

# TENDER DOCUMENT

FOR

**SUPPLY & DELIVERY OF 1.1 KV GRADE, XLPE  
INSULATED & PVC SHEATHED ARMoured ALUMINUM  
CABLES FOR INTERNAL POWER DISTRIBUTION AT  
COTTON UNIVERSITY**

**PART – A**

**TECHNO-COMMERCIAL BID**



अप्रमत्तेन वेद्व्यम्

NIT No. 04 of 2021-2022

Dt. 08.03.2022

Cotton University  
Panbazar, Guwahati-781001, Assam, India  
[www.cottonuniversity.ac.in](http://www.cottonuniversity.ac.in)  
Phone: 0361-2733530: Fax: 0361-2733502

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## NOTICE INVITING TENDER

NIT No. 04 of 2021-2022

Date: 08.03.2022

Sealed tenders in two-bid-system are invited from reputed manufacturers of 1.1 KV Grade XLPE Cables or their authorized dealers/distributors for the following work.

Name of work	Supply & delivery of 1.1 KV grade, XLPE insulated & PVC Sheathed Armoured Aluminum Cables for internal power distribution at Cotton University
Earnest Money	₹ 44,000.00/-
Last Date & time for Submission Tenders (Both Technical & Commercial parts i.e. Part-A & B)	23.03.2022 Till 14.00 Hrs
Date & time for opening of Part-A (Technical Bid)	23.03.2022, 15.30 Hrs
Time of completion	45 (Forty Five) Days

### TERMS AND CONDITIONS –

#### A. Qualifying criteria:

1. Only the manufacturers or their authorized dealers/distributor of the following brands shall be eligible to participate —  
HAVELLS/ RPG/CCI/POLYCAB/ GLOSTER/ FINOLEX / NICCO/ KEI/ RR.
  - 1.1 In case of authorized dealer/distributor, the agency must submit valid certificate to establish their dealership/distributorship.
  - 1.2 The authorized dealer/distributor must be in the business for a period not less than 5yrs and documents in support to this shall be enclosed with the tender.
2. Cable brand must be ISI marked for the type of cables offered. Valid certificate from BIS shall be submitted.
3. Updated price-list of UG armored cables of respective make must have to be furnished along with the technical bid.

#### B. Other Terms & Conditions:

1. Soft copy of the tender will be available in the university's website. Interested bidders can deposit the cost of the tender amounting to Rs. 500/- either through DD drawn in favour of "Cotton University" payable at Guwahati or ICICI bank challan **FEECODE011(available in the website)** and the counter folio must be submitted with the technical bid of the tender failing to which the tender will summarily be rejected.
2. EMD for ₹ 42,000.00/- (Rupees Forty Two Thousand One Hundred only) shall be enclosed along with the tender. The EMD shall be paid in the form of Demand Draft drawn in favour of "Cotton University" payable at Guwahati. Tender submitted without EMD will not be considered.
3. In case the tender is submitted through authorized dealer/distributor of the approved brands of cables, attested copy of dealership/distributorship certificate from the manufacturer must be enclosed, without which, the offer will be rejected.

4. The Tenderers shall submit their technical as well as the price bid in two separate envelopes marking one envelopes as **Techno-commercial Part-A** & other as **Part-B: Price Bid** with name of work & bidder's name on it on the separate envelope. These two envelopes shall be placed inside another envelope with name of work & bidder's name on it. **Part A** shall include the following : —
- a) Earnest Money Deposit as mentioned in Sl. No. 1 above.
  - b) All documents in support of the qualifying criteria mentioned at A. above.
  - c) Technical details, catalogues and commercial terms etc. complying against each specification mentioned in Annexure – I
  - d) Annexure – II duly filled up by the bidder.

**Part B** shall contain the Price offer filled up as per the format of Price Bid of the Tender Document. The Price Bid of the bidders fulfilling the criteria as per the NIT on the basis of documents submitted in the Techno-Commercial Bid shall only be opened.

**The Tenderer must furnish the Technical bid along with all required documents in hard not spiral binding only and in the event of non compliance of this instruction, tender is liable to be cancelled. Hard copy of tender in loose or stapled papers will not be accepted.**

Tenderers must submit tender at the following office:

**The Registrar,  
Cotton University  
Panbazar, Guwahati – 781001**

5. The technical specification of the cables is enclosed in Annexure – I. The evaluation of the technical bid shall be based on compliance of all the specifications as mentioned under Annexure – I and Annexure – II.
6. Rates must be valid for 6 (six) months and shall be inclusive of all GST, transportation to the site (i.e. Cotton University, Panbazar, Guwahati), loading & unloading at site.
7. Rate shall be shown (as per enclosed format) with break-up of basic rate, transportation and transit insurance, GST etc. till unloading at site. The quoted rate shall be inclusive of the cost of loading at the factory and unloading at site.
8. Relevant technical details, reports of test conducted on similar cables at authorized test centers, quality certification if any, list of similar orders executed along with performance certificates etc. shall be submitted with the tender (in the Techno-Commercial Bid).
9. The University reserves the right to approve more than one supplier and split the order accordingly.
10. Time allotted for the delivery of cables shall not be more than 45 (Forty Five) days from the date of issue of order.
11. The cables supplied shall be guaranteed for a minimum period of 12 months from the date of commissioning or 18 months from the date of supply whichever is earlier.
12. The successful bidder shall submit security deposit equivalent to 5% of the total value of the cables to be ordered, through Demand Draft / Bank Guarantee of any Nationalized Bank. The security deposit shall be retained till the expiry of the guarantee period of cables supplied against the order. The security deposit shall stand forfeited against failure to execute the order as per above terms or failure to do rectification / replacement needed in case of any defect in design, materials and workmanship of the supplied cables within the guarantee period.
13. Full payment will be made against submission of bill after supply and acceptance of the cables against the order. However, no payment will be released unless the security deposit as mentioned under item 12as submitted. No part payment will be entertained.

14. Tolerance in length in individual drum shall be  $\pm 5\%$ , while the overall tolerance on the total length of individual size of cables shall not exceed  $\pm 2.5\%$ . **Payment shall be made as per actual length of the cables supplied.**
15. In case, the day of submission of the tender happens to be a holiday on account of Govt. notification or due to some unavoidable circumstances and the submission & opening of the tenders shall automatically be extended to the next working day, the times specified remaining the same.

**The University reserves the right to reject any or all of the tenders without assigning any reasons thereof.**

**TECHNICAL SPECIFICATION FOR 1.1kV XLPE POWER CABLE ( CROSS LINKED  
POLYTHELENE DRY GAS CURED  
ANNEXURE-I**

1.1 SCOPE:

- 1.1.1 This Section of the Specification covers design, manufacturing, testing, packing, supply & delivery of following 1.1 kV XLPE insulated power cables.

1100V, XLPE insulated, armoured, aluminium underground power cable (A2XFY)- 300sq mm, 3.5core	700m
1100V, XLPE insulated, armoured, aluminium underground power cable (A2XFY)- 240sq mm, 3.5core	600m

2 STANDARDS:

- 1.2.1 Unless otherwise specified, the cable shall conform in all respect to IS: 7098 (Part-I)-1988 with latest amendment thereof.

1.3 CLIMATIC CONDITIONS:

- 1.3.1 The climatic conditions under which are cables shall operate satisfactorily are as follows:

- |  |                         |
|--|-------------------------|
| (a) Maximum ambient temperature of air                               | $^{\circ}\text{C}$ : 50 |
| (b) Minimum ambient temperature of air in shade                      | $^{\circ}\text{C}$ : 4  |
| (c) Maximum daily average ambient temperature<br>$^{\circ}\text{C}$  | : 40                    |
| (d) Maximum yearly average ambient temperature<br>$^{\circ}\text{C}$ | : 30                    |
| (e) Maximum relative humidity %                                      | : 95                    |

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- (f) Average number of thunder storm days per annum : 15
- (g) Average annual rainfall cm : 150
- (h) Maximum wind pressure Kg/cm<sup>2</sup> : 150
- (i) Altitudes not exceeding above MSL mtrs. : 1000
- (j) Maximum soil temperature at cable depth<sup>0</sup>C : 30<sup>0</sup>

1.4 PRINCIPAL PARAMETERS:

1.4.1 1100V XLPE, 3.5-Core, power cable shall be of high conductivity, stranded compacted, H.D. aluminum circular shaped conductor with XLPE (cross linked Poly Ethylene) insulation provided with laid together and provided with common covering of PVC Inner Sheath (Extruded). Overall galvanized steel strip armour and PVC outer sheath shall be provided. The specification for manufacture of cable shall be conforming to IS: 7098 (Part-I) 1988 (latest edition).

1.4.2 Outer sheath shall be designed to afford high degree of mechanical protection and shall also be heat, oil, chemical and weather resistant, Common acid, alkalis and sealing solution shall not have adverse effect on material of PVC sheath.

1.4.3 Cable shall be suitable for laying in covered trenches and / or buried under-ground in outdoor.

1.4.4 Cable Parameters

:

- (i) Voltage grade V : 1100
- (ii) Cores (Nos) : 3.5
- (iii) Nominal system voltage V : 430
- (iv) Highest system voltage V : 460
- (v) System frequency Hz : 50
- (vi) Variation in frequency % : 3%
- (vii) (a) Maximum allowable temp. of conductor during continuous normal operation at rated full load current.

0  
C  
(b)  
Maxi  
mu  
m

*Sharma*

allowable : 90

temp. under short circuit  
condition °C : 250

(viii) 5 Min, Power frequency  
withstand voltage kV rms : 3

(ix) System earthing : Earthed.

## 1.5 GENERAL TECHNICAL REQUIREMENTS:

### 1.5.1 Conductor:

The cable conductor shall be made from high conductivity stranded High Density aluminum to form compacted circular shaped conductor (H2 grade) having resistance within limits specified in IS:8130/1984 and any latest amendment to it.

### 1.5.2 Insulation:

The XLPE insulation as per IS:7098 Part-I, shall be applied through extrusion.

### 1.5.3. Filler and Inner-Sheath:

The sheath shall be suitable to withstand the site conditions and the desired temperature. It shall be of adequate thickness, consistent quality and free from all defects. The PVC sheath shall be extruded. The material of fillers and inner-sheath shall be compatible with the temperature ratings of the cable and shall have no adverse effect on any other component of the cable. Central PVC filler shall also, be provided with other peripheral PVC fillers to have proper circular section. Thickness of the inner sheath shall be as per IS:7098 Part-1

1.5.4  Armour:

Armouring of galvanized steel strip shall be provided. The dimensions of steel strips shall be as per latest edition of IS: 7098 Part-1 1988.

1.5.5  Outer-Sheath:

Extruded type ST-2 PVC outer-sheath, conforming to IS: 5831-(1984) (latest edition) over armouring with suitable additives (to prevent attack by rodents & termites), shall be provided. Thickness of the outer sheath shall be as per IS:7098 Part-1.

1.5.6 Construction:

1.5.6.1 The cable shall have suitable PVC fillers laid up with insulation cores to have subsequently circular cross-section before the inner sheath is applied. The fillers shall be suitable for operating temperature of the cable.

1.5.6.2 All materials used in manufacturing of cable shall be new, unused and of finest quality. All materials should comply with the requirements / tests as per applicable IS / IEC specification, Indian Electricity Rules and any other statutory provision of rules & regulations.

1.5.7 Operation :

1.5.7.1 Cable shall be suitable for operation under frequency variation of  $\pm 3\%$  and voltage variation of  $+10\%$  to  $-15\%$  and combined frequency - voltage variation of  $10\%$  (absolute sum).

1.5.7.2 Cable shall be suitable for laying in duct or buried underground.

1.5.7.3 Cable shall have heat & moisture resistance properties. These shall be of type & design with proven record on distribution network service.

1.5.7.4 Length :

The cable shall be supplied in standard drum length of at least 500 mtrs.  $\pm 5\%$  tolerance. Over all tolerance in total quantity of ordered cables shall be  $\pm 2\%$ .

1.5.10.5 Identification Mark :

(i) The cable drum shall be printed with information as per cl.21;2 of IS and ISI Certification mark. Bidder shall submit xerox copy of valid ISI Licenses with technical bid.

(ii) For identification of cores, coloured strip of Red, Yellow and Blue colours shall be used for identification of phases. Following details of identification shall be embossed at intervals of length of one meter of cable outer sheath.

(iii) (a) Name of manufacturer (b) year of manufacture  
c) voltage grade (d) Name of purchaser.



1.6 TESTS

1.6.1(A) Type Tests:

At least one size of the voltage grade and type of cable offered should have been fully type tested as per the relevant standards at any Govt. recognized Laboratory. The bidder shall furnish type test reports along with the offer. The Type test reports shall not be older than FIVE years and shall be valid up to the expiry of validity of offer. The purchaser reserves the right to reject the offer in case of failure to submit such Type-test reports.

1.6.1(B) The following type test reports shall be furnished with the offer

- (a) Tests on conductor :
  - (i) Tensile test
  - (ii) Resistance test
  
- (b) Tests for armour strips / wires. :
  
- (c) Tests for thickness of insulation and sheath. :
  
- (d) Physical tests for insulation
  - (i) Tensile strength and elongation at break
  - (ii) Ageing in air oven
  - (iii) Hot set
  - (iv) Shrinkage test
  - (v) Water absorption
  
- (e) Physical tests on outer sheath
  - (i) Tensile strength and elongation at break
  - (ii) Ageing in air oven
  - (iii) Shrinkage test
  - (iv) Hot deformation

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- (v) Heat shock test
- (vi) Thermal stability
  - (f) Insulation resistance (Volume resistivity)
  - (g) High voltage test
  - (h) Flammability test

1.6.2 Acceptance Test:

1.6.2.1 The selection of sample pieces for acceptance test shall be from 10% drums of each lot offered for inspection or part thereof. The minimum shall be one drum.

1.6.2.2 The following acceptance tests shall be carried out on the selected samples as per IS: 7098 (Part-II) - 1985.

- (a) Annealing test (for copper)
- (b) Tensile test (for aluminum)
- (c) Wrapping test (for aluminum)
- (d) Conductor resistance test.
- (e) Test for thickness of insulation and sheath
  
- (f) Hot set test for insulation
- (g) Tensile strength and elongation at break test for insulation and sheath.
- (h) High voltage test (as per cl. No. 16.2.1 of IS)
- (i) Insulation resistance (volume resistivity) test.

1.6.2.3 All the acceptance tests shall be carried out by the firm, in the presence of purchaser's representative at their works. The firm shall give at least 15 days' advance notice to the purchaser to enable him to depute the engineer for witnessing the tests. The test certificates for acceptance tests witnessed by inspecting officer/ engineer shall be submitted for approval before dispatch of material.

1.6.3 Routine tests:

Following Routine tests shall be performed on full drum lengths of every drum in presence of purchaser's representatives-

- (a) Conductor resistance test

(b) High-voltage test for 5 minutes [as per Clause 16.2.1 of IS:7098 (Part-I) – 1988].

1.7 STAGE INSPECTION:

1.7.1 The inspection may be carried out by the purchaser at any stage of manufacture. The successful bidder shall grant free access to the purchaser's representative at reasonable time, when the work is in progress. Inspection and acceptance, of any cables under this specification by the purchaser, shall not relieve the supplier of his obligation of supplying cable in accordance with the specification and shall not prevent subsequent rejection, if the cables are found defective.

1.7.2 The supplier shall keep the purchaser informed in advance about the program of manufacturing of cables so that arrangement can be made for inspection.

1.7.3 The purchaser reserves the right to insist for witnessing the acceptance / routing tests of the bought out items.

1.8 DOCUMENTATION:

1.8.1 The bidder shall furnish following documents along with his offer.

1.8.1.1 Sectional view, showing the General constructional feature with conductor / conductor screen / insulation / armouring / inner and outer sheath etc.

1.8.1.2 Drawing of cable drums with details of material dimension and paint etc shall be submitted

1.8.1.3 All the required type test reports for offered items tested at any Government recognized Laboratory as stated under Clause No.1.6.1 (B).

1.8.1.4 Literature, pamphlets for the record item.

1.9 PACKING AND FORWARDING:

1.9.1 The cable shall be wound on wooden drums as per IS: 10418 – 1972 and packed in drums suitable for vertical / horizontal transport, as the case may be and shall be suitable to withstand rough handling during transport and outer storage. The outer surface of the drum shall be painted with white aluminum paint. Similarly, the inside surface of drum shall have the protective layer of varnish / paint to protect it from white ants.

1.9.2 The wooden drums shall be reinforced with steel bends and strips for better protection.

1.9.3 The ends of the cable shall be sealed by means of non-hygroscopic sealing materials.

1.9.4 The following information may be stenciled on the drum with either water proof ink or oil paint:

- i. Reference of IS / IEC standard
- ii. Manufacturer's name or trade mark
- iii. Type of cable and voltage grade.
  
- iv. No. of cores.
- v. Nominal cross-sectional area of conductor
- vi. Cable code.
- vii. Length of cable on the drum
- viii. No. of lengths on the drum (if more than one)
- ix. Direction of rotation of drum (by means of an arrow)
- x. Position of outer end of cable
- xi. Gross weight
- xii. Country of manufacture
- xiii. Year of manufacture
- xiv. Reference of A/T No. & date
- xv. Purchaser's name
- xvi. Name of consignee and the destination

The drum may also be marked with ISI Certification Mark. Over and above, name plate of aluminum of suitable size and thickness, containing all the above information, shall be fixed on the drum in addition to the painting.

1.9.5 The firm shall be responsible for any damage to the cables during transit due to improper and inadequate packing. Wherever necessary, proper arrangement for lifting, such as lifting hooks, shall be provided. Any cable found short inside the packing cases shall be supplied by the supplier, without any extra cost.

1.9.6 Each consignment shall be accompanied by a detailed packing list, containing the following information:

- (a) Name of consignee
- (b) Details of consignment
- (c) Destination
- (d) Total weight of consignment
- (e) Handling and unpacking instruction
- (f) Bill of materials, indicating contents of each package

#### 1.12 TECHNICAL AND GUARANTEED PARTICULARS

The bidder shall furnish all Guaranteed Technical Particulars, as called for, in Appendix - I of this Specification. Particulars, which are subject to guarantee, shall be clearly identified. Offer not containing these information will not be considered for acceptance.

#### 1.13 PERFORMANCE CERTIFICATE:

Bidders shall also submit performance reports for the specified size of cables supplied to other State Electricity Boards / reputed firms, with the clear indication of the period since when the cables performed satisfactory service.

#### 1.14 LEGIBLE SUBMISSION:

Only required relevant, legible documents shall be submitted to avoid delay due to back reference.

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## ANNEXURE – II

### SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS FOR 1100V XLPE POWER CABLE

(To be filled in and signed by the Bidder)

Note: (Fill – up separate column for the following particulars for each type  
& size of cable)

- |        |  |   |
|--------|--|---|
| 1.00.0 | CABLES:  |   |
| 1.01.0 | Voltage grade  |   |
| 1.02.0 | Cores  |   |
| 1.03.0 | Nominal System Voltage KV  |   |
| 1.04.0 | Highest System Voltage   |   |
| 1.05.0 | System frequency Hz  |   |
| 1.06.0 | Max allowable temperature under<br>normal operating condition °C             |   |
| 1.07.0 | Max allowable temperature under<br>Short circuit condition °C                |   |
| 1.08.0 | Power frequency withstand<br>Voltage KV                                      | : |
| 1.10.0 | Whether suitable for :<br>earthed / unearthed System                         |   |
| 1.11.0 | Permissible voltage & frequency :<br>variation for satisfactory<br>operation |   |
| 1.12.0 | Continuous current carrying :<br>capacity                                    |   |
| 1.12.1 | For standard condition as per IS   |   |
|        | 1) In air (Amp.)   | : |
|        | 2) In ground ( “ )   | : |
|        | 3) In duct ( “ )   | : |
|        | 4) In trench ( “ )   | : |
| 1.12.2 | For site condition   | : |

- 1) In air (Amp.) :
  - 2) In ground ( “ ) :
  - 3) In duct ( “ ) :
  - 4) In trench ( “ ) :
- 1.13.0 Short-circuit current rating KA
- 2.00.0 CONDUCTOR:
- 2.01.0 Material & its applicable IS. :
  - 2.02.0 Shape of conductor :
  - 2.03.0 Nominal cross section area (mm<sup>2</sup>) :
  - 2.04.0 Number of wires per core :
  - 2.05.0 Nominal diameter & cross section :  
area of each wire used in each core  
of the conductor :
- 3.00.0 INSULATION:
- 3.01.0 Material & its applicable IS :
  - 3.02.0 Thickness of insulation (mm)
  - 3.03.0 Tolerance in thickness (percent) :  
of insulation
  - 3.04.0 Diameter of core over insulation :  
(mm)
  - 3.05.0 Specific insulation resistance at :  
ninety (90) degree Centigrade  
(Ohm-Cm)
- 4.00.0 FILLER:
- 4.01.0 Material & its applicable IS :
  - 4.02.0 Whether suitable for  
temperature of cable
  - 4.03.0 No of fillers provided including  
central filler

- 5.00.0 INNER SHEATH:
- 5.01.0 Material & its applicable IS :
- 5.02.0 Extruded or wrapped :
- 5.03.0 Thickness (mm) :
- 5.04.0 Diameter of cable over inner sheath (mm)
- 6.00.0 ARMOURING:
- 6.01.0 Material & its applicable IS :
- 6.02.0 Type of armouring :
- 6.04.0 Nos. of strips & size :
- 6.05.0 Diameter of cable over armouring :
- 6.06.0 Current carrying capacity of :
  - a) on continuous basis (Amp) :
  - b) short circuit current duration of :
    - 1 sec (KA)
- 7.00.0 OUTER SHEATH:
- 7.01.0 Material & its applicable IS. :
- 7.02.0 Thickness of sheath :
- 7.03.0 Tolerance on thickness of sheath :
- 7.04.0 Over all diameter of cable (mm) :
- 7.05.0 Scheme for identification :
- 8.00.0 OTHER ELECTRIC PARAMETERS:
- 8.01.0 AC resistance per core at :
  - operating temp. (Ohm/KM)

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- 8.02.0 DC resistance per core at 20°C :  
(Ohm/KM)
- 8.03.0 Reactance per core (Ohm/KM) :
- 8.04.0 Capacitance per core :  
(Microfarad/ KM)
- 8.05.0 Insulation resistance at 27°C  
(Ohm/ KM)
- 8.06.0 Loss tangent
- 8.07.0 Dielectric constant
- 8.08.0 Maxi. Cable charging current at :  
normal operating voltage  
(Amp/KM)
- 9.00.0 OTHER PARAMETERS:
- 9.01.0 Recommended minimum :  
bending radius (mm)
- 9.02.0 Safe pulling force  
:
- 9.03.0 Cable weight (Kg./KM) :
- 10.00.0 CABLE DRUM:
- 10.01.0 Net weight of cable (Kg.)
- 10.02.0 Drum weight (Kg.)  
:
- 10.03.0 Shipping weight (Kg.) :
- 10.04.0 Whether ISI Mark shall be :  
indicated on drum (Yes/No)
- 10.05.0 Length of cable per drum (Meter) :
- 11.00.0 Whether details shall be :  
embossed as stated under Cl.  
1.9.4 of Technical Specification  
(Yes/No)
- 12.00.0 Whether type test reports :  
submitted, as stated under Cl.  
1.6.1 of Technical Specification  
(Yes/ No)
- 13.00.0 Whether drawings submitted as :

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specified under Cl. 1.8.1 of  
Technical Specification. (Yes/ No)

Signature of the Bidder: \_\_\_\_\_

Name: \_\_\_\_\_

Designation \_\_\_\_\_

Date: \_\_\_\_\_



**Price Bid**

NIT No- 04 of 2021-2022 Dtd. 08.03.2022

Sl. No.	Item Description	Unit	Basic Rate (A) (Rs.)	GST in % (B) (Rs.)	Total Rate (C=A+B) (Rs.)	Qty (D)	Amount in Rs. (E= C*D)
1	Supply & delivery to site including cost of transportation, transit insurance and loading & unloading of 1100V, XLPE insulated, armoured, aluminium underground power cable (A2XFY)-						
1.1	240sq mm, 3.5core	Meter				600	
1.2	300sq mm, 3.5core	Meter				700	
Total in Rs.							

(In words:  
Rupees.....Only)

Date:  
Place:

Signature:  
Seal:

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