completion of Contract

- I) If the Supplier fails to deliver the materials/equipments within the delivery schedule, specified in the contract including delivery time extension, if any, granted thereto, the Purchaser shall recover from the Supplier, penalty for a sum of half percent (0.5 percent) of the Ex-works price of the un-delivered equipment for each calendar week of delay or part thereof. For this purpose, the date of receipted challan shall be reckoned as the date of delivery. The total amount of penalty shall not exceed five percent (5%) of the ex-works price of the unit or units so delayed. Equipment will be deemed to have been delivered only when all its components and accessories as per technical Specification are also delivered. If certain components & accessories are not delivered in time, the equipment will be considered delayed until such time as the missing parts are delivered.

- II) If the Supplier fails to rectify /replace the equipment/material within 30 days from the date of intimation of the defect, so noticed by the purchaser within the guarantee period then the penalty for sum of one half of the one percent (0.5%) of the total Purchase order amount for each calendar week of delay shall be recovered by the purchaser within the guarantee period. For this purpose, penalty date will start from the 30th. day from the date of issue of letter on defectiveness of equipment/material, so supplied, by the purchaser. The total amount of penalty in this case shall not exceed 10% (TEN PERCENT) of the purchase order amount.The purchase order amount shall mean ex-works price + freight & insurance and all taxes & duties.If the defects so intimated will not be rectified by the supplier within the guarantee period, then whole of the B.G. will be forfeited by the purchaser, without any intimation to the Supplier.
23. **Insurance**
The Supplier shall undertake insurance of stores covered by this Specification unless otherwise stated. The responsibility of delivery of the stores at destination in good condition rests with the Supplier. Any claim with the Insurance Company or transport agency arising due to loss or damage in transit has to be settled by the supplier. The Supplier shall undertake free replacement of materials damaged or lost, which will be reported by the consignee within 30 days of receipt of the materials at destination without awaiting for the settlement of their claims with the carriers and underwriters.
24. **Payment Due from the Supplier.**All costs and damages, for which the supplier is liable to the purchaser, will be deducted by the purchaser from any money, due to the supplier, under any of the contract (s), executed with OPTCL.
25. **Sales Tax clearance certificate and Balance sheet and profit & Loss Account:**
- i. Sales Tax clearance certificate for the previous year shall be enclosed with the tender.
 - ii. Audited Balance Sheet and Profit & Loss Account of the bidder for the previous three years shall be enclosed to assess the financial soundness of the bidder(s).
26. **Certificate of Exemption from Excise Duty/Sales tax.**
Offers with exemption from Excise duty including sales tax shall be accompanied with authenticated proof of such exemption. Authenticated proof for this clause shall mean attested Photostat copy of exemption certificate. Any claim towards Excise duty/ Sales Tax shall be paid on actual basis subject to production of authenticated documentary evidence.
27. **Supplier's Responsibility.**
Notwithstanding anything mentioned in the Specification or subsequent approval or acceptance by the Purchaser, the ultimate responsibility for design, manufacture, materials used and satisfactory performance shall rest with the Tenderers. The Supplier(s) shall be responsible for any discrepancy noticed in the documents, submitted by them alongwith the bid(s).
28. **Validity.**
Prices and conditions contained in the offer should be kept valid for a minimum period of 180 days from the date of opening of the tender, failing which the tendershall be rejected.
29. **EVALUATION.**
- (i) Evaluation of bids will be on the basis of the FOR DESTINATION PRICE (By Road Transport) including Excise Duty, sales Tax & other levies as may be applicable. The FORD PRICE shall consist of the following components
 - a) Ex-works price.

- b) Packing & Forwarding charges.
- c) Freight
- d) Insurance.
- e) Excise Duty.
- f) Sales Tax.
- g) Other levies.
- h) Mandatory spares, if any for maintenance of equipment. (At the discretion of the purchaser)
- i) Test charges, if any. .
- j) Supervision of erection, testing and commissioning charges, if any.
- k) Any other items, as deemed proper for evaluation by the purchaser.
- l) Loading factors will be taken in to account during evaluation if the prices of some of the items, not quoted.

(II) Weightage shall be given to the Following factors in the Evaluation & Comparison of Bids.

In comparing bids and in making awards, the Purchaser will consider other factors such as compliance with Specification, minimum qualification criteria as per clause-30, outright rejection of tenders clause-34 of this tender, relative quality, adaptability of Supplies or services, experience, financial soundness, record of integrity in dealings, performance of materials/equipments earlier supplied, ability to furnish repairs and maintenance services, the time of delivery, capability to perform including available facilities such as adequate shops, plants, equipment and technical organisation.

30. Minimum Qualification Criteria of Bidders.

All the prospective bidders are requested to note that their bids for tendered equipment can only be considered for evaluation if:

- i) The bidder should have manufacture and supply experience of above rated or higher capacity equipments for a minimum period of 2 (two) years as on the date of opening of the tender
- ii) At least 50% of the tendered quantity. of above rated or higher capacity equipment should have been supplied within the above-stipulated period.
- iii) The above rated or higher capacity equipment should have at least 2 (two) years successful performance from the date of commissioning. At least one of the performance certificates shall be submitted from Govt.of India/State Govt.(s) or their undertakings.
- iv) The bidder should have conducted type tests on the tendered equipments in Government approved laboratory within five years from the date of opening of the tender.

31. Jurisdiction of the High Court of Orissa.

Suits, if any, arising out of this contract shall be filed by either Party in a court of Law to which the jurisdiction of High court of Orissa extends.

32. Correspondences.

- i) Any notice to the supplier under the terms of the contract shall be served by Registered Post or by hand at the Supplier's Principal Place of Business.
- ii) Any notice to the Purchaser shall be served at the Purchaser's Principal Office in the same manner.

33. Official Address of the Parties to the Contract

The address of the parties to the contract shall be specified:-

- [i] **Purchaser:** Senior General Manager (Procurement)(CPC) OPTCL
Bhubaneswar-751022 (Orissa)
Telephone No. 0674 - 2541801
FAX No. 0674 - 2542964
- [ii] **Supplier:** Address
Telephone No.
Fax No.
34. **Outright Rejection of Tenders**
Tenders shall be outrightly rejected if the followings are not complied with.
- [i] The Tenderer should have purchased/obtained the Bid specification document from the office of the Purchaser or downloaded the same from website of OPTCL, but shall deposit the tender cost, while submitting the tender.
- [ii] The Tender shall be submitted in person or by Registered Post with A.D.
- [iii] The Tender shall not be submitted telegraphically or by FAX.
- [iv] The Tender shall be accompanied by the prescribed Earnest Money deposit.
- [v] The Tender shall be kept valid for a minimum period of 180 days from the date of opening of tender.
- [vi] The Tender shall be submitted in two parts as specified.
- [vii] The Tenders shall be accompanied by a list of major supplies effected prior to the date of opening of tender. Data of at least 2 (two) years shall be furnished.
- [viii] Tender shall be accompanied by Photostat copy of latest type test certificates (for the tests, carried out on the tendered equipments, being offered). Such type tests should have been conducted within last five years from the date of opening of this tender in a Government approved laboratory/CPRI in presence of any Government Organisation's representative(s).
- [ix] The schedule of prices should be filled up fully to indicate the break-up of the prices including taxes and duties. Incomplete submission of this schedule will make the tender liable for rejection. Vide Clause-4(ii) of Part-II.
- [x] The Tenderer should quote 'FIRM' price only and the price should be kept valid for a minimum period of 180 days from the date of opening of the tender.
- (xi) Tender shall be accompanied by legibly written user's certificate to prove the satisfactory operation of the offered equipments/materials for a minimum period of 2 (two) years from the date of commissioning/use as per the tender specification. User's certificate shall include the detailed address of the user with Equipment/Material, Name and type as per this specification, number of years of satisfactory use/operation & date of issue of this user's certificate with official seal written in English only & clearly visible must be furnished. *At least one of the user's certificates shall be from state or Central Govt. or their Undertakings.*
- (xii) Guaranteed Technical particulars & Abstract of terms and Conditions should be filled in completely.
35. **Documents to be treated as confidential.**
The supplier shall treat the details of the specification and other tender documents as private and confidential and these shall not be reproduced without written authorization from the Purchaser.
36. **Scheme/Projects**
The materials/equipment covered in this specification shall come under "O&M WORKS

SECTION - III [LIST OF ANNEXURES]

The following schedules and proformas are annexed to this specification and contained in Section-III as referred to in the relevant clauses.

1	Declaration form	ANNEXURE-I
2	Abstract of terms and conditions to accompany Section-II of Part-I	ANNEXURE-II
3	Schedule of Quantity and Delivery	ANNEXURE-III
4	Abstract of price component [to accompany Part-II of this specification]	ANNEXURE-IV
5	Schedule of prices to accompany Part-II	ANNEXURE-V
6	Bank Guarantee form for earnest money deposit	ANNEXURE-VI
7	Composite Bank Guarantee form for security deposit, payment and performance	ANNEXURE-VII
8.	Chart showing particulars of E.M.D.	ANNEXURE - VIII
9.	Data on Experience.	ANNEXURE - IX
10.	Schedule of spare parts.	ANNEXURE-X
11.	Schedule of Installations.	ANNEXURE-XI

ANNEXURE - I

DECLARATION FORM

To

The Sr. General Manager (CPC)
OPTCL Head Qrs.BBSR,751022

Sub:- Tender Specification No-_____

Sir,

1. Having examined the above specification together with terms & conditions referred to therein * I/We the undersigned hereby offer to supply the materials/equipments covered therein complete in all respects as per the specification and General conditions, at the rates, entered in the attached contract schedule of prices in the Tender.
2. * I/We hereby undertake to have the materials/equipments delivered within the time specified in the Tender.
3. * I/We hereby guarantee the technical particulars given in the Tender supported with necessary reports from concerned authorities.
4. * I/We certify to have purchased/ downloaded a copy of the specification by remitting *cash/money order/D.D./ remitting the cost of tender, herewith and this has been acknowledged by your letter/ money receipt No.
Dated,
5. In the event of Tender, being decided in *my/our favour, * I/We agree to furnish the Composite B.G. in the manner, acceptable to ORISSA POWER TRANSMISSION CORPORATION LTD., and for the sum as applicable to *me/us as per clause-19 of section-II of this specification within 15 days of issue of letter of intent/purchase order failing which *I/We clearly understand that the said letter of Intent/Purchase order will be liable to be withdrawn by the purchaser, and the EMD deposited by us shall be forfeited by OPTCL.

Signed this

day of

2010

Yours faithfully

Signature of the Tenderer with seal of the company

[This form should be dully filled up by the tenderer and submitted along with the original copy of the tender]

- (Strikeout whichever is not applicable).

ANNEXURE-II
ABSTRACT OF GENERAL TERMS AND CONDITIONS OF CONTRACT
[COMMERCIAL] TO ACCOMPANY PART-I

1	(a) OPTCL Money Receipt No. & Date towards purchase of Tender. (b) Earnest money furnished. (A) Bank Guarantee, (B) Bank Draft.	
2	Manufacturer's supply experience including user's certificate furnished or not.[As per clause No.7 of Section-II.]	Yes/No
3	Deviations to the specification if any[list enclosed or not] [As per clause-9 of the Section-II] (a) Commercial (b) Technical.	Yes/No Yes/No
4	Delivery (period in months from the date of purchase order)	
5	Guarantee:- Whether agreeable to OPTCL's terms. [As per clause-18 of Section-II]	Yes/No
6	Whether agreeable to furnish Composite B.G. in case his tender be successful [As per clause-19 of Section-II]	Yes/No
7.	Terms of payment:- Whether agreeable to OPTCL's terms or not [As per clause-21 of Section-II]	Yes/No.
8.	Nature of price:- FIRM	Yes/No
9.	Penalty:- Whether agreeable to OPTCL's terms or not (As per clause-22 of Section-II)	Yes/No
10.	Whether STCC/ P&L A/C, Balance Sheet for the required period are furnished as per clause-25 of Section-II	Yes/No
11.	Validity: - Whether agreeable to OPTCL's terms or not [As per clause-28 of Section-II]	Yes/No
12.	Whether recent type test certificates from any Government approved laboratory are furnished or not. [As per clause-34[viii] of section-II]	Yes/No
13.	Whether guaranteed technical particulars in complete shape are furnished or not	Yes/No
14.	Whether dimensional design/drawings furnished or not	Yes/No
15.	Whether materials are ISI/ISO marked.	Yes/No
16.	Manufacturer's name and it's trademark.	Yes/No
17.	Whether registered under Orissa Sales Tax Act. 1947	Yes/No
18.	Whether declaration form duly filled in furnished or not.	Yes/No.

Place: -

Date: -

Signature of the Tenderer
with seal of the company

ANNEXURE-III
SCHEDULE OF QUANTITY AND DELIVERY
 (To be filled up by the tenderer)

SL No	Description of materials	Quantity required	Desired Delivery	Destination	Remarks
1	2	3	4	5	6
LOT-I					
LOT-II					
LOT-III					
LOT-IV					
.					
.					
.					
.					
.					
.					
.					

Place:

Date:

Signature of Tenderer
with seal of Company

ANNEXURE-IV

ABSTRACT OF PRICE COMPONENT [TO ACCOMPANY PRICEBID]

1	Price basis	F.O.R. Purchaser's destination Stores/ site.
2	Packing & forwarding	
3	Rate of Insurance charges	
4	Rate of Freight charges	
5	Rate of excise duty	
6	Rate of sales Tax	
7	Rate of other taxes/levies /duties etc.	
8	Rate of entry tax.	
9.	Rate of Service Tax on supervision of erection testing and commissioning	
10.	Nature of price.	

Place

Date:

**Signature of Tenderer
With seal of company**

NB:- Abstract of price component shall be done for equipment/material offered, for testing & commissioning charges, if any. All the above prices will be taken during bid price evaluation.

ANNEXURE-V.

SCHEDULE OF PRICES TENDER SPECIFICATION No.

Item No.	Description.	Qty (unit)	Unit Ex-factory Price.	Unit Packing & Forwarding.	Unit Freight Charges.	Unit Insurance Charges.	Unit landing cost at destination store/site excluding ST,ED & Entry tax.
1.	2.	3.	4.	5.	6.	7.	8.

Unit E.D.	Unit S.T.	Unit Entry Tax.	Unit landing Cost including All taxes & Duties.	Total landing cost Including all taxes & duties.
9.	10.	11.	12= (8+9+10+11)	13= (3X12)

Signature of Tenderer
Name, Designation and Seal

NB: -

1. The tenderer should fill up the schedule properly and in full. The tender will be rejected, if the schedule of price is submitted in incomplete form. No post tender correspondence will be entertained on break-up of prices. Also, the supplier should agree for delivery at sub-station site.
2. In case, where F&I components are not specifically indicated in this schedule, 5% of the ex-works price shall be taken towards F&I components for the purpose of comparison of price.
3. The Tenderer shall certify in the price bid that MODVAT benefit, if any, has been fully passed on to the purchaser while quoting the tender price.
4. Conditional offers will not be acceptable.
5. The bidder is to clearly indicate the period up to which the tax holidays are available to them.
6. Price bid in any other format will not be acceptable and the offer will be rejected.
7. Test charges (Routine/type) if any, mandatory spares, if any, maintenance equipment charges, if any, as per Technical Specification, supervisory charges, if any, (in case of equipments by taking 30 Man days) shall be indicated separately, row-wise.
8. All the above charges will be taken into account, during bid price evaluation.

ANNEXURE-VI

PROFORMA FOR BANK GUARANTEE FORM FOR EARNEST MONEY DEPOSIT

- Ref _____ Date _____ Bank Guarantee No: _____
- 1 In accordance with invitation to Bid No. _____ Dated _____ of ORISSA POWER TRANSMISSION CORPORATION LTD. [OPTCL][herein after referred to as the OPTCL for the purchase of _____ Messers _____ Address _____ wish/wished to participate in the said tender and as a Bank Guarantee for the sum of Rs. _____ [Rupees _____ Valid for a period of 240 days [Two hundred forty days] is required to be submitted by the Tenderer. We the _____ [Indicate the Name of the Bank] [Hereinafter referred to as 'the Bank'] at the request of M/S _____ [Herein after referred to as supplier (s)] do hereby unequivocally and unconditionally guarantee and undertake to pay during the above said period, on written request by the Sr. General Manager [Procurement] ORISSA POWER TRANSMISSION CORPORATION LTD. _____ [Indicate designation of the purchaser] an amount not exceeding Rs. _____ to the OPTCL, without any reservation. The guarantee would remain valid up to 4.00 PM of _____ [date] and if any further extension to this is required, the same will be extended on receiving instructions from the _____ on whose behalf this guarantee has been issued.
2. We the _____ do hereby, further undertake [Indicate the name of the bank] to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the OPTCL stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the OPTCL by reason of any breach by the said supplier [s] of any of the terms or conditions or failure to perform the said Bid . Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____
3. We undertake to pay the OPTCL any money so demanded not withstanding any dispute or disputes so raised by the contractor [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there

under and the supplier(s) shall have no claim against us for making such payment.

4. We, the _____ further agree that the guarantee

[Indicate the Name of the Bank]

herein contained shall remain in full force and effect during the aforesaid period of 240 days [two hundred forty days] and it shall continue to be so enforceable till all the dues of the OPTCL under or by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till Managing Director, ORISSA POWER TRANSMISSION CORPORATION LTD. certifies that the terms and conditions of the said Bid have been fully and properly carried out by the said Supplier [s] and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the

_____ we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ further agree with the OPTCL that

[Indicate the name of the Bank]

the OPTCL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Bid or to extend time of performance by the said Supplier [s] from time to time or to postpone for any time or from time to time any of the powers exercisable by the OPTCL against the said supplier [s] and to forbear or enforce any of the terms and conditions relating to the said bid and we shall not be relieved from our liability by reason of any such variation, postponement or extension being granted to the said Supplier [s] or for any forbearance act or omission on the part of the OPTCL or any indulgence by the OPTCL to the said Supplier[s] or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name, style and constitution of the Bank or the supplier [s].

7. We, _____ lastly undertake not revoke this

[Indicate the name of the Bank]

Guarantee during its currency except with the previous consent of the OPTCL in writing.

8. We the _____ Bank further agree that this guarantee shall also be invokable at our place of business at Bhubaneswar in the state of Orissa.

Dated _____ Day of _____

For _____

[Indicate the name of Bank]

Witness ((Signature, names & address)

1.

2.

ANNEXURE-VII

PROFORMA FOR COMPOSITE BANK GUARANTEE FOR SECURITY DEPOSIT PAYMENT AND PERFORMANCE

This Guarantee Bond is executed this _____ day
of _____ 2010 by us the
_____ Bank at _____

P.O. _____ P.S. _____
District _____ State _____

1. WHEREAS the ORISSA POWER TRANSMISSION CORPORATION LTD., a body corporate constituted under the Electricity Act, 2003 [hereinafter called "the OPTCL" which shall include its successors and assigns has placed orders No. _____ Date _____ [hereinafter called "The Agreement"] on M/s. _____ [hereinafter called "The Supplier"] which shall include its successors & assigns for supply of materials.

AND WHERE AS the supplier has agreed to supply materials to the OPTCL in terms of the said agreement AND

WHEREAS the OPTCL has agreed [1] to exempt the supplier from making payment of Security [2] to release 100% payment of the cost of materials as per the said agreement and [3] to exempt from performance guarantee on furnishing by the Supplier to the OPTCL, a Composite bank Guarantee of the value of 10 % [ten percent] of the contract price of the said agreement.

NOW THEREFORE, in consideration of the OPTCL having agreed [1] to exempt the Supplier from making payment of Security [2] releasing 100% payment to the Supplier and [3] to exempt from furnishing performance guarantee in terms of the said agreement as aforesaid, we, the _____ [Bank][hereinafter referred to as 'the Bank'] do hereby undertake to pay to the OPTCL an amount not exceeding Rs. _____ [Rupees _____] against any loss or damage caused to or suffered by or would be caused to or suffered by the OPTCL by reason of any breach by the said Supplier [s] of any of the terms or conditions contained, in the said agreement.

2. We the (_____ Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on demand from the OPTCL stating that the amount claimed is due by way of loss or damage caused to or suffered by the OPTCL by reason of any breach by the said Supplier [s] of any of the terms or conditions, contained in the said agreement or by reason of the supplier's failure to perform the said agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ [Rupees _____]
3. We the _____ Bank} also undertake to pay to the OPTCL any money so demanded notwithstanding any dispute or disputes raised by the supplier [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Supplier [s] shall have no claim against us for making such payment.

4. We, (_____Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to do so enforceable till all the dues of the OPTCL under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Managing Director, ORISSA POWER TRANSMISSION CORPORATION LTD. certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said Supplier [s] and accordingly discharges this Guarantee.

Unless a demand or claim under this guarantee is made on us in writing on or before the [Date_____], we shall be discharged from all liability under this guarantee thereafter.

5. We,(_____Bank) further agree that the OPTCL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Supplier [s] and we shall not be relieved from our liability by reason of any such variations or extension being granted to the said supplier [s] or for any forbearance, act or omission on the part of the OPTCL or any indulgence by the OPTCL to the said Supplier [s] or by any such matter or thing whatsoever which under the law relating to sureties would but these provisions have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name , style and constitution of the Bank and supplier [s].

7. We,[_____Bank] lastly undertake not to revoke this guarantee during its currency except with the previous consent of the OPTCL in writing.

8. We the _____ Bank further agree that this guarantee shall also be invokable at our place of business at Bhubaneswar in the state of Orissa.

Date at _____ the, _____ day of 201_____

For _____
[Indicate the name of Bank]

Witness (Name, Signature & Address)

1.

2.

ANNEXURE-VIII

**CHART SHOWING PARTICULARS OF EARNEST MONEY DEPOSIT
FURNISHABLE BY TENDERERS**

1.	Central and State Government Undertakings	Exempted
2.	All other inside & outside state units.	The amount of EMD as specified in the specification /Tender Notice in shape of bank guarantee /DD.

NB: - **REFUND OF E.M.D.**

- [a] In case of unsuccessful tenderers, the EMD will be refunded immediately after the tender is decided. In case of successful tenderer, this will be refunded only after furnishing of Composite Bank Guarantee referred to in clause No.19 of Section-II of this specification.
Suits, if any, arising out of EMD shall be filed in a court of law to which the jurisdiction of High Court of Orissa extends.
- [b] Earnest Money will be forfeited if the tenderer fails to accept the letter of intent/purchase order, issued in his favour or revises the bid price[s] within the validity period of Bid.

ANNEXURE-IX

DATA ON EXPERIENCE

- [a] Name of the manufacturer.
- [b] Standing of the firm as manufacturer of equipment quoted.
- [c] Description of equipment similar to that quoted [supplied and installed during the last two years with the name of the organizations to whom supply was made].
- [d] Details as to where installed etc.
- [e] Testing facilities at manufacturer's works.
- [f] If the manufacturer is having collaboration with another firm, details regarding the same and present status.
- [g] A list of purchase orders, executed during last three years.
- [h] A list of similar equipments of specified MVA rating, voltage class, Impulse level, short circuit rating, Designed, manufactured, tested and commissioned which are in successful operation for at least two years from the date of commissioning with legible user's certificate. User's full complete postal address/fax/phone must be indicated. (Refer clause No.7 of the Part-I, Section-II of the specification).

Place:

Date:

Signature of tenderer
Name, Designation, Seal

ANNEXURE-X

SCHEDULE OF SPARE PARTS FOR FIVE YEARS OF NORMAL
OPERATION & MAINTENANCE

Rated MVA	Rated Voltage	Place of installation and complete postal address	Year of commissioning

Place: -
Date

Signature of Tenderer:
Name, Designation, Seal

**PART - II
PRICE BID**

1. **PRICE:**

- (i) Bidders are required to quote their price(s) for goods offered indicating they are 'FIRM'
 - (ii) The prices quoted shall be FOR Destination only at the consignee's site/store inclusive of packing, forwarding, Freight & Insurance. In addition, the break-up of FOR Destination price shall be given as per schedule of Prices in Annexure-V of Section - III. The Tenderer has to certify in the price bid that MODVAT benefit if any, has been fully passed on to the Purchaser, while quoting the tender prices.
2. **INSURANCE :**
Insurance of materials/equipments, covered by the Specification should normally be done by the Suppliers with their own Insurance Company unless otherwise stated. The responsibility of delivery of the materials/equipments at destination stores/site in good condition rests with the Supplier. Any claim with the Insurance Company or Transport agency arising due to loss or damage in transit has to be settled by the Supplier. The Supplier shall undertake free replacement of equipments/materials damaged or lost which will be reported by the Consignee within 30 days of receipt of the equipments/materials at Destination without awaiting for the settlement of their claims with the carriers and underwriters.
3. **CERTIFICATE FOR EXEMPTION FROM EXCISE DUTY/SALES TAX:**
Offers with exemption from excise Duty/ Sales tax shall be accompanied with authenticated proof of such exemption. Authenticated proof for this clause shall mean Photostat copy of exemption certificates, attested by Gazetted Officers of State or Central Government.
4. **PROPER FILLING UP OF THE PRICE SCHEDULE:**
 - (i) In case where Freight & Insurance charges are not furnished, 5% of the Ex-works price shall be considered as the freight & Insurance charges.
 - (ii) The tenderer should fill up the price schedule (Annexure-V of Section-III) properly and in full. The tender may be rejected if the schedule of price is submitted in incomplete form as per clause-34 (ix) of Section-II of the Specification.
5. **NATURE OF PRICE INDICATED IN SPECIFICATION SHALL BE FINAL.**
The nature of price indicated in the Clause-13, Section - I of PART -I of the Specification shall be final and binding.



**ORISSA POWER TRANSMISSION CORPORATION
LIMITED**

**OFFICE OF THE SR. GENERAL MANAGER,
CENTRAL PROCUREMENT CELL,
JANPATH, BHUBANESWAR-751022.**

TENDER SPECIFICATION

SECTION - IV

TECHNICAL SPECIFICATION

FOR

PROCUREMENT

OF

**132KV, 33KV INDUCTIVE VOLTAGE
& 220KV, 132KV CAPACITIVE VOLTAGE TRANSFORMERS WITH
METERING WINDING OF
ACCURACY CLASS (0.2)**

LOT-I-33KV IVT

LOT-II-132KV IVT

LOT -III-132KV CVT

LOT -IV-220KV CVT

**TECHNICAL SPECIFICATION FOR 132KV, 33KV INDUCTIVE &
220KV, 132KV CAPACITIVE VOLTAGE TRANSFORMER**

1.0 SCOPE :

- 1.1. This specification provides for the design, manufacture, assembly inspection and testing at the manufacturer's works, packing and delivery FOR [Destinations] of outdoor mounted type, single phase, oil filled, self cooled, single unit type Inductive voltage transformers for 132KV & 33KV systems, & Capacitive Voltage Transformers for 220kv, 132KV system to be used for voltage indication, supply of potential to tariff meters, relays for feeder protection in Grid Sub-stations of OPTCL, Orissa.. In addition to the above functions the 220kv, 132KV CVT shall be suitable for carrier coupling. 33KV polycrystalline dry type VTs may also be offered which may be procured in some quantity which is at the discretion of the purchaser.
- 1.2 The IVTs shall be complete in all respects with insulators, bimetallic connectors, fixing details etc. as described herein.
- 1.3 Bidders are required to quote for 0.2 accuracy class [metering winding] for 33KV, 132KV IVTs & 220kv, 132KV CVTs in the following manner.
- (a) Guaranteed Technical Particulars.
 - (b) Technical literatures, brochures and drawings as per this specification.
 - (c) Type Test reports.
 - (d) List of orders, executed and Users' certificates with offer, failing submission of the above particulars with the offer, the tender may not be considered for evaluation.

2.0 Following is the list of documents constituting this Specification.

- (i) Technical Specification (TS).
 - (ii) Technical requirements. - [Appendix-I]
 - (iii) Quantity and delivery schedule. - [Appendix-II]
 - (iv) Guaranteed Technical Particulars.- [Annexure-A]
 - (v) Calibration status of testing equipment and meters/Instruments. - [Annexure-B]
 - (vi) Check list towards Type Test Reports.- [Annexure-C]
 - (vii) Check list for Delivery Schedule. - [Annexure-D].
- N.B.:- Annexure-A, B, C & D are to be filled up by the Bidder.

3.0 STANDARDS:-

- 3.1 The IVTs & CVTs shall conform in all respects to high standards of Engineering, design, workmanship and latest revisions of relevant standards at the time of offer and the Purchaser shall have the power to reject any work or material which in his judgement is not in full accordance therewith.
- 3.2 Except to the extent modified in the specifications, the IVTs & CVTs shall conform to the latest editions and the amendments of the standards listed hereunder:

Sl. No.	Standard Ref. No.	Title.
01	IEC-44(4)	Instrument Transformer - measurement of PDS.
02	IEC-60	High voltage testing techniques.
03	IEC-171	Insulation co-ordination.
04	IEC-186	Voltage Transformers.
05	IEC-186(A)	Voltage Transformers (first supp. to IEC-186)
06	IEC-270	Partial discharge measurement.

07	IS-335	Insulating oil for transformers and switch gears.
08	IEC-8263	Method for RIV Test on high voltage insulators.
09	IS-2071	Method of high voltage testing.
10	IS-2099	High Voltage porcelain bushings.
11	IS-2147	Degree of protection provided by enclosures for low voltage switch-gear and control.
12	IS-2165	Insulation co-ordination for equipments of 100KV and above.
13	IS-3156 (Part-I to IV).	Voltage transformers.
14	IS-3347	Dimensions of porcelain transformer bushings.
15	IS-4146	Application guide for voltage transformers.
16.	IS-5547	Application guide for Capacitor Voltage Transformers.
17.	IS-9348	Coupling Capacitor & Capacitor Devices.

3.3 All the above alongwith the amendments thereof shall be read and interpreted together. However, in case of a contradiction between the Technical Specification and any other volume, the provisions of this Technical Specification will prevail.

3.4 The voltage transformers with the requirements of other authoritative standards, which ensure equal or better quality than the standards, mentioned above shall also be acceptable. Where the equipments, offered by the supplier conforms to other standards, salient points of difference between the standards shall be brought out in the offer. 4 (four) copies of the reference standards in English language shall be furnished alongwith the offer.

3.5 The supplier is to furnish the standards as mentioned above from Sl. 1 to 17 at their own cost, if required by the purchaser.

4.0 CLIMATIC AND SERVICE CONDITIONS :

4.1 The VTS are required to operate satisfactorily under the following conditions.

- (a) Maximum ambient temperature - 50°C.
- (b) Maximum daily average ambient air temperature - 45°C.
- (c) Maximum relative humidity - 100%.
- (d) Average number of rainy days in a year - 120 days.
- (e) Average annual rainfall - 150 cms.
- (f) Altitude not exceeding - 1000 M.
- (g) Maximum wind pressure - 260kg/sq.m.

4.2 EARTHQUAKE INCIDENCE:-

The VTS are to be designed to withstand earthquake of an intensity, equivalent to 0.3g in the horizontal and 0.15g in the vertical direction where, 'g' stands for acceleration due to gravity.

5.0 PURCHASER'S AUXILIARY POWER SUPPLY:-

5.1 Following power supplies shall be made available at site:

- (a) AC-3 phase, 415V, 50HZ earthed.
- (b) AC single phase, 240V, 50HZ earthed.
- (c) 220V DC, Ungrounded.

5.2 All equipments and devices shall be capable of continuous satisfactory operation on AC and DC supplies of nominal voltage, mentioned above with variations as given below.

- (a) AC voltage variation. $\pm 10\%$
- (b) Frequency variation. $\pm 5\%$.
- (c) Combined voltage & frequency variation. $\pm 10\%$
- (d) DC voltage variation. 190V to 240V DC.

5.3 The supplier shall make his own arrangements for the power supplies other than those specified under Clause-5.1 above.

6.0 **INSTALLATION:-**

The VTS covered under this specification shall be suitable for outdoor installation without any protection from rain, dust, mist and direct rays of the sun.

A.7.0. **GENERAL TECHNICAL REQUIREMENTS FOR IVT :-**

7.1 Each IVT shall be supplied, filled with insulating oil and shall be hermetically sealed to prevent atmosphere coming in contact with oil, avoiding filtration and change of oil. In case the tenderer intends to use Nitrogen or any other inert gas above the oil level, the gas must not leak out and the same shall be stated in the tender.

7.2 However, the IVT shall have a provision for draining and filling insulating oil after drying or preferably must have arrangement for drying the oil by continuous process with oil filters.

7.3 The IVT shall be suitable for transport in horizontal position if the transport limitations so demand.

7.4 **SECONDARY TERMINAL BOX:-**

7.4.1 The secondary terminals shall be brought out in a weather proof terminal box with a rating not less than IP-55.

7.4.2 All secondary terminals shall be brought out in a compartment on one side of each IVT for easy access.

7.4.3 The exterior of this terminal box shall be hot-dip galvanized.

7.4.4 The terminal box shall be provided with removable gland plate and glands suitable for 1100 volts grade. PVC insulated, PVC sheathed multi core 4 sq.mm to 6 sq.mm stranded copper conductor cable.

7.4.5 The terminal box shall be provided with a door in front so as to have easy access of secondary terminals. The door shall have a sealing/locking arrangement and shall be suitable to prevent penetration of moisture and rain water.

7.4.6 The dimensions of the terminal box and its openings shall be adequate to enable easy access and sufficient working space for use of normal tools.

7.4.7 The terminal blocks shall be standard type and provided with ferrules indelibly marked or numbered and their identifications shall correspond to the designation on the relevant wiring diagram.

7.4.8 Secondary wiring terminal studs shall be provided with at least three nuts, plain and spring washers. The studs, nuts and washers shall be of brass, duly nickel plated. The minimum diameter of the studs shall be 6 mm. The length of at least 15 mm shall be available on the studs for inserting the leads.

7.5 Polarity shall be indelibly marked on each primary and secondary terminals.

7.6 The IVT shall be vacuum filled with oil after processing and thereafter hermetically sealed to eliminate breathing and to prevent air and moisture from entering the tanks. Oil filling and/or oil sampling cocks, if provided to facilitate

- factory processing should be properly sealed before despatching the IVT. The method, adopted for hermetic sealing shall be described in the offer.
- 7.7 The castings of base, collar etc. shall be diecast and tested before assembly to detect cracks and voids, if any.
- 7.8 The characteristics of the IVTS shall be such as to provide satisfactory performance such as voltage error and phase displacement at rated frequency shall not exceed the values as per relevant standards at any voltage between 80% and 120% of rated voltage and with burdens of between 25% and 100% of rated burden at a power factor of 0.8 lagging. The error shall be determined at the terminals of the IVT and shall include the effects of any fuses or resistors as an integral part of the IVT.
- 7.9 Inductive voltage transformers shall be designed so as to achieve the minimum risk of explosion in service. The bidder shall bring out in his offer, measures taken to achieve this.
- 7.10 **PRIMARY WINDING:-**
Primary winding of the IVT will be connected phase to neutral with the neutral point solidly earthed. The arrangement for this shall be included in the scope of supply. The primary conductor shall be of adequate cross-section so that the maximum permissible current density shall not be exceeded even during short-circuit conditions.
- 7.11 **SECONDARY WINDING.**
Suitably insulated copper wire of electrolytic grade shall be used for secondary windings. The secondary conductor shall be of adequate cross section so that the maximum permissible current density shall not be exceeded even during short-circuit conditions. Each 132KV IVT will have two secondary windings, protection-500VA -Metering-500VA -burden at 0.8 lagging power factor and rated voltage of 110V for protection and 110/1.732V for metering winding. Secondary windings shall be used for metering, relaying and synchronizing. Each winding shall comply requirements of both Part-II and III of up-to-date editions of IS-3156/IEC-186, 33KV IVT will have one secondary winding of 200 VA burden at 0.8 lagging power factor and 110/1.732 volts.
- 7.12 **CORE:-** Core laminations shall be of cold rolled grain oriented silicon steel or other equivalent alloys of low hysteresis and eddy current losses, high permeability to ensure accuracy i.e. 0.2 accuracy class at both normal and high over voltage. The core material , thickness of lamination, the relevant graphs showing the characteristics of the core materials shall be submitted along with the offer.
- 7.13 **TANK.**
- 7.13.1 Both expansion chambers and tanks of the IVT shall be made of high quality steel and shall be able to withstand full vacuum and pressure, occurring during transit and thermal and mechanical stresses resulting from maximum short circuit current during operation. The tanks along with all ferrous parts shall be hot- dip galvanized as per relevant standard.
- 7.13.2 The metal tanks shall have bare minimum number of welded joints so as to minimize possible locations of oil leakage. Welding in horizontal plane is to be avoided as welding at this location may give way due to vibrations during transport resulting in oil leakage. Supplier has to obtain specific approval from the purchaser for any horizontal welding, used in the bottom tank
- 7.13.3 Paint inside the metallic housing shall be of anti-condensation type.

7.14 **PORCELAIN HOUSING.**

- 7.14.1. The housing shall be made up of homogeneous, vitreous porcelain of high mechanical and dielectric strength, Glazing of porcelain shall be of uniform brown or dark brown colour with a smooth surface, arranged to shed away rain water or condensed water particles(fog).The details of location and type of joint, if provided on the porcelain, shall be furnished by the Bidder along with the offer.
- 7.14.2.The bushings of the IVTS shall conform to latest edition of IS-2099.The hollow porcelain insulators shall conform to the latest edition of IS-5621
- 7.14.3 The insulators shall be cemented with Portland cement to the flanges resulting in high mechanical, tensile and breaking strength
- 7.14.4. The bushings shall have ample insulation, mechanical strength and rigidity for the condition under which they shall be used and shall be used and shall be designed to prevent accumulation of explosive gases and provide adequate oil circulation to remove the internal heat.
- 7.14.5 Cast metal and caps for the bushings shall be of high strength hot dip galvanized malleable iron. They shall have smooth surface to prevent discharge taking place between the metal parts and porcelain as a result of ionisation.
- 7.14.6 The insulation of bushings shall be co-ordinated with that of the IVT such that the flashover, if any, shall occur only external to the IVT.
- 7.14.7 Oil level gauge and convenient means of filling, sampling and draining of oil shall be provided.
- 7.14.8 End shields should be provided for distribution of stresses.
- 7.14.9 Corona shields for bushings, if required, should be provided.

7.15 **INSULATING OIL.**

The quantity of insulating oil for the filling and the complete specification of the insulating oil shall comply in all respects with the provisions of the latest edition of IS-335. The IVTS shall be supplied completely filled with purified oil.

7.16. **PREVENTION OF OIL LEAKAGE AND ENTRY OF MOISTURE:-**

The supplier shall ensure that the sealing of the IVT is properly achieved. In this connection, the arrangement provided by the supplier at various locations including the following ones shall be described, supported by sectional drawings

- (a) Locations of emergence of primary & secondary terminals..
- (b) Interface between porcelain housing and metal tank(s).
- (d) Cover of the secondary terminal box.
- 7.16.1 Nuts and bolts or screws used for fixation of the interfacing porcelain bushings for taking out terminals shall be provided on flanges, cemented to the bushings and not on the porcelain.
- 7.16.2 For gasketed joints, wherever used, nitrite butyl rubber gaskets shall be used. The gasket shall be fitted in properly machined groove with adequate space for accommodating the gasket under compression.
- 7.17 **FITTINGS AND ACCESSORIES:-** Fittings and accessories, listed below shall be supplied with each IVT. Any fitting, required essential other than those listed below shall also be supplied along with each IVT.
- (a) Oil level gauge.
- (b) Oil filling hole and cap.
- (c) Pressure relieving device.
- (d) Lifting lugs for core and windings, bushings & complete transformers.
- (e) Phase terminal connectors.

- (f) Tank earthing pads/terminals with necessary nuts and bolts and washers for connecting to Purchaser's strip.
 - (g) Name/Rating plate.
 - (h) H.R.C. fuse.
- 7.18.1 **OIL LEVEL GAUGE:-** An oil level gauge shall be provided to indicate the oil level in the IVT. This gauge shall be mounted in such a way that the oil level can be seen from the ground level.
- 7.18.2 **PRESSURE RELIEVING DEVICE:-** Each IVT shall be provided with a pressure relieving device so as to protect bushing of the IVT even under unfavourable conditions.
- 7.18.3 **OIL DRAIN COCK:-** An oil drain cock alongwith a stop cock shall be provided in the bottom flange so as to permit taking of oil samples for testing, if required.
- 7.18.4 **EARTHING:-** Metal tank of each IVT shall be provided with two separate earthing terminals for bolted connection to 50mm x 6mm flat to be provided by the Purchaser for connection to station earth-mat.
- 7.18.5 **LIFTING ARRANGEMENT:-** The IVT shall be provided with suitable lifting arrangement to lift the entire unit. The lifting arrangement shall be clearly shown in the general arrangement drawing. Lifting arrangement [Lifting eye] shall be positioned in such a way so as to avoid any damage to the porcelain housing or the tanks during lifting for installation/transport. Necessary string guides shall be offered which shall be of removable type.
- 7.18.6 **NAME PLATE:-** The IVT shall be provided with non-corrosive legible name plate with the information specified in relevant standards, duly engraved/punched on it.
- 7.18.7 **GASKET JOINT:-** The manufacturer shall furnish the type of gasket used or setting methods.
- TERMINAL CONNECTORS:-**
All the IVTS shall be provided with bimetallic solderless clamp type, rigid type terminal connectors, suitable for ACSR Moose Conductor for 220KV IVT & CVT ACSR.ZEBRA Conductor for 132KV, 33KV IVT & 132KV CVT..Each terminal connector shall be of universal type, suitable for both horizontal and vertical connections to the transmission line conductors/station bus bar.
- 7.18.8.1 **TERMINAL CONNECTORS** shall be manufactured and tested as per IS:5561.
- 7.18.8.2 All castings shall be free from blow holes, surface blisters, cracks and cavities.
All sharp edges and corners shall be blurred and rounded off.
- 7.18.8.3 No part of a clamp shall be less than 10mm thick.
- 7.18.8.4 All ferrous parts shall be hot dip galvanized conforming to IS-2633. For bimetallic connectors, copper alloy linear of minimum thickness of 2 mm shall be cast integral with aluminium body.
- 7.18.8.5 All current carrying parts shall be designed and manufactured to have minimum contact resistance.
- 7.18.8.6 Connectors shall be designed to be corona free in accordance with the requirements, stipulated in IS-5561.
- 7.18.9 **SECONDARY WIRING:-**
The Secondary wiring shall be enclosed in conduits and shall be brought to a terminal block ready for external connections. The wiring shall be of adequate cross-section and not less than 4.00 sq.mm copper wire.
- 7.18.10 The supplier shall supply necessary hardwares, required for connection of phase side conductor to the line terminal and the grounding strip to the grounding terminal.

- 7..18.11 Necessary nuts and bolts for fixing the IVTS on the supporting structures shall be in tenderer's scope of supply.
- B.7.0 **GENERAL TECHNICAL REQUIREMENTS FOR 220KV & 132KV CAPACITIVE VOLTAGE TRANSFORMER:-**
- 7.1 The design of capacitor voltage transformers shall such that its accuracy shall not be affected by the presence of pollution on the external surface of its insulators.
- 7.2 The CVT shall operate satisfactorily in system with high X/R ratio. (Tp=100 ms).
- 7.3 The CVT transformer tanks along with top metallic shall be galvanized and painted to required shade.
- 7.4 Impregnation details along with tests and checks to ensure successful completion of impregnation cycle shall be furnished for purchaser's approval.
- 7.5 Bellows, if used to cater for expansion of insulating oil, shall be tested in accordance with relevant standards. The details shall be subject to the approval of the purchaser.
- 7.6 The CVT shall be capacitor voltage type with electromagnetic units and shall be suitable for carrier coupling..
- 7.7 All windings of voltage transformer secondaries shall be protected by HRC cartridge type fuses. In addition, fuses shall be provided for the protection and metering windings for fuse monitoring scheme. The secondary terminals of the CVTs shall be terminated to stud type non-disconnecting terminal blocks in the individual phase secondary boxes via. the fuse
- 7.8 CVTs shall be suitable for high frequency (HF).coupling, required for power line carrier communication. The carrier signal must be prevented from flowing into potential transformer (EMU) circuit by meant of a RF choke/reactor, suitable for effectively blocking the carrier signal over the entire carrier frequency range i.e. 40 to 500 KHZ. Details of the arrangement shall be furnished along with the bid. HF terminal of the CVT shall be brought out through a suitable bushing and shall be easily accessible for connection to the coupling devices of the carrier communication equipment, when utilized. The bushing shall be fully protected against rain and vermin so as to avoid the possibility of short circuits to earth. An earthing link with fastener shall be provided for HF terminal.
- 7.9 The electromagnetic unit, comprising compensating reactor, intermediate transformer and protective and damping devices should have a separate terminal box with all secondary terminals, brought out.
- 7.10 Voltage transformers should be thermally and dielectrically safe when the secondary terminals are loaded with the guaranteed thermal burdens.
- 7.11 The accuracy of the windings (3P/3P/0.2) shall be maintained through out the entire burden range preferably in the frequency range of 48 HZ to 51.5 HZ on all the three windings without any adjustment during operation. Preference will be given to such bidders who can offer for maintaining the above accuracy class in the frequency range i.e. 48 HZ to 51.5 HZ up to the above specified burden values.
- 7.12 **CONSTRUCTIONAL FEATURES:-**
- 7.12.1 The 220KV & 132KV CVT shall be suitable for mounting on support structure of tubular GI pipe of nominal bore of 300/200 mm. or lattice type structures.
- 7.12.2 Access to secondary terminals shall be possible without any danger of access to high voltage circuit.
- 7.12.3 CVTs shall be hermetically sealed units.

- 7.12.4 A protective surge Arrester/spark gap shall be provided to prevent break down of insulation by incoming surges and to limit abnormal rise of terminal voltage of shunt capacitor/primary winding, tuning reactor/RF choke etc. due to short circuit in transformer secondaries. In case of an alternative arrangement, the Bidder shall bring out the details in the Bid.
- 7.12.5 The CVT secondary terminals shall brought out in to a weather proof terminal box for ease of access. The terminal box shall have an IP rating of not less than IP 55. The terminal box shall be provided with a removable gland plate at the bottom and shall be suitable for accepting the required number of PVC insulated PVC sheathed, 10 core 2.5 mm² standard copper conductor cable.
- 7.12.6 All terminals shall be clearly marked to facilitate connection of secondary wiring.
- 7.12.7 Secondary fuses or MCBs shall be provided on or adjacent to each CVT, located such that they are accessible while the primary is live and shall be provided with labels indicating their function and their phase colours CVT secondary circuits shall be complete in themselves and shall be earthed at one point only. A separate earth link shall be provided for each secondary winding and shall be situated at the CVT.
- 7.12.8 Where CVTs are supplied which are, or may be connected to different sections of the bus bar, it shall not be possible for the CVT secondary circuits, to be connected in parallel.
- 7.12.9 An auxiliary switch or relay shall be provided in each phase of the secondary circuit of the synchronizing and metering voltage supply connections to break the circuits automatically as soon as the circuit breaker is opened.
- 7.12.10 To prevent ferro resonance, suitable damping devices shall provided for connection to the transformer secondaries.
- 7.12.11 CVTs shall meet the requirements, given in this section of the specification.
- 7.12.12 The creepage and flashover distances of the high voltage insulator shall be suitable for the out door service conditions, specified in the schedules.
- 7.12.13 The bidder in the offer is to state the suitable precautions/methods, adopted during design stage of the CVT to avoid the un-desirable effects due to ferro resonance phenomena. The precautions/methods include lower level of working flux density in EMU, greater utilization of the linear portion of the magnetization curve, providing an air gap in the magnetic circuit, connecting a suitable damping resistance permanently across the secondary etc.
- 7.12.14 It should be stated in the bid offer regarding the steps taken in the design stage for elimination/minimization of the influence of the transient response on the behavior of high speed relays.
- 7.12.15 It shall be ensured by the bidder in the offer that the connection of carrier, frequency coupling device across the CVT will not affect the designated accuracy class of the CVT windings.
- 7.12.16 The capacitor divider unit shall comply to IS: 9348/1979.
- 7.12.17 It shall also be complied in the offer through a calculation sheet, proving that the designated accuracy class of the CVT (both metering and protection) are not affected by extreme temperatures, to be encountered in service conditions (Max. ambient temperature 50° C and minimum -0° C).
- 7.12.18 The terminal connectors should be suitable for ACSR ' ZEBRA' Conductor, complying to Cl.No.A.7.18.8 of this specification.

8.. **TESTS:-**

8.1 **Type Tests:-** The offered 132KV & 33KV Inductive voltage transformer & 220kv, 132KV capacitive voltage transformer should have been subjected to the following type tests in a Government approved Test Laboratory. The bidder shall furnish four sets of type test reports along with the offer. These tests must not have been conducted earlier than five years from the date of opening of the bid. For any change in the design/type already type tested and to the design/type offered against this specification, the purchaser reserves the right to demand repetition of some or all type tests/special tests without any extra cost to OPTCL in the presence of purchaser's representative at the cost of the supplier.

For 132KV & 33KV IVT:

- (a) Temperature rise test.
- (b) Lightning Impulse Test.
- (c) High Voltage power frequency wet withstand voltage tests.
- (d) Determination of errors.
- (e) IP-55 Test on secondary Terminal Box.

N.B.:- [I] The dielectric type tests should have been carried out on the same transformer.

(ii) After the IVT was subjected to the dielectric tests, it should have been subjected to all routine tests as per relevant standards.

(iii) For Temperature Rise Test, the test must have been made with the appropriate rated burden, connected to each secondary winding.

For 220KV & 132KV CVT.

TYPE TESTS/SPECIAL TESTS FOR 220KV, 132KV CVT:-

- a) Lightning Impulse voltage test on complete CVT unit.
- b) Power frequency over-voltage test on complete CVT unit.
- c) Partial discharge test.
- d) Radio interference voltage test.
- e) Corona extinction voltage test.
- f) Temperature rise test on complete CVT unit.
- g) Ferro resonance test on the complete C.V.T. unit.
- h) Transient response tests.
- i) Determination of Temperature Co-efficient test.
- j) High frequency capacitance and equivalent resistance measurement test (as per IEC-358)
- k) Stray capacitance and stray conductance test (as per IEC-358).
- l) Accuracy tests.
- m) Thermal stability test.
- n) Thermal Co-efficient test (as per IEC-358)
- o) Fast transient test.
- p) Seismic withstand test.
- q) IP-55 test on secondary Terminal Box.
- r) Magnetization and internal burden tests.
- s) Effectiveness of sealing tests.
- t) Mechanical Terminal load test on Bushing.
- u) Dielectric loss angle test (Tan Delta Test).

N.B.:- 1.The dielectric type tests should have been carried out on the same CVT.
2.After the CVT was subjected to the dielectric tests, it should have been subjected to all routine tests as per relevant standards.

3.The ratio errors, phase displacements before, during and after the temperature rise test on complete CVT unit should have been determined with stipulated burdens and the same should comply with the designated accuracy class for each winding of the CVT.

- 8.2 **ROUTINE TESTS:-** The following routine tests shall be conducted on each VT in the presence of Purchaser's representative for which no charges will be payable by OPTCL. No sampling is allowed.
- (a) Verification of terminal markings.
 - (b) Power frequency withstand tests on primary windings/capacitor voltage divider for IVT/CVT
 - (c) Partial discharge measurement for 132KV IVT & 220KV & 132KV CVT.
 - (d) Power frequency withstand tests on secondary windings/Low voltage terminal of the capacitor divider for 220KV & 132KV CVT.
 - (e) Power frequency withstand tests between sections.
 - (f) Determination of errors on complete IVT./CVT.
 - (g) Measurement of Insulation resistance.
 - (h) Oil leakage test.
 - (i) Measurement of capacitance and dielectric dissipation factor before and after dielectric tests (as per IEC-358)
 - (j) Power frequency tests on electromagnetic unit for 220KV & 132KV CVT.
 - (k) Any other test as per relevant national & international standards.

N.B.:- Determination of errors shall be performed after the other tests. The standard reference VT to be used during testing for determination of ratio error and phase angle error should of 0.05 accuracy class or better as per standard practice, presently adopted by OPTCL.

9. **INSPECTION:**

- 9.1 The Purchaser shall have access at all times to the works and all other places of manufacture, where the IVTs/CVTs are being manufactured and the supplier shall provide all facilities for unrestricted inspection of the supplier's works, raw materials, manufacturer of all the accessories and for conducting the necessary tests.
- 9.2 The Supplier shall keep the Purchaser informed in advance of the time of starting and of the progress of manufacture of equipment in its various stages so that arrangement could be made for inspection at the discretion of the Purchaser.
- 9.3 No material shall be despatched from its manufacture unless the material has been satisfactorily inspected, tested and despatch clearance issued. However, the Purchaser reserves the right to alter the despatch schedule attached to this Specification.
- 9.4 The acceptance of any quantity of equipment shall in no way relieve the supplier of his responsibility for meeting all the requirements of this Specification and shall not prevent subsequent rejection, if such equipments are found to be defective.
- 9.5 Clear 15 (Fifteen) days notice shall be given to this office for deputing officer(s) for inspection. The Voltage Transformers shall be despatched only after the inspection is conducted by a representative of OPTCL and release order, issued from this office after approval of Routine Test Certificates. The shop routine test certificates in triplicate for all the Voltage Transformers along with the calibration certificates of all the meters and equipments to be used during testing (as per Annexure-B of the Specification) should be furnished along with the Inspection Offer. The Inspecting Officer will be authorised for inspection of the

Voltage Transformers subject to the condition that the routine test certificates and calibration certificates of the testing equipments/meters will be found to be in order.

10. **QUALITY ASSURANCE PLAN:-**

- 10.1 The Bidder shall invariably furnish following informations along with his offer.
- [i] Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards, according to which the raw materials are tested, list of tests, normally carried out on raw materials in presence of Bidder's representative, copies of test certificates.
 - [ii] Information and copies of test certificates as in [i] above in respect of bought out items.
 - [iii] List of manufacturing facilities available.
 - [iv] Level of automation achieved and list of areas where manual processing exists.
 - [v] List of areas in manufacturing process where stage inspections are normally carried out for quality control and details of such tests and inspection.
 - [vi] Special features provided in the equipment to make it maintenance free.
 - [vii] List of testing equipments, meters and test plant limitation, if any, vis-à-vis the type, acceptance and routine tests, specified in the relevant standards. These limitations shall be very clearly brought out in the offer.
 - [viii] All the testing equipments, meters etc. should have been calibrated in a Government approved laboratory. The Bidder must submit the list of testing equipments and meters test-wise as per ANNEXURE-B of the Technical Specification.
- 10.2 The Supplier shall within 30 days of placement of order submit the following information to the Purchaser.
- [i] List of raw materials as well as bought out accessories and the names of the materials as well as bought out accessories and the name of Sub-suppliers selected from those, furnished along with the offer.
 - [ii] Type test certificates of the raw materials and bought out accessories.
 - [iii] Quality Assurance Plan (QAP) with hold points for the Purchaser's possible inspection. The QAP and hold points shall be discussed between the Purchaser and the Supplier before the QAP is finalised.
- 10.3 The Supplier shall submit the routine test certificates of bought out items and raw materials at the time of acceptance testing of the fully assembled equipment.
- 11 **DOCUMENT:** The supplier shall furnish four sets of following drawings/documents along with his offer.
- [a] General outline and assembly drawings of the Inductive Voltage Transformers/ Capacitive Voltage Transformers.
 - [b] Sectional views showing:-
 - [i] General constructional features.
 - (ii) Materials/gaskets/sealing used.
 - iii] The insulation of the winding arrangements, method of connection of primary/secondary winding to the primary/secondary terminals etc.
 - [c] Schematic drawing.
 - [d] Rating & diagram plate as per relevant IEC/ISS
 - [e] Secondary Terminal Box.
 - [f] Assembly Sectional view of Primary terminal./ capacitor voltage divider
 - [g] Assembly drawing for secondary terminal

- [h] The detailed dimensional drawing of Porcelain Housing such as ID,OD, thickness and insulator details such as height, profile of petticoats, angle of inclination and gap between successive petticoats, total creepage distance etc.
 - [i] Sectional view of pressure release device.
 - [j] Drawing showing details of Oil level.
 - [k] All type test reports relating to the tests as specified in Clause-8.1 of the above.
 - [l] Ratio and phase angle error curves for IVTS/ CVTS
 - [m] Magnetization characteristic curves such as B-H curves and Sp. Loss vs. Flux density curves for core material, used for IVT & EMU unit of CVT.
 - [n] Sectional view of EMU unit of 220KV&132KV CVT.
12. **TEST REPORTS:-**
- [i] Four copies of type test/special test reports shall be furnished to the Purchaser with the tender offer.
 - [ii] Copies of acceptance test reports and routine test reports shall be furnished to the Purchaser. One copy will be returned, duly certified by the Purchaser and only thereafter shall the materials be despatched.
 - [iii] All records of routine test reports shall be maintained by the supplier at his works for periodic inspection by the Purchaser.
 - [iv] All test reports of tests, conducted during manufacture shall be maintained by the supplier. These shall be produced for verification as and when required for by the purchaser.
13. The necessary galvanized flanges, bolts etc. for the base of the Inductive/Capcitive Voltage Transformers shall be supplied without any extra cost to the purchaser.
14. **PACKING AND FORWARDING:-**
- 14.1 The equipment shall be packed in suitable crates so as to withstand handling during transport and outdoor storage during transit. The supplier shall be responsible for any damage to the equipment during transit, due to improper and inadequate packing. The easily damageable material shall be carefully packed and marked with the appropriate caution symbols. Wherever necessary, proper arrangement for lifting such as lifting hooks etc. shall be provided. Any material found short inside the packing cases shall be supplied by supplier without any extra cost.
- 14.2 Each consignment shall be accompanied by a detailed packing list containing the following informations:
- [a] Name of the consignee.
 - [b] Details of consignment.
 - [c] Destination.
 - [d] Total weight of consignment.
 - [e] Sign showing upper, lower side of the crate.
 - [f] Handling and unpacking instructions.
 - [g] Bill of materials indicating contents of each package.
 - [h] Set of approved drawings.
- 14.3 The supplier shall ensure that the bill of materials is approved by the Purchaser before despatch.
15. **Any tender without complete information as asked for in the above Specification is likely to be rejected.**

APPENDIX – I.
TECHNICAL REQUIREMENTS FOR 132KV & 33KV INDUCTIVE
VOLTAGE TRANSFORMERS & 220KV, 132KV CAPACITIVE
VOLTAGE TRANSFORMER.

SL. NO	PARTICULARS	33KV IVT	132KV IVT	132KV CVT	220KV CVT
1	Type	Single phase, 50Hz, oil filled, self cooled, Hermetically sealed, outdoor porcelain type.	Single phase, 50Hz, oil filled, self cooled, Hermetically sealed, outdoor porcelain type.	Single phase, 50Hz, oil Filled, self cooled, Hermetically sealed, Outdoor porcelain type.	Single phase, 50Hz, oil Filled, self cooled, Hermetically sealed, Outdoor porcelain type.
2	Nominal system voltage.	33KV.	132KV.	132KV	220KV
3	Highest system voltage.	36KV	145KV.	145KV	245KV
4	Frequency.	50Hz± 5%	50Hz± 5%	50Hz ± 5%	50Hz± 5%
5	System earthing.	Effectively solidly earthed	Effectively solidly earthed	Effectively solidly earthed.	Effectively solidly earthed.
6	Number of phases.	3 [single phase]	3 [single phase]	3 [single phase]	3 [single phase]
7	(i)Number of secondary windings. (ii)Purpose of windings.	2 (two) Protection & metering	2 [two] Protection & metering.	3 [three] Protection & metering.	3 [three] Protection & metering.
8	Rated primary voltage.	33/1.732KV	132/1.732KV	132/1.732 KV	220/1.732 KV
9	Rated secondary voltage.	Winding-I-110/1.732V (Protection) Winding-II-110/1.732V(Metering)	Winding-I-110/1.732V (Protection) Winding-II-110/1.732V(Metering)	Winding-I-110/1.732V Winding-II-110/1.732V Winding-III-110/1.732V	Winding-I-110/1.732V Winding-II-110/1.732V Winding-III-110/1.732V
10	Ratio	33KV/1.732: 110/1.732	132KV/1.732: 110V/1.732	132KV/1.732: 110V/1.732	220KV/1.732: 110V/1.732
11	Rated burden.	Winding-I(P)-50 VA Winding-II(M)- 50 VA Simultaneous Burden- 50 VA with accu. cl-0.2	Winding-I(P)-100 VA Winding-II(M)- 100 VA Simultaneous Burden- 100 VA with accu. cl-0.2	Winding-I (P)-100VA Winding-II (P)-100VA Winding-III (M)-100 VA/0.2 class simultaneous burden-100 VA with accu. cl-0.2	Winding-I (P)-100VA Winding-II (P)-100VA Winding-III(M)-100 VA/0.2 class simultaneous burden-100 VA with accu. cl-0.2
12	Accuracy class .	3P/0.2	3P/ 0.2	3P/3P/0.2	3P/3P/0.2
13	Rated voltage factor at rated frequency.	1.2 continuous. 1.5 for 30 seconds	1.2 continuous. 1.5 for30 seconds.	1.2 continuous. 1.5 for 30 second.	1.2 continuous. 1.5 for 30 second.

14	Temperature rise at 1.2 times the rated primary voltage, rated frequency & rated burdens.	As per IEC-186.	As per IEC-186.	As per IEC-186	As per IEC-186
15	Temperature rise at 1.5 times the rated primary voltage for 30 seconds, rated frequency & rated burden.	As per IEC-186	As per IEC-186.	As per IEC-186.	As per IEC-186.
16	One-minute power frequency dry withstands test voltage for primary winding.	70KV (rms)	275KV [rms]	275KV [rms]	460KV [rms]
17	1-minute power frequency wet withstands test voltage for primary winding.	70KV (rms)	275KV [rms]	275KV [rms]	460KV [rms]
18	1.2/50 micro second impulse withstand test voltage for primary winding	170KV (peak)	650KV [peak]	650KV [peak]	1050KV [peak]
19 (i) (ii)	One-minute power frequency withstands test voltage for Secondary winding Between LV(HF) terminal & earth terminal	3 KV (rms)	3KV [rms] -	3KV [rnms] 10KV [rms] for exposed terminals & 4KV [rms] for terminals, enclosed in a weatherproof box.	3KV [rnms] 10KV [rms] for exposed terminals & 4KV [rms] for terminals, enclosed in a weatherproof box.
20	Class of insulation.	'A'	'A'	'A' or better for EMU.	'A' or better for EMU.
21	Material of the conductor of primary and secondary windings.	Copper	Copper.	Copper for EMU	Copper for EMU
22	Fault level of the bus to which PTs will be connected.	25KA[rms] for 1 second.	31.5KA [rms].for 1second.	31.5KA [rms] for 1 second.	40KA [rms].for 1 second.
23	Minimum creepage distance.	900mm	3625mm	3625 mm	6125mm
24	Quality of oil.	EHV Grade As per IS-335	EHV Grade As per IS-335.	EHV Grade As per IS-335.	EHV Grade As per IS-335.

25	Radio interference voltage at 1.1 times maximum rated voltage at 1.0 MHZ.	-	500 micro volts.	500 micro volts.	500 micro volts.
26	Partial discharge level.		Less than 10 piccoulombs.	Less than 10 Piccoulombs.	Less than 10 piccoulombs.
27	Seismic acceleration- Horizontal - Vertical.	0.3g. 0.15g.	0.3g. 0.15g.	0.3g. 0.15g.	0.3g. 0.15g.
28	Accuracy class of standard V.T. to be used during testing towards determination of ratio errors and phase angle errors for metering windings.	0.05 or better.	0.05 or better.	0.05 or better.	0.05 or better.
29.	Capacitance (Pf)	-	-	4400 + 10%,-5%	4400 + 10%,-5%

APPENDIX-II

QUANTITY AND DELIVERY SCHEDULE.

Sl. No.	Description	Quantity required.	Desired delivery	Destination.
1.[LOT-I]	33KV Inductive Voltage Transformer	49Nos.	Within 4 months from the date of placement of the purchase order.	Any stores/sites within the Orissa State. The same will be indicated in the Purchase order/Release order.
2. (LOT-II)	132 KV Inductive Voltage Transformer	68Nos.	-do-	-do-
3.(LOT-III)	132KV capacitive Voltage Transformer.	11Nos.	-do-	- do-
4.(LOT-IV)	220KV Capacitive Voltage Transformer.	11Nos.	-do-	-do-

N.B.:- The detail delivery programme and quantity to be delivered will be intimated at the time of placement of the Purchase order/issue of release order.

ANNEXURE - A

GUARANTEED TECHNICAL PARTICULARS.

Sl. No.	Description.	33KV IVT	132KV IVT	132KV CVT	220KV CVT
		3P/0.2 Accuracy Class	3P/0.2 Accuracy Class	3P/3P/0.2 Accuracy Class.	3P/3P/0.2 Accuracy Class.
1	Bidder's name and address.				
2	Name and address of the Manufacturer.				
3	Manufacturer's type and designation.				
4	Standards applicable.				
5	Type of IVT/CVT				
6	Rated primary voltage (kv).				
7	Rated secondary voltage (volts).				
7.1	Winding-I.				
7.2	Winding-II.				
7.3	Winding-III.				
8	Rated frequency [HZ].				
9	Rated burden:- Protection Winding Protection Winding Metering Winding				
10	Number of secondary windings.				
11	Accuracy class.				
[I]	[protection] Winding				
[II]	[metering] Winding				
12	Rated voltage factor for continuous operation at rated frequency.				
13	Rated voltage factor for 30 seconds at rated frequency.				
14	One minute dry and wet power frequency withstand voltage for primary side [kv] rms.				
15	One minute power frequency withstand voltage for secondary winding [kv] rms.				
16	1.2/50 micro- second impulse withstand test voltage for primary side				
17	Temperature rise over an ambient temperature of 50°C				
[a]	With 1.2 times rated primary voltage at rated frequency and at rated burdens. [I] Winding [°C] [II] Oil [°C] [III] Other parts [°C]				
[b]	With 1.5 times rated primary voltage for 30 seconds at rated frequency and at rated burdens. [I] Winding [°C]				

	[II] Oil [°C] [III] Other parts [°C]				
18	Class of insulation.				
19	Total creepage distance in (mm)				
20	Maximum radio interference voltage at 1.1 times maximum line to ground voltage (micro volts)				
21	Corona inception and extinction voltage (kv) rms				
22	Partial discharge level (piccoulombs)				
23	Primary.[For 220KV, 132KV & 33KV IVT] (a) No. of primary turns (b) Material of primary (c) Size of the primary conductor bare/insulated. (d) Cross sectional area of primary conductor (sq.mm) (e) Current density adopted for primary winding(A/sq.mm) (f) Type of primary winding. (g) Name of the insulating materials used for primary conductor. (h) Weight of primary winding.				
24	Secondary. [For 220KV, 132KV & 33KV IVT] (a)No. of secondary turns (b) Material of secondary (c) Size of the secondary conductor bare /insulated. (d)Cross sectional area of secondary conductor (mm ²) (e)Current density adopted for secondary winding(A/mm ²) (f)Type of secondary winding (g)Name of the insulating materials used for secondary conductor. (h)Weight of secondary winding.				
25.	Core. [For 220KV, 132KV & 33KV IVT] (a)Shape of the core (b)Material and grade of the core laminations (c)Thickness of the core lamination (mm) (d)Maximum flux density adopted (Tesla) (e)Net iron area of the core (f)Watt loss/kg. for the core materials at the operating flux density(W/kg) (g) Total weight of the core(kg) (h)Whether B-H curve for core material enclosed? (i)Whether specific loss vrs. Flux density curve enclosed ?				

26	INSULATION. .[For 220KV, 132KV & 33KV IVT] (a) Insulation between core and secondaries. (b) Insulation between secondaries. © Insulation between secondary and primary. (d) Insulation between primary .and core.				
27	DIMENSIONS OF CORE AND WINDINGS. .[For 220KV, 132KV & 33KV IVT] (a)Diameter of the core (mm) (b)Inner diameter of the secondary windings(mm) (c) Outer diameter of the secondary windings (mm) (d) Inner diameter of the primary winding(mm) (e) Outer diameter of the primary winding(mm) (f) Minimum clearance from primary winding to tank(mm) (g) Minimum clearance from secondary winding to tank(mm)				
28.	Percentage voltage ratio (error)/phase displacement (min.)at 100% rated burden at 0.8PF lagging for measuring winding. (a) 80% of rated voltage at frequency:- (b) 120% of rated voltage at frequency:- (c) Accuracy of standard PT to be used. during determination of errors (0.05 or better.				
29.	Percentage Voltage ratio /phase displacement (min.)at 25% rated burden at 0.8PF lagging for measuring winding. (a) 80% of rated voltage at rated frequency:- (b) 120% of rated voltage at rated frequency:-				
30.	Percentage voltage (ratio)error /phase displacement (min.) at 100% rated burden at 0.8PF lagging for protection winding (a)5% of rated voltage. (b)1.2 times rated voltage (c)1.5 times rated voltage (d) 2% of rated voltage..				
31.	Percentage voltage (ratio) error /phase displacement (min) at 25% of rated burden at 0.8PF lagging for protection winding (a)5% of rated voltage (b)1.2 times rated voltage. ©1.5 times rated voltage. (d) 2% of rated voltage.				

32.	Whether IVT/CVT is suitable for horizontal transportation.				
33.	Quantity of oil per IVT/ CVT (Ltrs/kg)				
34.	Standard to which oil conforms.				
35.	Characteristic of oil(Prior to filling)				
35.1.	Breakdown voltage (kv-rms)				
35.2.	Dielectric dissipation constant tan delta)				
35.3	Water content(PPM)				
35.4	Gas content(PPM)				
35.5	Interfacial tension at 27 degree C(N/m)				
35.6	Specific resistance.				
35.6.1	At 90 deg.C(ohm-cm)				
35.6.2	At 27 deg.C(ohm-cm)				
36.	Whether IVTS are hermetically sealed ? If so how ?				
37.	Total Weight (kg)				
38.	Transport weight (kg)				
39.	Dimensional details.				
40	Whether IVT characteristic curves enclosed?				
41.	TANK AND SECONDARY TERMINAL BOX.				
41.1	Material of the IVT/ CVT tank				
41.2	Material of the secondary terminal box.				
41.3	Thickness of the IVT/ CVT tank material.				
41.4	Thickness of the secondary terminal box material.				
41.5	Zinc coating of IVT/ CVT tank(g/sq.m)				
41.6	Zinc coating of the secondary terminal box (g/sq.m)				
41.7	Weather proof rating of secondary terminal box.				
41.8	Weight of tank fitting and other accessories.				
	TERMINAL CONNECTORS				
01.	Manufacturer's name				
02.	Applicable standards.,				
03.	Type.				
04.	Material of connector. (a)Clamp body. (b)Bolts and Nuts. (c) Spring Washers				
05.	Rated current.				
06.	(a) Rated terminal load(kg) (b) Factor of safety.				
07.	Minimum thickness of any part(mm)				
08.	Weight of connector complete with hardware.				
09.	Type test reports as per IS enclosed.				

10.	OGA drawing enclosed.				
	BUSHING/SUPPORT INSULATOR				
01	Manufacturer's name				
02.	Type.				
03.	Applicable standards.				
04	Dimensions: (i)Height(mm) (ii)Diameter(top)(mm) (iii)Diameter(bottom)(mm)				
05	Total creepage distance (mm).				
06.	Rated voltage(KV)(rms)				
07.	Power frequency withstand voltage for (1 minute dry and wet(KV/ rms)				
08.	1.2/50 micro-second Impulse withstand voltage (KVP)				
09.	Corona Extinction voltage(kv)				
10.	Weight(kg)				
11.	Maximum allowable span (mm)				
12.	Cantilever strength(kg)				
13.	OGA drawing enclosed.				

ADDITIONAL TECHNICAL REQUIREMENT FOR 220KV & 132KV CVT

1. Rated capacitance of the CVT
2. High frequency capacitance for entire carrier frequency range.
3. Equivalent series resistance over the entire frequency.
4. Stray capacitance and stray conductance of the LV terminal over entire carrier frequency range.
5. Capacitance (PF) /Tan delta between:-
 - a) HV-HF point
 - b) HF point-Ground point of International Transformer.
 - c) HV-Ground point of Intermediate Transformer winding.
6. Capacitive reactance of the two parts of the divider i.e. High voltage capacitor, and Intermediate voltage capacitor, connected in parallel.
7. Total Inductive reactance, offered by CVT.
8. Voltage ratio of the capacitor divider.
9. Open circuit Intermediate voltage.
10. Rated open circuit Intermediate voltage.
11. Reference range of temperatures within which the CVT complies with the relevant accuracy requirements.
12. Protective device, in-corporate in the CVT for limiting over voltages and/or to prevent sustained Ferro resonance.

13. Rated voltage of Surge Arrester, connected at the secondary of CVT.
14. Natural frequency of coupling (KHZ).
15. Self tuning frequency of CVT (KHZ).
16. Bandwidth (KHZ).
17. Temperature rise over ambient.
18. One minute power frequency test voltage of secondary winding (KV).
19. One minute power frequency test voltage of H.F. terminal (KV).
20. One minute power frequency test voltage of capacitor (dry & wet) (KV).
21. 1.2/50/micro second Impulse withstand test voltage of capacitor (KVP).
22. 250/2500 micro second switching surge withstand voltage of capacitor (dry & wet).
23. Literature
Whether the followings are enclosed?
 - 23.1 Type Test reports as per IEC 186.
 - 23.2 OGA drawing of CVT and terminal connector.
 - 23.3 Characteristic curves.
 - 23.4 Drawing showing clearance from earthed object.
 - 23.5 Details of Surge Arrester, connected at secondary winding of CVT.
24. **ELECTROMAGNETIC UNIT:-**
 - 24.1 **CORE:-**
 - a) Core diameter (mm)
 - b) Window Weight (mm)
 - c) Leg centre (mm)
 - d) Net cross sectional area of iron
In the core (mm²)
 - e) Core lamination thickness (mm)
 - f) Type & grade of core.
 - g) Design flux density at rated voltage.
And rated frequency (Tesla)
 - h) Design flux density at highest system voltage
& lowest system frequency (Tesla).
 - i) Minimum knee point voltage (volts).
 - 24.2 **PRIMARY WINDING:-**
 - a) No. of turns.
 - b) Bare size of conductor
 - c) Insulated size of conductor.
 - d) Area of cross section.
 - e) Current density (A/ mm²).
 - f) Conductor material.
 - g) Class of insulation.
 - h) Power frequency withstand level.
(KV-rms).

i) Impulse withstand level (KVP).

24.3 Secondary Winding
Metering

Protection

Protection

Winding

Winding

Winding.

- a) No.of turns
- b) Bare conductor size (mm)
- c) Insulated conductor size (mm)
- d) Cross-sectional area (sq.mm)
- e) Current density (A/ mm²)
- f) Conductor material.
- g) Class of Insulation.'
- h) Power frequency withstand Level (KV-rms).

ANNEXURE -B.

CALIBRATION STATUS OF TESTING EQUIPMENTS AND INSTRUMENTS/METERS.

Name of the test	Meters and equipments required for the corresponding test with range, accuracy, make and Sl. No.	Date of Calibration.	Due date of Calibration	Name of the Calibrating Agency.	Whether Calibrating Agency is Govt. Approved.
1	2	3	4	5	6

Whether documents relating to Govt. Approval of the calibrating Agency furnished ?	Whether the meters/ equipment fulfill the accuracy class as per calibration report	Whether the calibrating agency has put any limitation towards the use of the particular meter/equipment. If yes, state the limitations.	Whether green sticker or blue sticker or yellow sticker has been affixed on the body of the particular equipment/meter. State the colour of the affixed sticker.	In spite of imposed limitations, whether the particular meter/equipment can still be used ? Justify its use for corresponding test(s).	Remarks
7	8	9	10	11	12

Signature of the tenderer with seal and date.

ANNEXURE-C

CHECK LIST TOWARDS TYPE TEST REPORTS.

Name of the Type Test.	Date of Test.	Name of the Laboratory where the Test has been conducted.	Whether the Laboratory is Government Approved.	Whether the Test reports are valid as per Clause No.8.1 of T.S.	Whether the copy of Test Report in complete shape alongwith drawings etc. furnished or not ?	Whether the Tested I.V.T. fulfills the technical requirements as per TS.	If the type tested I.V.T does not fulfill the technical requirements as per this specification, whether the bidder agrees to conduct the particular test(s) again at their own cost without any financial liability to OPTCL in the presence of OPTCL's representative within the specified delivery period.	Remark
1	2	3	4	5	6	7	8	

date.

Signature of the Tenderer with seal and

ANNEXURE -D.

CHECK LIST FOR DELIVERY SCHEDULE

Sl. No.	Description of the equipments.	Quantity.	Delivery Schedule.
1	2	3	4
<u>LOT-I</u> 33KV IVT			
LOT-II 132KV IVT			
LOT-III 132KV CVT.			
LOT-IV 220KV CVT			

Signature of the Tenderer
with seal and date.