प्रसारभारती / **PRASAR BHARATI**
भारतीयलोकसेवाप्रसारक/ **INDIA'S PUBLIC SERVICE BROADCASTER**
अपरमहानिदेशक(अभि.)(द.क्षे) कार्यालय/ **O/O. ADDL. DIRECTOR GENERAL (E)(SZ)**
आकाशवाणीएवंदूरदर्शन / **ALL INDIA RADIO & DOORDARSHAN**
स्वामीशिवानंदासाले, चेन्नई / **SWAMY SIVANANDA SALAI, CHENNAI – 600 005.**

सत्यम् शिवम् सुन्दरम्

File No.J-11025/1/2025-DD PROJ-ADG(E)-(SZ)/ E-302667 Dt: 12.05.2026

Subject: Budgetary quote request for **supply of INDOOR TYPE 500kVA 11kV/415V, 3Φ, 50Hz, Copper wound HT transformer with OLTC (Auto Operation)- 2 Nos for Geo Diversity Disaster Recovery Centre, Chintalakunta, LB Nagar, Hyderabad from Vendors/OEM –reg.**

Sir/Madam,

Technical specifications for **supply of INDOOR TYPE 500kVA 11kV/415V, 3Φ, 50Hz, Copper wound HT transformer with OLTC (Auto Operation)- 2 Nos for Geo Diversity Disaster Recovery Centre, Chintalakunta, LB Nagar, Hyderabad from Vendors/OEM**

Revised Budgetary quote for revised specification may kindly be provided by email to tvproject_sz@yahoo.com on or before 18.05.2026

भवदीय /Regards,

T. Nalini 13/5/2026

टी / नलिनी.T.Nalini,
उप महानिदेशक (अभि(/ DDG(E)
कृतेअपरमहानिदेशक (प्र.सं.)(द.क्षे) / for ADG(BO)(SZ)

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SECTION- I

Technical Specifications for supply of INDOOR TYPE 500kVA 11kV/415V, 3Φ, 50Hz, Copper wound HT transformer with OLTC (Auto Operation) two numbers for Geo Diversity Disaster Recovery Centre, Chintalakunta, LB Nagar, Hyderabad

SCOPE:

1.0 This specification covers the design, manufacture, pre dispatch inspection, design inputs for civil foundation, packing and transportation, insurance, supply, loading, unloading, handling, storage, erection, installation, site testing and commissioning of oil immersed, naturally cooled, 3Φ, 11kV/415V HT Indoor Transformer **with OLTC (Auto Operation)** two numbers.

The equipment shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation, in a manner acceptable to the purchaser, who will interpret the meanings of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance there with. The offered equipment shall be complete with all components necessary for their effective and trouble free operation. Such components shall be deemed to be within the scope of bidder's supply irrespective of whether those are specifically brought out in this specification and/or the commercial order or not.

General Conditions:

2.1 The transformer and accessories shall be designed to facilitate Continuous operation (24x7Hrs), inspection, maintenance and repairs.

2.2 The design shall incorporate every precaution and provision for the safety of equipment as well as staff engaged in operation and maintenance of equipment.

2.3 All materials used in the manufacturing shall be of high quality and conform to the relevant IS 2026 and other standard, amended up to date.

2.4 All work shall be carried out in accordance with standard mechanical & electrical practice.

2.5 Only easily available standard components should be used as far as possible. The tenderer shall submit an undertaking to make available spares and replacement parts for a period of ten years.

2.6 Completeness of Contract: All fittings and accessories which may not have been specifically mentioned or which the tenderer may not explicitly mention in his tender but are necessary and essential for the satisfactory operation of the transformer shall be deemed to be included in the contract and is to be provided by the contractor without any extra charges.

<u>An undertaking in this regard is to be submitted with the offer by tenderer .</u>

2.7 Documents to be submitted (with tender):-

2.7.1 Printed original leaflets detailing technical parameters with illustrations of transformer & accessories in section , elevation & plan.

2.7.2 Experience certificate in manufacturing/ assembling of 500 kVA transformers in their own capacity during the last five years. A list of such works giving details of capacity & date of supply along with the satisfactory completion certificates issued by the client.

2.7.3 Certificate of Original Equipment Manufacturer (OEM)/Original Equipment Assembler (OEA) of the offered make/model.

2.7.4 A valid copy of ISO 9001 Certificate of OEM/OEA of the offered equipment.

2.7.5 Following test certificates of similar type and capacity of transformers done earlier.

a) Test certificate for the routine /acceptance tests.
b) Type Test certificates for Lightning Impulse Test & Dynamic short circuit test.

2.8 Documents to be submitted (After Acceptance of Tender):-

2.8.1 Six copies of the drawings in plan, elevation & section showing the dimensional details, location, accessories etc. of the transformers should be sent to Indenter within two weeks of acceptance of the tender for approval before taking up manufacturing. Two sets will be returned after approval.

2.8.2 Two copies of installation, assembly at site, operation, maintenance and trouble shooting manual having details of routine, preventive/ corrective and periodical maintenance for indenter to accord approval to enable the contractor to supply of final copy.

2.8.3 Following documents/details will have to be supplied to the consignee along with the transformers at the time of delivery:

a. Two copies of the book of instructions for the Installation, Testing, Commissioning, Operation and Maintenance of transformers.

b. Factory Test Certificates showing the results of tests actually conducted on the transformers , Accessories.

c. Two sets of finalized drawings showing dimensions and other fixtures on the transformers.

2.9 .Delivery period and completion of works:

Delivery, Installation, Testing, Commissioning & handing over of the transformers shall be completed within two (02) months from the date of firm order. This period shall be effective from the date of acceptance of the tender and shall be independent of any other factors.

2.10 Packing:

The packing shall be suitable to withstand transportation hazards. Each packing shall contain a packing slip giving the details of the contents and bear the address of consignee. A copy of packing slip giving the list of items included in the package together with the package number shall be mailed in advance to the consignee.

2.11 Guarantee:

The transformers shall be guaranteed in all respects for satisfactory operation under full load condition for Three years from the date of taking it into service.

2.12 Miscellaneous:

(i) First filling of transformer oil, consumable hardware required to make the transformers fully functional shall be the part of the contract.

(ii) The supplier shall make good/repair the damage to DD property during installation, testing etc.

(iii) The supplier shall hold DD or it's representative harmless for any liability/ compensation by his employee or third party for any damage/ loss of life or property to them during the execution of project.

(iv) Supplier/ his erection crew will make their own arrangement for stay during installation of transformers.

(v) Termination of cable including termination kit on H.T. Side and lugs on L.T. side shall be provided by supplier. However cable shall be provided by office.

2.13 Insurance/Transportation:

Supplier will comprehensively insure entire material for loss/theft during transportation from factory to site till installation is completed and handed over to DD. A copy of **Insurance Policy** in this regard shall be submitted at the time of initial consignment.

2.14 Pre- Despatch Inspection:

The successful tenderer will have to get the transformers inspected by a person authorized by indenter at manufacturer works /factory before dispatch as per mutually accepted ATP according to guide lines of BIS for such jobs & procedure defined in relevant BIS Standard as amended to date and for the tests mentioned in section - II.

2.15 Testing/Acceptance at site:

The supplier shall show all the required tests at site (tests mentioned in Section - II except type test), as per mutually agreed ATP according to relevant standard of BIS for such jobs at no load, partial load and full load (in steps of 20% to the extent feasible from no load to full load).

2.16 The consumable items if any required during this testing at site shall be arranged by the supplier.

2.17 C E A Clearance:

The supplier shall have to arrange CEA clearance for transformers before the same is offered for acceptance to DD after installation, testing & commissioning at DD site.

SECTION-II

DESIGN FEATURES Of THE EQUIPMENT

(As per IS:2026(Part-I)-1977 with latest amendments)

2.1 Scope:-

This section covers Design features, supply, Installation, Testing & Commissioning of 500kVA, 11KV/415V, 3-phase, 50-Hz transformers **with OLTC (Auto Operation).** These transformers are required for **Geo Diversity Disaster Recovery Centre, Chintalakunta, LB Nagar, Hyderabad** and shall be used for feeding supply to building power, light load, A/C Plants load and broadcasting equipment.

2.2 General:-

500 kVA, 11KV/415V 3phase, 50Hz transformers shall be copper wound suitable for indoor installation, oil-immersed, naturally cooled, On-Load Tap changing **(OLTC) with Auto Operation.** Transformer shall be complete in all respect i.e. termination of cable including termination kit on H.T. Side and lugs on L.T. Side shall be provided by supplier. However cable shall be provided by this office.

2.3 Standards: Should comply with IS 2026, IS 1180, IS 335, and other relevant standards, along with all applicable statutory requirements and safety codes, amended up to date.

a) (Part-I) 77 with amendments 1 to 3

b) (Part-II) 77 with amendments 1 &2

c) (Part-III) 81 & (Part-III) 77 with amendment 1

2.4 Operational Requirement:-

a) Transformer shall be capable of continuous operation 24x7 hrs , capable of continuous operation of rated output under the operating conditions of voltage and frequency variations as per statutory limits governed by relevant Indian Standard and Electricity Act-2003 and its amendments in force.

b) Transformers should be designed such that when operated on nominal 11KV primary voltage ,the secondary out put voltage should be 415 volts. For taking care of variation under load conditions from nominal 11 KV primary supply **with OLTC (Auto Operation)** facility should be provided for obtaining 415 volt on secondary side.

c) The transformers must be suitable for operation in hot, humid and tropical climate, including the anticipated temperature and humidity ranges, protection against fungus growth and moisture ingress.

d) The design material construction shall be such that to secure reliability, economy, safe and convenient operation.

e) The transformer shall be free from abnormal hum or vibration. The design shall be such as not to cause any undesirable interference with radio or communication circuits.

f) The transformers shall be capable of withstanding the short circuit stresses due to terminal fault between phase to phase and phase to ground on one winding with full voltage maintained on the other windings for a minimum period of three seconds as per IS standard.

2.5 Insulating Oil:-

The insulating oil used in Transformers shall comply with the requirement of SI 335 /1993(4th revision) Amended to date (Specification for insulating oil for transformers and switchgears).

2.6 Cooling:-

The Transformers shall be oil immersed natural air-cooled (ONAN –Oil Natural Air Natural) type with required radiator fins to dissipate the heat.

2.7 Cable Termination Box:-

The transformer shall be provided with cable end box on H.V. side suitable for connection to incoming H.T., 3 core 120 sq. mm armoured Aluminium conductor cable along with cable glands of suitable size.

The bidder shall ensure the arrangement HT cable box so as to prevent the ingress of moisture into the box Due to rainwater directly falling on the box.

The bushings of the cable box shall be fitted with nuts & stem to take the cable cores without bending them. The stem shall be of copper with copper nuts. The cross section of the connecting rods shall be stated and shall be adequate for carrying the rated currents. On the HV side the terminal rod shall have a diameter of not less than 12 mm. The material of connecting rod shall be copper. HT cable support clamp should be provided to avoid tension due to cable weight

On low voltage side, the cable end box shall be provided with cable glands of suitable size.

Indoor heat shrinkable termination kit shall be used for termination of HT cable.

Terminal box on LT Side shall be provided with removable gland plate.

2.8 Accessories & Other Fittings:

The followings minimum accessories /fixtures /attachments and fittings shall be provided as per requirements of design of Transformer:-

a) Diagram & Rating (marking) plate : 01 No.

b) Earthing terminals : 04 Nos. (2 for Body and 2 for Neutral)

c) Lifting Hooks : 02 Nos.

d) Directional Rollers : 04 Nos.

e) Thermometer Pocket with Thermometer : 01 No.

f) Dial type Thermometer min/max Indicator : 01 No.

g) Oil Conservator Tank with : 01 No.

i) Oil level gauge : 01 No.

ii) Silica gel breather with pipe : 01 No.

h) Air Release Plug : 01 No.

i) Explosion vent : 01 No.

i) OLTC (On-Load Tap Changing) Auto Operation : 01 No.

j) Oil drain valve with plug : 01 No.

k) Cable Box on H.V. & LV side : 01 No. (respective side)

l) Oil filling Nipple with cap : 01 No.

m) Filter valve with plug : 01 No.

n) Buchholz Relay with alarm & trip contact : 01 No.

o) Any other item as per OEM : As required

2.9 Earthing:

The transformers has to work in a RF field laid by transmitter system. Therefore it is necessary to provide fool-proof Earthing for the chassis.

Four number of conventional type copper plate earthing with dual run copper strip should be provided as per standard requirement. The earthing value should be ensured below 1 Ohm.

2.10 Protective Systems & Measures:

Buchholz Relay with Alarm & Trip Contact.

Contacts or protection relay which should close in the event of fault due to over current, earth fault, high oil temperature (from OTI), high winding temperature (from WTI), gas / bubble formation, high pressure, Over/Under voltage for tripping the incoming breaker.

2.11 Tank:

The transformer tank and cover shall be fabricated from robust M.S. plate steel without pitting & shall have adequate thickness (top cover 6 mm min., side plates 5 mm min., bottom plate 6 mm min.) with external cooling tubes/radiators. The tank and cover shall be of welded construction. All seams shall be welded and where practicable they shall be double welded. All edges shall be double welded. The tank wall shall be reinforced by stiffener to ensure rigidity, so that it can withstand without any deformation the mechanical shock during transportation. All removable covers shall be provided with weather proof, hot oil resistant, resilient gaskets Type III (as per IS:11149) Type C (as per IS: 4253 (Part.2). The design shall be such as to prevent any leakage of water into or oil from the tank.

The tank shall be subjected to a pressure test of 0.35 kg/cm^2 with hot oil for 12 hours when the transformer is complete with all fittings. During the test average oil temperature shall be maintained at 45ºC above ambient temperature throughout test period by circulating suitable current in H.V. winding and short circuiting L.V. winding. There shall be no leakage of oil during or after the test. Also there shall be no deflection at all when the pressure is removed. The purchaser's representative may be present during the tests for which advance intimation shall be given. Otherwise, test Certificate shall be produced in triplicate before dispatching the units.

The top cover of the tank shall be suitably sloped to facilitate water drain off and shall be so designed as to facilitate lifting of the same, in case required, with minimum disconnection of pipe

work and accessories. Air release plugs shall be provided on main tank top cover to cover entire area suitably.

2.12 **Terminal:**

2.12.1 Primary**:** Terminals shall be provided with 12 kV porcelain bushing as per IS: 3347 and its latest amendments, for heavily polluted atmosphere having suitable diameter with nuts and check nuts.

2.12.2 Secondary: Terminals shall be provided with 1.1 kV Epoxy bushings as per IS: 3347 and its latest amendments, for heavily polluted atmosphere having fixed palm type connectors with suitable locking arrangements to restrict the rotation of palm assembly.

2.12.3 The palm shall be of copper and stud of copper duly brazed at the joint. A suitable clamping arrangement shall be provided so as to clamp 4 core, 400 sqmm,Aluminium, armoured and sheathed cable. Each clamp shall be detachable type with nut bolt arrangement for ease in removal/replacement of LV cables.

2.13 **Drying-Out:**
The transformer winding shall be thoroughly dried out & kept immersed in oil to avoid any further drying out by the purchaser & to facilitate immediate commissioning of the transformer on receipt.

2.14 **Oil:**
The necessary quantity of new transformer oil according to IS: 335 and its latest amendments, shall be supplied & filled in the transformer tank up to a height above the minimum filling mark of conservator tank. The supplier shall furnish the relevant technical particulars and test certificates of the oil supplied.
Leakage of Oil: Suitable approved type of material such a*s "N*eoprene*"* of RC 70 C grade which has an oil proof agent, as specified in IS: 1866 and its latest amendments, shall be provided at all joints to prevent leakage of oil during continued operation or during transportation.
Particular attention shall be taken to deliver the oil free from moisture having uniform quality throughout in non- returnable steel drums. The quantity of oil for first filling of each transformer shall be stated in the offer.

2.15 **Clamping of Leads:**
All leads from the coils to the terminals shall be suitably clamped to prevent snagging and fouling with other parts and the tank.

2.16 **Phase Marking:**
Phase markings as per IS:1180 and its latest amendments, punched on small non-corrosion metallic tags shall be permanently fixed for H.V. just below the cable box or on some suitable removable part of the tank and above L.V. bushings. Phase markings tags shall be properly fixed with proper alignment.

2.17 **Core and Coil:**
The Core should be CRGO of Low Loss (As per IS:3024 Latest).
The transformer may be of core type. The core shall be built up with high grade, non-aging, low loss, high permeability, grain oriented, cold- rolled silicon steel laminations especially suitable for core material. The grade of core lamination shall be premium grade M-OH or better quality with appropriate thickness. The transformer shall be so designed as to have minimum humming noise.
The coils shall be manufactured from electrolytic copper conductor and fully insulated for rated voltage. Copper for winding shall be purchased from "Original Copper Manufacturer".

Coil assembly shall be suitably supported between adjacent sections by insulating spacers and barriers. Bracing and other insulation used in assembly of the winding shall be arranged to ensure a free circulation of the oil and to reduce the hot spot of the winding.

All leads from the windings to the terminal board and bushings shall be rigidly supported to prevent injury from vibration or short circuit stresses. Guide tube shall be used wherever practicable.

The core and coil assembly shall be securely fixed in position so that no shifting or deformation occurs during movement of transformer. The core and coil assembly shall be capable of withstanding without injury, the thermal and mechanical effects of short circuit at the terminals of any winding as perIS:1180 with latest amendments thereto.

2.18 **Insulation Level:**

a) Separate source power frequency voltage withstand	
i) Between Windings (KV rms)	HV Side 28kV (rms) LV Side 3 or 5 kV (rms)
ii) To Earth (KV rms)	
iii) Between adjacent contacts (KV rms)	
iv) Between first and last contact (KV rms)	
b) Switch impulse withstand voltage	
i) Between Windings(KV Peak)	HV Side 75kV peak LV Side 3kV peak
ii)To Earth (KV Peak)	
iii) Between adjacent contacts(KV Peak)	
iv) Between first and last contact (KV Peak)	

2.19 **Over fluxing:**

The transformer shall we suitable for over fluxing due to combined effect of voltage and frequency up to 10% of any tapping without injuries heating at full load conditions .

2.20 Painting:-

All steel surfaces shall be thoroughly cleaned by sand blasting or chemical agents, as required, to produce a smooth surface free of scales, grease and rust.

The steel surfaces after cleaning shall be given a coat of high quality red oxide or yellow chromate primer followed by final coats.

The internal surfaces in contact with insulating oil shall be painted with heat resistant insulating varnish which shall not react with and not soluble in the insulating liquid used.

Special care shall be taken by the manufacturer to ensure against rusting of nuts, bolts and fittings during operation. All bushings and current carrying parts shall be cleaned properly after final painting.

The paints shall be carefully selected to withstand tropical heat, rain etc. The paint shall not scale off or crinkle or be removed by abrasion due to normal handling. Where the painting is damaged during transit, installation etc. touch up painting shall be done by tenderer at site.

Paint inside the tank: Hot Oil resistant (Refer table 12 of IS: 1180 (Pt.1): 2014)

Paint on external surface: Epoxy (Primer), Polyurethane (finish coat) (Refer Table 12 of IS: 1180 (Pt.1): 2014)

2.21 Rating Plates :

Each transformer shall be provided with a rating plate of weather proof material, fitted in a visible position , showing the appropriate items as per IS :2026(Part-I) amended to date. the entries on the rating plate shall be indelibly marked (by etching, engraving or stamping)

2.22 Tests:-

General, Routine and Type tests as per mutually accepted procedure based upon IS : 2026 (Part-I) 77 with amended up to date shall be witnessed at the manufacturer's works and site by the client:

2.22.1 General Observation

a) Workmanship

b) Material

c) Provision of all accessories

e) Literature & Certificates

f) Misc.

2.22.2 Routine Test:-

a) Measurement of Insulation Resistance..
b) Measurement of Resistance of winding.
c) Oil dielectric strength test.
d) Out put voltage test.
e) Measurement of No load loss & current , Full Load Loss & current.
f) Measurement of Impedance voltage /short circuit impedance .
g) Measurement of efficiency & regulation at various loads.

2.22.3 Functional Test:-

a) Test on different Tapping Positions.

b) A heat run test (Temperature rise test) will be conducted at works of manufacturer in presence of Client, without any charge.

c) Any other found necessary as per specs and site conditions.

2.22.4 Type Test:-

Tenderer must possess and produce type test certificate for similar capacity/equipment. If type test certificate is not available than tenderer shall have to conduct the for following tests at Manufacturer in the presence of indenter at their own expenses.

a. Lightning Impulse Test:-

b. Dynamic Short Circuit Test:-

2.3 **Inspection:**

2.23.1 The successful bidder will give ten days advance intimation to the Department to organize stage inspection of the transformer in which the assembling of core and the winding could be inspected.

2.23.2 In respect of raw material such as core stampings, winding conductors, insulating paper and oil, you shall use these materials manufactured / supplied by standard manufacturers and furnish the manufacturers test certificate.

2.23.3 If any of the technical particulars are seen to be at variance than the guaranteed technical particulars, the transformer will be rejected and risk purchase resorted to.

2.23.4 To ascertain the quality of the transformer oil, the original manufacturer's test report should be submitted at the time of inspection. Also arrangement should be made for testing of transformer oil, after taking out the sample from the manufactured transformer and tested in the presence of Department's representative or in an independent laboratory.

2.23.5 **Deviations:**

a) The bidders are not allowed to deviate from the principal requirements of the Specifications. However, the bidder is required to submit with his bid in the relevant schedule a detailed list of all deviations without any ambiguity. In the absence of a deviation list in the deviation schedules, it is understood that such bid conforms to the Bid Specifications and no post-bid negotiations shall take place in this regard.

b) If it is observed that there are deviations in the offer in guaranteed technical particulars other than those specified in the deviation schedules, then such deviations shall be treated as deviations.

c) All schedules shall be prepared by vendor & are to be enclosed with the bid.

2.24 **Guarantee for the Transformers:**

2.24.1 Guarantee period shall be Three Years from the date of commissioning. If any transformer fails during this guarantee period, the supplier shall repair the same at his cost at the site.

2.24.2 The supplier shall have to establish suitable and adequate arrangement for repairing and testing of failed transformer at his cost. This arrangement shall have to be continued up to the completion date of guarantee period of supply.

2.24.3 After intimation of failure of transformer failed within guarantee period, the Supplier will arrange for the dispatch of guarantee period failed transformer to firm's works at the cost of the supplier. The failed transformer shall be repaired immediately and the repaired unit duly tested shall be dispatched by supplier at his cost to the consignee from where the failed unit was received along with the test report. If the transformer is not repaired and delivered back or dispatched without complete test report within this period, then the cost of GP failed transformer shall be recovered from the supplier's security deposit/ensuing bill against the order or any other of order. In case, the supplier does not have further order, the cost of failed transformers shall be recovered from the Bank Guarantee furnished. Testing of transformer will be done in presence of department official to ensure no change in losses as per Guaranteed Technical Particulars after repair. Transformer found with higher losses than GTP will not be accepted and cost thereof will be recovered.

SECTION - III

TECHNICAL PARAMETERS AND OTHER PARTICULALRS TO BE SUPPLIED BY THE TENDERERS AS GIVEN BELOW:-

S.No	Item	specification	Tenderer's Offer
i	ii	iii	iv
3.1	KVA RATING	500 kVA	
3.2	STAR RATING	BEE Star rating => 3 Star or above	
3.3	RATED VOLTAGE a) H.V. winding b) L.V. Winding	11KV, +10% 415 V, Phase to phase 240 V, Phase to neutral)	
3.4	RATED FREQUENCY	50 Hz ±3%	
3.5	No. OF PHASES	THREE (3)	
3.6	NATURE OF LOAD	Light, Power A/C & Broadcasting eqpts.	
3.7	WINDINGS	Two separate copper windings	
3.8	CONNECTIONS:-		
	a) H.V. Side	DELTA (11KV)	
	b) L.V. Side	STAR (415V) with Neutral Dyn11	
3.9	TAPPINGS (H.V. Side)		
	a) Range	±2 1/2 %, ± 5 % ±7 1/2 %, ± 10 %	
	b) Number of steps/position	Nine	
	c) Type of tapings	On-Load Tap Changing (OLTC)	
	d) type of operation	Auto Operation	
3.10	TYPE OF COOLING	ONAN –Oil Natural Air Natural	

3.11	TYPE OF COOLING MEDIUM	Mineral Oil (as per IS:335 Latest)	
3.12	TEMPRATURE RISE	50^{o}C for oil, 55^{o}C for winding.	
3.13	VECTOR DIAGRAM/GROUP	Dy.11 if Neutral is available	
3.14	TYPE OF INSULATION	class 'A'	
3.15	COMPONENT LOSSES: a. 50% of Load b. 100% of load	a. <1354 W b. <3909 W	
3.16	% of IMPEDANCE	4.5%	
3.17	REACTANCE AT RATED CURRENT & FREQUENCY.	less than 5.0%	
3.18	INSULATION LEVEL: a) Full wave lightning impulse withstand voltage HV winding. b) Rated short duration power frequency with-stand voltage	75 KV peak 28KV rms.	
3.19	EFFICIENCY	>99%	
3.20	ELECTRIC STRENGTH OF INSULATING OIL (New unfiltered) min.	30 kV(rms)	
3.21	REGULATION AT FULL-LOAD AT 75^{O}C a) At unity power factor b) At 0.8 power factor lagging.	$\leq$ 1.3%: $\leq$ 4.0%	
3.22	ENVIRONMENTAL CONDITIONS: a) Max.ambient air temp b) Relative Humidity d)Altitude Above MSL	45^{o}C 95%(noncondensing) 1000 meter	
3.23	PROTECTION OF	a) Provision of	

	TRANSFORMER	Buchholz Relay b) Explosion vent	
3.24	TERMINAL ARRANGEMENT a) H.V. winding b) L.V. Winding	Cable Box type Cable Box type	
3.25	APPROXIMATE MASS(IN KG) a) Core & Windings b) Tank fittings& accessories. c) Oil Quantity in ltrs. d) total mass in KG	To be furnished by tenderer	
3.26	APPROXIMATE OVERALL DIMENSIONS INCLUDING ALL FITTINGS(IN METERS) a) Length x Width x Height b) Spacing between wheels	To be furnished by tenderer	

All Test Report to be issued by NABL accredited labs

SECTION- IV

SCHEDULE OF REQUIREMENTS:

Sl. No.	DESCRIPTION	Qty.
3.1	Design, manufacture, pre dispatch inspection, design inputs for foundation, packing and transportation, supply, loading, storage, of 11kV/415V , 500kVA ,50 Hz , 3 phase HT transformer, indoor type, with ON load tap changing facilities **(OLTC with Auto Operation)** complete with standard accessories.	Two numbers
3.2	Insurance, Transportation and unloading at site of the above HT Transformer.	Two numbers
3.3.	a)Installation, including Civil foundation, provision of 4 nos of copper plate earthing and termination to the transformer, First filling of transformer oil, consumable hardware, inter connecting cabling with cables, input & output supply cable connection with necessary termination kit to & fro from HT panel.. ►**The tenderer may visit the site before submitting the tender, to assess the quantum of work to avoid any delay while execution.** b) Testing & Commissioning, of the above HT Transformer.	Two numbers
3.4	Special tools if any required for field maintenance and repair of Transformer (List of Tools to be enclosed).	2 set