ODISHA MINING CORPORATION LIMITED

(A GOLD CATEGORY STATE PSU)

Bid Document
for
Supply of Transformers to various mines of OMC.

(through e-tendering)

Bid document No: OMC/e-PROC/C&P/92/2023-24, dated:29/01/2024

Contents

E-procurement notice

Bid document No.: OMC/e-PROC/C&P/92/2023-24, dated:29/01/2024

1	Work name	Supply of Transformers to various mines of OMC (through e-tendering)
2	Availability of tender documents on the e-tendering portal of Government of Odisha	Date: 31.01.2024
3	Pre-bid meeting	Date: 07.02.2024; Time: 3.30 PM; Venue: Through VC
4	Bid Due Date	Date: 27.02.2024; Time: 3.00 PM
5	Opening of Techno-Commercial Bid	Date: 27.02.2024; Time: 5.00 PM

All other details can be seen from the Tender Document available on the e-procurement portal of the Government of Odisha (www.tendersodisha.gov.in) and on the website of OMC (www.omcltd.in). OMC reserves the right to reject any or all bids without assigning any reason thereof.

Sd/-

Advisor(C&P)

Odisha Mining Corporation Ltd.

(A Gold Category State PSU)

Registered Office: OMC House, Bhubaneswar-751001

Tel: 0674 2377510, 2377488

1. Schedule for the Tender

Sl. No.	Parameter	Name
1	Date of publication of NIT	Date: 29.01.2024
2	Availability of tender documents on the e-tendering portal of Government of Odisha	Date: 31.01.2024
3	Last date for sending queries to OMC	Date: 06.02.2024; Time: 5.00 PM; queries may be sent by email to sanjay.sahoo@odishamining.in
4	Pre-bid meeting	Date: 07.02.2024; Time: 3.30 PM; Venue: Through VC
5	Issue of responses to pre-bid queries, addendum/ corrigendum, if required	Date: 09.02.2024
6	Bid Due Date	Date: 27.02.2024; Time: 3.00 PM
7	Opening of Techno-Commercial Bid	Date: 27.02.2024; Time: 5.00 PM
8	Opening of Price Bid	To be informed to the Technically Qualified Bidders by appropriate means

2. Data Sheet

Sl. No.	Parameter	Name
1	Name of tender	Supply of Transformers to various mines of OMC.
2	Type of tendering	Open tendering
3	Mode of tendering	e-tender
4	E-tender site	www.tendersodisha.gov.in
5	Tender Paper Fee (non-refundable) including GST	INR 11,800/- (Rupees Eleven thousand eight thousand only) including GST @18% Payable online on the e-tender portal of Government of Odisha (www.tendersodisha.gov.in)
6	Earnest Money Deposit (EMD)	INR 4,93,000/- (Rupees Four lakh ninety three thousand only) Payable online on the e-tender portal of Government of Odisha (www.tendersodisha.gov.in)
7	Amount of Security Deposit (SD)	5% of awarded PO value (excluding taxes) Amount shall be submitted in the shape of DD or Bank Guarantee in the format provided in Annexure 8
8	Nodal Officer	Name: Sanjaya Kumar Sahoo Phone No.: 91- 8275721218 e-mail: sanjay.sahoo@odishamining.in
9	Address of OMC Limited	OMC House, P.O. Box No.34 Bhubaneswar - 751 001 Odisha, India
10	Bid document No.	**OMC/e-PROC/C&P/92/2023-24, dated:29/01/2024**

3. Disclaimer

3.1 This Bid document is neither an agreement nor an offer by OMC to the prospective Bidders or any third party. The purpose of this Bid document is to provide interested parties with information to facilitate the formulation of their Bid pursuant to this Bid document.

3.2 This Bid document includes statements, which reflect various assumptions and assessments arrived at by OMC. Such assumptions, assessments and statements do not purport to contain all the information that a Bidder may require. This Bid document may not be appropriate for all persons, and it is not possible for OMC to consider the particular needs of each party who reads or uses this Bid document. The assumptions, assessments, statements and information contained in the Bid document may not be complete, accurate, adequate or correct. Each Bidder must, therefore conduct its own due diligence and analysis and should verify the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this Bid document and obtain independent advice from appropriate sources.

3.3 Information provided in this Bid document to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information provided is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. OMC accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

3.4 OMC, its employees and its consultants make no representation or warranty and shall have no liability to any person including any Bidder under any law, statute, rules or regulations, the law of contract, tort, principles of restitution or unjust enrichment or otherwise for any loss, damage, cost or expense which may arise from or be incurred or suffered in connection with this Bid document, or any matter deemed to form part of this Bid document, or arising in any way in relation to this Bidding Process.

3.5 Neither OMC nor its employees or its consultants make any representation or warranty as to the accuracy, reliability or completeness of the information in this Bid document. OMC also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this Bid document.

3.6 The Bidder should confirm that the Bid document downloaded by them is complete in all respects including all annexures and attachments. In the event the document or any part thereof is mutilated or missing, the Bidder shall notify the Nodal Officer immediately in writing.

3.7 If no intimation is received within the last date for submission of Pre-Bid queries, it shall be considered that the Tender Documents received by the Bidder is complete in all respects and that the Bidder is fully satisfied with the Tender Documents.

3.8 No extension of time shall be granted to any Bidder for submission of its Bid on the ground that the Bidder did not obtain the complete set of Tender Documents.

3.9 This Bid document and the information contained herein are strictly confidential and privileged and are for the exclusive use of the Bidder to whom it is issued. This Bid document shall not be copied or distributed by the recipient to third parties (other than, to the extent required by Applicable Law or in confidence to the recipient's professional advisors, provided that such advisors are bound by confidentiality restrictions at least as strict as those contained in this Bid document). In the event after the issue of the Bid document, the recipient does not continue with its involvement in the Bidding Process for any reason whatsoever, this Bid document and the information contained herein shall be kept confidential by such party and its professional advisors at all times.

3.10 OMC may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the statements, information, assessment or assumptions contained in this Bid document at any time during the Bidding Process. All such changes shall be uploaded on the e-procurement portal of the Government of Odisha and on the website of OMC. It is the duty of Bidders to visit the e-procurement portal and the website of OMC regularly and keep themselves updated on the Bidding Process and any communication made in relation to the Bidding Process.

3.11 The Bidders or any third party shall not object to such changes/ modifications/ additions/ alterations as provided in Clause 3.10 above, explicitly or implicitly. Any such objection by the Bidder shall make the Bidder's Bid liable for rejection by OMC. Further objection by any third party shall be construed as infringement on confidentiality and privileged rights of OMC with respect to this Bid document.

3.12 The Bidder shall not make any public announcements with respect to the Bidding Process, this Bid document and/or the Bidding Documents. Any public announcements to be made with respect to the Bidding Process or this Bid document shall be made exclusively by OMC. Any breach by the Bidder of this Clause shall be deemed to be in non-compliance with the terms and conditions of this Bid document and shall render the Bid liable for rejection. OMC's decision in this regard shall be final and binding on the Bidder.

3.13 By responding to the Bid document, the Bidder shall be deemed to have confirmed that it has fully satisfied and has understood the terms and conditions of the Bid document. The Bidder hereby expressly waives any and all claims in respect thereof.

3.14 The Bid is not transferable.

4. Abbreviations

AMC	Annual Maintenance Contract
BG	Bank Guarantee
BOQ	Bill of Quantity
DSC	Digital Signature Certificate
EFT	Electronic Fund Transfer
EMD	Earnest Money Deposit
ESI	Employee's State Insurance
FoR	Freight on Road
FY	Financial Year
GCC	General Conditions of Contract
GST	Goods and Services Tax
GSTIN	GST Identification Number
GSTR	GST Returns
GTE	General Technical Evaluation
I/C	In-Charge
IFSC	Indian Financial System Code
INR	Indian Rupee / legal tender currency of India
ISI	Indian Standards Institute
ISO	International Organization for Standardization
IT	Income Tax
ITC	Input Tax Credit
JV	Joint Venture
LD	Liquidated Damages
LLP	Limited Liability Partnership
LoA	Letter of Award
MICR	Magnetic Ink Character Recognition
MSE	Micro & Small Enterprises
MSME	Micro, Small & Medium Enterprises
NEFT	National Electronic Funds Transfer
NIT	Notice Inviting Tender
OEM	Original Equipment Manufacturer
OMC	Odisha Mining Corporation
PAN	Permanent Account Number
POL	Petroleum, Oil and Lubricants
PSU	Public Sector Undertaking
RfP	Request for Proposal
RTGS	Real Time Gross Settlement
SCC	Special Conditions of Contract
SO	Service Order
TIA	Tender Inviting Authority

5. Definitions and Interpretations

The words and expressions beginning with capital letters and defined in this document shall, unless repugnant to the context, have the meaning ascribed thereto herein.

5.1 "Applicable Laws" means all laws, legislations, statutes, rules, directives, ordinances, notifications, exemptions, regulations, judgments/ orders of any court, tribunal, regulatory bodies and quasi-judicial bodies or any interpretation thereof enacted, issued, or promulgated by any authority and applicable to either OMC or to the Bidders;

5.2 "Authorized Signatory" shall have the meaning as set forth in Clause 8.5;

5.3 "Bid" means the documents submitted by a Bidder pursuant to this Bid document, including the Techno-Commercial Bid along with any additional information/clarifications required/ sought by OMC and the Price Bid, submitted strictly in the formats provided by OMC. The Bid shall not be considered to be a Bid if it is not submitted as per the formats prescribed by OMC;

5.4 "Bidder" designates the legal entity which has made a proposal, a tender or a bid with the aim of concluding a Service Order / Agreement with OMC;

5.5 "Bidding Process" means the process governing the submission and evaluation of the Bids as set out in the Bid document itself;

5.6 "Bid Due Date" shall mean the last date for submission of bids, as given in the Schedule for the Tender. No bids shall be accepted in the e-procurement portal after the Bid Due Date;

5.7 "Bid Validity Period" shall have the meaning given to it in Clause 8.8;

5.8 "EMD" means the amount submitted by a Bidder to OMC for participating in the Bidding Process, in terms of Clause 8.7;

5.9 "Financial Criteria" shall have the meaning given to it in Clause 7.2;

5.10 "Financial Year" means the 12 months period from 1st April to 31st March corresponding to the audited annual accounts;

5.11 "Letter of Award (LoA)" means the written official intimation by OMC notifying the Preferred Bidder that the work has been awarded in its favour as per the terms and conditions mentioned therein;

5.12 "Net Worth" shall have the meaning ascribed to it in Section 2(57) of the Companies Act, 2013;

5.13 "Notice Inviting Tender" or "Bid document" or "RfP document" or "Tender Paper" or "Tender Documents" or "Tender" or "Bid Documents" means documents issued by OMC vide Bid document No. **OMC/e-PROC/C&P/92/2023-24, dated:29/01/2024** for Supply of Transformers to various mines of OMC and shall include any modifications, amendments, corrigenda/ addenda or alterations thereto. The documents are as follows:

a) This Bid document;

b) Any corrigendum(a)/addendum(a) and clarification(s) to the Bid document issued by OMC subsequent to the issue of the Bid document will also be considered an integral part of the Bid document. Any reference to the Bid document in the Agreement shall include such corrigendum(a)/ addendum(a);

5.14 "OMC" means Odisha Mining Corporation Limited having its registered office at Bhubaneswar – 751 001, Odisha including its successor and assignees or its representatives;

5.15 "Pre-bid Meeting" means Pre-bid meeting to be held as per the schedule indicated in the Schedule for the Tender hereof;

5.16 "Price Bid" means the Price Bid submitted by the Bidder, in accordance with Clause 8.15.2;

5.17 "Related Party" shall have the meaning ascribed to it in Section 2(76) of the Companies Act, 2013;

5.18 "Revised Price Bid" shall have the meaning given to it in Clause 8.21.1;

5.19 "Preferred Bidder" shall have the meaning given to it in Clause 8.21;

5.20 "Successful Bidder" shall have the meaning given to it in Clause 8.22;

5.21 "Technical Criteria" shall have the meaning given to it in Clause 7.1;

5.22 "Technically Qualified Bidder" means a Bidder whose Techno-Commercial Bid is responsive and meets the requirements to the satisfaction of OMC as per terms and condition of the Bid document and is qualified for opening of its Price Bid;

5.23 "Techno-Commercial Bid" means proposal submitted by the Bidder in accordance with Clause 8.15.1;

5.24 "Tender Paper Fee" shall have the meaning as set forth in Clause 8.6;

5.25 "Turnover" shall have the meaning ascribed to it in Section 2(91) of the Companies Act, 2013.

All other capitalized words not defined herein shall have the same meaning as ascribed to them in the Bid document. Terms and expressions not defined anywhere in the Bid Documents shall have the same meaning as are assigned to them in Indian Contract Act, 1872 and/or in General Clauses Act, 1897.

6. Scope of Supply

6.1 The selected Bidder shall have to supply to OMC the following goods in the below mentioned timeframe:

Sl. No.	Name/ type of goods	Estimated total requirement with units	Time period for supply	Delivery location	Distance from Head Office Bhubaneswar
1	500 KVA, 33/.415 KV Transformer	1	4 Months	South Kaliapani, Jajpur-755047	160 KMs
2	1000 KVA, 33/.415 KV Transformer	2	5 Months	COBP, South Kaliapani, Jajpur-755047	160 KMs
3	630 KVA, 11/.415 KV Transformer	1	4 Months	RO, Barbil, Keonjhar-758035	295 KMs
4	630 KVA, 11/.415 KV Transformer	1	4 Months	Jilling Mines, Barbil, Keonjhar-758034	280 KMs
5	1000 KVA, 11/.415 KV Transformer	1	5 Months	Banguru, Keonjhar-758078	165 KMs
6	1000 KVA, 11/.415 KV Transformer	1	5 Months	Khandadhar Mines, Sundergarh-770041	285 KMs
7	3.15 MVA, 33/11 KV Transformer	1	6 Months	Jilling Mines, Barbil, Keonjhar-758034	280 KMs
8	500 KVA, 11/.415 KV Transformer	2	4 Months	Khondalite Group of Mines, Khorda-752018	55 KMs
9	500 KVA, 11/.415 KV Transformer	1	4 Months	New OMC Corporate Office, Bhubaneswar-751001	10 KMs
10	500 KVA, 11/.415 KV Transformer	2	4 Months	Khandadhar Mines. Sundergarh-770041	285 KMs
11	500 KVA, 11/.415 KV Transformer	1	4 Months	Gandhamardan Mines, Keonjhar-758018	240 KMs
	Total	**14**			

6.2 The detailed scope and specifications of the goods to be supplied and the scope of supply, along with the inspection requirements, requirements of special tests and test certificates (if

any) and requirements of statutory and compliance related approvals is given in Special Conditions of Contract as enclosed in Annexure 2.

6.3 The “General Conditions of Contract-Goods” as enclosed in the tender at Annexure 1 shall form an integral part of the Bid document and will also form a part of the Purchase Order placed against this tender.

7. Eligibility Criteria

The Bidders eligible to participate in this tender should fulfill the following Criteria:

#	Criteria	Required Documents
7.1	**Technical Criteria** i) The Bidder must be a manufacturer or an authorized dealer of minimum 500 KVA rating Transformers. ii) The Bidder should have manufactured and/or supplied at least 10 nos. transformers of 500 KVA rating or higher in the last five years, and out of which, at least 2 number of transformer of 500 KVA rating or higher should have been manufactured and/or supplied in the last financial year. iii) The bidder should have a valid & approved type test report for each rating of transformer approved within 5 years of bid opening date. **Note:** a. Applicable 5 (five) years shall be preceding five financial years excluding the financial year of floating of the Tender (i.e. FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23)	Self-attested copies of i. For Manufacturers - Copy of manufacturing license For Authorized Dealer – Copy of Authorization certificate as well as manufacturing license of manufacturer ii. Relevant purchase orders containing the value of the goods supplied; and Completion certificate/letter of reference from their customer(s), regarding successful supply of the goods. iii. Approved & valid type test report from Govt. lab or Govt. approved lab. **Note:** In case the completion certificate is not available, certificate of statutory auditor certifying value of Similar Completed Services shall be submitted
7.2	**Financial Criteria** i) Average financial turnover of the Bidder during the last 3 (three) financial years should be at least INR 5 Crore **Note:** a. Applicable 3 (three) years – FY 2020-21, FY 2021-22 and FY 2022-23	i. Copies of audited financial statements
7.3	Other Criteria	

#	Criteria	Required Documents
7.3.1	The Bidder can be either a. a Company (Private or Public), or b. a Registered partnership firm, or c. an LLP, or d. a Proprietorship firm.	Copies of a. Company (Private or Public) • Certificate of Incorporation • Memorandum of Association • Articles of Association b. Registered partnership firm • Registration certificate • Deed of Partnership c. LLP • Certificate of Incorporation • Deed of Partnership d. Proprietorship firm • GST registration certificate
7.3.2	The Bidder should have valid PAN and GSTIN registration	▪ Copy of PAN ▪ Copy of GST registration certificate – REG 06
7.3.3.	The Bidder should not have been banned/blacklisted by OMC or any government agency or any PSU as on the date of submission of Bid	Affidavit to this effect, as per the format given in Annexure 5
7.3.4	Tender Paper Fee, EMD amount and Power of Attorney	a) Proof of payment of Tender Paper Fee; Please refer to Clause 8.6 for further details b) Proof of payment of EMD; Please refer to Clause 8.7 for further details. c) Power of Attorney (as per the format given in Annexure 3) in favour of the Authorized Signatory of the Bidder who shall also be the DSC holder. Please refer to Clause 8.5 for further details
7.3.5	The Bidder whose Contract/Agreement with OMC had been terminated /failed to perform will not be eligible to participate in the bidding.	Decision of OMC in this regard is final & binding on all such entities

Note

a. The value of the contracts or purchase orders or agreements to be considered shall be exclusive of all taxes and duties.

8. Instruction to Bidders

8.1 The Bidders intending to participate in this tender are required to register on the e-procurement portal of the Government of Odisha (www.tendersodisha.gov.in.) This is a onetime activity for registering on the Government website. During registration, the Bidders will be required to attach a Digital Signature Certificate (DSC) to the Bidder's unique user ID. The DSC used should be of appropriate class (Class II or Class III) issued from a registered Certifying Authority. The registration of Bidders on the portal shall be free of cost. The registration shall be in the name of the Bidder, whereas the DSC holder shall be the duly Authorized Signatory of the Bidder.

8.2 The tender documents shall be available on the state e-procurement portal (www.tendersodisha.gov.in) and the website of OMC (www.omcltd.in). There shall be no sale of hard copies of the tender documents. Tenders can be accessed by the prospective Bidders at the above websites and may be downloaded by them free of cost. However, the Tender Paper Fee shall have to be paid at the time of bid submission, unless exempted to be paid by the competent authority.

8.3 E-tendering process is mentioned in Chapter 10.

8.4 The bids are to be submitted in two covers, consisting of: (i) **Techno-Commercial Bid (under Cover I)** and (ii) **Price Bid (under Cover II)**. Both the Techno-Commercial Bid and the Price Bid have to be submitted on the e-procurement portal of the Government of Odisha.

8.5 The Authorized Signatory of the Bidder shall be duly authorized by a Power of Attorney authorizing him/her to perform all tasks related to tender submission, including but not limited to sign and submit the bid and to participate in the bidding process on behalf of the Bidder. The format for the Power of Attorney is given in Annexure 3 of this Bid document. In case of a company, the Power of Attorney shall be accompanied with the copy of the Board Resolution. Each page of all scanned documents submitted as part of the Techno-Commercial Bid shall be initialed with date by the Authorized Signatory of the Bidder at the lower left-hand corner of each page.

8.6 Tender Paper Fee

8.6.1 The Bidder shall pay to OMC a non-refundable amount ("Tender Paper Fee"), indicated in the Data Sheet, as part of its Techno-Commercial Bid. The mode of payment of the Tender Paper Fee is also indicated in the Data Sheet.

8.6.2 The Bidders, who are exempted to deposit Tender Paper Fee due to any exemption granted by the Government of Odisha, are required to attach scanned copy of relevant documents evidencing such exemption granted, along with the Techno-Commercial Bid document while submitting online. Bidders registered in Micro & Small Enterprises (MSE) category in the state of Odisha are exempted from Tender Fee. The Bidders, who does not submit Tender Paper Fee claiming exemption but does not submit relevant document, is ineligible for bidding and such bid shall be summarily rejected.

8.7 Earnest Money Deposit (EMD)

8.7.1 Bidders as part of their Techno-Commercial Bid shall have to submit an Earnest Money Deposit; the amount of the EMD is indicated in the Data Sheet.

8.7.2 Mode of Payment:
The EMD shall be payable online on the e-tender portal of Government of Odisha (www.tendersodisha.gov.in).
For the avoidance of doubt, it is clarified that OMC shall not be liable to pay any interest on the EMD deposit so made and the same shall be interest free.

8.7.3 Return of EMD:
The EMD of the technically disqualified Bidders shall be returned after declaration of the list of such technically qualified Bidders in the portal. The EMD of other unsuccessful Bidders shall be refunded after signing of the Agreement with the Successful Bidder. The return of the EMD shall be in the form of bank transfer to the account of the Bidder through the e-procurement portal of the Government of Odisha.

8.7.4 The Bidders, who are exempted to deposit EMD amount due to any exemption granted by the Government of Odisha, are required to attach scanned copy of relevant documents evidencing such exemption granted, along with the Techno-Commercial Bid document while submitting online. Bidders registered in Micro & Small Enterprises (MSE) category in the state of Odisha are exempted from EMD. The Bidders, who does not submit EMD amount claiming exemption but does not submit relevant document, is ineligible for bidding and such bid shall be summarily rejected.

8.7.5 The EMD of the Preferred Bidder shall be returned upon the Preferred Bidder furnishing the Security Deposit.

8.7.6 Forfeiture of EMD: The EMD shall be forfeited and appropriated by OMC as a genuine pre-estimated compensation and damages payable to OMC for, inter alia, the time, cost and effort of OMC without prejudice to any other right or remedy that may be available to OMC hereunder, or otherwise, under the following conditions:

i) if any of the documents submitted by a Bidder as part of the bid is found to be not genuine or forged or any of the claims, confirmations, statements or declarations of the Bidder is found to be incorrect or inconsistent, or is a case of any material misrepresentation of facts at any point of time during the bid evaluation process;

ii) if the Preferred Bidder fails to acknowledge and return to OMC a signed copy of the LoA or Purchase Order within the timeframe allowed by OMC;

iii) if the Preferred Bidder fails to submit the Security Deposit within the timeframe allowed by OMC;

iv) if a Bidder withdraws its bid before completion of the bidding process during the bid validity period, except as provided in Clause 8.8;

v) If the Bidder has otherwise committed any breach of the terms of this Bid document;

vi) in case the Preferred Bidder, does not comply with the requirements of the Price Bid or the revised Price Bid, as the case may be;

vii) in case the Techno-Commercial Bid of a Bidder contains any information on the Price Bid of the Bidder;

8.7.7 In case of cancellation of the tender before bid opening date and time, the EMD shall be refunded to respective Bidder's account.

8.8 Bid validity period: The bid shall initially remain valid and binding on the Bidder for at least 180 (one hundred and eighty) days from the Bid Due Date, as given in the Schedule for the Tender. Any bid with a shorter validity period shall be rejected by OMC. Under exceptional circumstances, OMC may in writing request the Bidders to extend the bid validity period of their bids. In case the Bidder refuses the request of OMC to extend its bid, the EMD of such Bidder will be returned to the Bidder. However, such bids will not be evaluated further.

8.9 Issue of clarifications: Bidders may also send their queries by email to the Nodal officer; queries received after the last date for sending queries (as per the Schedule for the Tender) may not be considered by OMC. The responses to the queries received shall be published by OMC on its website and also on the e-procurement portal of the Government of Odisha and the same shall also be considered to be a part of the tender documents; however, the source of queries shall not be mentioned.

8.10 Issue of corrigendum / amendment: At any time prior to the Bid Due Date, OMC may at its own initiative or in response to a query or clarification requested by a prospective Bidder if found appropriate, issue a corrigendum/ amendment to the tender documents, which shall be available for download on its website and also on the e-procurement portal of the Government of Odisha and the same shall also be considered to be part of the tender documents. In order to give Bidders reasonable amounts of time to take into account such corrigendum / amendment, OMC may at its own discretion also extend the Bid Due Date.

8.11 Extension of Bid Due Date: OMC may, at its discretion, extend the Bid Due Date which shall be related as an act of amendment of this Bid document.

8.12 Acknowledgement by the Bidder: It shall be deemed that by submitting its bid, the Bidder has:

i) made a complete and careful examination of the tender documents;

ii) received all relevant information requested from OMC;

iii) accepted the risk of inadequacy, error or mistake in the information provided in the tender documents or furnished by or on behalf of OMC relating to any of the matters related to this tender or otherwise;

iv) satisfied itself about the scope of supply of goods <and installation> and the extant conditions and all matters, things and information necessary and required for submitting an informed bid and for supplying of the required goods in accordance with the tender documents and performance of all of its obligations thereunder;

v) acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information said to be in the bidding documents or ignorance of any of the matters shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from OMC;

vi) agreed to be bound by the undertakings provided by it under and in terms; and

OMC shall not be liable for any omission or commission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the tender documents or the bidding process, including any error or mistake therein or in any information or data given by OMC.

8.13 Right to accept or reject any/ all bids: Notwithstanding anything contained in the Bid document, OMC reserves the right in its sole discretion, without any obligation or liability whatsoever, to accept or reject any or all of the Bids at any stage of the Bidding Process without assigning any reasons, thereof. Further OMC reserves the right to annul the Bidding Process and / or to reject any or all Bids at any stage prior to the issue of Purchase Order without thereby incurring any liability to the affected Bidders or any obligation to inform the affected Bidders of the grounds for OMC's action. Decision of OMC shall be final and binding in this regard. OMC reserves the right to reject any bid if at any time, a material misrepresentation is made or uncovered or if the bid received is conditional or qualified.

8.14 Language of the bid: The bid and all related correspondence and documents in relation to the bidding process shall be in the English language. Supporting documents and printed literature furnished by the Bidder with the bid may be in any other language provided that they are accompanied by translations of all the pertinent passages in the English language, duly authenticated and certified by the Bidder. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the bid, the English language translation shall prevail. The English translation of the documents shall be carried out by professional translators and the translator shall certify that he is proficient in both languages in order to translate the document and that the translation is complete and accurate.

8.15 Bid to be submitted by Bidders: The bid to be submitted by Bidders shall consist of the Techno-Commercial Bid and the Price Bid.

8.15.1 Techno-Commercial Bid: Bidders shall have to submit their Techno-Commercial Bid on the e-procurement portal of the Government of Odisha. The Techno-Commercial Bid should consist of clear and legible scanned copies of all the required documents and should be submitted within the Bid Due Date, as indicated in the Schedule for the Tender. The Techno-Commercial Bid shall contain no information on the Price Bid of the Bidder. The Techno-Commercial Bid shall consist of the following:

i) Documents Supporting Eligibility Criteria (Refer Chapter 7)

ii) Techno-Commercial Bid checklist as per Annexure 6

iii) Mandate Form for Bank payment through e-mode as per Annexure 7

iv) Other documents as may be required

8.15.2 Price Bid: The Price Bid shall be submitted on the e-tender portal of the Government of Odisha as per the price bid format in Annexure 4.

8.16 Material deviation

8.16.1 Bids shall be liable for rejection in case of material deviation, that shall include, inter alia, the following:

i) The Techno-Commercial Bid or any accompanying document or Price Bid submitted by the Bidder is not in accordance with the formats given in this tender document.

ii) The Techno-Commercial Bid is not accompanied by all the documents required to be submitted in terms of this tender document as per Clause 8.15.1

iii) It does not contain all the information (complete in all respects) as requested in this tender document (in accordance with the formats provided in this tender document);

iv) The Techno-Commercial Bid is not accompanied by documentary evidence of the credentials of the Bidder(s).

v) The Techno-Commercial Bid or Price Bid submitted by the Bidder is conditional or qualified.

vi) The bid submitted by the Bidder is not valid for the minimum bid validity period, as per Clause 8.8.

vii) It is otherwise substantially/ materially in deviation of the terms and conditions of the tender document.

8.16.2 OMC may waive any nonconformity in the Bid that does not constitute a material deviation, reservation or omission. OMC may request that the Bidder submit information or documentation, within a reasonable period of time (Refer Clause 8.19.3), to rectify nonmaterial nonconformities in the Technical-Commercial Bid related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request of OMC by the date specified therein, may result in the rejection of its Bid. OMC, however, is not bound to waive such non-conformity under this Clause 8.16.2.

8.17 Bid preparation cost: The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by OMC or any other costs incurred in connection with or relating to its Bid.

All such costs and expenses will remain with the Bidder and OMC shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process.

8.18 Opening of Techno-Commercial Bids: The Techno-Commercial Bids shall be opened as per the schedule indicated in Schedule for the Tender.

8.19 Evaluation of Techno-Commercial Bids:

8.19.1 The Techno-Commercial Bids shall first be evaluated to determine whether they are complete, whether the required documents have been submitted in the correct formats and whether the documents have been properly signed by the Authorized Signatory and whether the Techno-Commercial Bid is generally in order. It will be determined whether the Techno-Commercial Bid is of acceptable quality, is generally complete and is substantially responsive to the tender documents. For purposes of this determination, a substantially responsive Techno-Commercial Bid is one that conforms to all the terms, conditions and specifications of the tender documents without any material deviations (as defined in Clause 8.16), objections, conditionalities or reservations.

8.19.2 A Techno-Commercial Bid which is not substantially responsive, may be rejected by OMC, and may not subsequently be made responsive by the Bidder by correction of the material deviations, as defined in Clause 8.16.

8.19.3 If required, OMC may ask Bidders to provide clarifications on the uploaded documents provided in the Techno-Commercial Bid, if necessary, with respect to any doubts or illegible documents. The Officer Inviting Tender may ask for any other documents of historical nature during Technical Evaluation of the tender. Non submission of legible documents may render the bid nonresponsive. The authority inviting bid reserves the right to accept any additional document. Such clarifications shall be submitted by the Bidder in the Upload Shortfall document section of the e-procurement portal or shall be submitted through email. The Bidders shall be allowed a maximum time period of 3 (three) working days for uploading on the e-procurement portal/ submitting the requisite shortfall documents through email. However, no changes in the Price Bid shall be sought, offered or permitted, nor shall the documents sought be related to the EMD. No modification of the bid or any form of communication with OMC or submission of any additional documents, not specifically asked for by OMC will be allowed and even if submitted, they may not be considered by OMC.

8.19.4 The responsive Techno-Commercial Bids shall then be evaluated in detail to determine whether they fulfill the eligibility criteria (as given in Chapter 7) and other requirements of the tender, such as submission of all the requisite documents as listed in Clause 8.15.1.

8.19.5 Based on the evaluation of the Techno-Commercial Bids as well as any shortfall documents submitted by the Bidders within the timeframe allowed by OMC (Refer Clause 8.19.3), the list of technically qualified Bidders shall be prepared.

8.20 Opening and Evaluation of Price Bids

8.20.1 The date and time of opening of the Price Bids shall be communicated to the technically qualified Bidders in writing by e-mail or registered post/Speed Post; the Price Bids of only technically qualified Bidders shall be opened. A comparative statement shall be prepared detailing each price component in the bid and including all components of the Price Bid, as per Clause 8.15.2.

8.21 Preferred Bidder: The Bidder who submits the lowest Price Bid shall be the Preferred Bidder. The Preferred Bidder shall be issued the LoA. OMC reserves the right to negotiate the price with the Preferred Bidder before issue of the LoA. The Preferred Bidder shall have to acknowledge and accept the LoA by returning a signed copy of the LoA within a period of 15 (fifteen) days of issue thereof, along with submission of the Security Deposit, failing which the issued LoA may be cancelled and EMD of the Preferred Bidder shall be forfeited by OMC. In such a case, OMC reserves the right to approach the technically qualified Bidder(s) who has submitted the next lowest Price Bid and ask such Bidder(s) to match the L1 price and on acceptance of the same, issue a fresh LoA to such Bidder and proceed with such Bidder in terms of this Clause 8.21.

8.21.1 Tie-Bidders:

In the event that 2 (two) or more technically qualified Bidders (the "Tie Bidders") have submitted the lowest identical Price Bids. OMC shall hold an auction amongst such Tie Bidders. The auction shall be held at the offices of OMC and only the Tie Bidders shall be invited to attend the same, wherein they have to physically submit their revised Price Bids on their letterhead (with company rubber stamp) and in sealed covers. Hence the Authorized Signatory of the Tie Bidders are required to attend such auction. The revised Price Bid (the "Revised Price Bid") submitted by a Tie Bidder during the auction should be lower than Price Bid already submitted by it, else the revised Price Bid shall not be considered by OMC for further evaluation. The Tie Bidder who offers the lowest revised Price Bid in such auction shall be declared to be Preferred Bidder and the lowest revised Price Bid received by OMC during such auction shall be the L1 price. In the event that the Authorized Signatory of a Tie Bidder is not present during the auction or the Authorized Signatory of such Bidder does not or is unwilling to participate in such auction, the auction would be held amongst the remaining Tie Bidders and if there be only one remaining Tie Bidder, the latter will be declared as the

Preferred Bidder, provided that the revised Price Bid submitted by such Bidder is lower than that its earlier submitted Price Bid; in such as case the revised Price Bid submitted by such Bidder shall be considered to be the L1 price. In case of a second round of tie between the revised Price Bids submitted by the Tie Bidders, the Bidder with the higher average annual turnover (to be determined by OMC on the basis of the audited financial statements submitted by such Bidders as part of their Techno-Commercials Bids) in the last 3 (three) financial years shall be declared as the Preferred Bidder and the L1 price shall be the revised Price Bid submitted by such Bidder during the auction.

8.22 Issue of PO: Within 7 (seven) days of receipt of the signed copy of the LoA, along with the Security Deposit, the L1 Bidder shall be issued the PO by OMC. The Preferred Bidder shall have to acknowledge and accept the PO by returning a signed copy of the PO within a period of 7 (seven) days of issue thereof, failing which the Security Deposit shall be appropriated by OMC. In such a case, OMC reserves the right to approach the technically qualified Bidder(s) who has submitted the next lowest Price Bid and ask such Bidder(s) to match the L1 price and on acceptance of the same, issue a fresh LoA to such Bidder and proceed with such Bidder in terms of Clause 8.21. Upon acceptance of PO, the Preferred Bidder shall be considered to be the "Successful Bidder".

8.23 Security Deposit: The formula for calculating the amount of the Security Deposit is indicated in the Data Sheet. The Preferred Bidder shall submit the Security Deposit at the Head Office, OMC upon issue of LoA within a period of 15 (fifteen) days. The Security Deposit shall be in the form of a Bank Guarantee from any Nationalised/ Scheduled Bank invocable at their branch in Bhubaneswar as per the format given in Annexure 8 or in the form of demand draft from a scheduled commercial bank and payable in Bhubaneswar, Odisha. The Security Deposit shall be valid for the entire guarantee / warranty period as mentioned in Special Conditions of Contract (Annexure 2). The Security Deposit shall be returned by OMC after its expiry and in case of no claims, with due approval of the competent authority of OMC .

9. Additional Information on E-tendering process

9.1 The e-tendering process shall be held on the e-procurement portal of the Government of Odisha (www.tendersodisha.gov.in). All the steps involved starting from hosting of tenders till determination of the Preferred Bidder shall be conducted online on the e-procurement portal.

9.2 The Bidder will have to accept unconditionally the online user portal agreement which contains the acceptance of all the terms and conditions including commercial and general terms and conditions and other conditions, if any, along with on-line undertaking in support of the authenticity of the declarations regarding the facts, figures, information and documents furnished by the Bidder on-line in order to become an eligible Bidder. No conditional bid shall be allowed/ accepted.

9.3 The Bidder will have to give an undertaking online that if the information/ declaration/ scanned documents furnished in support of the same in respect of eligibility criteria are found to be wrong or misleading at any stage, they will be liable to punitive action and this includes forfeiture of EMD and cancellation/ termination of Purchase Order/Agreement.

9.4 The Bidder will submit their Techno-Commercial Bid and Price Bid on-line. The Bidders will have to upload a scanned copy of the Techno-Commercial Bid in Cover-I; the Price Bid is to be submitted in Cover-II.

9.5 Procedure for bid submission and payment of Tender Paper Fee and EMD

9.5.1 Log on to e-procurement portal: The Bidders have to log onto the e-procurement portal of the Government of Odisha (www.tendersodisha.gov.in) using their digital signature certificate and then search and then select the required active tender from the "Search Active Tender" option. Then the submit button can be clicked against the selected tender so that it comes to the "My Tenders" section.

9.5.2 Uploading of the Techno-Commercial Bid and the Price Bid: The Bidders have to upload the required Techno-Commercial Bid and the Price Bid, as mentioned in the tender document and in line with the Works Department office memorandum no.7885, dated 23 July 2013.

9.5.3 Payment of Tender Paper Fee and EMD: Tender Paper Fee and EMD shall be paid using a single banking transaction. The Bidders have to select and submit the bank name as available in the payment options. A Bidder shall make electronic payment using his/her internet banking enabled account with designated banks or their aggregator banks. The payment gateways of

the designated banks (State Bank of India/ ICICI Bank, HDFC Bank) are integrated with the e-procurement portal. A Bidder having account in other banks can make payment using NEFT/RTGS facility of designated banks. Online NEFT/RTGS payment can be done using internet banking of the bank in which the Bidder holds his account, by adding the account number as mentioned in the challan as an interbank beneficiary.

Only those Bidders who successfully remit their EMD on submission of bids would be eligible to participate on the tender/bid process. The Bidders with pending or failure payment status shall not be able to submit their bid. Tender Inviting Authority, State Procurement Cell, NIC and the designated Banks shall not be held responsible for such pendency or failure.

9.5.4 Bid submission: Only after receipt of intimation at the e-procurement portal regarding successful transaction by Bidder, the system will activate the 'Freeze Bid Submission' button to conclude the bid submission process.

9.5.5 System generated acknowledgement receipt for successful bid submission: System will generate an acknowledgement receipt for successful bid submission. The Bidder should make a note of 'Bid ID' generated in the acknowledgement receipt for tracking their bid status.

9.5.6 Settlement of EMD on submission of bids: The Bank will remit the Earnest Money Deposit on cancellation of bids to respective Bidder’s account as per direction received from Tender Inviting Authority through e-procurement system.

9.5.7 Forfeiture of EMDs: The forfeiture of EMD on submission of bid of defaulting Bidder may be occasioned for various reasons. In case the EMD Deposit on submission of bid is forfeited, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the Tender Inviting Authority, i.e. OMC.

9.6 Price Bid: The price bid containing the bill of quantity will be in Excel format (or any other format) and will be uploaded by OMC during tender creation. This will be downloaded by the Bidder and will be used to quote the Price Bid, exclusive of GST. Thereafter, the Bidder will upload the same Excel file during bid submission in Cover-II. The L1 price will be decided for module as stipulated in the tender. The Price Bid of the Bidders will have no conditions. The Price Bid which is incomplete and not submitted as per the instructions given shall be summarily rejected by OMC without any further reference to the Bidder.

9.7 Modification of bids: Modification of the submitted bid shall be allowed online only before the Bid Due Date. A Bidder may modify and resubmit the bid online as many times as he may wish. Bidder may withdraw only once its Bid online within the end date of Bid submission.

9.8 Opening of Techno-Commercial Bids: The Techno-Commercial Bids shall be opened as per the schedule given in the Schedule of Tender. The Techno Commercial bids (Cover-I) will be decrypted on-line and will be opened by the designated bid openers of OMC with their Digital Signature Certificates. The Techno-Commercial Bids shall be opened as per the schedule, irrespective of the number of bids received. Even in case of receipt of single bid, the Techno-Commercial Bid shall be opened for evaluation. In case no bids are received, the tender shall be automatically cancelled with approval of the competent authority of OMC.

9.9 Evaluation of Techno-Commercial Bids: The Techno-Commercial Bids shall be evaluated in terms of Clause 8.19. If required, OMC may ask Bidders to provide clarifications on their bid or provide shortfall documents within a period of 3 (three) working days. The Bidders will get this information on their personalized dash board under "Upload shortfall document/ information" link. However, no changes in the Price Bid shall be sought, offered or permitted, nor shall the documents sought be related to the EMD or the Tender Paper Fee. No modification of the bid or any form of communication with OMC or submission of any additional documents which are not specifically asked for by OMC, will be allowed and even if submitted, they will not be considered by OMC. Additionally, information shall also be sent by system generated e-mail and SMS, but it will be the Bidder's responsibility to check the updated status/information on their personalized dash board at least once daily after opening of bid. No separate communication will be required in this regard. Non-receipt of email and SMS will not be accepted as a reason for non-submission of documents within prescribed time. The Bidder shall submit the requisite clarifications and the requested documents and in the Upload Shortfall document section of the e-procurement portal within the specified period and no additional time will be allowed for submission of the clarifications/ documents. In case of any failure of the Bidder to submit the requisite documents within the allowed timeframe, OMC shall proceed to evaluate its Techno-Commercial Bid without any further reference to the Bidder.

9.10 Based on the evaluation of the Techno-Commercials Bids, the list of technically qualified Bidders shall be prepared and the same shall be uploaded, along with the date and time of opening of Price bid in the portal and such Bidders shall also be informed through system generated e-mail and SMS alert. The Price Bid of such shortlisted Bidders shall be decrypted and opened on the scheduled date and time by the designated bid openers of OMC with their Digital Signature Certificates. The Bidders may view the price bid opening online remotely on their personalized dash board under the link "Bid Opening (Live)" and can see the Price Bid / BOQ submitted by all shortlisted Bidders.

9.11 A comparative statement of the Price Bids shall be generated by the e-procurement system. The same shall be downloaded and will be signed by the officers of OMC opening the Price Bids and submitted to the competent authority of OMC for approval and further necessary action. The comparative statement shall also be viewable to the participating Bidders whose Price Bids were opened. In case of tie bids, the same shall be dealt with in terms of Clause 8.21.

9.12 Upon approval and completion of the due process of OMC, the Preferred Bidder shall be issued the LoA in terms of Clause 8.21. The LoA shall be sent through registered/ speed post to the office address of the Preferred Bidder; a scanned copy of the PO shall also be uploaded on the e-procurement portal.

Annexure 1: General Conditions of Contract-Goods

1. Definitions

In the interpretation of the Contract and the general and special conditions governing it, unless the context otherwise requires:

1.1. “Purchase Order Price” or “Purchase Order Value” shall mean the price payable to the Seller under the PO / Agreement for the full and proper performance of his contractual obligations;

1.2. “Country of origin”: For purposes of this Clause “origin” means the place where the Goods were mined, grown or produced, or from which the services are supplied;

1.3. “Drawing” shall mean and include Engineering drawings, sketches showing plans, sections and elevations in relation to the PO / Agreement together with modifications and/or revisions thereto;

1.4. “Inspector” shall mean any person nominated by or on behalf of OMC to inspect supplier's Stores or works under the PO / Agreement or his duly authorized agent;

1.5. “Performance and Guarantee Tests” shall mean all operational checks and tests required to determine and demonstrate capacity, efficiency and operating characteristics as specified in the PO / Agreement documents;

1.6. “Purchase Order (PO)” or “Agreement” shall mean the PO / Agreement and all attached exhibits and documents referred to therein and all terms and conditions thereof together with any subsequent modifications thereto;

1.7. "Site" shall mean the place or places named in the PO / Agreement or such other place or places at which any work has to be carried out as may be approved by OMC;

1.8. "Supplier" or “Seller” shall mean the person, firm or company with whom the PO / Agreement is placed and shall be deemed to include the supplier in successors (approved by OMC) representatives, heirs, executors, administrators and permitted assignee as the case may be;

1.9. "Stores" or “Material” or “Goods” or “Equipment” means the goods specified in the supply order or schedule which the Seller has agreed to supply under PO / Agreement;

1.10. "Test" shall mean such test or tests as prescribed by the specification or considered necessary by the Inspector or any agency acting under direction of the Inspector.

2. Scope of Supply

2.1. Scope of Supply shall be as defined in the Special Conditions of Contract, drawings and Annexure thereto.

2.2. Any equipment, fittings and accessories which may not be specifically mentioned in the specifications or drawings, but which are usual or necessary for the satisfactory functioning of the equipment (successful operation and functioning of the equipment being Seller's responsibility) shall be provided by Seller;

2.3. The Seller shall follow the best modern practices in the manufacture of high-grade equipment notwithstanding any omission in the specifications. The true intent and meaning of these documents is that Seller shall in all respects, design, engineer, manufacture and supply the equipment in a thorough workmanlike manner and supply the same in prescribed time to the entire satisfaction of OMC.

2.4. The Goods / Equipment supplied under the PO / Agreement shall conform to the standards mentioned in Special Conditions of Contract, or such other standards which ensure equal or higher quality, and when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' / Equipments' country of origin and such standards shall be the latest issued by the concerned institution

2.5. All dimensions and weight should be in metric system.

2.6. All equipment to be supplied and work to be carried out under the PO / Agreement shall conform to and comply with the provisions of relevant regulations/Acts (State Government or Central Government) as may be applicable to the type of equipment/work carried out and necessary certificates shall be furnished.

3. Instructions, Direction & Correspondence

A) All instructions and orders to Seller shall, excepting what is herein provided, be given by OMC.

B) All the work shall be carried out under the direction of and to the satisfaction of OMC.

C) All communications including technical/commercial clarifications and/or comments shall be addressed to OMC shall always bear reference to the PO / Agreement.

D) Invoices for payment against PO / Agreement shall be addressed to OMC.

E) The PO / Agreement number shall be shown on all challans / invoices, communications, packing lists, containers and bills of lading, (as applicable), etc.

4. PO / Agreement Obligations

4.1. If after award of the LoA, the Seller does not acknowledge the receipt of award or fails to furnish the Security Deposit within the prescribed time limit (as the case maybe), OMC reserves the right to cancel the LoA and forfeit the EMD.

4.2. Once a PO / Agreement is accepted and confirmed and signed, the terms and conditions contained therein shall take precedence over the Seller's bid and all previous correspondence.

4.3. The PO/ Agreement shall, in all respects, deemed to be and shall construe and operate as an Indian Contract in conformity with the Indian Laws

5. Modification in PO / Agreement

5.1. All modifications leading to changes in the PO / Agreement with respect to technical and/or commercial aspects including terms of delivery, shall be considered valid only when accepted in writing by OMC by issuing amendment to the PO / Agreement. Issuance of acceptance or otherwise in such cases shall not be any ground for extension of agreed delivery date and also shall not affect the performance of PO / Agreement in any manner except to the extent mutually agreed through a modification of PO / Agreement.

5.2. OMC shall not be bound by any printed conditions or provisions in the Seller's Bid Forms or acknowledgment of PO / Agreement, invoices, packing list and other documents which purport to impose any conditions at variance with or supplemental to PO / Agreement.

6. Use of PO / Agreement Documents & Information

6.1. The Seller shall not, without OMC's prior written consent, disclose any approved plan, drawing, pattern, sample or information furnished by or on behalf of OMC in connection therewith, to any person other than a person employed by the Seller in the performance of the PO / Agreement. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purpose of such performance.

6.2. The Seller shall not, without OMC's prior written consent, make use of any document or information enumerated in Clause 6.1 except for purpose of performing the PO / Agreement.

7. Patent Rights, Liability & Compliance of Regulations

7.1. Seller hereby warrants that the use or sale of the materials delivered hereunder will not infringe claims of any patent covering such material and Seller agrees to be responsible for and to defend at his sole expense all suits and proceedings against OMC based on any such alleged patent infringement and to pay all costs, expenses and damages which OMC may have to pay or incur by reason of any such suit or proceedings.

7.2. The Seller shall indemnify OMC against all third-party claims of infringement of patent, trade mark or industrial design rights arising from use of the Goods / Equipment or any part thereof.

7.3. Seller shall be responsible for compliance with all requirements under the laws and shall protect and indemnify completely OMC from any claims/penalties arising out of any infringements.

8. Security Deposit / Performance Security

8.1. The Seller shall furnish Security Deposit / Performance Security as per the terms and conditions provided in the Bid document.

8.2. The Security Deposit / Performance Security shall be for due and faithful performance during the project execution period and is liable for forfeiture in the following cases:

- If the successful Bidder fails to undertake the work after issuance of LoA, or
- If the Seller abandons the work before its completion, or during its extended period, or
- If the work performed by the Seller is not as per the Technical specification as agreed by the Seller, or
- On breach of PO / Agreement by the Seller

8.3. The proceeds of Security Deposit / Performance Security shall be appropriated by OMC as compensation for any loss resulting from the Seller's failure to complete his obligations under the PO / Agreement without prejudice to any of the rights or remedies OMC may be entitled to as per terms and conditions of PO / Agreement.

8.4. Security Deposit / Performance Security shall be extended by the Seller in the event of delay in completion of work, as defined in the PO / Agreement for any reason whatsoever. OMC's claim period shall remain valid for twelve months after the expiry of the guarantee/warrantee/Defect Liability Period or till the satisfactory performance of the objectives of the PO / Agreement, whichever is later.

8.5. For the avoidance of doubt, it is hereby clarified, that the Security Deposit / Performance Security shall not carry any interest.

9. Inspection, Testing & Expediting

9.1. OMC or its authorized representative shall have the right to inspect and/or to test the Goods / Equipment to confirm their conformity to the PO / Agreement specifications. The Special Conditions of Contract shall specify what inspections and tests OMC requires and where they are to be conducted. The place where inspections and tests may be conducted shall also be specified.

9.2. Should any inspected or tested Goods / Equipment fail to conform to the specifications, OMC may reject them and the Seller shall either replace the rejected Goods / Equipment or make all alterations necessary to meet Specifications' requirements, free of cost to OMC.

9.3. The Inspector shall follow the progress of the manufacture of the Goods / Equipment under the PO / Agreement to ensure that the requirements outlined in the PO / Agreement are not being deviated with respect to schedule and quality.

9.4. Seller shall allow the Inspector to visit, during working hours, the workshops relevant for execution of the PO / Agreement during the entire period of PO / Agreement validity.

9.5. Seller shall place at the disposal of the Inspector, free of charge, all tools, instruments, and other apparatus necessary for the inspection and/or testing of the Goods / Equipment. The Inspector is entitled to prohibit the use and dispatch of Goods / Equipment and/or materials which have failed to comply with the characteristics required for the Goods / Equipment during tests and inspections.

9.6. Seller shall advise in writing of any delay in the inspection program at the earliest, describing in detail the reasons for delay and the proposed corrective action.

9.7. Any and all expenses incurred in connection with tests, preparation of reports and analysis made by qualified laboratories, necessary technical documents, testing documents and drawings shall be at Seller's cost. The technical documents shall include the reference and numbers of the standards used in the construction and, wherever deemed practical by the Inspector, copy of such standards.

9.8. Nothing in Clause 9 shall in any way release the Seller from any warranty or other obligations under this PO / Agreement.

9.9. Arrangements for all inspections required by Indian Statutory Authorities and as specified in technical specifications shall be made by Seller.

9.10. Inspection & Rejection of Goods / Equipment / Materials by consignees

When materials are rejected by the consignee, the Seller shall be intimated with the details of such rejected materials, as well as the reasons for their rejection, also giving location where such materials are lying at the risk and cost of the Seller. The Seller will be called upon either to remove the materials or to give instructions as to their disposal, within 14 days of notice, failing which the consignee will either return the materials to the Seller freight to pay or otherwise dispose them off at the Seller's risk and cost. OMC shall in no way be responsible for any deterioration or damage to the Goods / Equipment under any circumstances whatsoever

9.11. Preliminary inspection at Seller's works by Inspector shall not prejudice OMC's claim for rejection of the Goods / Equipment on final inspection at Site or claims under warranty Provisions

10. Time Schedule & Progress Reporting

10.1. Together with the Purchase Order / Agreement confirmation, Seller shall submit to OMC, its time schedule regarding the documentation, manufacture, testing, supply, erection and commissioning of the Goods / Equipment. The time schedule will be in the form of a network or a bar chart clearly indicating all main or key events regarding documentation, supply of raw materials, manufacturing, testing, delivery, erection and commissioning.

10.2. OMC's representatives shall have the right to inspect Seller's premises with a view to evaluating the actual progress of work on the basis of Seller's time schedule documentation.

10.3. Irrespective of such inspection, Seller shall advise OMC, at the earliest possible date of any anticipated delay in the progress.

10.4. Notwithstanding the above, in case progress on the execution of PO / Agreement at various stages is not as per phased time schedule and is not satisfactory in the opinion of OMC which shall be conclusive or Seller shall neglect to execute the PO / Agreement with due diligence and expedition or shall contravene the provisions of the PO / Agreement, OMC may give notice of the same in writing to the Seller calling upon him to make good the failure, neglect or contravention complained of.

11. Delivery & Documents

11.1. Delivery of the Goods / equipment shall be made by the Seller in accordance with terms specified in the Special Conditions of Contract, and the Goods / Equipment shall remain at the risk of the Seller until delivery has been accepted by OMC.

11.2. Delivery shall be deemed to have been made on receipt of Goods / Equipment by OMC at the designated site(s).

11.3. The delivery terms are binding and essential and consequently, no delay is allowed without the written approval of OMC. Any request concerning delay will be void unless accepted by OMC.

11.4. The documentation shall be delivered in due time, in proper form and in the required number of copies as specified in the Special Conditions of Contract.

12. Mode of delivery, Transit Risk Insurance, Packing & Forwarding and Handling charges

Details regarding Mode of delivery, Transit Risk Insurance, Packing & Forwarding and Handling charges shall be specified in the Special Conditions of Contract.

13. Terms of Payment

13.1. Details about the method of payment, payment terms, billings, place of payment, etc. under this PO / Agreement shall be specified in the Special Conditions of Contract.

13.2. All payments shall be made in INR only and shall be made directly to the bank account of the Seller.

13.3. No advance shall be paid and no letter of credit shall be issued.

13.4. Payment shall be released within 30 (thirty) days after receipt of relevant documents complete in all respects.

13.5. No interest charges for delay in payments, if any, shall be payable by OMC.

13.6. Defective bills shall be returned to the Seller within 7 (seven) working days. No payment shall be made on defective/incomplete bills.

13.7. Provision of part payment against part supply of consignment at consignee's end may be incorporated in Purchase order on the merit of the case (only if the part consignment can be used independently), provided necessary stipulation is made in the notice inviting tender.

14. Subletting & Assignment

14.1. The Seller shall not without previous consent in writing of OMC, sublet, transfer or assign the PO / Agreement or any part thereof or interest therein or benefit or advantage thereof in any manner whatsoever. Provided, nevertheless, that any such consent shall not relieve the Seller from any obligation, duty or responsibility under the PO / Agreement.

15. Delivery Period

15.1. The delivery period shall be as given in Special Conditions of Contract. Extension in delivery period may be granted by OMC only in cases where the delay is not attributed to the Seller.

15.2. It may be noted that any extension of delivery period shall be at the sole option of OMC only and any extension must be in writing and with the approval of the competent authority of OMC.

15.3. Delivery period shall include time for submission of drawings for approval, incorporation of comments, if any, and final approval of drawings by OMC.

16. Cancellation of Purchase Order / Agreement

16.1. If the Seller fails to fulfil the terms and conditions of the Purchase Order / Agreement which are spelt out in the Tender Document, OMC shall have the right to terminate the Purchase Order / Agreement and award the total or balance work (if any) to any other Seller at the risk and cost of the said Seller after giving 30 days' notice to the Seller as to why the said work shall not be awarded to another entity at his risk and cost. Further the Purchase Order / Agreement could be terminated by OMC if:

i) There is a force-majeure situation,
ii) Seller has given false declaration or document including affidavit,
iii) Due to conflict of interest between OMC & Seller during the Purchase Order / Agreement execution,
iv) The Seller defaults in proceeding with the work as per the milestones and/or in complying with any of the terms and conditions, stipulated in the Purchase Order / Agreement,
v) The Seller or firm or any of the partner represented by the Seller, in the subject Purchase Order / Agreement is adjudged as Insolvent by the concerned authority and further if the Seller entity has been wound up and dissolved,
vi) The Seller assigns/transfers/sub-lets the entire work or a portion thereof without the approval of the Competent Authority,
vii) The Seller offers to give or agrees to give gift or any other consideration tangible or intangible, as inducement or reward for seeking or offering benefits in the Purchase Order / Agreement as the case may be,
viii) Seller is an individual or a proprietary concern and the individual or the proprietor dies.
ix) A court order or an order of a competent statutory forum is received in respect of the Service under consideration of the Purchase Order / Agreement.

Termination of the agreement shall not relieve the Seller of any obligations which expressly or by necessary implication survives termination. Except as otherwise provided in any provisions of the agreement expressly limiting the liability of the Seller, shall not relieve the Seller of any obligations or liability for loss or damage to OMC arising out of or caused by acts or omissions of the Seller prior to the effective date of termination or arising out of such termination. Even if Purchase Order / Agreement is terminated/abandoned prematurely, OMC reserves the right to deduct/impose penalties and shall remain indemnified, till such time all or any such claims are suitably addressed. OMC reserves the right to appropriate the Performance Security, as a genuine pre-estimated damages suffered by OMC for the non-performance by the Seller. OMC may also impose further penalties on the Seller such as holidaying/banning/blacklisting for a specific period of time. In all such cases, the decision of OMC shall be final. This notice shall be in accordance with Clause 16.1.

17. Right to risk purchase

If the supplier fails to fulfill the terms and conditions of the PO, OMC shall have the right to procure the goods from any other party for the execution/ completion of the scope of supply and installation (as the case maybe) under the PO and recover from the supplier all charges/expenses/losses/damages suffered by OMC, at the risk and cost of the supplier, after giving 15 (fifteen) days of notice to the supplier. This will be without prejudice to the rights of OMC for any other action including termination of the PO.

18. Force Majeure

18.1. "Force Majeure Event" means any event or circumstances or combination of events or circumstances which:

A) Are beyond the reasonable control of the Party affected by such event (the Affected Party); and cannot by exercise of reasonable diligence, reasonable precautions and reasonable alternative measures (where sufficient time to adopt such precautions or alternative measures before the occurrence of such event or circumstances is available), be prevented or caused to be prevented;

B) Materially and adversely affects such Party's performance of its duties or obligations or enjoyment of its rights under this PO / Agreement.

18.2. As soon as practicable and in any case within 7 (seven) days from the date of occurrence of a Force Majeure Event or the date of knowledge thereof, the Affected Party shall notify the other Party of the same, setting out the details of the Force Majeure Event.

18.3. If the Affected Party is rendered wholly or partially incapable of performing any of its obligations under this PO / Agreement because of a Force Majeure Event, it shall be excused from performance of such obligations to the extent it is unable to perform the same on account of such Force Majeure Event.

18.4. If a Force Majeure Event described above, in the reasonable judgment of the Parties, is likely to continue beyond a period of 6 (six) months or any other period as stipulated in the Bid document, the parties may mutually decide to terminate the PO /Agreement or continue the PO / Agreement on mutually agreed revised terms.

19. Dispute Resolution

19.1. Any dispute, difference or controversy of whatever nature howsoever arising under, or out of, or in relation, to this tender or the PO (including its interpretation) between OMC and the Seller, and so notified in writing by either party to the other party shall, in the first instance, be attempted to be resolved amicably and the parties agree to use their best efforts for resolving all disputes arising under or in respect of this tender promptly, equitably and in good faith. In the event of any dispute between the parties, it is agreed that a discussion shall be held between the supplier and OMC within 7 (seven) days from the date of reference to discuss and attempt to amicably resolve the dispute. If such meeting does not take place within the 7 (seven) day period or the dispute is not amicably settled within 15 (fifteen) days of the meeting, the dispute, if referred to, shall be decided by the Civil Court of competent jurisdiction at Bhubaneswar. There shall be no arbitration between the Parties. The provisions of Arbitration & Conciliation Act, 1996 as amended from time to time, shall have no application to the present work.

19.2. Governing law and jurisdiction: This Purchase Order/ Agreement shall be construed and interpreted in accordance with and governed by the laws of State and Central Government in force in India. The Courts at Bhubaneswar shall have exclusive jurisdiction over all matters arising out of or relating to this Purchase Order/ Agreement.

20. Governing Language

The PO / Agreement shall be written in English language as specified by OMC in the Instruction to Bidders. All literature, correspondence and other documents pertaining to the PO / Agreement which are exchanged by the parties shall be written in English language. Printed literature in other language shall only be considered, if it is accompanied by an English translation. For the purposes of interpretation, English translation shall govern and be binding on all parties.

21. Notices

Any notice given by one party to the other pursuant to the PO / Agreement shall be sent in writing or by email. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

22. Permits & Certificates

22.1. Seller shall procure, at his expense, all necessary permits, certificates and licences required by virtue of all applicable laws, regulations, ordinances and other rules in effect at the place where any of the work is to be performed, and Seller further agrees to hold OMC harmless from liability or penalty which might be imposed by reason of any asserted or established violation of such laws, regulations, ordinances or other rules.

23. General

23.1. The Seller shall be deemed to have carefully examined all PO / Agreement documents to its entire satisfaction. Any lack of information shall not in any way relieve the Seller of his responsibility to fulfill his obligation under the PO / Agreement documents.

23.2. The General Conditions of Contract (GCC)-Goods shall apply to the extent that they are not superseded by provisions of other parts of the Special Conditions of Contract.

23.3. Losses due to non-compliance of Instructions

Losses or damages occurring to OMC owing to the Seller's failure to adhere to any of the instructions given by OMC in connection with the contract execution shall be recoverable from the Seller.

23.4. Recovery of sums due

All costs, damages or expenses which OMC may have paid, for which under the PO / Agreement, the Seller is liable, may be recovered by OMC (he is hereby irrevocably authorized to do so) from any money due to or becoming due to the Seller under this PO / Agreement or other POs / Agreements and/or may be recovered by action at law or otherwise. If the same due to the Seller be not sufficient to recover the recoverable amount, the Seller shall pay to OMC, on demand, the balance amount.

24. Fall Clause

The price charged for the goods supplied by the supplier shall in no event exceed the lowest price at which the supplier sells the goods or offers to sell goods of identical description to any person(s)/ organisation(s) including OMC or to the Central Government or State Government departments or any Public Sector undertakings of the Central or a State Government, as the case may be, during the period till the completion of the entire scope of supply and installation (as the case may be) under this PO / Agreement. If the supplier reduces its price or sells or even offers to sell the same goods, at a price lower than the price under this PO / Agreement, to any person or organization during the currency of this PO / Agreement, the price of the PO / Agreement shall be automatically reduced with effect from that date for the subsequent supply of all goods under this PO / Agreement shall be amended accordingly.

25. Liability and Indemnity

25.1. Seller shall indemnify, defend and hold OMC harmless against:

a) any and all third party claims, actions, suits or proceedings against OMC, for any loss of or damage to property of such third party, or death or injury to such third party, arising out of breach by the Seller of any of its obligations under the PO / Agreement, except to the extent that any such claim, action, suit or proceeding has arisen due to a negligent act or omission, breach of the PO / Agreement, or breach of statutory duty on the part of OMC, its suppliers and contractors, employees, servants or agents; and

b) any and all losses, damages, costs, and expenses including legal costs, fines, penalties and interest actually suffered or incurred by OMC from third party claims arising by reason of breach by the Seller of any of its obligations under this PO / Agreement, except to the extent that any such losses, damages, cost & expenses including legal costs, fines, penalties and interest (together to constitute “Indemnifiable Losses”) have arisen due to negligent act or omission breach of the PO / Agreement, or breach of statutory duty on the part of OMC, its suppliers or contractors, employees, servants or agents or any of the representations; and

c) to the extent of the value of free issue materials to be issued till such time the entire PO / Agreement is executed and proper account for the free issue materials is rendered and the left over / surplus and scrap items are returned to OMC. The Seller shall not utilize OMC’s free issue materials for any job other than the one contracted out in this case and also not indulge in any act, commission or negligence which will cause / result in any loss/damage to OMC and in which case, the Seller shall be liable to OMC to pay compensation to the full extent of damage / loss and undertake to pay the same.

25.2. OMC remains indemnified (even if the PO / Agreement ends pre-maturely) towards all or any obligations due to OMC by the Seller and shall continue to remain in force till such time all or any such claims are suitably addressed.

26. Publicity & Advertising

Seller shall not without the written permission of OMC make a reference to OMC or any Company affiliated with OMC or to the destination or the description of goods or services supplied under the PO / Agreement in any publication, publicity or advertising media.

27. Blacklisting

Blacklisting of a business concern/entity or supplier may be resorted to in following cases:-

i) If the Proprietor or Partner or Director of the business concern/entity is convicted by a Court of Law, following prosecution under the normal process of Law for an offence involving moral turpitude in relations to business dealings;

ii) If security consideration of the state i.e. any action that jeopardize the security of the State.

iii) If there is justification for believing that the Proprietor or Partner or Director of the Concern/entity has been guilty of malpractices such as bribery, corruption, cheating, fraud and tender fixing etc.

iv) If the business concern/entity refuses / fails to return OMC's dues without adequate cause;

v) If the business concern/entity is blacklisted by any Department of the Central Government / State Government/Central PSU/State PSU.

vi) If the business concern/entity is a concern/entity evader of Central / State taxes / duties for which OMC has received notice from the concerned department of Central / State Govt.

vii) If internal violation of important conditions of contract/agreement.

viii) If submission of false/fabricated/forged documents for consideration of a tender

Annexure 2: Special Conditions of Contract

1. General

These Special Conditions of Contract delete, amend or add to the clauses in the General Conditions of Contract. In the event of an inconsistency, these Special Conditions of Contract shall supersede or take precedence over the General Conditions of Contract to the extent of that inconsistency.

2. Scope of Supply

2.1. Specification including technical parameter

The selected bidder shall supply the following transformer along with spare for OMC:

Sl. No.	Name/ type of goods	Estimated total requirement with units	Delivery location
1	500 KVA ,33/.415 KV Transformer	1	South Kaliapani, Jajpur
2	1000 KVA ,33/.415 KV Transformer	2	COBP, South Kaliapani
3	630 KVA, 11/.415 KV Transformer	1	RO, Barbil, Keonjhar
4	630 KVA, 11/.415 KV Transformer	1	Jilling Mines, Barbil, Keonjhar
5	1000 KVA, 11/.415 KV Transformer	1	Bangur
6	1000 KVA, 11/.415 KV Transformer	1	Khandadhar Mines, Sundergarh
7	3.15 MVA, 33/11 KV Transformer	1	Jilling Mines, Barbil Region
8	500 KVA, 11/.415 KV Transformer	2	Khondalite, Khordha
9	500 KVA, 11/.415 KV Transformer	1	New OMC corporate Office
10	500 KVA, 11/.415 KV Transformer	2	Khandadhar Mines
11	500 KVA, 11/.415 KV Transformer	1	Gandhamardan Mines
	Total	**14**	

Standards to be followed (Latest to be considered):

IS 2026

IS 1180

IS 3024

IS 1576

IS 9335

IS 335

IS 8603

IS 3347

IS 11149

IS 5

IS 104

IS 649

CEA Guideline Latest

Indian Electricity Rules & Regulation

IS 6600

IS 1608

IEC 60076

NEMA TR 1

CBIP Regulation

IS 3401

2.1.1. **Specifications of 1 No. 500 KVA, 33/.415 KV Transformer for South Kaliapani, Jajpur**

Sl No	Description/Specification	OMC Requirement
1	**General Specification**	
	Normal continuous rating (kVA)	500 KVA
	Service & Duty	Continuous
	Type	Core Type- Oil Immersed
	Location	Outdoor Type
	Relevant to Standard	IS 2026
	Type of Cooling	ONAN
	Wound	Copper Double Wound
2	**System Particulars**	
	-Nominal ratio of Transformation	33/0.415 KV
	Rated Frequency	50
	No. Of phases	3
	Highest System Voltage	36kV
	Voltage Variation	+/- 5%
	Frequency Variation	+/- 3%
	Combined Voltage & Frequency Variation	+/- 5%
	Rated Current Ratio	8.75/666.67 Amp
	Overload Capacity	As per IS:6600
	Bureau of Energy Efficiency Level	2
3	**Phase Connections**	
	a) HV Winding	Delta
	b) LV Winding	Star
	c) Vector group reference no. & connection symbol	Dyn11
4	**Maximum temperature rises above ambient temperature**	
	i) oil by thermometer at full ONAN rating	40 °C
	ii) winding by resistance at full ONAN rating (°C)	45 °C
	iii) By hotspot temperature indicator	116 °C
	iv) Ambient	50 °C
5	**Temperature gradient between windings and oil**	As per bidder
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076
7	**Losses & Others**	
	A) NO LOAD LOSSES:	

	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	iii) No Load losses at 110% of rated voltage	As per bidder
	B) LOAD LOSSES:	
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	As per bidder
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	C) TOTAL LOSSES:	
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	2000W (Maximum)
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	5750W (Maximum)
	D) No Load Current Approx	1.5% of Full Load Current
	E) Regulation at full load on unity Power Factor	By Bidder
	F) Regulation at full load on 0.8 Power Factor	By Bidder
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	As per bidder
	H) Reactance voltage drop expressed as percent of rated winding MVA	As per bidder
	I) Impedance voltage at normal & 75 °C temp. Expressed as percentage of rated voltage	5.00% +/-10%
	J) Permissible Over Loading	As per IEC 60076-7
8	**Efficiency:**	
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	98.97 By Bidder
	iii) 1/2 Full Load	99.16 By Bidder
	iv) 1/4 th Full Load	99.18 By Bidder
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.	
	i) Full Load	98.42 By Bidder
	ii) 3/4 th Full Load	98.71 By Bidder
	iii) 1/2 Full Load	98.95 By Bidder
	iv) 1/4 th Full Load	98.98 By Bidder
9	**Terminal arrangement**	

	a) HV Winding	Outdoor Type Bushing
	b) LV Winding	Cable Box with Bushing
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coulomb	As per IS 2026
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)
12	**Details of Core:**	
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type
	b) Type of core joints between core limb and yoke	Mitered
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)
	e) Core Lamination:	
	Material and grade	Carlit-H1B
	Thickness	As per bidder
	f) Allowable over fluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%
13	**Details of Windings:**	
	a) Type of winding	HV Winding- Disc/ Crossover
		LV Winding- Spiral/ Helical
	b) Material of the winding conductor	Electrolytic Copper
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)	
	Conductor Area (Sqmm) (For HV & LV)	As per bidder
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)
	d) Insulating material for conductor	Pressboard and Kraft Paper
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.
	g) No. of Coils per Limb (For HV & LV)	As per bidder
	h) Volt per Coil (For HV & LV)	As per bidder
	i) No. of Turns per Coil (For HV & LV)	As per bidder
	j) Volts per Turn (For HV & LV)	As per bidder

	k) Insulation level for Windings	HV & LV
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	170 & NA
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3
	l) Insulation Class on Winding	Class-A
	m) Fault Current at LV Terminals with duration	As per bidder
14	**Clearances**	
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder
15	**Bushings**	
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026
	b) Type of Bushings	Porcelain
	c) Rated Voltage	As per Requirement
	d) Minimum Creepage Distance	31 mm/KV
	e) Class of Bushings (HV & LV)	52.5kV & 1.1kV
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	31.5 kA & Duration to be specified by Vendor during Bidding.
16	**Particulars of Tap**	
	i) Type & Make	Off Load Type
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap
	iv) Voltage of each Step	825 V
	v) Whether provided on HV or LV side	HV
	vi) Whether a Tap PositionIndicator provided	Yes

17	**Clearance in Air**	As per CBIP
18	**Details of Tank**	
	a) Type of Tank and size L x B x H	As per bidder
	b) Appropriate thickness of sheet	
	Sides	5 mm
	Bottom	8 mm
	Cover	8 mm
	Thickness of Radiator (Pipes & Sheets)	1.2 mm
	c) Provision of Explosion Vent	Yes
	d) Provision of Drain Valve	Yes
19	**Conservator:**	
	a) Thickness of sheet	2.5 mm
	b) Size	As per bidder
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer
	e) Provision of Oil Level Gauge (Prismatic)	Yes
	f) Provision of Dehydrating Breather	Yes
	Dehydrating agent	Silica Gel
	Applicable Standard	IS 3401
	Minimum Quantity of Silica Gel Required	5 Kg
	Design of Breather	Such that Silica Gel should be easily visible from a distance.
	Provision of Oil Cap for Breather	Yes
	g) Provision of Oil Filling Nipple with Cap	Yes
	h) Power required by heaters, if provided (kW)	NA
	i) Conservator Lifting Lug	2 Nos.
	j) Locking Box Unit	4 Nos.
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes
20	**Radiator**	
	i) Overall dimensions, LxBxH (mm)	As per bidder
	ii) Total weight with oil (kg)	As per bidder
	iii) Total weight without oil (kg)	As per bidder
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm
	v) Types of Mounting	As per bidder
	vi) Vacuum withstand capability	As per bidder
	vii) No. of Radiator Sets	As per bidder

20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder
21	**Temperature Indicators**	
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included
22	**Approximate overall dimension of Transformer in mm**	
	i) Length	By Bidder
	ii) Breadth	By Bidder
	iii) Height	By Bidder
	iv) Wight in Kgs	
	Core & winding	By Bidder
	Tank, Fittings & Accessories	By Bidder
	Oil in Kgs	By Bidder
	Oil in Ltrs.	By Bidder
	Total Weight in Kgs.	By Bidder
23	**Marshalling Kiosk**	
	i) Make & Type	By Bidder
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder
24	**Characteristics of insulating oil to be used**	As per IS 335
	i) Density in gms/cu. Cm	
	ii) Kinematic viscosity in cst	
	iii) Interfacial tension at 27 °C in N/M	
	iv) Flash point in °C	
	v) Pour point in °C	
	vi) Acidity (Neutralisation/Value)	
	vii) Corrosive Sulphur in %	
	viii) Electric strength (Breakdown voltage)	
	ix) Dielectric dissipation factor (tan delta) at 90 °C	
	x) Saponification value in mg of KOH/gm	
	xi) Water content in ppm	
	xii) Specific resistance	
	a. At 90 °C ohm/cm	
	b. At 27 °C ohm/cm	
	xiii) N-dm Analysis	
	a. CA %	

	b. CN %	
	c. CP %	
	xiv) Oxidation stability	
	a. Neutralisation value after oxidation	
	b. Total sludge after oxidation	
	xv) Ageing characteristic	
	a. Resistivity	
	A. At 27 °C	
	B. At 90 °C	
	b. Tan Delta at 90 °C	
	c. Total Acidity	
	d. Sludge content by weight	
	xvi) Permittivity at 60 °C	
	xvii) Specific heat at 60 °C	
	xviii) Thermal conductivity °C	
	xix) Mean coefficient of expansion	
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5
26	Rating & Diagram Plate	
27	Bidirectional Flanged Rollers	4 Nos.
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)
29	Jacking Pads	Required
30	Inspection Cover	Required
31	Thermometer Pocket for WTI & OTI	Required
32	Oil Filling Hole with Cover	1 No.
33	Top Oil Filter Valve	1 No.
34	Bottom oil Filter cum Drain Valve	1 No.
35	Type Test Report of the offered transformer is required & Type Test Report to be attached along with Technical Bid.	Required
36	Foundation Drawing	As per bidder To be submitted in the event of ordering witin 1 month of ordering.
37	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed

2.1.2. **Specification of 2 Nos. 1000 KVA, 33/.415 KV Transformer for COBP, South Kaliapani**

Sl No	Description/Specification	OMC Requirement
1	**General Specification**	
	Normal continuous rating (kVA)	1000 KVA
	Service & Duty	Continuous
	Type	Core Type- Oil Immersed
	Location	Outdoor Type
	Relevant to Standard	IS 2026
	Type of Cooling	ONAN
	Wound	Copper Double Wound
2	**System Particulars**	
	-Nominal ratio of Transformation	33/0.415 KV
	Rated Frequency	50
	No. Of phases	3
	Highest System Voltage	36 kV
	Voltage Variation	+/- 5%
	Frequency Variation	+/- 3%
	Combined Voltage & Frequency Variation	+/- 5%
	Rated Current Ratio	17.50/1333.34 Amp
	Overload Capacity	As per IS:6600
	Bureau of Energy Efficiency Level	2
3	**Phase Connections**	
	a) HV Winding	Delta
	b) LV Winding	Star
	c) Vector group reference no. & connection symbol	Dyn11
4	**Maximum temperature rises above ambient temperature**	
	i) of oil by thermometer	
	a) at full ONAN rating	40 deg C
	ii) of winding by resistance	
	a) at full ONAN rating (oC)	45 deg C
	iii) By hotspot temperature indicator	116 deg C
	iv) Ambient	50 deg C
5	**Temperature gradient between windings and oil**	To be Provided by Vendor during Bidding

6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076
7	**Losses & Others**	
	A) NO LOAD LOSSES:	
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 deg C	To be Provided by Vendor during Bidding
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	iii) No Load losses at 110% of rated voltage	To be Provided by Vendor during Bidding
	B) LOAD LOSSES:	
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 deg C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bidding
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	C) TOTAL LOSSES:	
	i) Guaranteed Total Losses at 75 deg C temperature at 50% of Load	5000 W (Maximum)
	ii) Guaranteed Total Losses at 75 deg C temperature at 100% of Load	12000 W (Maximum)
	D) No Load Current Approx	1.5% of Full Load Current
	E) Regulation at full load on unity Power Factor	By Bidder
	F) Regulation at full load on 0.8 Power Factor	By Bidder
	G) Resistance voltage drop at 75 deg C winding temp. Expressed as percent of rated voltage	To be Provided by Vendor during Bidding
	H) Reactance voltage drop expressed as percent of rated winding MVA	To be Provided by Vendor during Bidding
	I) Impedance volatge at normal & 75 deg C temp. Expressed as percentage of rated voltage	5.00% +/-10%
	J) Permissible Over Loading	As per IEC 60076-7
8	**Efficiency:**	
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of Unity PF.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder

	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of 0.8PF Lagging.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	by Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
9	**Terminal arrangement**	
	a) HV Winding	Outdoor Type Bushing
	b) LV Winding	Cable Box with Bushing
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)
12	**Details of Core:**	
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type
	b) Type of core joints between core limb and yoke	Mitered
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)
	e) Core Lamination:	
	Material and grade	Carlit-H1B
	Thickness	To be Provided by Vendor during Bidding
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%
13	**Details of Windings:**	
	a) Type of winding	HV Winding- Disc/ Crossover
		LV Winding- Spiral/ Helical
	b) Material of the winding conductor	Electrolytic Copper
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)	

	Conductor Area (sqmm) (For HV & LV)	To be Provided by Vendor during Bidding
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)
	d) Insulating material for conductor	Pressboard and Kraft Paper
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.
	g) No. of Coils per Limb (For HV & LV)	To be Provided by Vendor during Bidding
	h) Volt per Coil (For HV & LV)	To be Provided by Vendor during Bidding
	i) No. of Turns per Coil (For HV & LV)	To be Provided by Vendor during Bidding
	j) Volts per Turn (For HV & LV)	To be Provided by Vendor during Bidding
	k) Insulation level for Windings	HV & LV
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	170 & NA
	Power Frequency Voltage With stand for one minute (kVrms)	33 & 3
	l) Insulation Class on Winding	Class-A
	m) Fault Current at LV Terminals with duration	To be Provided by Vendor during Bidding
14	**Clearances**	
	a) Minimum Clearance distance to earth in air of HV Terminals.	To be Provided by Vendor during Bidding
	b) Minimum Clearance distance to earth in air of LV Terminals.	To be Provided by Vendor during Bidding
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	To be Provided by Vendor during Bidding
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	To be Provided by Vendor during Bidding
15	**Bushings**	
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026
	b) Type of Bushings	Porcelain
	c) Rated Voltage	As per Requirement
	d) Minimum Creepage Distance	31 mm/KV

	e) Class of Bushings (HV & LV)	52.5kV & 1.1kV
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	31.5 kA & Duration to be specified by Vendor during Bidding.
16	**Particulars of Tap**	
	i) Type & Make	Off Load Type
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap
	iv) Voltage of each Step	825 V
	v) Whether provided on HV or LV side	HV
	vi) Whether a Tap Position Indicator provided	Yes
17	**Clearance in Air**	As per CBIP
18	**Details of Tank**	
	a) Type of Tank and size L x B x H	To be Provided by Vendor during Bidding
	b) Appropriate thickness of sheet	
	Sides	5 mm
	Bottom	8 mm
	Cover	8 mm
	Thickness of Radiator (Pipes & Sheets)	1.2 mm
	c) Provision of Exploision Vent	Yes
	d) Provision of Drain Valve	Yes
19	**Conservator:**	
	a) Thickness of sheet	2.5 mm
	b) Size	To be Provided by Vendor during Bidding
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer
	e) Provision of Oil Level Gauge (Prismatic)	Yes
	f) Provision of Dehydrating Breather	Yes
	Dehydrating agent	Silica Gel

	Applicable Standard	IS 3401
	Minimum Quantity of Silica Gel Required	5 Kg
	Design of Breather	Such that Silica Gel should be easily visible from a distance.
	Provision of Oil Cap for Breather	Yes
	g) Provision of Oil Filling Nipple with Cap	Yes
	h) Power required by heaters, if provided (kW)	NA
	i) Conservator Lifting Lug	2 Nos.
	j) Locking Box Unit	4 Nos.
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes
20	**Radiator**	
	i) Overall dimensions, LxBxH (mm)	To be Provided by Vendor during Bidding
	ii) Total weight with oil (kg)	To be Provided by Vendor during Bidding
	iii) Total weight without oil (kg)	To be Provided by Vendor during Bidding
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm
	v) Types of Mounting	To be Provided by Vendor during Bidding
	vi) Vacuum withstand capability	To be Provided by Vendor during Bidding
	vii) No. of Radiator Sets	To be Provided by Vendor during Bidding
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of setiings etc.) with two Switches	To be Provided by Vendor during Bidding
21	**Temperature Indicators**	
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxilary Switch
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches	1 Set with Auxilary Switch
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alaram	To be included
22	**Approximate overall dimesion of Transformer in mm**	
	i) Length	To be Provided by Vendor during Bidding
	ii) Breadth	To be Provided by Vendor during Bidding

	iii) Height	To be Provided by Vendor during Bidding
	iv) Wight in Kgs	To be Provided by Vendor during Bidding
	Core & winding	To be Provided by Vendor during Bidding
	Tank, Fittings & Accessories	To be Provided by Vendor during Bidding
	Oil in Kgs	To be Provided by Vendor during Bidding
	Oil in Ltrs.	To be Provided by Vendor during Bidding
	Total Weight in Kgs.	To be Provided by Vendor during Bidding
23	**Marshalling Kiosk**	
	i) Make & Type	To be Provided by Vendor during Bidding
	ii) Details of apparatus proposed to be housed inthe kiosk	To be Provided by Vendor during Bidding
24	**Characteristics of insulating oil to be used**	As per IS 335
	i) Density in gms/cu. Cm	
	ii) Kinematic viscosity in cst	
	iii) Interfacial tension at 27 deg C in N/M	
	iv) Flash point in deg C	
	v) Pour point in deg C	
	vi) Acidity (Neutralisation/Value)	
	vii) Corrosive sulphur in %	
	viii) Electric strength (Breakdown voltage)	
	ix) Dielectric dissipation factor (tan delta) at 90 deg C	
	x) Saponification value in mg of KOH/gm	
	xi) Water content in ppm	
	xii) Specific resistance	
	a. At 90 deg C ohm/cm	
	b. At 27 deg C ohm/cm	
	xiii) N-dm Analysis	
	a. CA %	
	b. CN %	
	c. CP %	
	xiv) Oxidation stabilty	
	a. Neutralisation value after oxidation	

	b. Total sludge after oxidation	
	xv) Ageing characteristic	
	a. Resistivity	
	A. At 27 deg C	
	B. At 90 deg C	
	b. Tan Delta at 90 deg C	
	c. Total Acidity	
	d. Sludge content by weight	
	xvi) Permitivity at 60 deg C	
	xvii) Specific heat at 60 deg C	
	xviii) Thermal conductivity at deg C	
	xix) Mean coefficient of expansion	
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5
26	Rating & Diagram Plate	
27	Bidirectional Flanged Rollers	4 Nos.
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)
29	Jacking Pads	Required
30	Inspection Cover	Required
31	Thermometer Pocket for WTI & OTI	Required
32	Oil Filling Hole with Cover	1 No.
33	Top Oil Filter Valve	1 No.
34	Bottom oil Filter cum Drain Valve	1 No.
35	Type Test report of the offered Transformer is required & Type Test Report to be attached along with Technical Bid.	Required
36	Foundation Drawing	To be submitted in the event of ordering within one month of ordering.
37	System Earthing (HV & LV)	HV-Soildly Earthed & LV-Resistance Earthed

2.1.3. **Specification of 1 No. 630 KVA, 11/.415 KV Transformer for RO, Barbil, & 1 No. 630 KVA, 11/.415 KV Transformer for Jilling Mines, Keonjhar.**

Sl No	Description/Specification	OMC Requirement
1	**General Specification**	
	Normal continuous rating (kVA)	630 KVA

	Service & Duty	Continuous
	Type	Core Type- Oil Immersed
	Location	Outdoor Type
	Relevant to Standard	IS 2026
	Type of Cooling	ONAN
	Wound	Copper Double Wound
2	**System Particulars**	
	Normal ratio of Transformation	11/0.415 KV
	Rated Frequency	50
	No. Of phases	3
	Highest System Voltage	12kV
	Voltage Variation	+/- 5%
	Frequency Variation	+/- 3%
	Combined Voltage & Frequency Variation	+/- 5%
	Rated Current Ratio	33.06/876.48 Amp
	Overload Capacity	As per IS:6600
	Bureau of Energy Efficiency Level	2
3	**Phase Connections**	
	a) HV Winding	Delta
	b) LV Winding	Star
	c) Vector group reference no. & connection symbol	Dyn11
4	**Maximum temperature rises above ambient temperature**	
	i) oil by thermometer at full ONAN rating	40 °C
	ii) winding by resistance at full ONAN rating (°C)	45 °C
	iii) By hotspot temperature indicator	116 °C
	iv) Ambient	50 °C
5	**Temperature gradient between windings and oil**	As per bidder
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076
7	**Losses & Others**	
	A) NO LOAD LOSSES:	
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	iii) No Load losses at 110% of rated voltage	As per bidder
	B) LOAD LOSSES:	

	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bid Submission
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	C) TOTAL LOSSES:	
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	1745 W (Maximum)
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	4850 W (Maximum)
	D) No Load Current Approx	1.5% of Full Load Current
	E) Regulation at full load on unity Power Factor	By Bidder
	F) Regulation at full load on 0.8 Power Factor	By Bidder
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	By Bidder
	H) Reactance voltage drop expressed as percent of rated winding MVA	By Bidder
	I) Impedance voltage at normal & 75 °C temp. Expressed as percentage of rated voltage	4.50% +/-10%
	J) Permissible Over Loading	As per IEC 60076-7
8	**Efficiency:**	
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
9	**Terminal arrangement**	
	a) HV Winding	Outdoor Type Bushing
	b) LV Winding	Cable Box with Bushing
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.

10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)
12	**Details of Core:**	
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type
	b) Type of core joints between core limb and yoke	Mitered
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)
	e) Core Lamination:	
	Material and grade	Carlit-H1B
	Thickness	As per bidder
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%
13	**Details of Windings:**	
	a) Type of winding	HV Winding- Disc/ Crossover
		LV Winding- Spiral/ Helical
	b) Material of the winding conductor	Electrolytic Copper
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)	
	Conductor Area (sqmm) (For HV & LV)	As per bidder
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)
	d) Insulating material for conductor	Pressboard and Kraft Paper
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.
	g) No. of Coils per Limb (For HV & LV)	As per bidder
	h) Volt per Coil (For HV & LV)	As per bidder
	i) No. of Turns per Coil (For HV & LV)	As per bidder
	j) Volts per Turn (For HV & LV)	As per bidder
	k) Insulation level for Windings	HV & LV

	1.2/50 microsecond wave shape Impulse Withstand (kVp)	75 & NA
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3
	l) Insulation Class on Winding	Class-A
	m) Fault Current at LV Terminals with duration	As per bidder
14	**Clearances**	
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder
15	**Bushings**	
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026
	b) Type of Bushings	Porcelain
	c) Rated Voltage	As per Requirement
	d) Minimum Creepage Distance	31 mm/KV
	e) Class of Bushings (HV & LV)	17.5kV & 1.1kV
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	25kA & Duration to be specified by Vendor during Bidding.
16	**Particulars of Tap**	
	i) Type & Make	Off Load Type
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap
	iv) Voltage of each Step	275 V
	v) Whether provided on HV or LV side	HV
	vi) Whether a Tap Position Indicator provided	Yes

16	**Clearance in Air**	As per CBIP
17	**Details of Tank**	
	a) Type of Tank and size L x B x H	As per bidder
	b) Appropriate thickness of sheet	
	Sides	5 mm
	Bottom	8 mm
	Cover	8 mm
	Thickness of Radiator (Pipes & Sheets)	1.2 mm
	c) Provision of Explosion Vent	Yes
	d) Provision of Drain Valve	Yes
18	**Conservator:**	
	a) Thickness of sheet	2.5 mm
	b) Size	As per bidder
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer
	e) Provision of Oil Level Gauge (Prismatic)	Yes
	f) Provision of Dehydrating Breather	Yes
	Dehydrating agent	Silica Gel
	Applicable Standard	IS 3401
	Minimum Quantity of Silica Gel Required	3 Kg
	Design of Breather	Such that Silica Gel should be easily visible from a distance.
	Provision of Oil Cap for Breather	Yes
	g) Provision of Oil Filling Nipple with Cap	Yes
	h) Power required by heaters, if provided (kW)	NA
	i) Conservator Lifting Lug	2 Nos.
	j) Locking Box Unit	4 Nos.
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes
19	**Radiator**	
	i) Overall dimensions, LxBxH (mm)	As per bidder
	ii) Total weight with oil (kg)	As per bidder
	iii) Total weight without oil (kg)	As per bidder
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm
	v) Types of Mounting	As per bidder
	vi) Vacuum withstand capability	As per bidder
	vii) No. of Radiator Sets	As per bidder

20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder
21	**Temperature Indicators**	
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included
22	**Approximate overall dimension of Transformer in mm**	
	i) Length	By Bidder
	ii) Breadth	By Bidder
	iii) Height	By Bidder
	iv) Wight in Kgs	
	Core & winding	By Bidder
	Tank, Fittings & Accessories	By Bidder
	Oil in Kgs	By Bidder
	Oil in Ltrs.	By Bidder
	Total Weight in Kgs.	By Bidder
23	**Marshalling Kiosk**	
	i) Make & Type	By Bidder
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder
24	**Characteristics of insulating oil to be used**	As per IS 335
	i) Density in gms/cu. Cm	
	ii) Kinematic viscosity in cst	
	iii) Interfacial tension at 27 °C in N/M	
	iv) Flash point in °C	
	v) Pour point in °C	
	vi) Acidity (Neutralisation/Value)	
	vii) Corrosive Sulphur in %	
	viii) Electric strength (Breakdown voltage)	
	ix) Dielectric dissipation factor (tan delta) at 90 °C	
	x) Saponification value in mg of KOH/gm	
	xi) Water content in ppm	
	xii) Specific resistance	
	a. At 90 °C ohm/cm	

	b. At 27 °C ohm/cm	
	xiii) N-dm Analysis	
	a. CA %	
	b. CN %	
	c. CP %	
	xiv) Oxidation stability	
	a. Neutralisation value after oxidation	
	b. Total sludge after oxidation	
	xv) Ageing characteristic	
	a. Resistivity	
	A. At 27 °C	
	B. At 90 °C	
	b. Tan Delta at 90 °C	
	c. Total Acidity	
	d. Sludge content by weight	
	xvi) permittivity at 60 °C	
	xvii) Specific heat at 60 °C	
	xviii) Thermal conductivity at °C	
	xix) Mean coefficient of expansion	
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5
26	Rating & Diagram Plate	
27	Bidirectional Flanged Rollers	4 Nos.
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)
29	Jacking Pads	Required
30	Inspection Cover	Required
31	Thermometer Pocket for WTI & OTI	Required
32	Oil Filling Hole with Cover	1 No.
33	Top Oil Filter Valve	1 No.
34	Bottom oil Filter cum Drain Valve	1 No.
35	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required
36	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering
37	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed

2.1.4. **Specification of 1 No. 1000 KVA, 11/.415 KV Transformer for Bangur & 1 No. 1000 KVA, 11/.415 KV Transformer for Khandadhar Mines, Sundergarh.**

Sl No	Description/Specification	OMC Requirement
1	**General Specification**	
	Normal continuous rating (kVA)	1000 KVA
	Service & Duty	Continuous
	Type	Core Type- Oil Immersed
	Location	Outdoor Type
	Relevant to Standard	IS 2026
	Type of Cooling	ONAN
	Wound	Copper Double Wound
2	**System Particulars**	
	Normal ratio of Transformation	11/0.415 KV
	Rated Frequency	50
	No. Of phases	3
	Highest System Voltage	12kV
	Voltage Variation	+/- 5%
	Frequency Variation	+/- 3%
	Combined Voltage & Frequency Variation	+/- 5%
	Rated Current Ratio	52.49/1333.37 Amp
	Overload Capacity	As per IS:6600
	Bureau of Energy Efficiency Level	2
3	**Phase Connections**	
	a) HV Winding	Delta
	b) LV Winding	Star
	c) Vector group reference no. & connection symbol	Dyn11
4	**Maximum temperature rises above ambient temperature**	
	i) oil by thermometer at full ONAN rating	40 °C
	ii) winding by resistance at full ONAN rating (°C)	45 °C
	iii) By hotspot temperature indicator	116 °C
	iv) Ambient	50 °C
5	**Temperature gradient between windings and oil**	As per bidder
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076
7	**Losses & Others**	
	A) NO LOAD LOSSES:	

	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	iii) No Load losses at 110% of rated voltage	As per bidder
	B) LOAD LOSSES:	
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bid Submission
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	C) TOTAL LOSSES:	
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	2620W (Maximum)
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	7000W (Maximum)
	D) No Load Current Approx	1.5% of Full Load Current
	E) Regulation at full load on unity Power Factor	By Bidder
	F) Regulation at full load on 0.8 Power Factor	By Bidder
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	By Bidder
	H) Reactance voltage drop expressed as percent of rated winding MVA	By Bidder
	I) Impedance volatge at normal & 75 °C temp. Expressed as percentage of rated voltage	5.50% +/-10%
	J) Permissible Over Loading	As per IEC 60076-7
8	**Efficiency:**	
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
9	**Terminal arrangement**	
	a) HV Winding	Outdoor Type Bushing

	b) LV Winding	Cable Box with Bushing
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)
12	**Details of Core:**	
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type
	b) Type of core joints between core limb and yoke	Mitered
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)
	e) Core Lamination:	
	Material and grade	Carlit-H1B
	Thickness	As per bidder
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%
13	**Details of Windings:**	
	a) Type of winding	HV Winding- Disc/ Crossover
		LV Winding- Spiral/ Helical
	b) Material of the winding conductor	Electrolytic Copper
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)	
	Conductor Area (sqmm) (For HV & LV)	As per bidder
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)
	d) Insulating material for conductor	Pressboard and Kraft Paper
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.
	g) No. of Coils per Limb (For HV & LV)	As per bidder

	h) Volt per Coil (For HV & LV)	As per bidder
	i) No. of Turns per Coil (For HV & LV)	As per bidder
	j) Volts per Turn (For HV & LV)	As per bidder
	k) Insulation level for Windings	HV & LV
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	75 & NA
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3
	l) Insulation Class on Winding	Class-A
	m) Fault Current at LV Terminals with duration	As per bidder
14	**Clearances**	
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder
15	**Bushings**	
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026
	b) Type of Bushings	Porcelain
	c) Rated Voltage	As per Requirement
	d) Minimum Creepage Distance	31 mm/KV
	e) Class of Bushings (HV & LV)	17.5kV & 1.1kV
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	25kA & Duration to be specified by Vendor during Bidding.
16	**Particulars of Tap**	
	i) Type & Make	Off Load Type
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%

	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap
	iv) Voltage of each Step	275 V
	v) Whether provided on HV or LV side	HV
	vi) Whether a Tap Position Indicator provided	Yes
16	**Clearance in Air**	As per CBIP
17	**Details of Tank**	
	a) Type of Tank and size L x B x H	As per bidder
	b) Appropriate thickness of sheet	
	Sides	5 mm
	Bottom	8 mm
	Cover	8 mm
	Thickness of Radiator (Pipes & Sheets)	1.2 mm
	c) Provision of Explosion Vent	Yes
	d) Provision of Drain Valve	Yes
18	**Conservator:**	
	a) Thickness of sheet	2.5 mm
	b) Size	As per bidder
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer
	e) Provision of Oil Level Gauge (Prismatic)	Yes
	f) Provision of Dehydrating Breather	Yes
	Dehydrating agent	Silica Gel
	Applicable Standard	IS 3401
	Minimum Quantity of Silica Gel Required	5 Kg
	Design of Breather	Such that Silica Gel should be easily visible from a distance.
	Provision of Oil Cap for Breather	Yes
	g) Provision of Oil Filling Nipple with Cap	Yes
	h) Power required by heaters, if provided (kW)	NA
	i) Conservator Lifting Lug	2 Nos.
	j) Locking Box Unit	4 Nos.
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes
19	**Radiator**	
	i) Overall dimensions, LxBxH (mm)	As per bidder
	ii) Total weight with oil (kg)	As per bidder
	iii) Total weight without oil (kg)	As per bidder

	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm
	v) Types of Mounting	As per bidder
	vi) Vacuum withstand capability	As per bidder
	vii) No. of Radiator Sets	As per bidder
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder
21	**Temperature Indicators**	
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included
22	**Approximate overall dimension of Transformer in mm**	
	i) Length	By Bidder
	ii) Breadth	By Bidder
	iii) Height	By Bidder
	iv) Wight in Kgs	
	Core & winding	By Bidder
	Tank, Fittings & Accessories	By Bidder
	Oil in Kgs	By Bidder
	Oil in Ltrs.	By Bidder
	Total Weight in Kgs.	By Bidder
23	**Marshalling Kiosk**	
	i) Make & Type	By Bidder
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder
24	**Characteristics of insulating oil to be used**	As per IS 335
	i) Density in gms/cu. Cm	
	ii) Kinematic viscosity in cst	
	iii) Interfacial tension at 27 °C in N/M	
	iv) Flash point in °C	
	v) Pour point in °C	
	vi) Acidity (Neutralisation/Value)	
	vii) Corrosive Sulphur in %	
	viii) Electric strength (Breakdown voltage)	
	ix) Dielectric dissipation factor (tan delta) at 90 °C	
	x) Saponification value in mg of KOH/gm	
	xi) Water content in ppm	

	xii) Specific resistance	
	a. At 90 °C ohm/cm	
	b. At 27 °C ohm/cm	
	xiii) N-dm Analysis	
	a. CA %	
	b. CN %	
	c. CP %	
	xiv) Oxidation stability	
	a. Neutralisation value after oxidation	
	b. Total sludge after oxidation	
	xv) Ageing characteristic	
	a. Resistivity	
	A. At 27 °C	
	B. At 90 °C	
	b. Tan Delta at 90 °C	
	c. Total Acidity	
	d. Sludge content by weight	
	xvi) permittivity at 60 °C	
	xvii) Specific heat at 60 °C	
	xviii) Thermal conductivity at °C	
	xix) Mean coefficient of expansion	
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5
26	Rating & Diagram Plate	
27	Bidirectional Flanged Rollers	4 Nos.
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)
29	Jacking Pads	Required
30	Inspection Cover	Required
31	Thermometer Pocket for WTI & OTI	Required
32	Oil Filling Hole with Cover	1 No.
33	Top Oil Filter Valve	1 No.
34	Bottom oil Filter cum Drain Valve	1 No.
35	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required
36	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering

37	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed

2.1.5. Specifications of 1 No. 3.15 MVA, 33/11 KV Transformer for Jilling Mines, Barbil Region

Sl No	Description/Specification	OMC Requirement
1	**Normal Continuous Rating (MVA)**	3.15 MVA
2	**Normal Ratio of Transformation**	33/11KV
	Maximum System Voltage Ratio (HV/LV)	36/12KV
	Rated Frequency	50 (-5% to +3%)
	No. of phases	3
	Type of Transformer	Outdoor Type
	Bureau of Energy Efficiency Level	2
3	**Phase Connections**	
	a) HV Winding	Delta
	b) LV Winding	Star
	c) Vector group reference no. & connection symbol	Dyn11
4	**Maximum temperature rises above ambient temperature**	
	i) of oil by thermometer	
	a) at full ONAN rating	40 deg C
	ii) of winding by resistance	
	a) at full ONAN rating (oC)	45 deg C
	iii) By hotspot temperature indicator	116 deg C
	iv) Ambient	50 deg C
5	**Temperature gradient between windings and oil**	To be Provided by Vendor during Bidding
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076
7	**A) No Load Losses:**	
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 deg C	To be Provided by Vendor during Bidding
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	iii) No Load losses at 110% of rated voltage	To be Provided by Vendor during Bidding
	B) LOAD LOSSES:	

	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 deg C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bidding
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
8	i) Guaranteed Total Losses at 75 deg C temperature at 50% of Load	9.0 KW (Maximum)
	ii) Guaranteed Total Losses at 75 deg C temperature at 100% of Load	17.0 KW (Maximum)
9	**Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of Unity PF.**	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
10	**Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of 0.8PF Lagging.**	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
11	Resistance voltage drop at 75 deg C winding temp. Expressed as percent of rated voltage	By Bidder
12	Reactance voltage drop expressed as percent of rated winding MVA	By Bidder
13	Impedance voltage at normal & 75 deg C temp. Expressed as percentage of rated voltage	6.25% + 10%, No negative tolerance is allowed
14	Regulation at full load on unity Power Factor	By Bidder
15	Regulation at full load on 0.8 Power Factor	By Bidder
16	Permissible Over Loading	As per IEC 60076-7
17	**Terminal arrangement**	
	a) HV Winding	Outdoor Type Bushing
	b) LV Winding	Outdoor Type Bushing
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.
18	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026

19	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)
20	**Details of Core:**	
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type
	b) Type of core joints between core limb and yoke	Metered
	c) Maximum flux density at rated voltage and frequency at principal tap (Tesla)	1.6 Tesla (max)
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)
	e) Core Lamination:	
	Material and grade	Carlit-H1B
	Thickness	To be Provided by Vendor during Bidding
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%
21	**Details of Windings:**	
	a) Type of winding	Helical/ Disc
	b) Material of the winding conductor	Electrolytic Copper
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)	
	Conductor Area (sqmm) (For HV & LV)	To be Provided by Vendor during Bidding
	Current density (A/sq cm) at normal tap (For HV & LV)	2.5 A/Sq mm (Max)
	Polarization Index	Greater than or equal to 1.5, but not less than or equal to 5
	d) Insulating material for conductor	Pressboard and Kraft Paper
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.
	g) No. of Coils per Limb (For HV & LV)	To be Provided by Vendor during Bidding
	h) Volt per Coil (For HV & LV)	To be Provided by Vendor during Bidding

	i) No. of Turns per Coil (For HV & LV)	To be Provided by Vendor during Bidding
	j) Volts per Turn (For HV & LV)	To be Provided by Vendor during Bidding
	k) Insulation level for Windings	HV & LV
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	170 & 75
	Power Frequency Voltage With stand (kVrms)	70 & 28
	l) Insulation Class on Winding	Class-A
	m) Insulation Thickness of Winding Conductor (HV & LV)	By Bidder
	n) Fault Current at LV Terminals with duration	By Bidder
22	**Clearances**	
	a) Minimum Clearance distance between HV Coil to inside of the Tank on the Longer side.	By Bidder
	b) Minimum Clearance distance between HV Coil to inside of the tank on the Width side. (LV Side)	By Bidder
	c) Minimum Clearance between HV Coil to inside of the tank on the width side (HV side to accommodate Delta & Tapping leads).	By Bidder
	d) Minimum Gap between Core Yoke to Tank bottom	By Bidder
	e) Minimum Yoke Insulation at top and bottom	By Bidder
	f) Minimum Phase to Phase clearance between HV limbs	By Bidder
	g) Minimum Radial Clearance between LV & HV Coil	By Bidder
	h) Minimum Radial Clearance between Core to LV Coil	By Bidder
23	**Bushings**	
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026
	b) Type of Bushings	Porcelain
	c) Rated Voltage	As per Requirement
	d) Minimum Creepage Distance	31 mm/KV
	e) Class of Bushings (HV & LV)	52.5kV & 17.5 kV
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder
	h) Provision of Arching Horn	To be provided on HV & LV side of Bushing (2 Sets per Phase)
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing
	j) External short circuit at bushing terminal withstand capacity (kA) .	31.5 kA for HV side & 26.2 kA for LV side

24	**Particulars of Tap**	
	i) Type & Make	Off Load Type
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap
	iv) Whether provided on HV or LV side	HV
	v) Whether a Tap Positioning Indicator provided	Required
25	**Clearance in Air**	As per CBIP
26	**Details of Tank**	
	a) Type of Tank and size L x B x H	To be Provided by Vendor during Bidding
	b) Appropriate thickness of sheet	
	Sides	5 mm
	Bottom	8 mm
	Cover	8 mm
	Thickness of Radiator (Pipes & Sheets)	1.2 mm
	Provision of Explosion Vent	Yes
	Provision of Drain Valve	Yes
27	**Conservator:**	
	a) Thickness of sheet	2.5 mm
	b) Size	To be Provided by Vendor during Bidding
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer
	e) Provision of Oil Level Gauge (Prismatic)	Yes
	f) Provision of Dehydrating Breather	Yes
	Dehydrating agent	Silica Gel
	Applicable Standard	IS 3401
	Minimum Quantity of Silica Gel Required	10 kg
	Design of Breather	Such that Silica Gel should be easily visible from a distance.
	Provision of Oil Cap for Breather	Yes
	g) Provision of Oil Filling Nipple with Cap	Yes
	h) Power required by heaters, if provided (kW)	NA
	i) Conservator Lifting Lug	2 Nos.
	j) Locking Box Unit	4 Nos.

	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes
	l) Type of Oil Preservation	Air-cell type with filling valve set & dry air one bottle.
28	**Radiator**	
	i) Overall dimensions, LxBxH (mm)	To be Provided by Vendor during Bidding
	ii) Total weight with oil (kg)	To be Provided by Vendor during Bidding
	iii) Total weight without oil (kg)	To be Provided by Vendor during Bidding
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm
	v) Types of Mounting	To be Provided by Vendor during Bidding
	vi) Vacuum withstand capability	To be Provided by Vendor during Bidding
	vii) No. of Radiator Sets	To be Provided by Vendor during Bidding
29	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches.	To be Provided by Vendor during Bidding
30	**Temperature Indicators**	
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches Alarm & Trip with adequate length capillary tube	1 Nos
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches Alarm & Trip with adequate length capillary tube	1 Nos
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	Required
31	**Approximate overall dimension of Transformer in mm**	
	i) Length	To be Provided by Vendor during Bidding
	ii) Breadth	To be Provided by Vendor during Bidding
	iii) Height	To be Provided by Vendor during Bidding
	iv) Wight in Kgs	
	Core & winding	To be Provided by Vendor during Bidding
	Tank, Fittings & Accessories	To be Provided by Vendor during Bidding

	Oil in Kgs	To be Provided by Vendor during Bidding
	Oil in Ltrs.	To be Provided by Vendor during Bidding
	Total Weight in Kgs.	To be Provided by Vendor during Bidding
32	**Marshalling Kiosk**	
	i) Make & Type	To be Provided by Vendor during Bidding
	ii) Details of apparatus proposed to be housed in the kiosk	To be Provided by Vendor during Bidding
33	**Characteristics of insulating oil to be used**	As per IS 335
	i) Density in gms/cu. Cm	
	ii) Kinematic viscosity in cst	
	iii) Interfacial tension at 27 deg C in N/M	
	iv) Flash point in deg C	
	v) Pour point in deg C	
	vi) Acidity (Neutralisation/Value)	
	vii) Corrosive sulphur in %	
	viii) Electric strength (Breakdown voltage)	
	ix) Dielectric dissipation factor (tan delta) at 90 deg C	
	x) Saponification value in mg of KOH/gm	
	xi) Water content in ppm	
	xii) Specific resistance	
	a. At 90 deg C ohm/cm	
	b. At 27 deg C ohm/cm	
	xiii) N-dm Analysis	
	a. CA %	
	b. CN %	
	c. CP %	
	xiv) Oxidation stability	
	a. Neutralisation value after oxidation	
	b. Total sludge after oxidation	
	xv) Ageing characteristic	
	a. Resistivity	
	A. At 27 deg C	
	B. At 90 deg C	
	b. Tan Delta at 90 deg C	
	c. Total Acidity	
	d. Sludge content by weight	

	xvi) Permittivity at 60 deg C	
	xvii) Specific heat at 60 deg C	
	xviii) Thermal conductivity at deg C	
	xix) Mean coefficient of expansion	
34	Painting of Transformer	Epoxy, Shade No. 632 of IS-5
35	Rating & Diagram Plate	Yes to be provided
36	Bidirectional Flanged Rollers	4 Nos.
37	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)
38	Jacking Pads	Required
39	Inspection Cover	Required
40	Thermometer Pocket for WTI & OTI	Required
41	Oil Filling Hole with Cover	1 No.
42	Top Oil Filter Valve	1 No.
43	Bottom oil Filter cum Drain Valve	1 No.
44	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required
45	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering
46	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed

2.1.6. **Specifications of 02 Nos. 500 KVA, 11/.415 KV Transformer for Khondalite Mines, Khordha, 01 No. 500 KVA, 11/.415 KV Transformer for New OMC Corporate Office, 02 Nos. 500 KVA, 11/.415 KV Transformer for Khandadhar Mines & 01 No. 500 KVA, 11/.415 KV Transformer for Gandhamardan Mines**

Sl No	Description/Specification	OMC Requirement
1	**General Specification**	
	Normal continuous rating (kVA)	500 KVA
	Service & Duty	Continuous
	Type	Core Type- Oil Immersed
	Location	Outdoor Type

	Relevant to Standard	IS 2026
	Type of Cooling	ONAN
	Wound	Copper Double Wound
2	**System Particulars**	
	Normal ratio of Transformation	11/0.415 KV
	Rated Frequency	50
	No. Of phases	3
	Highest System Voltage	12kV
	Voltage Variation	+/- 5%
	Frequency Variation	+/- 3%
	Combined Voltage & Frequency Variation	+/- 5%
	Rated Current Ratio	26.25/666.67 Amp
	Overload Capacity	As per IS:6600
	Bureau of Energy Efficiency Level	2
3	**Phase Connections**	
	a) HV Winding	Delta
	b) LV Winding	Star
	c) Vector group reference no. & connection symbol	Dyn11
4	**Maximum temperature rises above ambient temperature**	
	i) oil by thermometer at full ONAN rating	40 °C
	ii) winding by resistance at full ONAN rating (°C)	45 °C
	iii) By hotspot temperature indicator	116 °C
	iv) Ambient	50 °C
5	**Temperature gradient between windings and oil**	As per bidder
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076
7	**Losses & Others**	
	A) NO LOAD LOSSES:	
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	iii) No Load losses at 110% of rated voltage	As per bidder
	B) LOAD LOSSES:	
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bid Submission
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance
	C) TOTAL LOSSES:	
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	1430W (Maximum)
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	4100W (Maximum)

	D) No Load Current Approx	1.5% of Full Load Current
	E) Regulation at full load on unity Power Factor	By Bidder
	F) Regulation at full load on 0.8 Power Factor	By Bidder
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	By Bidder
	H) Reactance voltage drop expressed as percent of rated winding MVA	By Bidder
	I) Impedance voltage at normal & 75 °C temp. Expressed as percentage of rated voltage	4.50% +/-10%
	J) Permissible Over Loading	As per IEC 60076-7
8	**Efficiency:**	
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.	
	i) Full Load	By Bidder
	ii) 3/4 th Full Load	By Bidder
	iii) 1/2 Full Load	By Bidder
	iv) 1/4 th Full Load	By Bidder
9	**Terminal arrangement**	
	a) HV Winding	Outdoor Type Bushing
	b) LV Winding	Cable Box with Bushing
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)
12	**Details of Core:**	
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type
	b) Type of core joints between core limb and yoke	Mitered
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)
	e) Core Lamination:	

	Material and grade	Carlit-H1B
	Thickness	As per bidder
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%
13	**Details of Windings:**	
	a) Type of winding	HV Winding- Disc/ Crossover
		LV Winding- Spiral/ Helical
	b) Material of the winding conductor	Electrolytic Copper
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)	
	Conductor Area (sqmm) (For HV & LV)	As per bidder
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)
	d) Insulating material for conductor	Pressboard and Kraft Paper
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.
	g) No. of Coils per Limb (For HV & LV)	As per bidder
	h) Volt per Coil (For HV & LV)	As per bidder
	i) No. of Turns per Coil (For HV & LV)	As per bidder
	j) Volts per Turn (For HV & LV)	As per bidder
	k) Insulation level for Windings	HV & LV
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	75 & NA
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3
	l) Insulation Class on Winding	Class-A
	m) Fault Current at LV Terminals with duration	As per bidder
14	**Clearances**	
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder
15	**Bushings**	
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026
	b) Type of Bushings	Porcelain

	c) Rated Voltage	As per Requirement
	d) Minimum Creepage Distance	31 mm/KV
	e) Class of Bushings (HV & LV)	17.5kV & 1.1kV
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	25kA & Duration to be specified by Vendor during Bidding.
16	**Particulars of Tap**	
	i) Type & Make	Off Load Type
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap
	iv) Voltage of each Step	275 V
	v) Whether provided on HV or LV side	HV
	vi) Whether a Tap Position Indicator provided	Yes
16	**Clearance in Air**	As per CBIP
17	**Details of Tank**	
	a) Type of Tank and size L x B x H	As per bidder
	b) Appropriate thickness of sheet	
	Sides	5 mm
	Bottom	8 mm
	Cover	8 mm
	Thickness of Radiator (Pipes & Sheets)	1.2 mm
	c) Provision of Explosion Vent	Yes
	d) Provision of Drain Valve	Yes
18	**Conservator:**	
	a) Thickness of sheet	2.5 mm
	b) Size	As per bidder
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer
	e) Provision of Oil Level Gauge (Prismatic)	Yes
	f) Provision of Dehydrating Breather	Yes
	Dehydrating agent	Silica Gel
	Applicable Standard	IS 3401

	Minimum Quantity of Silica Gel Required	3 Kg
	Design of Breather	Such that Silica Gel should be easily visible from a distance.
	Provision of Oil Cap for Breather	Yes
	g) Provision of Oil Filling Nipple with Cap	Yes
	h) Power required by heaters, if provided (kW)	NA
	i) Conservator Lifting Lug	2 Nos.
	j) Locking Box Unit	4 Nos.
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes
19	**Radiator**	
	i) Overall dimensions, LxBxH (mm)	As per bidder
	ii) Total weight with oil (kg)	As per bidder
	iii) Total weight without oil (kg)	As per bidder
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm
	v) Types of Mounting	As per bidder
	vi) Vacuum withstand capability	As per bidder
	vii) No. of Radiator Sets	As per bidder
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder
21	**Temperature Indicators**	
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches	1 Set with Auxiliary Switch
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included
22	**Approximate overall dimension of Transformer in mm**	
	i) Length	By Bidder
	ii) Breadth	By Bidder
	iii) Height	By Bidder
	iv) Wight in Kgs	
	Core & winding	By Bidder
	Tank, Fittings & Accessories	By Bidder
	Oil in Kgs	By Bidder
	Oil in Ltrs.	By Bidder
	Total Weight in Kgs.	By Bidder
23	**Marshalling Kiosk**	
	i) Make & Type	By Bidder
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder
24	**Characteristics of insulating oil to be used**	As per IS 335
	i) Density in gms/cu. Cm	
	ii) Kinematic viscosity in cst	

	iii) Interfacial tension at 27 °C in N/M	
	iv) Flash point in °C	
	v) Pour point in °C	
	vi) Acidity (Neutralisation/Value)	
	vii) Corrosive Sulphur in %	
	viii) Electric strength (Breakdown voltage)	
	ix) Dielectric dissipation factor (tan delta) at 90 °C	
	x) Saponification value in mg of KOH/gm	
	xi) Water content in ppm	
	xii) Specific resistance	
	a. At 90 °C ohm/cm	
	b. At 27 °C ohm/cm	
	xiii) N-dm Analysis	
	a. CA %	
	b. CN %	
	c. CP %	
	xiv) Oxidation stability	
	a. Neutralisation value after oxidation	
	b. Total sludge after oxidation	
	xv) Ageing characteristic	
	a. Resistivity	
	A. At 27 °C	
	B. At 90 °C	
	b. Tan Delta at 90 °C	
	c. Total Acidity	
	d. Sludge content by weight	
	xvi) permittivity at 60 °C	
	xvii) Specific heat at 60 °C	
	xviii) Thermal conductivity at °C	
	xix) Mean coefficient of expansion	
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5
26	Rating & Diagram Plate	
27	Bidirectional Flanged Rollers	4 Nos.
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)
29	Jacking Pads	Required
30	Inspection Cover	Required
31	Thermometer Pocket for WTI & OTI	Required
32	Oil Filling Hole with Cover	1 No.
33	Top Oil Filter Valve	1 No.
34	Bottom oil Filter cum Drain Valve	1 No.

35	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required
36	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering
37	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed

Note:

1. The supplier shall share the compliance with the above specification as per Annexure 11.

2.The installation & commissioning of transformer is in OMC scope after acceptance of material. However, the supplier shall depute service engineer at the time of commissioning of transformer at no extra cost.

3. Temperature Compensation CT for Temperature Correction in WTI shall be used as required by Bidder. The rating of CT shall be suitable considered for each type of Transformers.

3. Testing & Inspection

3.1. Each and every offered transformers offered shall be subjected to routine tests and one transformer out of each offered lot shall also be subjected to Temperature Rise Test at lowest tap position at the manufacture works or NABL Accredited Test Lab at the Cost of the Manufacturer:

3.2. Measurement of winding resistance at all Tap position

3.3. Ratio at all tap positions, polarity and phase relationship

3.4. % Impedances voltage at 75°C and at 50 Hz

3.5. Load losses at SO% & at 100% loading at 7S"Cand load loss at 100% loading at lowest tap position for Temperature Rise Test.

3.6. No load loss at 50 Hz and no load current al rated voltage.

3.7. Insulation resistance.

3.8. Induced overvoltage withstand.

3.9. Separates source voltage withstand.

3.10. Magnetizing current at rated voltage & frequency & 112.5% of rated voltage & frequency should not exceed the limit as per IS: 1180 (Part-I)1989CI. 22.6.

3.11. Temperature Rise Test will be conducted on one transformer of each offered lot and the test will be conducted at lowest Tap position.

3.12. Pressure Test: As per Clause no. 21.S of IS 1I 80 (Part-1) 2014

3.13. Oil leakage Test: As per Clause no. 21.S of IS1180 (Part-1) 2014

3.14. The above Test shall be witnessed by OMC Engineer. Intimation to OMC for witnessing the Test shall be given 15 Days Prior to readiness.

3.15. Delivery period

The delivery period shall be **4 to 6 months** from the date of issuance of Purchase Order.

3.16. Inspection procedure

3.16.1. Pre-Dispatch inspection shall be carried out by the OMC authorities at the manufacturer site.

3.16.2. The decision of OMC regarding the quality of the transformers shall be final and binding.

3.17. Warranty/ Guarantee

3.17.1. The warranty will remain valid for 12 months from the date of commissioning of the transformers by OMC.

3.17.2. The warranty will cover all major & minor parts of the equipment and any replacement or repair required within the warranty period will be provided by the supplier at free of cost at the required destination.

3.17.3. Replacement under warranty clause shall be made by the bidder free of all charges on site including freight, insurance and other incidental charge.

3.17.4. The Agency shall promptly respond the complaint of the purchaser otherwise steps shall be taken for recovery of the expenditure incurred by the user from the Performance Guarantee.

4. Payment terms:

The place of payment shall be the Head Office of OMC.

Sl.No.	Milestone	Payment	Payment Terms
1	Supply of the Transformers	70% of the basic price of each supplied transformer with 100% GST	Payment for supply of each transformer shall be released on the receipt and acceptance of the material along with stock entry certificate from designated official of OMC
2	Commissioning of transformers	20% of the basic price of each supplied transformer after commissioning	Payment shall be released after commissioning of Transformer by respective site of OMC. In case commissioning of the transformer is delayed by OMC beyond 3 months of acceptance of the equipment at site, this payment shall be released.
3	Completion of Warranty period	10% of the basic price of the PO for respective site.	Payment shall be released after completion of warranty period or on submission of BG of equivalent amount after completion of supply.

5. Repeat Order

A Repeat order against this order may be placed at the same per unit cost and terms and conditions as per the original order.

Conditions for repeat Order:

- There is no downward trend in the price of the item. (The OEM should submit a declaration of the same in the company letter head).
- The total value of repeat order shall not exceed 100% of the original order value.
- There shall be no price or rate revision throughout the contract period.

6. Taxes & Duties

6.1. Indirect Taxes

A) The Seller agrees to and, hereby accepts full and exclusive liability for payment of any and all taxes, duties, charges and levies as per the Applicable Laws as applicable for the Scope of Supply in accordance with the provisions of this PO / Agreement. In case it is increased or decreased under any statute, rules, regulations, notifications, etc. of

any Authority, the impact shall be to the account of OMC subject to submission of documentary evidence to the satisfaction of OMC.

B) Obligations relating to Goods and Services Tax (GST)

i) The Seller should have registration under GST Acts

ii) The Seller has to raise Invoice as required under section 31 of the GST Act and relevant Rules made there under.

iii) The Invoice should contain the following particulars as required under Rule 46 of CGST Rules;

a. Name, address and Goods and Services Tax Identification Number of the Supplier;

b. A consecutive serial number not exceeding sixteen characters, in one or multiple series, containing alphabets or numerals or special characters- hyphen or dash and slash symbolised as "-" and "/" respectively, and any combination thereof, unique for a financial year;

c. Date of its issue;

d. Name, address and Goods and Services Tax Identification Number or Unique Identity Number, if registered, of the recipient;

e. Harmonised System of Nomenclature code for goods or SAC code for services;

f. Description of goods or services;

g. Quantity in case of goods and unit or Unique Quantity Code thereof;

h. Total value of supply of goods or services or both;

i. Taxable value of the supply of goods or services or both taking into account discount or abatement, if any;

j. Rate of tax (Central tax, State tax, integrated tax, Union territory tax or Cess);

k. Amount of tax charged in respect of taxable goods or services (Central tax, State tax, integrated tax, Union territory tax or Cess);

l. Place of supply along with the name of the State, in the case of a supply in the course of Inter-State Trade or Commerce;

m. Address of delivery where the same is different from the place of supply;

n. Whether the tax is payable on reverse charge basis; and

o. Signature or digital signature of the supplier or his authorised representative.

iv) The Seller should file the GST Returns as required in the GST Acts, and details

of Invoice submitted to OMC and GST amount charged thereon should reflect in Form GSTR-2A within a reasonable time, so as to make OMC enable to take Input Tax Credit (ITC) of the GST amount paid against those invoices.

v) If due to any reason attributable to the Seller, Input credit of the GST amount paid on Invoices raised by the Seller is not available to OMC/denied by the dept. then the same will be recovered from the payments of the Seller or the Seller has to deposit an equivalent amount.

vi) The Seller has to comply with all the Provisions of GST Acts, Rules and Notifications issued there under.

vii) The Seller will comply with the "Anti profiteering Measure" as required under Section 171 of the CGST Act.

viii) The Seller hereby undertakes to indemnify OMC, from any liabilities arising in future due to noncompliance by the Seller of the GST Acts, Rules and any other Acts currently in force and applicable to the Seller in relation to the job assigned to the Seller by OMC.

6.2. Direct Taxes

TDS as applicable shall be deducted under Income Tax Act,1961 and certificate of deduction shall be provided by OMC to the Seller in accordance with the provisions of Income Tax Act,1961.

7. Liquidated Damages

7.1. If the Seller fails to supply and install (as the case maybe) the Goods / Equipment within the delivery period and any extension thereof, unless such failure is due to force majeure situation or due to OMC's default, liquidated damages (LD) shall be imposed by OMC on the Seller. However, imposition of LD shall be without prejudice to the other remedies available to OMC under the terms of the PO.

7.2. In case of delay in supply and installation of the goods, the LD shall be calculated as 0.5% (zero point five per cent) of the value of the Purchase Order (excluding taxes and duties) in respect of which the delay in delivery has occurred for each week or part thereof of delay, subject to a maximum value of 5% of the value of the Purchase Order (excluding taxes and duties). GST on LD shall be recovered in addition to the LD amount.

7.3. The delivery period shall start from the date of acceptance of the PO / Agreement or seven days from the date of issue of PO / Agreement, whichever is earlier.

7.4. OMC shall have full liberty to realise the LD through the following ways:

A) Appropriation of the Security Deposit/Performance Security; OR

B) Appropriation the of EMD (in case provision of Security Deposit does not exist); OR

C) Reduction of the invoice/document value and release of the payment accordingly

7.5. Any waiver of LD shall be at the sole option of OMC only and any extension must be in writing and with the approval of the competent authority of OMC.
If at any time during the PO / Agreement, the Seller encounters conditions that may impact the timely supply and installation (as the case maybe) of goods, the Seller shall promptly notify to OMC in writing of the fact of the delay, it's likely duration and its cause(s). As soon as practicable after receipt of the Seller's notice, OMC shall evaluate the situation and may at its discretion waive the LD on the request of the Seller.

8. Designated nodal officer and key contacts of OMC

Name: Mr. Satyajit Jena, Sr. Manager (E)-Head Office
Mob: 9853340085
Email: satyajit.jena@odishamining.in

Name: Mr. Sanjay Ku Sahoo, Manager (E) C & P-Head Office
Mob: 8275721218
Email: sanjay.sahoo@odishamining.in

Name: Mr. Shreejit Das, Dy. Manager (E)-Head Office
Mob: 7894364915
Email: shreejit.das@odishamining.in

Name: Mr. Satyabrata Sahoo, Sr.Manager (E) -South Kaliapani & COBP
Mob: 9040094157
Email: satyabrata.sahoo@odishamining.in

Name: Mr. Anjan Kumar Jena, DGM (E) -Kurmitar
Mob: 8895429293
Email: anjan.jena@odishamining.in

Name: Mr. Satya Narayan Ray, Dy.Mgr (E) -Khondalite
Mob: 9437925858
Email: satyanarayan.ray@odishamining.in

Name: Mr. Santosh Kumar Naik, Sr.Mgr (E) -Gandhamardan
Mob: 7070796444
Email: sknaik1@odishamining.in

Name: Mr. Brijesh Bal, Sr.Mgr (E) -Barbil Region
Mob: 9439784236
Email: brijesh.bal@odishamining.in

9. Limitation of Liability

Notwithstanding anything contrary contained herein, the aggregate total liability of Seller under the Purchase Order / Agreement or otherwise shall be limited to 100% of Purchase Order / Agreement price. However, neither party shall be liable to the other party for any indirect and consequential damages, loss of profits or loss of production.

Annexure 3: Format for Power of Attorney

(to be executed on INR 100 non judicial stamp paper and to be duly notarized)

Known all men by these presents, we…….. (name of the firm and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorize Mr./ Ms. (name), …… son/daughter/wife of …… and presently residing at ……., who is presently employed with us and holding the position of …… , as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our tender against the Bid document no. [•] dated [•] published by Odisha Mining Corporation Limited for the "Procurement of Goods – [•]", including but not limited to signing and submission of all applications, bids and other documents and writings,

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE,……, THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS …… DAY OF …… 20[•].

For

……
(Signature, name, designation and address)

Witnesses

1.

2.

Accepted

(Signature)
(Name, Title and Address of the Attorney)

Annexure 4: Price Bid Format

Sl. No	Description	Qty	Unit	Basic Price per Unit (in figures)	Total without GST
Category-A (33/.415 KV)					
1	Supply of 500 KVA, 33/.415 KV Transformer as per Sl.No.1 of table at Clause-6.1 Bid Document.	1	Nos	**This price bid format is sample only. The price to be quoted in BoQ format available in e-procurement portal against this tender.**	
2	Supply of 1000 KVA, 33/.415 KV Transformer as per Sl.No.2 of table at Clause-6.1 Bid Document.	2	Nos.		
	Total (1 to 2) =	**3**	**Nos.**		
Category-B (11/.415 KV)					
1	Supply of 630 KVA, 11/.415 KV Transformer as per Sl.No.3,4 of table at Clause-6.1 Bid Document.	2	Nos	**This price bid format is sample only. The price to be quoted in BoQ format available in e-procurement portal against this tender.**	
2	Supply of 1000 KVA, 11/.415 KV Transformer as per Sl.No.5,6 of table at Clause-6.1 Bid Document.	2	Nos		
3	Supply of 500 KVA, 11/.415 KV Transformer for Khondalite Group of Mines, Khorda-752018 as per Sl.No.8 of table at Clause-6.1 Bid Document.	2	Nos.		
4	Supply of 500 KVA, 11/.415 KV Transformer for New OMC Corporate Office, Bhubaneswar-751001 as per Sl.No.9 of table at Clause-6.1 Bid Document.	1	No.		
5	Supply of 500 KVA, 11/.415 KV Transformer for Khandadhar Mines. Sundergarh-770041 as per Sl.No.10 of table at Clause-6.1 Bid Document.	2	Nos.		
6	Supply of 500 KVA, 11/.415 KV Transformer Gandhamardan Mines, Keonjhar-758018 as per Sl.No.11 of table at Clause-6.1 Bid Document.	1	No.		
	Total (1 to 6) =	**10**	**Nos.**		
Category-C (33/11 KV)					

1	Supply of 3.15 MVA, 33/11 KV Transformer as per Sl.No.7 of table at Clause-6.1 Bid Document.	1	No.	**This price bid format is sample only. The price to be quoted in BoQ format available in e-procurement portal against this tender.**
	Total =	**1**	**No.**	

Note:

i) The Bidder shall quote for all three categories of transformer mentioned above i.e. category (A) 33/.415 KV, (B) 11/.415 KV & (C) 33/11 KV. In case any bidder doesn't quote all category of transformer ,bid shall be rejected.

ii) The preferred bidder shall be considered separately for each category of transformer above i.e. (A) 33/.415 KV, (B) 11/.415 KV & (C) 33/11 KV.

iii) The bidder shall quote price for each transformer including the cost of mandatory spare as per list attached at the Annexure-13. All the mandatory spare shall be supplied along with the transformer.

Signature of the Bidder with seal

Annexure 5: Declaration by the Bidder

(to be executed on INR 100 non judicial stamp paper and to be duly notarized)

Date:_____

Sub: Tender No. _____

In response to the Tender Document above stated, I/We hereby declare and solemnly swear that our Company/ firm _____ is not banned/blacklisted as on date by any competent court of Law, forum or any State Government or Central Government or their agencies or by any statutory entities or any PSUs.

AND, if at any stage the declaration/statement on oath is found to be false in part or otherwise, then without prejudice to any other action that may be taken, I/We, hereby agree to be treated as a disqualified Bidder for the ongoing Contract.

In addition to the disqualification our concern/entity may be banned/blacklisted.

AND, that I/We, shall have no right whatsoever, to claim for consideration of my/our bid at any stage and the money deposited in the form of EMD shall be liable for forfeiture in full, and the tender, if any to the extent accepted may be cancelled.

Signature of the Deponent

(Authorized signatory of the Bidder with Seal)

Date:

Place:

Annexure 6: Check-list for the Techno-Commercial Bid

(to be enclosed with the Techno-Commercial Bid)

1. Name of the Bidder, Postal address & Registered Office:
2. Type of organization:
3. Contact name & designation of the Authorized Signatory of the Bidder & contact number:
4. Official email, phone, fax:
5. Official website:

Sl. No.	Qualification Requirement	Complied	Documents
1	Bidder's Experience – Documents in support of meeting Technical Criteria and Financial Criteria (Refer Chapter 7 and Clause 8.15.1)		
2	Incorporation related documents (Refer Clause 8.15.1)		
3	Tax related documents (Refer Clause 8.15.1)		
4	Declaration by the Bidder - Annexure 5		
5	Proof of payment of Tender Paper Fee		
6	Proof of payment of EMD/ documents related- to exemption from the same		
7	Power of Attorney - Annexure 3		
8	Signed copy of check list with seal - Annexure 6		
9	Bank details – Annexure 7		
10	Technical Specification Compliance Sheet- Annexure 11		
11	Details of Service Network- Annexure 12		
12	Others		

Date Signature of the Authorized Signatory of the Bidder with Seal

Annexure 7: Mandate Form - on the letterhead of the Bidder

To

Odisha Mining Corporation Limited
OMC House, Post Box No. – 34, Unit 5, Bhubaneswar
Odisha – 751001

Sub: <u>Mandate for payment through electronic mode i.e. EFT/NEFT/RTGS</u>

Dear Sir,

We are hereby giving our consent to get all our payments due from Odisha Mining Corporation Ltd. through electronic mode i.e. EFT/NEFT/RTGS. We also agree to bear all the bank charges payable in this regard.

(Please furnish the information in capital letter)

1. Name of the Bidder
2. Address of the Bidder

PIN Code			
IT PAN			
e-mail ld		Mobile No	
Phone		FAX No	

3. Bank Particulars

Bank Name					
Branch Name					
Branch Place					
Account No.					
Account Type	Saving/Current/Cash Credit		Branch State		
RTGS Enable	Yes/No	NEFT Enabled	Yes/No	Core-Bank Enabled *	Yes/No
Branch Code		MICR Code		IFSC Code	

***** In case of Bidders having Bank account in Union Bank of India

4. Effective Date

We hereby declare that the particulars furnished are correct & complete. If any transaction is delayed or not effected for incomplete/incorrect information/any other technical reasons, we will not hold OMC Ltd. responsible.

Date Signature of the Authorized Signatory of the Bidder with Seal

Certified that the Bank particulars furnished are correct as per our record.

Date: Signature of the Bank with seal

Annexure 8: Format for Security Deposit

BG should be obtained from Nationalised/ Scheduled Bank and should be operable and invokable at its Branch in Bhubaneswar

(To be executed on INR 100/- non-judicial stamp paper)

B.G. No. Dated:

WHEREAS:

(A) …….. (“AGENCY”) and Odisha Mining Corporation having its office at OMC House, Bhubaneswar – 751 001 ("OMC") has issued a Letter of Award (LoA) dated …….. (the "LoA") whereby OMC has agreed to engage the Agency for ……. (the “agreement”).

(B) The LOA requires the AGENCY to furnish Security Deposit </Performance Security> to OMC of a sum of INR _____/- (the "Guarantee Amount") as security for due and faithful performance of its obligations, under and in accordance with the AGREEMENT, for a period of _____ (the “Guarantee Period”).

(C) We, …….. through our branch at ……..(Bhubaneswar) (the "Bank") have agreed to furnish this bank guarantee ("Bank Guarantee") as Performance Security. NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby, unconditionally and irrevocably, guarantees and undertakes to pay to OMC upon occurrence of any failure or default in due and faithful performance of all or any of the AGENCY’s obligations, under and in accordance with the provisions of the agreement, on its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Agency, such sum or sums up to an aggregate sum of the Guarantee Amount as OMC shall claim, without OMC being required to prove or to show grounds or reasons for its demand and/ or for the sum specified therein.

2. A letter from OMC that the AGENCY has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that OMC shall be the sole judge as to whether the AGENCY is in default in due and faithful performance of its obligations under the agreement and its decision that the Agency is in default shall be final, and binding on the Bank, notwithstanding any difference between OMC and the Agency, or any dispute between them pending before any court, tribunal, arbitrator or any other judicial or quasi-judicial body or by the discharge of the Agency for any reason whatsoever.

3. In order to give effect to this Bank Guarantee, OMC shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Agency and/ or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Bank Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for OMC to proceed against the Agency before presenting to the Bank its demand under this Bank Guarantee.

5. OMC shall have the liberty, without affecting in any manner the liability of the Bank under this Bank Guarantee, to vary at any time, the terms and conditions of the agreement or to extend the time or period for the compliance with, fulfilment and/ or performance of all or any of the obligations of the AGENCY contained in the agreement or to postpone for anytime, and from time to time, any of the rights and powers exercisable by OMC against the AGENCY, and either to enforce or forbear from enforcing any of the terms and conditions contained in the agreement and/ or the securities available to OMC, and the Bank shall not be released from its liability and obligation under this Bank Guarantee by any exercise by OMC of the liberty with reference to the matters aforesaid or by reason of time being given to the AGENCY or any other forbearance, indulgence, act or omission on the part of OMC or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would, but for this provision, have the effect of releasing the Bank from its liability and obligation under this Bank Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Bank Guarantee is in addition to, and not in substitution of, any other guarantee or security now or which may hereafter be held by OMC in respect of, or relating to, the agreement or for the fulfillment, compliance and/ or performance of all or any of the obligations of the Agency under the agreement .

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Bank Guarantee is restricted to the Guarantee Amount and this Bank Guarantee will remain in force until the expiry of the Guarantee Period, and unless a demand or claim in writing is made by OMC on the Bank under this Bank Guarantee no later than twelve (12) months from the date of expiry of the Guarantee Period, all rights of OMC under this Bank Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Bank undertakes not to revoke this Bank Guarantee during its validity, except with the previous express consent of OMC in writing, and declares and warrants that it has the power to issue this Bank Guarantee and the undersigned has full powers to do so on behalf of the Bank.

9. Any notice by way of request, demand or otherwise hereunder may be sent by hand/messenger or by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of OMC that the envelope was so posted shall be conclusive.

10. This Bank Guarantee shall come into force with immediate effect and shall remain in force and effect until the expiry of the Guarantee Period (including the claim period) or until it is released earlier by OMC pursuant to the provisions of the agreement.

11. Capitalized terms used herein, unless defined herein, shall have the meaning assigned to them in the agreement.

12. Notwithstanding anything contained herein:
    i) Our liability under this Bank Guarantee shall not exceed INR .....
    ii) The Bank Guarantee shall be valid up to ……. ("Expiry Date including claim period" ……. of the Bank Guarantee).
    iii) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and if you serve upon us a written claim or demand made in the manner prescribed in this Bank Guarantee on or before …… (Claim Period of the Bank Guarantee) at our Branch at _____Bhubaneswar.
    iv) After claim period all your rights under this Bank Guarantee will be forfeited and we shall be relived and discharged from all liabilities thereunder, irrespective of whether the original has been returned to us or not.
13. The Bank Guarantee is issued in paper form and Advice transmitted through SFMS with required details to the beneficiary's advising bank (UNION BANK OF INDIA, OMC CAMPUS BRANCH, BHUBANESWAR, IFSC Code UBIN0810592)

Signed and Delivered by _____ Bank By the hand of Mr./Ms. _____, its _____ and authorized official.

(Signature of the Authorized Signatory) (Official Seal)

NOTE:

(i) The Bank Guarantee should contain the name, designation and code number of the officer(s) signing the Bank Guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing Branch.

For _____ [Indicate name of Bank]

Signature…….

Full Name…….

Designation……

Power of Attorney No…….

Date…….

Seal of the Bank……..

WITNESS: (SIGNATURE WITH NAME AND ADDRESS)

(1)

Signature……..

Full Name……..

(2)

Signature……..

Full Name……..

Annexure 9: Rate of GST

The bidders are required to provide the description of activities and applicable GST in the below format.

To be uploaded in the financial packet.

Sl. No	Description	HSN Code	Rate of GST in %
Category-A (33/.415 KV)			
1	Supply of 500 KVA, 33/.415 KV Transformer as per Sl.No.1 of table at Clause-6.1 Bid Document.		**This GST format is sample only. The rate of GST in Percentage to be quoted as format available in e-procurement portal against this tender.**
2	Supply of 1000 KVA, 33/.415 KV Transformer as per Sl.No.2 of table at Clause-6.1 Bid Document.		
Category-B (11/.415 KV)		**HSN Code**	**Rate of GST in %**
1	Supply of 630 KVA, 11/.415 KV Transformer as per Sl.No.3,4 of table at Clause-6.1 Bid Document.		**This GST format is sample only. The rate of GST in Percentage to be quoted as format available in e-procurement portal against this tender.**
2	Supply of 1000 KVA, 11/.415 KV Transformer as per Sl.No.5,6 of table at Clause-6.1 Bid Document.		
3	Supply of 500 KVA, 11/.415 KV Transformer as per Sl.No.8 of table at Clause-6.1 Bid Document.		
4	Supply of 500 KVA, 11/.415 KV Transformer as per Sl.No.9 of table at Clause-6.1 Bid Document.		
5	Supply of 500 KVA, 11/.415 KV Transformer as per Sl.No.10 of table at Clause-6.1 Bid Document.		
6	Supply of 500 KVA, 11/.415 KV Transformer as per Sl.No.11 of table at Clause-6.1 Bid Document.		
Category-C (33/11 KV)		**HSN Code**	**Rate of GST in %**
1	Supply of 3.15 MVA, 33/11 KV Transformer as per Sl.No.7 of table at Clause-6.1 Bid Document.		**This GST format is sample only. The rate of GST in Percentage to be quoted as format available in e-procurement portal against this tender.**

Signature Seal

Annexure 10: Format of Bidder Information

Sl.No	Description	Details
1	Name of the bidder	
2	Address for communication	
3	Contact Details	
4	PAN	
5	GSTIN	
6	Experience in Supply of equipment • Number of Transformers supplied in last five years	
7	Turnover (FY 20-21)	
8	Turnover (FY 21-22)	
9	Turnover (FY 22-23)	
10	Average turnover of 3 years (FY 20-21, FY21-22 & FY22-23)	

Annexure 11: Technical Specification Compliance

1) **1 No. 500 KVA, 33/.415 KV Transformer for South Kaliapani, Jajpur**

Sl No	Description/Specification	OMC Requirement	Bidder's Confirmation (Yes/No)	If No, Specify the Details	Remark
1	**General Specification**				
	Normal continuous rating (kVA)	500 KVA			
	Service & Duty	Continuous			
	Type	Core Type- Oil Immersed			
	Location	Outdoor Type			
	Relevant to Standard	IS 2026			
	Type of Cooling	ONAN			
	Wound	Copper Double Wound			
2	**System Particulars**				
	-Nominal ratio of Transformation	33/0.415 KV			
	Rated Frequency	50			
	No. Of phases	3			
	Highest System Voltage	36kV			
	Voltage Variation	+/- 5%			
	Frequency Variation	+/- 3%			
	Combined Voltage & Frequency Variation	+/- 5%			
	Rated Current Ratio	8.75/666.67 Amp			
	Overload Capacity	As per IS:6600			
	Bureau of Energy Efficiency Level	2			
3	**Phase Connections**				
	a) HV Winding	Delta			
	b) LV Winding	Star			
	c) Vector group reference no. & connection symbol	Dyn11			
4	**Maximum temperature rises above ambient temperature**				

	i) oil by thermometer at full ONAN rating	40 °C			
	ii) winding by resistance at full ONAN rating (°C)	45 °C			
	iii) By hotspot temperature indicator	116 °C			
	iv) Ambient	50 °C			
5	**Temperature gradient between windings and oil**	As per bidder			
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076			
7	**Losses & Others**				
	A) NO LOAD LOSSES:				
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	iii) No Load losses at 110% of rated voltage	As per bidder			
	B) LOAD LOSSES:				
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	As per bidder			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	C) TOTAL LOSSES:				
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	2000W (Maximum)			
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	5750W (Maximum)			
	D) No Load Current Approx	1.5% of Full Load Current			

	E) Regulation at full load on unity Power Factor	By Bidder			
	F) Regulation at full load on 0.8 Power Factor	By Bidder			
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	As per bidder			
	H) Reactance voltage drop expressed as percent of rated winding MVA	As per bidder			
	I) Impedance voltage at normal & 75 °C temp. Expressed as percentage of rated voltage	5.00% +/-10%			
	J) Permissible Over Loading	As per IEC 60076-7			
8	**Efficiency:**				
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	98.97 By Bidder			
	iii) 1/2 Full Load	99.16 By Bidder			
	iv) 1/4 th Full Load	99.18 By Bidder			
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.				
	i) Full Load	98.42 By Bidder			
	ii) 3/4 th Full Load	98.71 By Bidder			
	iii) 1/2 Full Load	98.95 By Bidder			
	iv) 1/4 th Full Load	98.98 By Bidder			
9	**Terminal arrangement**				
	a) HV Winding	Outdoor Type Bushing			
	b) LV Winding	Cable Box with Bushing			

	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.			
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coulomb	As per IS 2026			
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)			
12	**Details of Core:**				
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type			
	b) Type of core joints between core limb and yoke	Mitered			
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)			
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)			
	e) Core Lamination:				
	Material and grade	Carlit-H1B			
	Thickness	As per bidder			
	f) Allowable over fluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%			
13	**Details of Windings:**				
	a) Type of winding	HV Winding- Disc/ Crossover			
		LV Winding- Spiral/ Helical			
	b) Material of the winding conductor	Electrolytic Copper			

	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)				
	Conductor Area (Sqmm) (For HV & LV)	As per bidder			
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)			
	d) Insulating material for conductor	Pressboard and Kraft Paper			
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper			
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.			
	g) No. of Coils per Limb (For HV & LV)	As per bidder			
	h) Volt per Coil (For HV & LV)	As per bidder			
	i) No. of Turns per Coil (For HV & LV)	As per bidder			
	j) Volts per Turn (For HV & LV)	As per bidder			
	k) Insulation level for Windings	HV & LV			
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	170 & NA			
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3			
	l) Insulation Class on Winding	Class-A			
	m) Fault Current at LV Terminals with duration	As per bidder			
14	**Clearances**				

	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder			
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder			
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder			
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder			
15	**Bushings**				
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026			
	b) Type of Bushings	Porcelain			
	c) Rated Voltage	As per Requirement			
	d) Minimum Creepage Distance	31 mm/KV			
	e) Class of Bushings (HV & LV)	52.5kV & 1.1kV			
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder			
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder			
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)			
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing			
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	31.5 kA & Duration to be specified by Vendor during Bidding.			
16	**Particulars of Tap**				
	i) Type & Make	Off Load Type			
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%			

	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap			
	iv) Voltage of each Step	825 V			
	v) Whether provided on HV or LV side	HV			
	vi) Whether a Tap PositionIndicator provided	Yes			
17	**Clearance in Air**	As per CBIP			
18	**Details of Tank**				
	a) Type of Tank and size L x B x H	As per bidder			
	b) Appropriate thickness of sheet				
	Sides	5 mm			
	Bottom	8 mm			
	Cover	8 mm			
	Thickness of Radiator (Pipes & Sheets)	1.2 mm			
	c) Provision of Explosion Vent	Yes			
	d) Provision of Drain Valve	Yes			
19	**Conservator:**				
	a) Thickness of sheet	2.5 mm			
	b) Size	As per bidder			
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer			
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer			
	e) Provision of Oil Level Gauge (Prismatic)	Yes			
	f) Provision of Dehydrating Breather	Yes			
	Dehydrating agent	Silica Gel			
	Applicable Standard	IS 3401			
	Minimum Quantity of Silica Gel Required	5 Kg			
	Design of Breather	Such that Silica Gel should be easily visible from a distance.			

	Provision of Oil Cap for Breather	Yes			
	g) Provision of Oil Filling Nipple with Cap	Yes			
	h) Power required by heaters, if provided (kW)	NA			
	i) Conservator Lifting Lug	2 Nos.			
	j) Locking Box Unit	4 Nos.			
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes			
20	**Radiator**				
	i) Overall dimensions, LxBxH (mm)	As per bidder			
	ii) Total weight with oil (kg)	As per bidder			
	iii) Total weight without oil (kg)	As per bidder			
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm			
	v) Types of Mounting	As per bidder			
	vi) Vacuum withstand capability	As per bidder			
	vii) No. of Radiator Sets	As per bidder			
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder			
21	**Temperature Indicators**				
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch			
	ii) Winding Temperature Indicator (WTI) with	1 Set with Auxiliary Switch			
	two Auxiliary Switches				
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included			
22	**Approximate overall dimension of Transformer in mm**				
	i) Length	By Bidder			

	ii) Breadth	By Bidder			
	iii) Height	By Bidder			
	iv) Wight in Kgs				
	Core & winding	By Bidder			
	Tank, Fittings & Accessories	By Bidder			
	Oil in Kgs	By Bidder			
	Oil in Ltrs.	By Bidder			
	Total Weight in Kgs.	By Bidder			
23	**Marshalling Kiosk**				
	i) Make & Type	By Bidder			
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder			
24	**Characteristics of insulating oil to be used**	As per IS 335			
	i) Density in gms/cu. Cm				
	ii) Kinematic viscosity in cst				
	iii) Interfacial tension at 27 °C in N/M				
	iv) Flash point in °C				
	v) Pour point in °C				
	vi) Acidity (Neutralisation/Value)				
	vii) Corrosive Sulphur in %				
	viii) Electric strength (Breakdown voltage)				
	ix) Dielectric dissipation factor (tan delta) at 90 °C				
	x) Saponification value in mg of KOH/gm				
	xi) Water content in ppm				
	xii) Specific resistance				
	a. At 90 °C ohm/cm				
	b. At 27 °C ohm/cm				
	xiii) N-dm Analysis				
	a. CA %				
	b. CN %				
	c. CP %				
	xiv) Oxidation stability				
	a. Neutralisation value after oxidation				

	b. Total sludge after oxidation				
	xv) Ageing characteristic				
	a. Resistivity				
	A. At 27 °C				
	B. At 90 °C				
	b. Tan Delta at 90 °C				
	c. Total Acidity				
	d. Sludge content by weight				
	xvi) Permittivity at 60 °C				
	xvii) Specific heat at 60 °C				
	xviii) Thermal conductivity °C				
	xix) Mean coefficient of expansion				
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5			
26	Rating & Diagram Plate				
27	Bidirectional Flanged Rollers	4 Nos.			
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)			
29	Jacking Pads	Required			
30	Inspection Cover	Required			
31	Thermometer Pocket for WTI & OTI	Required			
32	Oil Filling Hole with Cover	1 No.			
33	Top Oil Filter Valve	1 No.			
34	Bottom oil Filter cum Drain Valve	1 No.			
35	Type Test Report of the offered transformer is required & Type Test Report to be attached along with Technical Bid.	Required			
36	The Transformer Testing for Routine & Acceptance Test shall be carried out at NABL Accredited Laboratory only.	Required			

37	Details of the NABL Testing Lab to be submitted along with the Bid.	Required			
38	Foundation Drawing	As per bidder To be submitted in the event of ordering witin 1 month of ordering.			
39	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed			

2) **2 Nos. 1000 KVA, 33/.415 KV Transformer for COBP, South Kaliapani**

Sl No	Description/Specification	OMC Requirement	Bidder's Confirmation (Yes/No)	If No, Specify the Details	Remark
1	**General Specification**				
	Normal continuous rating (kVA)	1000 KVA			
	Service & Duty	Continuous			
	Type	Core Type- Oil Immersed			
	Location	Outdoor Type			
	Relevant to Standard	IS 2026			
	Type of Cooling	ONAN			
	Wound	Copper Double Wound			
2	**System Particulars**				
	-Nominal ratio of Transformation	33/0.415 KV			
	Rated Frequency	50			
	No. Of phases	3			
	Highest System Voltage	36 kV			
	Voltage Variation	+/- 5%			
	Frequency Variation	+/- 3%			
	Combined Voltage & Frequency Variation	+/- 5%			

	Rated Current Ratio	17.50/1333.34 Amp			
	Overload Capacity	As per IS:6600			
	Bureau of Energy Efficiency Level	2			
3	**Phase Connections**				
	a) HV Winding	Delta			
	b) LV Winding	Star			
	c) Vector group reference no. & connection symbol	Dyn11			
4	**Maximum temperature rises above ambient temperature**				
	i) of oil by thermometer				
	a) at full ONAN rating	40 deg C			
	ii) of winding by resistance				
	a) at full ONAN rating (oC)	45 deg C			
	iii) By hotspot temperature indicator	116 deg C			
	iv) Ambient	50 deg C			
5	**Temperature gradient between windings and oil**	To be Provided by Vendor during Bidding			
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076			
7	**Losses & Others**				
	A) NO LOAD LOSSES:				
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 deg C	To be Provided by Vendor during Bidding			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	iii) No Load losses at 110% of rated voltage	To be Provided by Vendor during Bidding			
	B) LOAD LOSSES:				
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 deg C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bidding			

	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	C) TOTAL LOSSES:				
	i) Guaranteed Total Losses at 75 deg C temperature at 50% of Load	5000 W (Maximum)			
	ii) Guaranteed Total Losses at 75 deg C temperature at 100% of Load	12000 W (Maximum)			
	D) No Load Current Approx	1.5% of Full Load Current			
	E) Regulation at full load on unity Power Factor	By Bidder			
	F) Regulation at full load on 0.8 Power Factor	By Bidder			
	G) Resistance voltage drop at 75 deg C winding temp. Expressed as percent of rated voltage	To be Provided by Vendor during Bidding			
	H) Reactance voltage drop expressed as percent of rated winding MVA	To be Provided by Vendor during Bidding			
	I) Impedance volatge at normal & 75 deg C temp. Expressed as percentage of rated voltage	5.00% +/-10%			
	J) Permissible Over Loading	As per IEC 60076-7			
8	**Efficiency:**				
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of Unity PF.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			

	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of 0.8PF Lagging.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	by Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
9	**Terminal arrangement**				
	a) HV Winding	Outdoor Type Bushing			
	b) LV Winding	Cable Box with Bushing			
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.			
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026			
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)			
12	**Details of Core:**				
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type			
	b) Type of core joints between core limb and yoke	Mitered			
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)			
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)			
	e) Core Lamination:				
	Material and grade	Carlit-H1B			
	Thickness	To be Provided by Vendor during Bidding			

	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%			
13	**Details of Windings:**				
	a) Type of winding	HV Winding- Disc/ Crossover			
		LV Winding- Spiral/ Helical			
	b) Material of the winding conductor	Electrolytic Copper			
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)				
	Conductor Area (sqmm) (For HV & LV)	To be Provided by Vendor during Bidding			
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)			
	d) Insulating material for conductor	Pressboard and Kraft Paper			
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper			
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.			
	g) No. of Coils per Limb (For HV & LV)	To be Provided by Vendor during Bidding			
	h) Volt per Coil (For HV & LV)	To be Provided by Vendor during Bidding			
	i) No. of Turns per Coil (For HV & LV)	To be Provided by Vendor during Bidding			

	j) Volts per Turn (For HV & LV)	To be Provided by Vendor during Bidding			
	k) Insulation level for Windings	HV & LV			
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	170 & NA			
	Power Frequency Voltage With stand for one minute (kVrms)	33 & 3			
	l) Insulation Class on Winding	Class-A			
	m) Fault Current at LV Terminals with duration	To be Provided by Vendor during Bidding			
14	**Clearances**				
	a) Minimum Clearance distance to earth in air of HV Terminals.	To be Provided by Vendor during Bidding			
	b) Minimum Clearance distance to earth in air of LV Terminals.	To be Provided by Vendor during Bidding			
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	To be Provided by Vendor during Bidding			
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	To be Provided by Vendor during Bidding			
15	**Bushings**				
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026			
	b) Type of Bushings	Porcelain			
	c) Rated Voltage	As per Requirement			
	d) Minimum Creepage Distance	31 mm/KV			
	e) Class of Bushings (HV & LV)	52.5kV & 1.1kV			
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder			

	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder			
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)			
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing			
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	31.5 kA & Duration to be specified by Vendor during Bidding.			
16	**Particulars of Tap**				
	i) Type & Make	Off Load Type			
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%			
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap			
	iv) Voltage of each Step	825 V			
	v) Whether provided on HV or LV side	HV			
	vi) Whether a Tap Position Indicator provided	Yes			
17	**Clearance in Air**	As per CBIP			
18	**Details of Tank**				
	a) Type of Tank and size L x B x H	To be Provided by Vendor during Bidding			
	b) Appropriate thickness of sheet				
	Sides	5 mm			
	Bottom	8 mm			
	Cover	8 mm			
	Thickness of Radiator (Pipes & Sheets)	1.2 mm			
	c) Provision of Exploision Vent	Yes			
	d) Provision of Drain Valve	Yes			
19	**Conservator:**				
	a) Thickness of sheet	2.5 mm			

	b) Size	To be Provided by Vendor during Bidding			
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer			
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer			
	e) Provision of Oil Level Gauge (Prismatic)	Yes			
	f) Provision of Dehydrating Breather	Yes			
	Dehydrating agent	Silica Gel			
	Applicable Standard	IS 3401			
	Minimum Quantity of Silica Gel Required	5 Kg			
	Design of Breather	Such that Silica Gel should be easily visible from a distance.			
	Provision of Oil Cap for Breather	Yes			
	g) Provision of Oil Filling Nipple with Cap	Yes			
	h) Power required by heaters, if provided (kW)	NA			
	i) Conservator Lifting Lug	2 Nos.			
	j) Locking Box Unit	4 Nos.			
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes			
20	**Radiator**				
	i) Overall dimensions, LxBxH (mm)	To be Provided by Vendor during Bidding			
	ii) Total weight with oil (kg)	To be Provided by Vendor during Bidding			
	iii) Total weight without oil (kg)	To be Provided by Vendor during Bidding			
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm			

	v) Types of Mounting	To be Provided by Vendor during Bidding			
	vi) Vacuum withstand capability	To be Provided by Vendor during Bidding			
	vii) No. of Radiator Sets	To be Provided by Vendor during Bidding			
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of setiings etc.) with two Switches	To be Provided by Vendor during Bidding			
21	**Temperature Indicators**				
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxilary Switch			
	ii) Winding Temperature Indicator (WTI) with	1 Set with Auxilary Switch			
	two Auxiliary Switches				
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alaram	To be included			
22	**Approximate overall dimesion of Transformer in mm**				
	i) Length	To be Provided by Vendor during Bidding			
	ii) Breadth	To be Provided by Vendor during Bidding			
	iii) Height	To be Provided by Vendor during Bidding			
	iv) Wight in Kgs	To be Provided by Vendor during Bidding			
	Core & winding	To be Provided by Vendor during Bidding			
	Tank, Fittings & Accessories	To be Provided by Vendor during Bidding			

	Oil in Kgs	To be Provided by Vendor during Bidding			
	Oil in Ltrs.	To be Provided by Vendor during Bidding			
	Total Weight in Kgs.	To be Provided by Vendor during Bidding			
23	**Marshalling Kiosk**				
	i) Make & Type	To be Provided by Vendor during Bidding			
	ii) Details of apparatus proposed to be housed inthe kiosk	To be Provided by Vendor during Bidding			
24	**Characteristics of insulating oil to be used**	As per IS 335			
	i) Density in gms/cu. Cm				
	ii) Kinematic viscosity in cst				
	iii) Interfacial tension at 27 deg C in N/M				
	iv) Flash point in deg C				
	v) Pour point in deg C				
	vi) Acidity (Neutralisation/Value)				
	vii) Corrosive sulphur in %				
	viii) Electric strength (Breakdown voltage)				
	ix) Dielectric dissipation factor (tan delta) at 90 deg C				
	x) Saponification value in mg of KOH/gm				
	xi) Water content in ppm				
	xii) Specific resistance				
	a. At 90 deg C ohm/cm				
	b. At 27 deg C ohm/cm				
	xiii) N-dm Analysis				
	a. CA %				
	b. CN %				
	c. CP %				
	xiv) Oxidation stabilty				

	a. Neutralisation value after oxidation				
	b. Total sludge after oxidation				
	xv) Ageing characteristic				
	a. Resistivity				
	A. At 27 deg C				
	B. At 90 deg C				
	b. Tan Delta at 90 deg C				
	c. Total Acidity				
	d. Sludge content by weight				
	xvi) Permitivity at 60 deg C				
	xvii) Specific heat at 60 deg C				
	xviii) Thermal conductivity at deg C				
	xix) Mean coefficient of expansion				
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5			
26	Rating & Diagram Plate				
27	Bidirectional Flanged Rollers	4 Nos.			
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)			
29	Jacking Pads	Required			
30	Inspection Cover	Required			
31	Thermometer Pocket for WTI & OTI	Required			
32	Oil Filling Hole with Cover	1 No.			
33	Top Oil Filter Valve	1 No.			
34	Bottom oil Filter cum Drain Valve	1 No.			
35	Type Test report of the offered Transformer is required & Type Test Report to be attached along with Technical Bid.	Required			
36	The Transformer Testing for Routine & Acceptance Test shall be carried out at NABL Accredited Laboratory only.	Required			

37	Details of the NABL Testing Lab to be submitted along with the Bid.	Required			
38	Foundation Drawing	To be submitted in the event of ordering within one month of ordering.			
39	System Earthing (HV & LV)	HV-Soildly Earthed & LV-Resistance Earthed			

3) **1 No. 630 KVA, 11/.415 KV Transformer for RO, Barbil, & 1 No. 630 KVA, 11/.415 KV Transformer for Jilling Mines, Keonjhar**

Sl No	Description/Specification	OMC Requirement	Bidder's Confirmation (Yes/No)	If No, Specify the Details	Remark
1	**General Specification**				
	Normal continuous rating (kVA)	630 KVA			
	Service & Duty	Continuous			
	Type	Core Type-Oil Immersed			
	Location	Outdoor Type			
	Relevant to Standard	IS 2026			
	Type of Cooling	ONAN			
	Wound	Copper Double Wound			
2	**System Particulars**				
	Normal ratio of Transformation	11/0.415 KV			

	Rated Frequency	50			
	No. Of phases	3			
	Highest System Voltage	12kV			
	Voltage Variation	+/- 5%			
	Frequency Variation	+/- 3%			
	Combined Voltage & Frequency Variation	+/- 5%			
	Rated Current Ratio	33.06/876.48 Amp			
	Overload Capacity	As per IS:6600			
	Bureau of Energy Efficiency Level	2			
3	**Phase Connections**				
	a) HV Winding	Delta			
	b) LV Winding	Star			
	c) Vector group reference no. & connection symbol	Dyn11			
4	**Maximum temperature rises above ambient temperature**				
	i) oil by thermometer at full ONAN rating	40 °C			
	ii) winding by resistance at full ONAN rating (°C)	45 °C			
	iii) By hotspot temperature indicator	116 °C			
	iv) Ambient	50 °C			
5	**Temperature gradient between windings and oil**	As per bidder			
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076			
7	**Losses & Others**				
	A) NO LOAD LOSSES:				
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	iii) No Load losses at 110% of rated voltage	As per bidder			
	B) LOAD LOSSES:				

	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bid Submission			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	C) TOTAL LOSSES:				
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	1745 W (Maximum)			
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	4850 W (Maximum)			
	D) No Load Current Approx	1.5% of Full Load Current			
	E) Regulation at full load on unity Power Factor	By Bidder			
	F) Regulation at full load on 0.8 Power Factor	By Bidder			
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	By Bidder			
	H) Reactance voltage drop expressed as percent of rated winding MVA	By Bidder			
	I) Impedance voltage at normal & 75 °C temp. Expressed as percentage of rated voltage	4.50% +/- 10%			
	J) Permissible Over Loading	As per IEC 60076-7			
8	**Efficiency:**				
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			

	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
9	**Terminal arrangement**				
	a) HV Winding	Outdoor Type Bushing			
	b) LV Winding	Cable Box with Bushing			
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.			
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026			
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)			
12	**Details of Core:**				
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type			
	b) Type of core joints between core limb and yoke	Mitered			
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)			
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)			

	e) Core Lamination:				
	Material and grade	Carlit-H1B			
	Thickness	As per bidder			
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%			
13	**Details of Windings:**				
	a) Type of winding	HV Winding- Disc/ Crossover			
		LV Winding- Spiral/ Helical			
	b) Material of the winding conductor	Electrolytic Copper			
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)				
	Conductor Area (sqmm) (For HV & LV)	As per bidder			
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)			
	d) Insulating material for conductor	Pressboard and Kraft Paper			
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper			
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of			

		parent conductor.			
	g) No. of Coils per Limb (For HV & LV)	As per bidder			
	h) Volt per Coil (For HV & LV)	As per bidder			
	i) No. of Turns per Coil (For HV & LV)	As per bidder			
	j) Volts per Turn (For HV & LV)	As per bidder			
	k) Insulation level for Windings	HV & LV			
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	75 & NA			
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3			
	l) Insulation Class on Winding	Class-A			
	m) Fault Current at LV Terminals with duration	As per bidder			
14	**Clearances**				
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder			
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder			
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder			
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder			
15	**Bushings**				

	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026			
	b) Type of Bushings	Porcelain			
	c) Rated Voltage	As per Requirement			
	d) Minimum Creepage Distance	31 mm/KV			
	e) Class of Bushings (HV & LV)	17.5kV & 1.1kV			
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder			
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder			
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)			
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing			
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	25kA & Duration to be specified by Vendor during Bidding.			
16	**Particulars of Tap**				
	i) Type & Make	Off Load Type			
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%			
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap			

	iv) Voltage of each Step	275 V			
	v) Whether provided on HV or LV side	HV			
	vi) Whether a Tap Position Indicator provided	Yes			
16	**Clearance in Air**	As per CBIP			
17	**Details of Tank**				
	a) Type of Tank and size L x B x H	As per bidder			
	b) Appropriate thickness of sheet				
	Sides	5 mm			
	Bottom	8 mm			
	Cover	8 mm			
	Thickness of Radiator (Pipes & Sheets)	1.2 mm			
	c) Provision of Explosion Vent	Yes			
	d) Provision of Drain Valve	Yes			
18	**Conservator:**				
	a) Thickness of sheet	2.5 mm			
	b) Size	As per bidder			
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer			
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer			
	e) Provision of Oil Level Gauge (Prismatic)	Yes			
	f) Provision of Dehydrating Breather	Yes			
	Dehydrating agent	Silica Gel			
	Applicable Standard	IS 3401			
	Minimum Quantity of Silica Gel Required	3 Kg			
	Design of Breather	Such that Silica Gel should be easily visible			

		from a distance.			
	Provision of Oil Cap for Breather	Yes			
	g) Provision of Oil Filling Nipple with Cap	Yes			
	h) Power required by heaters, if provided (kW)	NA			
	i) Conservator Lifting Lug	2 Nos.			
	j) Locking Box Unit	4 Nos.			
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes			
19	**Radiator**				
	i) Overall dimensions, LxBxH (mm)	As per bidder			
	ii) Total weight with oil (kg)	As per bidder			
	iii) Total weight without oil (kg)	As per bidder			
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm			
	v) Types of Mounting	As per bidder			
	vi) Vacuum withstand capability	As per bidder			
	vii) No. of Radiator Sets	As per bidder			
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder			
21	**Temperature Indicators**				
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch			
	ii) Winding Temperature Indicator (WTI) with	1 Set with Auxiliary Switch			
	two Auxiliary Switches				
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included			
22	**Approximate overall dimension of Transformer in mm**				
	i) Length	By Bidder			
	ii) Breadth	By Bidder			

	iii) Height	By Bidder			
	iv) Wight in Kgs				
	Core & winding	By Bidder			
	Tank, Fittings & Accessories	By Bidder			
	Oil in Kgs	By Bidder			
	Oil in Ltrs.	By Bidder			
	Total Weight in Kgs.	By Bidder			
23	**Marshalling Kiosk**				
	i) Make & Type	By Bidder			
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder			
24	**Characteristics of insulating oil to be used**	As per IS 335			
	i) Density in gms/cu. Cm				
	ii) Kinematic viscosity in cst				
	iii) Interfacial tension at 27 °C in N/M				
	iv) Flash point in °C				
	v) Pour point in °C				
	vi) Acidity (Neutralisation/Value)				
	vii) Corrosive Sulphur in %				
	viii) Electric strength (Breakdown voltage)				
	ix) Dielectric dissipation factor (tan delta) at 90 °C				
	x) Saponification value in mg of KOH/gm				
	xi) Water content in ppm				
	xii) Specific resistance				
	a. At 90 °C ohm/cm				
	b. At 27 °C ohm/cm				
	xiii) N-dm Analysis				
	a. CA %				
	b. CN %				
	c. CP %				
	xiv) Oxidation stability				
	a. Neutralisation value after oxidation				
	b. Total sludge after oxidation				

	xv) Ageing characteristic				
	a. Resistivity				
	A. At 27 °C				
	B. At 90 °C				
	b. Tan Delta at 90 °C				
	c. Total Acidity				
	d. Sludge content by weight				
	xvi) permittivity at 60 °C				
	xvii) Specific heat at 60 °C				
	xviii) Thermal conductivity at °C				
	xix) Mean coefficient of expansion				
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5			
26	Rating & Diagram Plate				
27	Bidirectional Flanged Rollers	4 Nos.			
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)			
29	Jacking Pads	Required			
30	Inspection Cover	Required			
31	Thermometer Pocket for WTI & OTI	Required			
32	Oil Filling Hole with Cover	1 No.			
33	Top Oil Filter Valve	1 No.			
34	Bottom oil Filter cum Drain Valve	1 No.			
35	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required			
36	The Transformer Testing for Routine & Acceptance Test shall be carried out at NABL Accredited Laboratory only.	Required			

37	Details of the NABL Testing Lab to be submitted along with the Bid.	Required			
38	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering			
39	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed			

4) **1 No. 1000 KVA, 11/.415 KV Transformer for Bangur & 1 No. 1000 KVA, 11/.415 KV Transformer for Khandadhar Mines, Sundergarh.**

Sl No	Description/Specification	OMC Requirement	Bidder's Confirmation (Yes/No)	If No, Specify the Details	Remark
1	**General Specification**				
	Normal continuous rating (kVA)	1000 KVA			
	Service & Duty	Continuous			
	Type	Core Type- Oil Immersed			
	Location	Outdoor Type			
	Relevant to Standard	IS 2026			
	Type of Cooling	ONAN			
	Wound	Copper Double Wound			
2	**System Particulars**				
	Normal ratio of Transformation	11/0.415 KV			

	Rated Frequency	50			
	No. Of phases	3			
	Highest System Voltage	12kV			
	Voltage Variation	+/- 5%			
	Frequency Variation	+/- 3%			
	Combined Voltage & Frequency Variation	+/- 5%			
	Rated Current Ratio	52.49/1333.37 Amp			
	Overload Capacity	As per IS:6600			
	Bureau of Energy Efficiency Level	2			
3	**Phase Connections**				
	a) HV Winding	Delta			
	b) LV Winding	Star			
	c) Vector group reference no. & connection symbol	Dyn11			
4	**Maximum temperature rises above ambient temperature**				
	i) oil by thermometer at full ONAN rating	40 °C			
	ii) winding by resistance at full ONAN rating (°C)	45 °C			
	iii) By hotspot temperature indicator	116 °C			
	iv) Ambient	50 °C			
5	**Temperature gradient between windings and oil**	As per bidder			
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076			
7	**Losses & Others**				
	A) NO LOAD LOSSES:				
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	iii) No Load losses at 110% of rated voltage	As per bidder			
	B) LOAD LOSSES:				

	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bid Submission			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	C) TOTAL LOSSES:				
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	2620W (Maximum)			
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	7000W (Maximum)			
	D) No Load Current Approx	1.5% of Full Load Current			
	E) Regulation at full load on unity Power Factor	By Bidder			
	F) Regulation at full load on 0.8 Power Factor	By Bidder			
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	By Bidder			
	H) Reactance voltage drop expressed as percent of rated winding MVA	By Bidder			
	I) Impedance volatge at normal & 75 °C temp. Expressed as percentage of rated voltage	5.50% +/-10%			
	J) Permissible Over Loading	As per IEC 60076-7			
8	**Efficiency:**				
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			

	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
9	**Terminal arrangement**				
	a) HV Winding	Outdoor Type Bushing			
	b) LV Winding	Cable Box with Bushing			
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.			
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026			
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)			
12	**Details of Core:**				
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type			
	b) Type of core joints between core limb and yoke	Mitered			
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)			
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)			
	e) Core Lamination:				
	Material and grade	Carlit-H1B			
	Thickness	As per bidder			

	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%			
13	**Details of Windings:**				
	a) Type of winding	HV Winding- Disc/ Crossover			
		LV Winding- Spiral/ Helical			
	b) Material of the winding conductor	Electrolytic Copper			
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)				
	Conductor Area (sqmm) (For HV & LV)	As per bidder			
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)			
	d) Insulating material for conductor	Pressboard and Kraft Paper			
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper			
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.			
	g) No. of Coils per Limb (For HV & LV)	As per bidder			
	h) Volt per Coil (For HV & LV)	As per bidder			

	i) No. of Turns per Coil (For HV & LV)	As per bidder			
	j) Volts per Turn (For HV & LV)	As per bidder			
	k) Insulation level for Windings	HV & LV			
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	75 & NA			
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3			
	l) Insulation Class on Winding	Class-A			
	m) Fault Current at LV Terminals with duration	As per bidder			
14	**Clearances**				
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder			
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder			
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder			
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder			
15	**Bushings**				
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026			
	b) Type of Bushings	Porcelain			
	c) Rated Voltage	As per Requirement			
	d) Minimum Creepage Distance	31 mm/KV			
	e) Class of Bushings (HV & LV)	17.5kV & 1.1kV			
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder			

	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder			
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)			
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing			
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	25kA & Duration to be specified by Vendor during Bidding.			
16	**Particulars of Tap**				
	i) Type & Make	Off Load Type			
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%			
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap			
	iv) Voltage of each Step	275 V			
	v) Whether provided on HV or LV side	HV			
	vi) Whether a Tap Position Indicator provided	Yes			
16	**Clearance in Air**	As per CBIP			
17	**Details of Tank**				
	a) Type of Tank and size L x B x H	As per bidder			
	b) Appropriate thickness of sheet				
	Sides	5 mm			
	Bottom	8 mm			
	Cover	8 mm			
	Thickness of Radiator (Pipes & Sheets)	1.2 mm			

	c) Provision of Explosion Vent	Yes			
	d) Provision of Drain Valve	Yes			
18	**Conservator:**				
	a) Thickness of sheet	2.5 mm			
	b) Size	As per bidder			
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer			
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer			
	e) Provision of Oil Level Gauge (Prismatic)	Yes			
	f) Provision of Dehydrating Breather	Yes			
	Dehydrating agent	Silica Gel			
	Applicable Standard	IS 3401			
	Minimum Quantity of Silica Gel Required	5 Kg			
	Design of Breather	Such that Silica Gel should be easily visible from a distance.			
	Provision of Oil Cap for Breather	Yes			
	g) Provision of Oil Filling Nipple with Cap	Yes			
	h) Power required by heaters, if provided (kW)	NA			
	i) Conservator Lifting Lug	2 Nos.			
	j) Locking Box Unit	4 Nos.			
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes			
19	**Radiator**				
	i) Overall dimensions, LxBxH (mm)	As per bidder			
	ii) Total weight with oil (kg)	As per bidder			

	iii) Total weight without oil (kg)	As per bidder			
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm			
	v) Types of Mounting	As per bidder			
	vi) Vacuum withstand capability	As per bidder			
	vii) No. of Radiator Sets	As per bidder			
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder			
21	**Temperature Indicators**				
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch			
	ii) Winding Temperature Indicator (WTI) with	1 Set with Auxiliary Switch			
	two Auxiliary Switches				
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included			
22	**Approximate overall dimension of Transformer in mm**				
	i) Length	By Bidder			
	ii) Breadth	By Bidder			
	iii) Height	By Bidder			
	iv) Wight in Kgs				
	Core & winding	By Bidder			
	Tank, Fittings & Accessories	By Bidder			
	Oil in Kgs	By Bidder			
	Oil in Ltrs.	By Bidder			
	Total Weight in Kgs.	By Bidder			
23	**Marshalling Kiosk**				
	i) Make & Type	By Bidder			
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder			
24	**Characteristics of insulating oil to be used**	As per IS 335			
	i) Density in gms/cu. Cm				
	ii) Kinematic viscosity in cst				
	iii) Interfacial tension at 27 °C in N/M				

	iv) Flash point in °C				
	v) Pour point in °C				
	vi) Acidity (Neutralisation/Value)				
	vii) Corrosive Sulphur in %				
	viii) Electric strength (Breakdown voltage)				
	ix) Dielectric dissipation factor (tan delta) at 90 °C				
	x) Saponification value in mg of KOH/gm				
	xi) Water content in ppm				
	xii) Specific resistance				
	a. At 90 °C ohm/cm				
	b. At 27 °C ohm/cm				
	xiii) N-dm Analysis				
	a. CA %				
	b. CN %				
	c. CP %				
	xiv) Oxidation stability				
	a. Neutralisation value after oxidation				
	b. Total sludge after oxidation				
	xv) Ageing characteristic				
	a. Resistivity				
	A. At 27 °C				
	B. At 90 °C				
	b. Tan Delta at 90 °C				
	c. Total Acidity				
	d. Sludge content by weight				
	xvi) permittivity at 60 °C				
	xvii) Specific heat at 60 °C				
	xviii) Thermal conductivity at °C				
	xix) Mean coefficient of expansion				
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5			
26	Rating & Diagram Plate				
27	Bidirectional Flanged Rollers	4 Nos.			

28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)			
29	Jacking Pads	Required			
30	Inspection Cover	Required			
31	Thermometer Pocket for WTI & OTI	Required			
32	Oil Filling Hole with Cover	1 No.			
33	Top Oil Filter Valve	1 No.			
34	Bottom oil Filter cum Drain Valve	1 No.			
35	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required			
36	The Transformer Testing for Routine & Acceptance Test shall be carried out at NABL Accredited Laboratory only.	Required			
37	Details of the NABL Testing Lab to be submitted along with the Bid.	Required			
38	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering			
39	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed			

5) **1 No. 3.15 MVA, 33/11 KV Transformer for Jilling Mines, Barbil Region**

Sl No	Description/Specification	OMC Requirement	Bidder's Confirmation (Yes/No)	If No, Specify the Details	Remark
1	**Normal Continuous Rating (MVA)**	3.15 MVA			
2	**Normal Ratio of Transformation**	33/11KV			
	Maximum System Voltage Ratio (HV/LV)	36/12KV			
	Rated Frequency	50 (-5% to +3%)			
	No. of phases	3			
	Type of Transformer	Outdoor Type			
	Bureau of Energy Efficiency Level	2			
3	**Phase Connections**				
	a) HV Winding	Delta			
	b) LV Winding	Star			
	c) Vector group reference no. & connection symbol	Dyn11			
4	**Maximum temperature rises above ambient temperature**				
	i) of oil by thermometer				
	a) at full ONAN rating	40 deg C			
	ii) of winding by resistance				
	a) at full ONAN rating (oC)	45 deg C			
	iii) By hotspot temperature indicator	116 deg C			
	iv) Ambient	50 deg C			
5	**Temperature gradient between windings and oil**	To be Provided by Vendor during Bidding			
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076			
7	**A) No Load Losses:**				
	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 deg C	To be Provided by Vendor during Bidding			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			

	iii) No Load losses at 110% of rated voltage	To be Provided by Vendor during Bidding			
	B) LOAD LOSSES:				
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 deg C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bidding			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
8	i) Guaranteed Total Losses at 75 deg C temperature at 50% of Load	9.0 KW (Maximum)			
	ii) Guaranteed Total Losses at 75 deg C temperature at 100% of Load	17.0 KW (Maximum)			
9	**Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of Unity PF.**				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
10	**Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 deg C average temp. For outputs of 0.8PF Lagging.**				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
11	Resistance voltage drop at 75 deg C winding temp. Expressed as percent of rated voltage	By Bidder			
12	Reactance voltage drop expressed as percent of rated winding MVA	By Bidder			
13	Impedance voltage at normal & 75 deg C temp. Expressed as percentage of rated voltage	6.25% + 10%, No negative tolerance is allowed			

14	Regulation at full load on unity Power Factor	By Bidder			
15	Regulation at full load on 0.8 Power Factor	By Bidder			
16	Permissible Over Loading	As per IEC 60076-7			
17	**Terminal arrangement**				
	a) HV Winding	Outdoor Type Bushing			
	b) LV Winding	Outdoor Type Bushing			
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.			
18	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026			
19	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)			
20	**Details of Core:**				
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type			
	b) Type of core joints between core limb and yoke	Metered			
	c) Maximum flux density at rated voltage and frequency at principal tap (Tesla)	1.6 Tesla (max)			
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)			
	e) Core Lamination:				
	Material and grade	Carlit-H1B			
	Thickness	To be Provided by Vendor during Bidding			
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full	12.50%			

	load condition and not getting saturated.				
21	**Details of Windings:**				
	a) Type of winding	Helical/ Disc			
	b) Material of the winding conductor	Electrolytic Copper			
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)				
	Conductor Area (sqmm) (For HV & LV)	To be Provided by Vendor during Bidding			
	Current density (A/sq cm) at normal tap (For HV & LV)	2.5 A/Sq mm (Max)			
	Polarization Index	Greater than or equal to 1.5, but not less than or equal to 5			
	d) Insulating material for conductor	Pressboard and Kraft Paper			
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper			
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.			
	g) No. of Coils per Limb (For HV & LV)	To be Provided by Vendor during Bidding			
	h) Volt per Coil (For HV & LV)	To be Provided by Vendor during Bidding			

	i) No. of Turns per Coil (For HV & LV)	To be Provided by Vendor during Bidding			
	j) Volts per Turn (For HV & LV)	To be Provided by Vendor during Bidding			
	k) Insulation level for Windings	HV & LV			
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	170 & 75			
	Power Frequency Voltage With stand (kVrms)	70 & 28			
	l) Insulation Class on Winding	Class-A			
	m) Insulation Thickness of Winding Conductor (HV & LV)	By Bidder			
	n) Fault Current at LV Terminals with duration	By Bidder			
22	**Clearances**				
	a) Minimum Clearance distance between HV Coil to inside of the Tank on the Longer side.	By Bidder			
	b) Minimum Clearance distance between HV Coil to inside of the tank on the Width side. (LV Side)	By Bidder			
	c) Minimum Clearance between HV Coil to inside of the tank on the width side (HV side to accommodate Delta & Tapping leads).	By Bidder			
	d) Minimum Gap between Core Yoke to Tank bottom	By Bidder			
	e) Minimum Yoke Insulation at top and bottom	By Bidder			
	f) Minimum Phase to Phase clearance between HV limbs	By Bidder			
	g) Minimum Radial Clearance between LV & HV Coil	By Bidder			
	h) Minimum Radial Clearance between Core to LV Coil	By Bidder			
23	**Bushings**				
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026			
	b) Type of Bushings	Porcelain			

	c) Rated Voltage	As per Requirement			
	d) Minimum Creepage Distance	31 mm/KV			
	e) Class of Bushings (HV & LV)	52.5kV & 17.5 kV			
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder			
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder			
	h) Provision of Arching Horn	To be provided on HV & LV side of Bushing (2 Sets per Phase)			
	i) Provision of Lighting Arrester	To be provided on LV side of Bushing			
	j) External short circuit at bushing terminal withstand capacity (kA) .	31.5 kA for HV side & 26.2 kA for LV side			
24	**Particulars of Tap**				
	i) Type & Make	Off Load Type			
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%			
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap			
	iv) Whether provided on HV or LV side	HV			
	v) Whether a Tap Positioning Indicator provided	Required			
25	**Clearance in Air**	As per CBIP			
26	**Details of Tank**				
	a) Type of Tank and size L x B x H	To be Provided by Vendor during Bidding			
	b) Appropriate thickness of sheet				
	Sides	5 mm			
	Bottom	8 mm			
	Cover	8 mm			

	Thickness of Radiator (Pipes & Sheets)	1.2 mm			
	Provision of Explosion Vent	Yes			
	Provision of Drain Valve	Yes			
27	**Conservator:**				
	a) Thickness of sheet	2.5 mm			
	b) Size	To be Provided by Vendor during Bidding			
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer			
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer			
	e) Provision of Oil Level Gauge (Prismatic)	Yes			
	f) Provision of Dehydrating Breather	Yes			
	Dehydrating agent	Silica Gel			
	Applicable Standard	IS 3401			
	Minimum Quantity of Silica Gel Required	10 kg			
	Design of Breather	Such that Silica Gel should be easily visible from a distance.			
	Provision of Oil Cap for Breather	Yes			
	g) Provision of Oil Filling Nipple with Cap	Yes			
	h) Power required by heaters, if provided (kW)	NA			
	i) Conservator Lifting Lug	2 Nos.			
	j) Locking Box Unit	4 Nos.			
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes			
	l) Type of Oil Preservation	Air-cell type with filling valve set & dry air one bottle.			
28	**Radiator**				

	i) Overall dimensions, LxBxH (mm)	To be Provided by Vendor during Bidding			
	ii) Total weight with oil (kg)	To be Provided by Vendor during Bidding			
	iii) Total weight without oil (kg)	To be Provided by Vendor during Bidding			
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm			
	v) Types of Mounting	To be Provided by Vendor during Bidding			
	vi) Vacuum withstand capability	To be Provided by Vendor during Bidding			
	vii) No. of Radiator Sets	To be Provided by Vendor during Bidding			
29	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches.	To be Provided by Vendor during Bidding			
30	**Temperature Indicators**				
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches Alarm & Trip with adequate length capillary tube	1 Nos			
	ii) Winding Temperature Indicator (WTI) with two Auxiliary Switches Alarm & Trip with adequate length capillary tube	1 Nos			
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	Required			
31	**Approximate overall dimension of Transformer in mm**				
	i) Length	To be Provided by Vendor during Bidding			

	ii) Breadth	To be Provided by Vendor during Bidding			
	iii) Height	To be Provided by Vendor during Bidding			
	iv) Wight in Kgs				
	Core & winding	To be Provided by Vendor during Bidding			
	Tank, Fittings & Accessories	To be Provided by Vendor during Bidding			
	Oil in Kgs	To be Provided by Vendor during Bidding			
	Oil in Ltrs.	To be Provided by Vendor during Bidding			
	Total Weight in Kgs.	To be Provided by Vendor during Bidding			
32	**Marshalling Kiosk**				
	i) Make & Type	To be Provided by Vendor during Bidding			
	ii) Details of apparatus proposed to be housed in the kiosk	To be Provided by Vendor during Bidding			
33	**Characteristics of insulating oil to be used**	As per IS 335			
	i) Density in gms/cu. Cm				
	ii) Kinematic viscosity in cst				
	iii) Interfacial tension at 27 deg C in N/M				
	iv) Flash point in deg C				
	v) Pour point in deg C				
	vi) Acidity (Neutralisation/Value)				
	vii) Corrosive sulphur in %				
	viii) Electric strength (Breakdown voltage)				

	ix) Dielectric dissipation factor (tan delta) at 90 deg C				
	x) Saponification value in mg of KOH/gm				
	xi) Water content in ppm				
	xii) Specific resistance				
	a. At 90 deg C ohm/cm				
	b. At 27 deg C ohm/cm				
	xiii) N-dm Analysis				
	a. CA %				
	b. CN %				
	c. CP %				
	xiv) Oxidation stability				
	a. Neutralisation value after oxidation				
	b. Total sludge after oxidation				
	xv) Ageing characteristic				
	a. Resistivity				
	A. At 27 deg C				
	B. At 90 deg C				
	b. Tan Delta at 90 deg C				
	c. Total Acidity				
	d. Sludge content by weight				
	xvi) Permittivity at 60 deg C				
	xvii) Specific heat at 60 deg C				
	xviii) Thermal conductivity at deg C				
	xix) Mean coefficient of expansion				
34	Painting of Transformer	Epoxy, Shade No. 632 of IS-5			
35	Rating & Diagram Plate	Yes to be provided			
36	Bidirectional Flanged Rollers	4 Nos.			
37	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)			
38	Jacking Pads	Required			
39	Inspection Cover	Required			
40	Thermometer Pocket for WTI & OTI	Required			
41	Oil Filling Hole with Cover	1 No.			

42	Top Oil Filter Valve	1 No.			
43	Bottom oil Filter cum Drain Valve	1 No.			
44	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required			
45	The Transformer Testing for Routine & Acceptance Test shall be carried out at NABL Accredited Laboratory only.	Required			
46	Details of the NABL Testing Lab to be submitted along with the Bid.	Required			
47	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering			
48	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed			

6) 02 Nos. 500 KVA, 11/.415 KV Transformer for Khondalite Mines, Khordha, 01 No. 500 KVA, 11/.415 KV Transformer for New OMC Corporate Office, 02 Nos. 500 KVA, 11/.415 KV Transformer for Khandadhar Mines & 01 No. 500 KVA, 11/.415 KV Transformer for Gandhamardan Mines.

Sl No	Description/Specification	OMC Requirement	Bidder's Confirmation (Yes/No)	If No, Specify the Details	Remark
1	**General Specification**				
	Normal continuous rating (kVA)	500 KVA			
	Service & Duty	Continuous			

	Type	Core Type- Oil Immersed			
	Location	Outdoor Type			
	Relevant to Standard	IS 2026			
	Type of Cooling	ONAN			
	Wound	Copper Double Wound			
2	**System Particulars**				
	Normal ratio of Transformation	11/0.415 KV			
	Rated Frequency	50			
	No. Of phases	3			
	Highest System Voltage	12kV			
	Voltage Variation	+/- 5%			
	Frequency Variation	+/- 3%			
	Combined Voltage & Frequency Variation	+/- 5%			
	Rated Current Ratio	26.25/666.67 Amp			
	Overload Capacity	As per IS:6600			
	Bureau of Energy Efficiency Level	2			
3	**Phase Connections**				
	a) HV Winding	Delta			
	b) LV Winding	Star			
	c) Vector group reference no. & connection symbol	Dyn11			
4	**Maximum temperature rises above ambient temperature**				
	i) oil by thermometer at full ONAN rating	40 °C			
	ii) winding by resistance at full ONAN rating (°C)	45 °C			
	iii) By hotspot temperature indicator	116 °C			
	iv) Ambient	50 °C			
5	**Temperature gradient between windings and oil**	As per bidder			
6	**Voltage to earth for which the star point will be insulated**	As per IS2026/IEC 60076			
7	**Losses & Others**				
	A) NO LOAD LOSSES:				

	i) Guaranteed no load loss at normal ratio, rated output, rated voltage & frequency at 75 °C	As per bidder			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	iii) No Load losses at 110% of rated voltage	As per bidder			
	B) LOAD LOSSES:				
	i) Guaranteed losses at rated voltage, rated output, rated frequency at 75 °C winding temp. Including stary losses at rated output (kW)	To be Provided by Vendor during Bid Submission			
	ii) Tolerance, if any, applicable to (i) above	No Positive Tolerance			
	C) TOTAL LOSSES:				
	i) Guaranteed Total Losses at 75 °C temperature at 50% of Load	1430W (Maximum)			
	ii) Guaranteed Total Losses at 75 °C temperature at 100% of Load	4100W (Maximum)			
	D) No Load Current Approx	1.5% of Full Load Current			
	E) Regulation at full load on unity Power Factor	By Bidder			
	F) Regulation at full load on 0.8 Power Factor	By Bidder			
	G) Resistance voltage drop at 75 °C winding temp. Expressed as percent of rated voltage	By Bidder			
	H) Reactance voltage drop expressed as percent of rated winding MVA	By Bidder			
	I) Impedance voltage at normal & 75 °C temp. Expressed as percentage of rated voltage	4.50% +/-10%			
	J) Permissible Over Loading	As per IEC 60076-7			
8	**Efficiency:**				

	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of Unity PF.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
	Efficiencies at normal ratio, rated voltage, rated frequency and average winding temp. For 75 °C average temp. For outputs of 0.8PF Lagging.				
	i) Full Load	By Bidder			
	ii) 3/4 th Full Load	By Bidder			
	iii) 1/2 Full Load	By Bidder			
	iv) 1/4 th Full Load	By Bidder			
9	**Terminal arrangement**				
	a) HV Winding	Outdoor Type Bushing			
	b) LV Winding	Cable Box with Bushing			
	c) LV Neutral	Bare Bushing with flexible copper strip of adequate rating suitable for fixing 1 No. of 75x10 Sq mm Copper Flat.			
10	Partial discharge level at 1.5 Um/SQR 3 kV in Pico Coloumb	As per IS 2026			
11	Noise Level when energized at normal voltage & frequency without load (dB)	As per NEMA TR1 (Maximum 57dB)			
12	**Details of Core:**				
	a) Type of core construction & no. Of limbs in frame	Stack/Wound Type			
	b) Type of core joints between core limb and yoke	Mitered			
	c) Maximum flux density at rated voltage and frequency at principal tap(Tesla)	1.6 Tesla (max)			
	d) Maximum flux density at principal tap & at 10% over voltage (Tesla)	1.7 Tesla (max)			
	e) Core Lamination:				

	Material and grade	Carlit-H1B			
	Thickness	As per bidder			
	f) Allowable Overfluxing of Transformer Core without injurious heating and at full load condition and not getting saturated.	12.50%			
13	**Details of Windings:**				
	a) Type of winding	HV Winding- Disc/ Crossover			
		LV Winding- Spiral/ Helical			
	b) Material of the winding conductor	Electrolytic Copper			
	c) Maximum current density of windings (For HV & LV) (at rated current and conductor area)				
	Conductor Area (sqmm) (For HV & LV)	As per bidder			
	Current density (A/sq mm) at normal tap (For HV & LV)	3 Amp/ Sq mm (Maximum)			
	d) Insulating material for conductor	Pressboard and Kraft Paper			
	e) Inter Layer Insulation	Epoxy dotted Kraft Paper			
	f) Joints in the Winding	Strictly Prohibited, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor.			
	g) No. of Coils per Limb (For HV & LV)	As per bidder			
	h) Volt per Coil (For HV & LV)	As per bidder			
	i) No. of Turns per Coil (For HV & LV)	As per bidder			
	j) Volts per Turn (For HV & LV)	As per bidder			

	k) Insulation level for Windings	HV & LV			
	1.2/50 microsecond wave shape Impulse Withstand (kVp)	75 & NA			
	Power Frequency Voltage With stand for one minute (kVrms)	28 & 3			
	l) Insulation Class on Winding	Class-A			
	m) Fault Current at LV Terminals with duration	As per bidder			
14	**Clearances**				
	a) Minimum Clearance distance to earth in air of HV Terminals.	By Bidder			
	b) Minimum Clearance distance to earth in air of LV Terminals.	By Bidder			
	c) Minimum Clearance distance to earth in Oil of HV Terminals.	By Bidder			
	d) Minimum Clearance distance to earth in Oil of LV Terminals.	By Bidder			
15	**Bushings**				
	a) Basic Insulation level of Bushings HV, LV & LV Neutral	As per IEC 60076/IS-2026			
	b) Type of Bushings	Porcelain			
	c) Rated Voltage	As per Requirement			
	d) Minimum Creepage Distance	31 mm/KV			
	e) Class of Bushings (HV & LV)	17.5kV & 1.1kV			
	f) Minimum External Clearances between Phases of Bushing Terminals (HV & LV)	By Bidder			
	g) Minimum External Clearances between Phase to Earth of Bushing Terminals (HV & LV)	By Bidder			
	h) Provision of Arching Horn	To be provided on HV side of Bushing (2 Sets per Phase)			

	i) Provision of Lighting Arrester	To be provided on LV side of Bushing			
	j) External short circuit at bushing terminal withstand capacity (kA) & duration.	25kA & Duration to be specified by Vendor during Bidding.			
16	**Particulars of Tap**				
	i) Type & Make	Off Load Type			
	ii) No. of Particulars of steps and ratio on different taps	+10% to -10% @ 2.5%			
	iii) Total Tappings	9 Tap positions and Tap No. 5 will be the Principal tap			
	iv) Voltage of each Step	275 V			
	v) Whether provided on HV or LV side	HV			
	vi) Whether a Tap Position Indicator provided	Yes			
16	**Clearance in Air**	As per CBIP			
17	**Details of Tank**				
	a) Type of Tank and size L x B x H	As per bidder			
	b) Appropriate thickness of sheet				
	Sides	5 mm			
	Bottom	8 mm			
	Cover	8 mm			
	Thickness of Radiator (Pipes & Sheets)	1.2 mm			
	c) Provision of Explosion Vent	Yes			
	d) Provision of Drain Valve	Yes			
18	**Conservator:**				
	a) Thickness of sheet	2.5 mm			
	b) Size	As per bidder			
	c) Total Volume (Litres)	10% of Total Quantity of Oil in Transformer			
	d) Minimum oil to be kept inside the Conservator	3% of Total Quantity of Oil in Transformer			
	e) Provision of Oil Level Gauge (Prismatic)	Yes			

	f) Provision of Dehydrating Breather	Yes			
	Dehydrating agent	Silica Gel			
	Applicable Standard	IS 3401			
	Minimum Quantity of Silica Gel Required	3 Kg			
	Design of Breather	Such that Silica Gel should be easily visible from a distance.			
	Provision of Oil Cap for Breather	Yes			
	g) Provision of Oil Filling Nipple with Cap	Yes			
	h) Power required by heaters, if provided (kW)	NA			
	i) Conservator Lifting Lug	2 Nos.			
	j) Locking Box Unit	4 Nos.			
	k) Provision of Buchholtz Relay with Shut-off Valve in top & bottom	Yes			
19	**Radiator**				
	i) Overall dimensions, LxBxH (mm)	As per bidder			
	ii) Total weight with oil (kg)	As per bidder			
	iii) Total weight without oil (kg)	As per bidder			
	iv) Thickness of Radiator Tube (mm)-Minimum	1.2 mm			
	v) Types of Mounting	As per bidder			
	vi) Vacuum withstand capability	As per bidder			
	vii) No. of Radiator Sets	As per bidder			
20	Gas & Oil operated relay/ Buchholtz Relay (make, type, range of settings etc.) with two Switches	As per bidder			
21	**Temperature Indicators**				
	i) Oil Temperature Indicator (OTI) with two Auxiliary Switches	1 Set with Auxiliary Switch			
	ii) Winding Temperature Indicator (WTI) with	1 Set with Auxiliary Switch			

	two Auxiliary Switches				
	iii) OTI/WTI/Buchholtz Relay Trip Contacts & Alarm	To be included			
22	**Approximate overall dimension of Transformer in mm**				
	i) Length	By Bidder			
	ii) Breadth	By Bidder			
	iii) Height	By Bidder			
	iv) Wight in Kgs				
	Core & winding	By Bidder			
	Tank, Fittings & Accessories	By Bidder			
	Oil in Kgs	By Bidder			
	Oil in Ltrs.	By Bidder			
	Total Weight in Kgs.	By Bidder			
23	**Marshalling Kiosk**				
	i) Make & Type	By Bidder			
	ii) Details of apparatus proposed to be housed in the kiosk	By Bidder			
24	**Characteristics of insulating oil to be used**	As per IS 335			
	i) Density in gms/cu. Cm				
	ii) Kinematic viscosity in cst				
	iii) Interfacial tension at 27 °C in N/M				
	iv) Flash point in °C				
	v) Pour point in °C				
	vi) Acidity (Neutralisation/Value)				
	vii) Corrosive Sulphur in %				
	viii) Electric strength (Breakdown voltage)				
	ix) Dielectric dissipation factor (tan delta) at 90 °C				
	x) Saponification value in mg of KOH/gm				
	xi) Water content in ppm				
	xii) Specific resistance				
	a. At 90 °C ohm/cm				
	b. At 27 °C ohm/cm				
	xiii) N-dm Analysis				
	a. CA %				

	b. CN %				
	c. CP %				
	xiv) Oxidation stability				
	a. Neutralisation value after oxidation				
	b. Total sludge after oxidation				
	xv) Ageing characteristic				
	a. Resistivity				
	A. At 27 °C				
	B. At 90 °C				
	b. Tan Delta at 90 °C				
	c. Total Acidity				
	d. Sludge content by weight				
	xvi) permittivity at 60 °C				
	xvii) Specific heat at 60 °C				
	xviii) Thermal conductivity at °C				
	xix) Mean coefficient of expansion				
25	Painting of Transformer	Epoxy, Shade No. 631 of IS 5			
26	Rating & Diagram Plate				
27	Bidirectional Flanged Rollers	4 Nos.			
28	Lifting Jugs	4 Nos. (Fitted with the Transformer Tank)			
29	Jacking Pads	Required			
30	Inspection Cover	Required			
31	Thermometer Pocket for WTI & OTI	Required			
32	Oil Filling Hole with Cover	1 No.			
33	Top Oil Filter Valve	1 No.			
34	Bottom oil Filter cum Drain Valve	1 No.			
35	Type Test Report of the offered Transformer is required and Type Test Report is to be attached along with Technical Bid	Required			

36	The Transformer Testing for Routine & Acceptance Test shall be carried out at NABL Accredited Laboratory only.	Required			
37	Details of the NABL Testing Lab to be submitted along with the Bid.	Required			
38	Foundation Drawing	To be submitted in the event of Ordering within one month of Ordering			
39	System Earthing (HV & LV)	HV-Solidly Earthed & LV-Resistance Earthed			

Annexure 12: Format of details of Service Network

Sl.No.	Name of Service Centre/Office/Branch	Address	Contact No	Email ID	GSTIN

Annexure 13: Spares for Transformers

i. 1 No. 500 KVA, 33/.415 KV Transformer for South Kaliapani, Jajpur

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

ii. 2 Nos. 1000 KVA, 33/.415 KV Transformer for COBP, South Kaliapani

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

iii. 1 No. 630 KVA, 11/.415 KV Transformer for RO, Barbil.

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

iv. **1 No. 630 KVA, 11/.415 KV Transformer for Jilling Mines, Keonjhar.**

Sl No	Description/Specification	OMC Requirement
1	**SPARES**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

v. **1 No. 1000 KVA, 11/.415 KV Transformer for Bangur,Keonjhar.**

Sl No	Description/Specification	OMC Requirement
1	**SPARES**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

vi. **1 No. 1000 KVA, 11/.415 KV Transformer for Khandadhar Mines, Sundergarh.**

Sl No	Description/Specification	OMC Requirement
1	**SPARES**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

vii. **1 No. 3.15 MVA, 33/11 KV Transformer for Jilling Mines, Barbil Region**

Sl No	Description/Specification	OMC Requirement
1	**SPARES**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

viii. **2 No. 500 KVA, 11/.415 KV Transformer for Khondalite Mines,Khorda.**

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

ix. **1 No. 500 KVA, 11/.415 KV Transformer for OMC Corporate Office,Bhubaneswar.**

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

x. **2 No. 500 KVA, 11/.415 KV Transformer for Khandadhar Mines, Sudergarh.**

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg

xi. 1 No. 500 KVA, 11/.415 KV Transformer for Gandhamardan Mines, Keonjhar.

Sl No	Description/Specification	OMC Requirement
1	**SPARES TO BE SUPPLIED**	
	i) HV Bushing	1 No.
	ii) LV Bushing	1 No.
	iii) Neutral Bushing	1 No.
	iv) Winding Temperature Indicator (WTI)	1 No.
	v) Oil Temperature Indicator (OTI)	1 No.
	vi) Sillica Gel for Breather in a sealed container	25 Kg