TECHNICAL SPECIFICATION OF 150KVA TRANSFORMER		
SL. NO.	**Technical Particulars**	**Data to be furnished by bidder**
1.GENERAL SPECIFICATIONS		
1.00	Rated KVA	150
1.01	Service & Duty	Continuous
1.02	Make	Reputed make
1.03	Type	Core Type - Oil Immersed
1.04	Location	Outdoor
1.05	Specifications & Standard as per IS	IS 2026 ,IS1180 (Part-1):2014 Level 2(Amendment 4)
1.06	Type of Cooling	ONAN(Oil Natural Air Natural
1.07	Wound	Copper Double Wound
2.SYSTEM PARTICULARS		
2.00	Nominal Voltage (V)	11000
2.01	Highest System Voltage (V)	12000
2.02	No. Of Phases	3
2.03	Frequency (Hz)	50
2.04	Voltage Variation	+ / - 5%
2.05	Frequency Variation	+ / - 3 %
2.06	Combined Voltage & Frequency Variation	+ / - 5%
2.07	Terminal Arrangement HV	Bare Bushings Porcelein
2.08	LV	Busduct Epoxy moulded
3. RATING		
3.01	Rated Voltage of H.V. (Volts)	11000,Current: 7.87 amps
3.02	Rated Voltage of L.V. (Volts)	433,Current: 200 amps
3.03	Max. Temperature rise above 50C ambient temperature of winding by resistance method. (Deg. C)	55
3.04	Max. Temperature rise in oil by thermometer above 50 C ambient temperature (Deg. C)	50
3.05	Over load capacity	As per IS: 6600
4.WINDING CONNECTION DETAILS		
4.00	Connections	As follows
4.01	a. H.V. Winding	Delta
4.02	b. L.V. Winding	Star
4.03	c. Neutral brought out for earthing	Yes
4.04	Tapings	Manual Tap Changer (Off-Circuit Tap Switch)
4.08	Vector Symbol	Dyn11
5.LOSSES AND OTHERS		
5.00	No load losses at rated frequency and Voltage (Watts)	320 W (as per IS 1180 Level 2 max limit)
5.01	Copper losses at rated current and rated frequency at 75 deg. C (Watts) At Normal Tap.	2,300 W (subject to IS tolerance)
5.02	Percentage Impedance at 75 deg. C at Normal Tap.	4% or less
5.03	No load Current Approx	≤ 2% of full load current
5.04	Regulation at full load at 75 deg. C u.p.f.	≤ 2%
5.05	Regulation at full load at 75 deg. C 0.8 u.p.f.	≤ 5%
6.EFFICIENCY		
6.00	Efficiency at 75 deg. C	U.P.F. 0.8 P.F.
6.01	a. 100 % full load	98.35 98.00
6.02	b. 75% full load	98.60 98.30
6.03	c. 50 % full load	98.85 98.55
6.04	d.25% full load	99.90 98.60
6.05	Load at which Max. efficiency occurs KVA	~60 – 70 kVA or better
6.06	Maximum Efficiency	98.90 – 99.00%
7.CONSTRUCTIONAL DETAILS		
7.00	Type of Construction	Core Type
7.01	Insulation between laminations	Carlit or equivalent insulating coating
7.02	Type of joint between core limb and yoke	Mitered

7.03	Type of Winding	As stated below
7.04	a. HV Winding	Cylindrical type with circular enamelled copper conductoror better
7.05	b. LV Winding	Spiral / Helical oe better
8.WINDING INSULATION LEVEL		
8.00	a. HV Winding (KV uniform)	11
8.01	b. LV Winding (KV uniform)	0.433 kV
9.INSULATION OF CONDUCTORS		
9.00	a. HV Winding turn Insulation	DPC (Double Paper Covered) Copper
9.01	b. LV Winding turn Insulation	DPC (Double Paper Covered) Copper Strip
9.02	c. Between HV and LV Winding	Oil Duct + Solid Cylinder + Oil Duct
9.03	d. Between LV Winding and Core	Solid Cylinder
10.TYPE OF JOINTS IN WINDING		Brazed
11.MINIMUM CLEARANCES		
11.00	H.V.to Earth (mm)	As stated below
11.01	In Oil	25
11.02	Out of Oil	280
11.03	L.V. to Earth (mm)	As stated below
11.04	In Oil	7
11.05	Out of Oil	20
12.TEST VOLTAGES		
12.00	a. Impulse (1.2 / 50 micro second wave)withstand voltage	
12.01	H.V. Winding (KV peak)	75
12.02	L.V. Winding (KV peak)	N. A.
12.03	b. One minute power frequency withstand voltage	
12.04	H.V. Winding (KV)	28
12.05	L.V. Winding (KV)	3
13.DETAILS OF TANK AND MATERIALS M.S.		
13.00	Thickness of side plates (mm)	5
13.01	Thickness of bottom plates (mm)	8
13.02	Thickness of cover plates (mm)	8
13.03	Thickness of radiator (pipes or sheets)	1.2mm
14.WEIGHTS AND DIMENSIONS (APPROX.)		
14.00	Net untanking Weight (Kg.)(Core and windings with clamps)	As per the standard
14.01	Volume of insulating Oil (Ltr.)	As per the standard
14.02	Tank and fittings (Kg.)	As per the standard
14.03	OLTC Weight (Kg) with Oil	As per the standard
14.04	Total Weight of Transformer (Kg.)	As per the standard
14.05	Overall dimensions of the Transformer	As per the standard
15.ARTS TO BE DETACHED FOR TRANSPORT		Rollers, Breather , Radiators etc
16.STANDARD FITTINGS AND ACCESSORIES		
S.No.	**DESCRIPTION**	**QTY.**
16.00	Rating and terminal marking plate	One
16.01	Earthing Terminals	Two
16.02	Lifting Lugs	Four
16.03	Conservator with Drain plug	One
16.04	Oil filling hole with cap	One
16.05	Oil Level Indicator	One
16.06	Dehydrating Silicagel Breather	One
16.07	Air release device	One
16.08	Thermometer Pockets	Two

16.09	Drain valve with blanking plate	One
16.10	Filter valve with blanking plate	One
16.11	Explosion vent with double diaphragm	One
16.12	Detachable Radiators	Four
16.13	Uni-directional Flat Rollers	Four
16.14	Separate Neutral Bushing	One
16.15	GOR/Reputed with A&T Contacts	One
16.16	Oil Temp Indicator with A&T	One
16.17	Winding Temperature Indicator with A&T	One
16.18	Magneting Oil Gauge with A&T	One
16.19	Marshaling Box	One
16.20	HV Bare Bushings	Three
16.21	L.V Busduct	Four
16.22	Jacking pads	Four
16.23	RTCC Panel	One
16.24	AVR	One
17.PAINTING		
17.00	Surface preparation	By Grit Blasting
17.01	Paint	Enamel Light Grey, Shade No.631, of IS : 5
18.TESTS		
18.00	**ROUTINE TESTS**	
18.01	As per IS: 2026 all the routine tests are carried out	
NOTE: The transformer make should be approved as per the CEIG / CEA & TSSPDCL norms.		

TERMS AND CONDITIONS OF 150 KVA TRANSFORMER

1. Compliance with Standards

The transformer shall conform to the latest editions of IS 2026, IS 1180 (Part-1):2014 (Level 2), and other relevant IS/IEC standards as applicable.

2. Inspection and Testing

- All routine, type, and special tests (if required) shall be conducted in accordance with IS/IEC standards.
- Pre-dispatch inspection by the purchaser or their authorized representative is mandatory.

3. Warranty

The transformer and all associated accessories shall carry a minimum warranty of **5 years from the date of commissioning** or **5.5 years from the date of supply**, whichever is earlier.

4. Delivery and Packing

- The transformer shall be securely packed to prevent any damage during transit.
- Transportation and unloading at the site shall be under the supplier's scope.

5. Installation and Commissioning (Turnkey Basis)

- The **entire work shall be carried out on a turnkey basis**.
- The supplier shall:
    - Conduct **complete site survey**.
    - **Construct the substation** including a **suitable concrete foundation/base** for the transformer and panels.
    - **Draw 11 kV HT supply** from the nearest pole (approximately 50 meters away) to the transformer location.
    - Provide **all required HT cables, terminations, insulators, hardware, and protection systems**.
    - After transformer installation and testing, install:
        - **One panel** in the substation with a **suitable MCCB** for outgoing LT supply.
        - **One panel in the workshop** with:
            - **One MCCB (main incomer)**.
            - **30 MCBs of various ratings** to distribute power to different workshop loads.
    - Lay **all interconnecting cables** (approximate 200meters) (LT) from substation to workshop.
    - If required, provide a **cable trench** or use other suitable methods for safe and reliable cable laying.
    - Ensure proper **earthing** and **lightning protection** systems are installed as per IS standards.

6. Drawings and Documentation
The supplier shall submit the following for approval and after completion:

- General Arrangement (GA) drawings
- Nameplate details
- Wiring & control diagrams
- Test certificates
- Foundation/civil layout drawings
- Warranty certificate

7. Performance Guarantee
The transformer shall perform satisfactorily under rated conditions. Any deviation, failure, or underperformance during the warranty period shall be rectified or replaced by the supplier at no cost.

8. Earthing and Lightning Protection
The supplier shall ensure:

- Proper earthing for all equipment.
- Provision and installation of suitable **Lightning Arrestors (LAs)** at the substation.

9. Replacement of Defective Materials
Any defective or non-conforming item shall be replaced **free of cost**, including transportation and associated handling.

10. Insurance
Transit insurance up to the delivery and acceptance point at the site shall be in the supplier's scope.

11. Training
The supplier shall provide **basic operational and maintenance training** to the client's technical staff after successful commissioning.

12. Make Approval
Only **approved/reputed makes** shall be used for critical items such as:

- Core and winding conductors
- Transformer oil
- Bushings
- Panels, MCCBs, and MCBs
- Cabling and accessories
  Makes must be **pre-approved by the purchaser** before manufacturing.