



**Department of Engineering Wing (Electrical)
Islamic University of Science & Technology**

Awantipora, Kashmir-192122

**SUPPLY, DESIGN, FABRICATION, TESTING AND
COMMISSIONING OF 630 KVA DT**

AT

**ISLAMIC UNIVERSITY OF SCIENCE &
TECHNOLOGY**

AT

AWANTIPORA, KASHMIR

TENDER DOCUMENT

EXECUTING AGENCY

**ISLAMIC UNIVERSITY,
AWANTIPORA, JAMMU & KASHMIR.**



Department of Engineering Wing (Electrical) Islamic University of Science & Technology

Awantipora, Kashmir-192122

Tender Notice

For and behalf of Vice Chancellor, Islamic University of Science and Technology (IUST), sealed tenders affixed with revenue stamp of Rs. 5/- are invited from the class "A" Contractor & Manufacturers registered with JKPDD, MES or CPWD and possess the required licences, registration as per law valid at least for six months from the date of the opening of the bid for Supply, Design, Fabrication, Testing & Commissioning of 630 KVA Distribution Transformer (DT) at IUST. Tender document can be downloaded from IUST website www.islamicuniversity.edu.in against bank receipt/demand draft of Rs. 500/- drawn in favour of IUST Awantipora payable at Awantipora. The Last date for receipt of tender document complete in all respects is **20-02-2018** up to 2 pm.

Sd/-
Superintendent Engineer

No: IUST/EW-ELE/Tend-Notice/428

Dated: 05-02- 2018



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ELIGIBILITY CRITERIA FOR BIDDING:

1. The contractor should be class “A” Contractor & Manufacturers registered with JKPDD, MES or CPWD and possess the required licences, registration as per law valid at least for six months from the date of the opening of the bid.
2. The Contractor should produce service tax deposit receipt issued by the central excise department. Permanent Account Number (PAN) issued by the department of income tax.
3. The contractor should produce compiled balance sheet and income tax return of the department dully certified by the chartered Accountant of the previous three financial years.
4. The Contractor should produce the experience of successful completion of works of electrical utility having similar magnitude and duration value not less than Rs 10 lacs in the last three proceeding financial years. A certificate to this effect should be placed for record by chartered Accountant.

Note:-

1. *Please attach relevant documents in proof of above submission.*
2. *Offers of the bidders who do not possess required qualification shall not be considered even if their bid is lowest.*



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General Terms and Conditions

1. Last date for receipt of tender document complete in all respects is 20-02-2018 up to 2 pm.
2. Material used shall be of standard make quality and strictly as per relevant IS. Defective, unspecified material shall be entertained on this account.
3. The work shall be completed within the period of 15 days positively falling a penalty up to 10% of the allotment shall be imposed on the firm at the discretion of the Ex. Engineer/SE IUST. Time of completion is the essence of contract
4. In the event of the failure of the firm to execute the work in the stipulated time, the SE IUST reserves the right to get the works executed through some other agency partly or in full at the risk and cost of the firm.
5. The work executed shall be guaranteed for satisfactory period of one year from the date of commissioning. During this warranty period the firm will be liable to replace any item/spare, and/or re execute the work without any extra cost to the IUST, in case the performance of the same is not satisfactory.
6. The firm shall execute an agreement with the IUST after issuance of the allotment order before execution of work envisaging all terms and conditions as laid down in PWD Form 25 without which the firm shall not be entitled to any payment even if the work is executed in full.
7. Any dispute or difference what so ever may arise between the IUST/ Firm either of the party may give in writing to either side and same shall be referred to SE(IUST) for arbitration under J&K Arbitration act 1940. The decision of arbitrator will be final conclusive and binding on the parties.
8. The funds for the subject work have been demanded. However the payment shall be made to the firm as and when the funds are available. The IUST will not be responsible on this account which please may be noted
9. The firm has to get work inspected through inspection agency J&K P.D.D.
10. The work has to be handed over properly to IUST Engineering Wing with inventory
11. During the execution of the work the firm shall be personally responsible if any accident/ incident theft takes place at site. During this period damage to any extent shall be the personally responsible of contractor/ firm.
12. Must be registered with state PDD or CPWD or central government as "A" class Contractor. The licence should be valid for the current financial year.
13. Should have a PAN card
14. Should have Income tax clearance & GSTIN certificate from income tax department ending March 2017.
15. Tender without 2% of estimated cost in the form of CDR drawn in favour of finance officer IUST will not be accepted even though these works out to be lowest .



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16. Security deposit 3% of the estimated cost shall be deposited by way of call Deposit Receipt of any nationalised /scheduled bank pledged to finance officer.
17. Security deposit will be refunded to the unsuccessful tenderers against application but will be held in case of successful.
18. Bid will be opened on 20-02-2018 at 2pm or any subsequent date convenient to works committee IUST in the office chamber of chairman works committee IUST.
19. The IUST has a right to reject any or all the tenders without assigning any reason.
20. The rates quoted by the tenders are deemed to be FOR IUST inclusive of all taxes duties insurance, cess, GST transportation and inspection charges.
21. In case of any discrepancy between rates written in word and figures (by the tenderer) the rates written in words shall be taken as final.
22. Subletting of allotted work wholly or partly is strictly prohibited and will be treated as a breach of contract.
23. Stipulated technical specification which demand additional requirements are applicable under Indian standard/ REC specification amended up to date are deemed to have been incorporated. Out of the prescribed make it shall be discretion of IUST to approve the make as per IUST requirement at site.
24. The contractor shall supply the material within stipulated period of 15 days immediately after issuance of order/LOI
25. If the IUST at any stage are not satisfied with the quality of the material, IUST may employ another contractor or agency for supplying the same and excess expenditure shall be recoverable for the original contractor /agency.
26. No claims of any sort will be entertained after ordering the work. Any dispute or claim must be brought to the notice of IUST in writing and got settled before undertaking such execution of work.
27. On failure of the contractor to carry out or comply with any of the conditions of this contract he will be deemed to have backed out from the contract and all the penalties under the rules of registration of contractor will be enforced against contractor
28. The work or material of defective quality shall be totally rejected and not considered on reduced rates. The contractor shall supply all the material according to approved specification, design and drawings.

SIGNATURE OF CONTRACTOR



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ISLAMIC UNIVERSITY OF SCIENCE AND TECHNOLOGY.

BILL OF QUANTITIES OF SUPPLY, DESIGN, FABRICATION, TESTING AND COMMISSIONING OF
630 KVA DT AT ISLAMIC UNIVERSITY AT AWANTIPORA, J&K.

PREPARED BY

ENGINEERING WING ELECTRICAL IUST.

S.No		DESCRIPTION	UNIT	TOTAL QTY	RATE	AMOUNT
SUB HEAD (I):						
1		Supply , Design , Fabrication , Manufactured, Shop Tested & Inspected 630 KVA : (Three Phase ,11000/440 Volt , Step Down , Outdoor Type , Double Wound ,50 Hz , Oil Immersed Naturally Cooled (ONAN) Distribution Transformer) with Neutral effectively Earthed (Solid Earthing) with suitably designed for service under Fluctuation in Supply Voltage up to (± 12%) permissible under Indian Electricity Supply Act & Rules with OLTC (Off Load Tap Changer) suitable for local Operation. The Transformer shall be Core type Construction with Two Windings.	NO	1		
	a)	The Transformer shall Confirm in all respects to ISS-2026 of 1977 with latest amendments thereof. Fillings & Accessories shall also comply generally with latest edition of relevant Indian Standards as detailed under; 1) For Bushings IS-2099 of 1977, IS-7421 of 1974 & IS-3346 of 1977 . 2) For Transformer Oil IS-335/1983 . (Routine Tests as per REC Specification no.				



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		23 of 1983 & IS-1180/1983. Loading Tests IS-6600 of 1972)			
	b)	<p>The Rating & Electrical Characteristics shall be as detailed below:-</p> <ol style="list-style-type: none"> 1. Continuous Capacity ...630 KVA. 2. Rated Voltage (HV) Winding ...11000 Volt. 3. Rated Voltage (LV) Winding ... 440 Volt L-L RMS & 230 Volt L-N RMS . 4. Rated Frequency ... 50 Hz. 5. Connection HV ... Delta type Winding. 6. Connection LV ... Star type Winding. 7. No, of Phases Three (3). 8. Vector Group ... Dyn-11 . 9. Type of Cooling ONAN. 10. Polarity ... Subtractive. 11. No Load Ratio Principal Tap.... 11000/440. 12. Highest System Voltage : <ol style="list-style-type: none"> a) HV 12000 V (12KV) b) LV 1100 V (1.1 KV) 13. Taps on HV Side Transformer with Off Circuit Tap Changing Gear in a step of 2.5% each on HV Side. 14. Impedance Voltage at 75% 5% for (100 KVA to 1 MVA). 15. Temperature rise above ambient as 			



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		per IS-2026: a) Windings 50°C by Resistance Methods. b) Oil (Hottest Layer)..... 45°C by Thermometer.				
	c)	Fillings & Accessories to be provided :- 1) Inspection Covers. 2) Diagram & Rating Plate. 3) Terminal Marking Plate. 4) Two Earthing Terminals. 5) Lifting Lugs. 6) Jacking Lugs. 7) Flanged Wheels. 8) Oil Filling Hole with Plug.				



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		<p>9) Air Release Device. 10) Drain Value with Plug and Locking arrangement. 11) Conservator. 12) Dehydrating Breather with Silica Gel. 13) Pressure relief device. 14) Radiators.</p>				
	d)	<p>The Transformer has to function under Climatic conditions as detailed below ;</p> <p>a) Maximum Temperature of Air + 45⁰c b) Minimum Temperature of Air - 12⁰c c) Maximum Humidity 93% d) Average no. of Thunderstorms 45 e) Average no. Dust Storm 20 f) Average Rainfall 2200 mm g) Altitude above Sea Level..... 1700 m M.S.L</p>				
TOTAL AMOUNT In Figures			Rs 5,50,000/-			
TOTAL AMOUNT IN WORDS			Rs. Five Lakhs & Fifty Thousand only/-			

TECHNICAL SPECIFICATION OF 630 KVA , 11/ 0.440 KV DRY TYPE OUTDOOR TRANSFORMER

1. Scope:

This specification covers design, manufacture, testing and supply of 630 KVA , 11/0.415 KV, Dry Type Distribution Transformers as per details furnished.

2. Location:

The Transformers may be installed Existing Double Pole Steel pole Structure at IUST. The elevations of the system mean sea level shall not exceed 1700 meters.



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3. System Details:

The 11 KV & 415 V systems are effectively earthed at the neutral points of the star connected with Transformers.

4. Weather Conditions:

4.1 The area is also subject to heavy snowfall/rains, 60 to 75% of the annual precipitation. Maximum Humidity 93%
Average number of thunderstorm day per annum 45. Average no. Dust Storm 20

4.2 Average rainfall per annum 2200 mm, Maximum wind pressure 150 kg/m² . For the purpose of this specification, the maximum daily average ambient temperature shall be 20°C over 24 hours period.

5. Standards:

5.1 Transformers covered by this specification shall, unless otherwise specified by built to conform Indian Electricity Rules, wherever applicable and the requirements of latest issue of ISS: 11171 ; CBIP Standards and other ISS (all as per latest issues.

5.2 In the event of a conflict between the above standard and the specification, the latter shall govern.

6. Rating and Central Data for Dry type Distribution Transformer:

6.1 Core type three phase Dry type step down two winding distribution Transformers for installation with weather condition as stated above.

6.2 Rating : 630 KVA .

6.3 Number of phase : Three

6.4 Frequency: Transformer shall be suitable for continuous Operation with a frequency variation of $\pm 3\%$ from normal 50 c/s without exceeding the specified temperature rise.

6.5 Type of cooling: ONAN

6.6 Voltage Ratio: 11/0.440 KV

6.7 Vector Group Reference: Dyn11

6.8 Category: Dry, ONAN , totally enclosed, Nomex insulated VPI type.

7. Connections:

The primary (HV) winding shall be connected in delta and the secondary (LV) winding star with vector Dyn11. The neutral of the secondary (LV) winding shall be brought out to a separate insulated terminal. The size (cross section) of the neutral connection conductors and jumpers must be of same size as that of phase connecting conductors and jumpers which shall be properly supported and insulated.

8. Temperature Rise:



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i) Average winding temp. rise by resistance method above 50°C max. ambient shall not exceed 120°C for Class C with a max. Permissible hot-spot temp. of 30°C over and above specified temperature rise limit for that particular class of insulation.

ii) Core, metallic parts solid insulation and associated materials shall in no case reach a value that may damage these materials or reduce their life expectancies.

9. Leads:

All leads of the windings, connection of the windings or their wires to one another to terminal bushing properly insulated and covered with insulation sleeves. The soldering materials shall have higher melting temperature above 300°C and preferably above 400°C for better thermal endurance and mechanical strength. The tenderer shall specifically mention the method and materials to be used by them for lead connection.

10. Tap Changing Arrangement:

Link Type Off Circuit Tap Changing Arrangement should be provided in the Transformer. Link type Taps ranging from +5% to -7.5% in steps of 2.5% on H.V winding for H.V. variation. The Tap link shall be located in a convenient position so that it can operated/changed from ground level. The link connection should be properly marked. The link connection diagram in separate metal sheet shall have to be provided nearby. The same should also be mentioned in Rating & Diagram plate.

11. Enclosure & Fitments

11.01 The core and coil assembly shall have CRCA pressed and shaped sheet steel. MS enclosure suitable for mounting on plinth in open air. The purpose of having the enclosure is to provide safety from live parts , protect and make the equipment suitable for outdoor use , prevent ingress of foreign particles rain water , vermin , rodent, outside dust & against ingress of splashing water of water etc. as per IP 54. The enclosure shall have structural steel frame work with lockable hinged door on HV and LV terminal sides. The gas kitted doors shall facilitate the inspection of transformer.

11.02 The CRCA sheet steel thickness shall be not less than 3.0 mm for structural members and 3.0 mm for all doors/covers etc.

11.03 The complete structure shall be rigid, self – supporting. To remove heat from transformer, its metallic enclosure shall have sufficient heat dissipation capability in outdoor conditions without any additional cooling arrangement. G.I or S.S. wire mesh shall be provided in the gap in between enclosure and ventilation hood to prevent entry of birds etc. Powder / enamel paint coated 3.0 mm thick CRCA sheet steel shall be provided for enclosing the bottom side.

11.04 The enclosure shall not have degree of protection less than IP 54 and fully enclosed type for outdoor use. The fitments shall comprise the following;

i) Cowl type inspection cover is to be provided on a raised boss on the top plate at a suitable position for getting access to HV & LV risers as well as HV tapping links inside the tank.

ii) Two drain plugs should be fitted at the bottom of the transformer enclosure to drain out water, accumulated due to humid deposition or seepage.



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- iii) Ports should be provided in core & winding for inserting temperature measuring transducers.
- iv) Lifting hooks on top cover of the main tank.
- v) Diagram and rating plate, Danger Plate.
- vi) Lifting lugs.
- vii) Two earthing terminals
- viii) Skid channels with rounded corners to be provided along the width of the transformer with hole centers at 457mm at the centre of gravity of the whole transformer. Open side of the channels should be outwards.
- ix) Property Plate along with Asset Codification No.: Asset codification no. for the ordered quantity shall be communicated to the supplier after placement of order. Necessary Engrave/Embossing (cold punch) shall be done on the main tank with 28 no font size and DTR name and diagram plate with font size not less than that used for marking KVA rating of the DTR. If cold punch on the tank is not possible then separate property plate(details marking of the plate shall be submitted with the transformer drawing for approval) shall be welded to the tank with the following details:-
(1. Ratings : 2. Manufacturer's Sl. No. : 3. Manufacturer's Name : 4. P.O. No. : 5. Year of Manufacturing: 6. Property of : JKPDD 7. Asset Code Number: (10 digit alpha numeric numbers as allotted by the purchaser) Again the following points shall have to be noted a) Front Size of letter shall be 28 i.e. 7 mm x 5.5 mm) b) Letters shall be distinctly engraved by cold Punch c) Plate size shall be min. 125mm X 170mm and shall be electrical run Welded be throughout its perimeter d) Material of Plate shall be Mild Steel and not less than 3mm thick. e) Plate shall be welded on the transformer tank at visible position and height.
- x) Explosion Vent-Two nos. explosion vents should be provided on main tank top copper to be shown in the General Arrangement Drawing. The area of each vent shall be 75 mm x 50 mm approx.
- xi) The transformer is to be mounted on plinth in the open air i.e. fully outdoor type. The sheet thickness of different parts of the transformer are tabulated as: LV cable Box LV Door Leaf HV cable Box HV Door Leaf 3.15 mm 3.15 mm 3.15 mm 3.15 mm

12. Core:

12.1 The magnetic core shall be built of very low loss Silicon steel, cold rolled grain oriented steel. Core should be of stack core type.

12.2 The materials used for insulating the sheets, shall have high interlamination resistance and rust inhibiting property. It shall not be deteriorated by ageing from hottest operating temperature and clamped pressure of the core disintegrated due to mechanical modes of core vibration. It shall not have the least tendency to absorb moisture, or to react with the moisture present in the air thus accelerating deterioration of insulation.

12.3 The assembled core shall be securely clamped in the lines and in the uniform pressure so as to minimize the noise from the core.



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12.4 The core-clamping frame shall be provided with lifting eyes for the purpose of lifting/shifting. The whole core shall be electrically connected by copper strip of adequate section to the core frame at two separate points for being eventually earthed through the tank to drain off electrostatic potential that may be built up. Core base and top and bottom of yoke shall be supported with M.S. channel of proper size and properly bolted together for stack type core.

12.5 Adequate provision shall be made to prevent movement of the core and winding relative to the enclosure during transport and installation or while in service.

12.6 The core shall conform to : IS: 3024-1965 Electrical Sheet Steel & IS: 649 – 1983 method of test and steel sheet.

13. Windings:

13.1 Transformer shall be provided with the requisite number of windings (as detailed hereunder in cl.16.2 and shall be designed to withstand the electromechanical stress exerted under short circuit conditions as per ISS: 2026 -1977. Class 'C' Insulation shall be used. The winding of Dry Type transformer will be non-encapsulated.

13.2 Construction details : HV & LV Coils

i) Active Material – copper conductor

ii) H.V. Winding – Nomex insulated round conductor.

iii) No. of H.V. Sections - 8 coils (Cross Over)/ continuous disk for 630 KVA, 11 / 0.415 KV Transformer.

iv) LV --- Multiple rectangular copper strip with Nomex inter – layer insulation to achieve best short circuit withstand capability. LV -- Copper strip of spiral type. v) Coil Insulation-Insulated with Nomex and glass tape and impregnated in Dow Corning make silicon varnish under vacuum. vi) Coil spacers & supports-High temp. Epoxy fiber glass.

13.3 The insulation level of the Windings shall be as follows as per 11171 –1985 of CEA guideline. Voltage Impulse Voltage Short duration Power frequency Voltage 415 V - 3 KV 11000 V 75KV 28 KV

13.4 The winding shall be so designed to reduce to a minimum the out of balance forces in the Transformer (at all voltage ratio).

13.5 The winding shall also be designed such that all coil assemblies of identical voltage rating shall be interchangeable.

13.6 Bracing of Windings:

(1) The windings and connections of all transformers shall be braced to withstand shocks which may occur during transport or due to switching short circuit and other transient conditions during service.

(2) Coil clamping rings, if provided, shall be of steel or of suitable insulating material.

(3) The winding shall be assembled on the core co-axially for magnetic balance and symmetrically for electrical balance. Liberal ducts shall be provided for air circulation and lowering spot temperature in the winding. Spacers, wedges shall be robust, hard insulations are so fitted in the winding that they will neither move nor permit any relative movement of any part of the winding during normal service and under a terminal short circuit, not mechanically injure any insulation in the windings.



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14. Bushing:

11 KV Bushing should be as per Standard Specification suitable for Dry Type Transformer. The bushings shall be of outdoor pattern (corrugated type) with long creep gel path suitable for polluted atmosphere. The bushing shall conform to IS: 2099-1962(latest)-bushing for Alternating voltage above 1000 volts 7421-1974(latest) for bushing up to and including voltage up-to 1000 volts. The dimensions of bushings of the following voltage classes shall conform to Indian Standard mentioned them. Voltage Class Indian Standards For Porcelain Parts For Metal parts Up-to 11 KV Bushing IS: 3347 / Part – I (Sec – I) (1979) IS: 3347 / Part-I(Sec-2) (1979) 12/17.5 KV Bushings IS: 3347 / Part - III (Sec - I) (1972) IS:3347 / Part-III(Sec-2) (1982). The clearances in air between live and conductive parts and live conductive part to earthed structures shall be as follows in cable end box: Nominal System Voltage (KV RMS) Test Voltage Impulse (KVP) Phase to Phase (MM) Phase of Earth (MM) 0.415 NIL 45 20 11 95 130 80 ** In LT side Copper Bus Bar on suitable fixture and of suitable size (100 mm x 8 mm) to be provided.

15. Cooling Arrangement:

15.1 The transformer shall be suitable for loading of 100% continuous maximum rating with 'ONAN' cooling without exceeding the thermal limit.

16. Painting:

16.1 The surface to be painted shall be completely cleaned & made free from all rust, scale or foreign adhering matter of grease.

16.2 After through metal treatment enclosure surface shall be given a primary coat of Zinc chromate and two coats of dark admiral gray/green (IS 104 & IS 2932) enamel / powder paint . Double coat of corrosion resistant primer shall be applied before painting. The inside of the enclosure shall have semi glossy paint finish. All metal parts not accessible for painting shall be made of corrosion resistant material. All steel surface exposed to weather, shall be given a primary coat of Zinc chromate and two coats of dark admiral gray paints.(IS 104 & IS 2932).

16.3 All paints shall be carefully selected to withstand tropical heat and extremities of weather. The paint shall not scale off or wrinkle or be removed by abrasion due to normal handling.

16.4 All nuts and bolts used in the Transformer for external fittings shall be galvanized or zinc passivated and painted with body paint.

17. Test & Inspection (As per I.S.S):

17.1 Routine Test: All Transformers shall be subject to routine tests at the manufacturers Works. The following tests are to be carried out.

- (a) Measurement of winding resistance.
- (b) Ratio, polarity and Vector Group test.
- (c) %Impedance voltage at Principal Tap position at 50 Hz & 75°C.
- (d) Load losses at 75°C .



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- (e) No load loss at 50 Hz.
- (f) Load Loss at 75°C at 50% loading.
- (g) Load Loss at 75°C at 100% loading
- (h) Insulation resistance.
- (i) Induced over voltage withstand.
- (j) Separate source voltage withstand
- (k) Unbalance current: The maximum value of unbalance current in Transformer shall not exceed 2% of full load current as per CBIP manual for Transformer.
- (l) Magnetizing current at rated voltage & frequency and 110% of rated voltage & frequency.
- (m) Temperature rise test-will be conducted on one transformer for every offered lot for inspection. The temperature rise test will be performed on lowest tap at appropriate current related to the said tapping with total losses fed corresponding to min. Voltage tapping as per IS 2026 (Part-2) 1977, amendment no.2, 1984.

18. TYPE TESTS:

As per IS 11171 the following mandatory Type tests & Special tests are to be carried out by the manufacturer on one Transformer of the total ordered quantity in addition to routine test mentioned above.

- a) Lightning Impulse test as per clause no – 16 of IS 2026 – Part - 1.
- b) Temperature Rise Test
- c) Partial Discharge test as per clause no – 18 of IS 2026 – Part – 1.
- d) Measurement of acoustic sound level as per clause no – 19 of IS 2026 – Part – 1.
- e) Dynamic Short Circuit test as per clause no – 20 of IS 2026 – Part – 1. All the costs related to Type & special tests are to be borne by the manufacturer. Bidder should submit Lightning Impulse withstand test , Temperature Rise Test, Dynamic Short Circuit withstand test, Partial Discharge test and Measurement of acoustic sound level test report from CPRI/NABL(third party)/Govt. approved Laboratories along with their offer having identical rating and voltage ratio and type as that of the tendered item, carried out within five years, as per pre-requisites of this tender, failing which their offer may not be technically accepted. However, after placement of order, Type tests & special test (Lightning Impulse withstand test, temperature Rise Test, Dynamic Short Circuit withstand test , Partial Discharge test, Measurement Page 10 of 25 of acoustic sound level) after successful routine test shall have to be done on one Transformer designed as per specification of JKPDD and approved drawing. Such Type tests & special tests are to be carried out at CPRI/ NABL (third party)/Govt. approved Laboratories in presence of JKPDD engineers. All the related costs for carrying out such Type & Special tests are to be borne by the manufacturer. The Transformer during testing for Dynamic Short Circuit Test shall not exhibit more than 2.0% variation in percentage reactance from it,'s original value. Routine & Temperature rise Test have to be carried out in presence of JKPDD engineers before carrying out Lightning Impulse withstand test , Temperature Rise Test, Short Circuit withstand test, Partial Discharge test and Measurement of acoustic sound level.



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Temperature rise Test shall have to be conducted on one transformer for every offered lot against the order design in presence of the Engineers of JKPDD.

19. INSPECTION:

The Transformer may be stage inspected at the factory of the manufacturer. The manufacturer shall intimate in advance, in writing, to the purchaser about the stages of manufacturer & subsequent readiness of the transformers, to enable the purchaser to carry out stage inspection & final inspection and testing of the finished transformers. The stage inspection will be carried out at the discretion of the purchaser during the process of manufacturing of the Transformers. The manufacturer need not stop the process of production because of programme of stage inspection of the Purchaser. While offering for final inspection, the following point should invariably be taken care of:

i) Name Plates should be welded / riveted on the enclosure of the Transformer.