



POLICE HEADQUARTERS { PROVISION SECTION }

Phone/Fax No: 0194-2443031/ 2443032
0191-2459029/2459255(Jammu).

J&K JAMMU.

(Sgr)Website: www.jkpolice.gov.in
Email: phajk@jkpolice.gov.in

Gist of e-tender notice No 8 of 2019

Dated: - 06.03.2019

For and on behalf of the Governor of Jammu and Kashmir State, e-tenders are hereby invited from registered OEM's or their authorised dealers to quote against this e-tender for Supply of Communication equipment & allied accessories as mentioned in Annexure "A" of this tender notice. The download of the NIT shall start on 06/03/2019 from 1600 hours. Tenders shall be submitted online on J&K State e-Procurement Portal www.jktenders.gov.in upto 18.03.2019 before 1800 hours. The tenders (technical bids only) will be opened online on 20.03.2019 at 1100 hours at Police Headquarters J&K Gulshan Ground Jammu. In case of unforeseen circumstances, the date of opening will be next working day.

A pre bid conference shall be held at PHQ J&K Gulshan Ground Jammu on 11.03.2019 at 1630 hours, intending firms can participate in this conference to clarify any issue related to instant tender enquiry.

Detailed tender documents (SBD) with terms and conditions are available on J&K State e-procurement Portal www.jktenders.gov.in. The intending tenderers may visit this portal site for detailed information.


Mubassir Latifi JKPS
(AIG Provision/Transport)
For Director General of Police,
J&K-Jammu


No: - Prov-II /WPR- 52/2018-19/ 14947-50

Dated: 06.03.2019

Copy to the:-

1. Principal Secretary to Govt. Home Department J&K Jammu
2. All ADsGPJ&K
3. All IsGPJ&K
....for favour of information.
4. DIG CKR Srinagar/DIG Jammu-Kathua & Samba Range Jammu.
5. Director Police Telecom J&K Jammu for information.
6. Director Industries Jammu/Srinagar for information.
7. FA/Chief Accounts officer PHQ J&K Jammu for information
8. Manager Government Press Srinagar / Jammu for publication of the e.tender in Govt Gazette.

9. SSP J&K CID Cell, 11 Harish Chander Mathur Lane Kasturba Gandhi Marg New Delhi-110001 alongwith copy of the e.tender for information intending firms.
10. AIG Communication PHQ J&K Jammu for information with the request to arrange publication of Gist of the e.tender in 02 leading State dailies and 01 national daily through information department.
- ✓ 11. In-Charge IT Centre PHQ/In-Charge e-tendering PHQ for placing the e-tender on the website of J&K Police and J&K Govt. Portal.


Mubassir Latifi JKPS
(AIG Provision/Transport)
For Director General of Police,
J&K-Jammu



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(Provision Section)

J&K, JAMMU.

(Sgr)Website: www.jkpolice.gov.in
Email: phqjk@jkpolice.gov.in

E-tender notice No 18 of 2019
Dated: - 06.03.2019

SBD

1.	<p>For and on behalf of the Governor J&K State, e-tenders are hereby invited from registered OEM's or their authorized dealers to quote against this e-tender for Supply of Communication equipment & allied accessories as mentioned in Annexure "A" of this tender notice. The tender notice consisting of qualifying information, eligibility criteria, specifications, bill of quantities (BOQ), set of terms and conditions of the contract and other details can be seen/ downloaded from J&K State e-procurement portal www.jktenders.gov.in from 06.03.2019 from 1600 hours to 18.03.2019 up to 1800 hours.</p> <p>A pre bid conference shall be held at PHQ J&K Gulshan Ground Jammu on .03.2019 at 1630 hours , intending firms can participate in this conference to clarify any issue related to instant tender enquiry.</p> <p>Note: Only those firms should respond the tender enquiry which is capable to execute the supply, within shortest possible time to be specified in purchase order.</p>	
2.	Time/date and place for online opening of technical bid only	On 06.03.2019 at 1100 hours at J&K Police Headquarters, Gulshan Ground Jammu.
	Validity of tender offer	Upto 31.12.2020
3.	<p>All tender documents attached with this invitation to tender including the specifications are SACROSANCT for considering any offer as complete offer. It is important that scanned copies of each page of the tender document duly completed, page numbered and signed are uploaded with your offer in a sequential manner and not haphazardly.</p>	

4.	<p>The tender fee has been fixed Rs 100/- only for SSI units of J&K State and all other vendors have to pay Rs. 2000/- in the shape of scanned copy of Treasury Challan deposited into State Govt. Treasury under object head 0055-Police & the same is non refundable . Treasury Challan should compulsorily mentioned (i) Name of Firm (ii) Tender No (iii) Date of opening of tender. However, the Govt/ Semi Govt. concerns of the J&K State claiming exemption of tender fee shall append authenticated orders, certificates etc. issued by competent authority in support of their claim. However, granting exemption from furnishing of Tender fee shall be at the sole discretion of DGP J&K Police or any officer authorized on his behalf. Tenders without stipulated tender fee shall be rejected. However, outside state bidders where J&K govt. Treasury is not available can furnish non refundable DD on account of tender fee.</p>
5.	<p><u>Earnest Money Deposit (EMD):-</u> Tender must be accompanied by a scanned copy of the Earnest Money for Rs 5000.00 in respect of SSI Unit holder of J&K State only and Rs 1,00,000/- (one lakh) for other tenderers who are not SSI Units of J&K State pledged to AIG (Prov/Tpt) PHQ J&K without which tender will not be considered. The amount shall deposited in the shape of Call Deposit Receipt Valid at call/FDR/Bank Guarantee of any Nationalized Bank valid for a period of one year. However, all the participating bidders would upload scanned copy of the requisite EMD with the tender. The Earnest Money will be released to unsuccessful tenderer within one month of the final acceptance of the tender whereas in case of successful tender original EMD shall be obtained before awarding the contract & it will be treated as part of security deposit. No interest shall be payable by purchaser on the EMD deposited by the tenderer. The original CDR/FDR/TDR/BG shall be sent by post by the successful bidder to the AIG Provision & Transport c/o DGP J&K before award of contract in pursuance to J&K Govt. Finance Department order issued under No OM No A/24(2017)/651 dated 7.6.2018.</p> <p>The Address is as under :- PHQ J&K Peer Bagh Srinagar (from May to October) PHQ J&K Gulshan Ground Jammu (from November to April)</p> <p>J&K Govt. rules with regard to furnishing of EMD in respect of local Registered SSI units of J&K State shall be applicable in letter and spirit. Tenders without EMD shall be rejected.</p>

6.	iii) Approximate completion time	Within 25 days from the date of issuance of supply order in case order is placed before culmination of current financial year. If order would be placed after 31.03.2019 than 40 to 45 days duration will be allowed for delivery of supplies.
	v) Inspection authority / place of survey	Survey of the items shall be conducted by the survey board constituted by PHQ J&K.
	vii) Payment terms	Payment shall be released by the department after delivery of material and Survey by the board.
7.	Rates quoted by the firms should be on firm price basis ie including all taxes/duties/charges if any.	
8.	i. If approved supplier backs out or fails to execute the supply order after placement of order within stipulated delivery period ,the department will be at liberty to get the supplies executed from L-2 firm and differential amount between L-1 & L-2 rates will be recovered from the security deposit furnished by the approved supplier and remaining amount will be recovered from L-1 firm besides invoking other penalties which shall include black-listing of the firm etc.	
9.	Firms shall clearly indicate different taxes, duties, charges which they propose to charge as per the format of Bill of quantity (BOQ) available with the e-tender.	
10.	Conditional tender will not be accepted /entertained. It will be summarily rejected.	
11.	Department reserves the right to change the quantity of sites as mentioned in the tender.	
12.	Department reserves the right to get the executing capacity of all the firms re-verified/checked irrespective of the registration status or any other document / information.	
13.	Department reserves the right to cancel/reject or scrap the tender, with no consequential liability	
14.	TWO BID SYSTEM:- All bidders are required to submit their offers in two covers online as under:-	

(A) FIRST COVER (Technical Bid) is to be uploaded Online and scanned copies in PDF format should contain the following documents:-

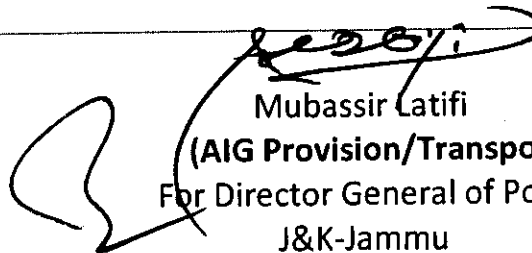
i.	Tender documents (viz technical compliance, registration/existence certificates of the firms / SSI Units & performance etc.) duly page numbered completed and signed BUT WITHOUT INDICATING THE RATES QUOTED.
ii.	All pages of the technical bid/pre-qualification documents must be clearly page marked at the bottom centre of each page before scanning the same and uploaded to e-tendering portal.
iii.	Duplicate documents /pages shall not be uploaded by the bidders
iv.	Documents to be scanned ,converted to PDF format and subsequently uploaded to the portal must be scanned at 200 DPI(Dots per inch) resolution/scale.
v.	Tender fee and EMD documents must be scanned and placed in separate PDF files.
vi.	Bidders are advised not to upload any irrelevant /un-necessary documents on tender portal.
vii.	Scan copy of the NIT, all pages duly signed & stamped by the tenderer, in token of having understood and accepted the specifications, terms & conditions of the NIT.
viii.	Self attested copies of Income tax returns for the last 02 years
ix.	Chartered Accountant duly vetted financial statements comprising of P 2 LA/C balance sheet for the last 02 years latest GST return.
x.	Performance statement for last two years as APPENDIX-III of this NIT.
xi.	Turn over for last two years as APPENDIX-III of this NIT
xii.	Acceptance of delivery/warranty & maintenance etc.
xiii.	Acceptance regarding execution of supplies within the stipulated time frame.
xiv.	PAN no/GST/TIN No. Self-attested photocopies thereof be appended.
xv.	Check list for tenders as per APPENDIX-IV of this NIT.
xvi.	Any other relevant document which the firms wishes to submit

15. (B) SECOND COVER (Commercial/Price Bid) should contain the following:-

	<p>i. Rate quoted by the firm should be on firm price basis as per Bill of Quantities (BOQ) of the e-tender to be downloaded from the website and Rates should be carefully quoted offline and then uploaded.(Rate quoted shall be final. The Zero basic cost quoted for any item in BOQ will be treated as Nil Quoted</p>
	<p>ii. Rates quoted shall be final till the validity of the contract i.e. upto 31.12.2020 with provision of further extension if finally approved by competent authority.</p>
16.	<p>On due date of opening of tenders i.e .03.2019 at 1100 hours, technical bids only shall be opened and technical evaluation process shall start. Those who qualify the technical bid on a/c documents uploaded by them shall be informed online with regard to opening of financial bids of the technically qualified firms. The evaluation committee can call the participating firms for demo of their offered items at any stage.</p>
17.	<p>Security Deposit: - The approved tenderer will have to furnish security deposit @ 5% of the total value in the shape of CDR/FDR valid for one year issued by a Nationalized/Scheduled Banks pledged to AIG Provision & Transport PHQ J&K Srinagar, at the time of signing of Deed of Agreement to ensure satisfactory performance of the contract, warranty period/agreed contract. The charges on stamps etc. (cost of documents in totality) shall be borne by the supplier while executing the agreement. (No interest shall be paid by the department on the Security deposit). J&K Govt rules for Security Deposit in respect of local SSI Units shall be applicable</p>
18.	<p>Guarantee/Warranty Except as otherwise provided in the invitation to the tender, the approved supplier hereby declares that supplied items shall be in all respects strictly as per RFP/requirement of the department. The approved supplier hereby guarantees the warranty of the supplies equipment for a period of 02 years and accessories/dry fit battery packs for 01 from the date of acceptance.</p>
19.	<p>Liquidity Damages Successful tenderer shall have to complete the execution of supply, installation/commissioning of items wherever necessary within stipulated period as would be mentioned in the supply order. J&K Police at its discretion reserves the right to impose liquidity damages of 5% of the cost of un-supplied material if the supplies are not executed/installation is not completed in stipulated time frame. However, ample opportunity would be given to the approved supplier to explain the cause of delay in the execution of supplies.</p>
20.	<p>As soon as the acceptance of the tender is communicated to the successful</p>

	tenderers online, the contract shall be binding on him. The earnest money of the tenderer who backs out or withdraw his tender or fails to abide by it after acceptance thereof is communicated/posted to him shall be forfeited besides other penal remedies that may be available to the Govt. of the J&K under the law for the time being in force in the State of J&K.
21.	The successful tenderer shall have to enter into an agreement on prescribed proforma (immediately after the issue of supply order) with the Department for due performance of the contract which shall be invariably furnished before the supply is made.
22.	The tenderer are required to furnish an authenticated copy of latest GST return. The PHQ shall be at liberty to put to scrutiny, verification etc. the GST clearance so furnished by the successful tenderer.
23.	The authorities reserve absolute powers to reject or accept any tender or part thereof without assigning any reason and without any legal obligations. Any clause incorporated in the tender (not conforming to the NIT in any manner) shall make such an offer liable for rejection. Therefore, all the terms and conditions of the tender Notice including technical specifications shall be carefully studied for the sake of complete and comprehensive tender. Failure to comply with any of the conditions stipulated in the tender or instructions or the offer with insufficient particulars/documents shall lead to out-right rejection of the tender offer.
24.	If after the registration/placement of orders/execution of the agreement and formally depositing the security money, in case the tenderer backs out or fails to execute the work, the security deposited will be forfeited besides imposing any other penal provisions as the department may decide to invoke.
25.	The formal deed incorporating the terms of the contract will be executed by the successful tenderer immediately after receipt of supply order. Failure to execute such bond/deed shall not however prevent the contract from being enforced against the tenderer. Any loss sustained by the Govt. as a result of re-tendering the contract shall be recovered from the defaulter, besides other penal provisions as the department may decide.
26.	If at any stage of the tender process two or more bidders are found in collusion between /among themselves with the intent to reduce competition, set price, share technical expertise ,share business information /decision ,control/share production and or distribution of products and raise prices ,all such tenders shall be out rightly rejected.

27.	If at any stage of tender process any bidder/s is/are found influencing any Government Servant associated with or handling the tender process and supplies thereof, bid of such tenderer/s shall be rejected besides invoking penal action under rules.
28.	All legal proceedings arising out of any dispute between the parties shall have to be settled in the Courts situated in Srinagar and Jammu and not elsewhere
29.	The supplier shall not sublet the contract or any part thereof to any other agency
30.	The Department reserves the right to add or suitably modify the terms and conditions (without prior notification) as per exigencies and hence above shall not be construed as all inclusive.
31.	Bidders submitting their bids on-line shall only be accepted and manual bids shall be rejected and no document other than mentioned in the NIT shall be accepted manually.
32.	PHQ may call any bidder at any stage of the tendering process for seeking any clarification.
33.	The bidder should furnish an undertaking APPENDIX-II of this NIT stating that he /she is not connected in any manner with any other bidder in this tender with respect to manufacturing ,distribution, supply, in sharing business information/documents price of the item etc. for the items quoted in this bid and has not been blacklisted by any Central /State Governments . If this is found to be incorrect, his/her tender would be liable to be rejected without any further notice.
34.	The detailed NIT, SBD and BOQ are available on J&K State e-Procurement portal www.jktenders.gov.in .
35.	The rates approved by this Hqrs in terms of this tender notice shall not be used as rate contract by other Government department.
36.	The approved supplier has to ensure the reasonability of rates quoted by the firm. If at any stage it is found that firm has charged lesser rates of the same items as are supplied to J&K Police from any other organization or State/Central Govt. organizations, suitable action under rules shall be taken against approved supplier and excess amount charged from J&K Police shall be recovered.


Mubassir Latifi
(AIG Provision/Transport)
 For Director General of Police,
 J&K-Jammu

APPENDIX-I

MANUFACTURER'S AUTHORIZATION LETTER/CERTIFICATE;

To,

The Director General of Police
J&K, Jammu/Srinagar.

Subject:- _____

Sir,

Please refer to your e-tender enquiry (NIT) No. 8 of 2019 dated 6.03.2019.

1. We _____ who are proven and reputable Manufacturers of _____ (name and description of the goods offered in the tender) having factories at _____ hereby authorize M/s _____ (name and address of the agent) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred tender enquiry documents for the above said goods manufactured by us.
2. We also hereby extend our full warranty, CMS, support as per the conditions of contract, read with modifications, if any, in the special conditions of contract for the goods and services offered for supply by the above firm against this tender enquiry document.

Yours faithfully,

Signature with date, name and designation

For and on behalf of M/s _____

(Name and address of the Manufacturers)

Note:-

- a. This letter should be on the letter head of the manufacturing firm and should be signed by the person who is competent having the power of attorney.
- b. Scan copy of the original letter must be attached with tender documents.

SIGNATURE OF THE TENDERER.

APPENDIX-II

Reference e.NIT No 18 of 2019 dated- 6.03.2019.

To,

The Director General of Police
J&K, Jammu/Srinagar.

Sir,

1. I _____ hereby state that I am not connected in any manner with any other bidder in this tender in sharing business information/documents and price quoted in this bid.
2. I further state that if this is found to be correct, the police department is at liberty to reject my tender.
3. I further certify that my concern has neither blacklisted nor banned by any central or state organizations to participate in tendering process.

Yours faithfully,

Signature with date, name and designation

For and on behalf of M/s _____

(Name and address of the tenderer)

Note:-

- a. This undertaking should be on the letter head of the tenderer firm and should be signed by the authorized person.
- b. Scan copy of the original letter must be attached with tender documents.

APPENDIX-III

Performance statement for last two years

Name of the firm	
Description of work executed	
Quantity on order	
Value	
Original execution period	
Whether executed in stipulated time frame or other wise	
Extension sought for final execution	
Reasons for delay in execution (if any)	
Past performance in % age upto 1 / 2 crores	
Past performance in % age above 2 crores	

Signature of Tenderer

APPENDIX-IV

General instructions/CHECK LIST FOR TENDERERS;

Before submission of tender documents, the tenderers should check whether they have complied with the following requirements or otherwise:-

<u>S.No</u>	<u>Requirement to be checked before submission of the tender</u>	<u>Complied</u> <u>(Please indicate YES or</u> <u>NO after complying</u> <u>with the requirement.</u>
1.	The tenderers for their own ease shall fill in relevant details of NIT offline & upload the same after ensuring accuracy	
2.	Whether tender fee scan copy is enclosed, with the technical bid?	
3.	Whether Earnest Money Deposit (EMD) scan copy is enclosed with the technical bid?	
4.	If an SSI Unit of J&K State, the same is indicated in the tender and scan copy of the valid registration/functional certificate is enclosed or not?	
5.	Whether scanned copies of complete tender documents are up-loaded in the technical bid duly signed having official seal on all pages or not. However, the quoted items may be also be ticked?	
6.	Whether tender documents are submitted in two bid system i.e. Technical and Financial Bids separately as per tender enquiry or not?	
7.	Whether offer validity as required in tender enquiry is accepted and indicated in your tender document or not?	
8.	Whether terms of execution required in tender enquiry is accepted and indicated in your tender document or not?	
9.	Whether payment terms as required in the tender enquiry is accepted and indicated in your tender document or not?	
10.	Whether performance statement for last 2 years as required in tender enquiry in the format is enclosed or not. If not, reason thereof is given?	
11.	Whether warranty period as required in the tender enquiry is accepted or not?	

12.	Whether maintenance conditions of the lease line during warranty /post warranty is accepted	
13.	If called for T.E. whether free training about usage of lease line is accepted or not?	
14.	Whether indicated in the tender document, if your firm's business dealings is banned by any Govt/Private agency or recommended for blacklisting or not?	
15.	The complete commercial quote should be in Indian Rupees only. Currency of price should be clearly mentioned (wherever applicable).	
16.	Tenderers are required to indicate Basic Rate, +GST in the relevant columns of the BOQ.	
17.	Tenderer will attach justification of price quoted which should include the recently executed contracts with Govt/Semi Govt Organizations etc.	
18.	No column should be left blank. Wherever amount is not quoted, the column should be clearly marked as 'Nil'.	
19.	Whether authorization certificate of the OEM (in case of authorized dealer) has been uploaded or not?	
20.	Valid registration certificate of approved dealer with central/state sales tax department for the items quoted	
21.	Latest GST return	
22.	SSI unit -registration certificate (local SSI units of J&K State only)	
23.	Whether copy of Copy of latest Income tax return has been uploaded.	
24.	Govt. supply orders for same if any available have been uploaded or not	
25.	Whether OEM registration certificate has been uploaded or not?	
26.	Whether other documents as asked in the SBD have been uploaded	

Annexure A of e-tender No 18 of 2019 dated 06.03.2019

Item No. 01. Automatic Voltage Regulators with Isolation Transformer 05 KVA (70 to 270 Volts AC)

Qty 10 NO

(SAMPLE REQUIRED to be deposited in Police Central Store Jammu)

Specifications:-

AVR (Static) with isolation Transformer

05 KVA single phase

Capacity: -

Control Circuitry based on Micro controlled and fully solid state power stage. No Moving Part in Power Stage.

Type: -

70-270 Volts

I/P Voltage: -

50 Hz

Frequency: -

sine wave

Wave form: -

High Grade Copper

Material to be used for isolation Transformer: -

220 Volts ± 5% Single Phase

O/P Voltage: -

100 Volts per second

Correction speed: -

Within 100 m. seconds

Response time: -

Minimum 03 outlets

Output points: -

1.5 times the rated current for 01 minute at nominal condition

Maximum O/P current: -

Fully solid state power thyristors for switching thyristors

Technology to be used: -

Protections:-

i. Input under / over voltage as per correction speed

ii. Output under/ over voltage as per correction speed

lii. Output over load

lv. Output short circuit

v. Current sensing protection for each triac individual protection

through electronic current limit circuit.

vi. Automatic Start at normal input voltage

Control:- The power device used for controlling will be switched On/ Off at voltage / Current zero cross over ,so that generation for spikes / surges can be avoided.

By Pass:- Provision of suitable auto/Manual service by pass in case of any malfunction of the unit

Metering: -

LCD meter for input and output status of Voltage / Current

Indication: -

Mains, Out Put, Load, Fault (Alarm)

Type of cooling: -

Air cooled through fan

Insulation Resistance: -

Better than 300 Mega ohms

Leakage current: -

5m Amps

Item No.02. Technical specification of Transformer 03 KVA (SAMPLE REQUIRED) Qty -35 No

1. Input voltage range

90 volts -260 volts AC 50Hz

2. Output voltage

220v AC

3. Rating

03 KVA

4. Voltage Control

Manual

- | | |
|-----------------------|---|
| 5. Winding material | high grade copper for both primary /secondary winding |
| 6. Core | Standard |
| 7. Voltmeter | 0-300V AC |
| 8. Protection | Short circuit, Circuit Breaker, Fuse |
| 9. Outlets | Minimum 01 No |
| 10. Efficiency | 98% at full load |
| 11. Type of operation | Semi automatic |

Item No.03. Technical specification of Transformer 02 KVA

Qty 50 No

(SAMPLE REQUIRED)

- | | |
|------------------------|---|
| 1. Input voltage range | 90 volts -260 volts AC 50Hz |
| 2. Output voltage | 220v AC |
| 3. Rating | 02KVA |
| 4. Voltage Control | Manual |
| 5. Winding material | high grade copper for both primary /secondary winding |
| 6. Core | Standard |
| 7. Voltmeter | 0-300V AC |
| 8. Protection | Short circuit, Circuit Breaker, Fuse |
| 9. Outlets | Minimum 01 No |
| 10. Efficiency | 98% at full load |
| 11. Type of operation | Semi automatic |

Item No.04 .Technical specification of Transformer 01 KVA

Qty .40 No

(SAMPLE REQUIRED)

1.	Input voltage range	90 volts -260 volts AC 50Hz
2.	Output voltage	220v AC
3.	Rating	01 KVA
4.	Voltage Control	Manual
5.	Winding material winding	high grade copper for both primary /secondary
6.	Core	Standard
7.	Voltmeter	0-300V AC
8.	Protection	Short circuit, Circuit Breaker, Fuse
9.	Outlets	Minimum 01 No
10.	Efficiency	98% at full load
11.	Type of operation	Semi automatic

Item No. 05 TECHNICAL SPECIFICATION OF DOT MATRIX PRINTER 136 Column 24 pin

Qty 06 No

Brand	Reputed
Printing METHOD	Serial impact Dot Matrix
Number of columns	136 column
Print Head type	24 wires
Ribbon	Cartridge, Black
Printer head life	200 million strokes per wire or more
Operating Voltage	220 V AC
Character sizes	All except superscript subscript 3.1mm high
Printing direction	Bidirectional for text printing Unidirectional for graphics
Line spacing	1/6 -inches, or programmable in increments of 1/216 th of an inch
Number of copies	One original plus two copies
Paper Path Standard	Top, Rear, and
Interface	Parallel /RS 232 Serial/USB 2.0
Ribbon life	30 million characters or higher
Compatible Operating Systems	Windows XP, 7, 8, 10, etc

Item No.06. Technical Specifications of Battery pack of ICOM IC F3 Hand held set.
Qty 50 No

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	9.6 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

Item No.07. Technical specifications of Battery pack of ICOM OGTL IC F3 Hand Held set Tentative Quantity 55 No

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	9.6 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

**Item No.08. Technical Specifications of Battery pack of HYT TC-780 Hand held set
Tentative Quantity 210 No**

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.4 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

**Item No.09. Technical Specifications of Battery pack of Kenwood TK-280 Hand
Held set. Tentative Quantity 20 No**

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.2 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

**Item No. 10. Technical Specifications of Battery pack of Kenwood TH-255 Hand
Held set Tentative Quantity 40 No**

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.2 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

**Item No. 11. Technical Specifications of Battery pack for Vertel VL-747
Hand held set Tentative Quantity 100 No**

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.4 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh

vi. Warranty

01 year minimum

Item No. 12. Technical Specifications of Battery pack of HYT 788 G Hand Held (Digital) set Tentative Quantity 100 No

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.2 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

Item No. 13. Technical Specifications of Battery pack of Motorola GP 900 Hand held set. Tentative Quantity 200 No

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.2volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

Item No. 14. Technical Specifications of Battery pack for Motorola GP-2000 Hand held set. Tentative Quantity 70 NO

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.2 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

Item No. 15. Technical Specifications of Battery pack for Motorola GP-2100 Hand held set. Tentative Quantity 60 No

i. Ampere hour capacity.	2000 mAh or more
ii. Terminal Voltage	7.2 volts Dc with +Ve & -Ve indication.
iii. Container	strong & rugged
iv. Self Discharge	very low very low
v. chemistry	Li-Polymer or Li-ion or Ni-mh
vi. Warranty	01 year minimum

Item No. 16. Battery pack for APCOM AH-398 Hand held set. Tentative Quantity 170 No

i. Ampere hour capacity.	2000 mAh or more
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- ii. Terminal Voltage: 7.4 volts Dc with +Ve & -Ve indication.
- iii. Container strong & rugged
- iv. Self Discharge very low very low
- v. chemistry Li-Polymer or Li-ion or Ni-mh
- vi. Warranty 01 year minimum

Item No. 17. Battery charger for HYT TC-780 Hand held set. Tentative Quantity 50 No

- i. Input voltage 150- 250 volts Ac.
- ii. Battery charging capacity Up to 3000 mAh

Features:-

- i. Regulator circuit
- ii. Normal charging
- iii. Rapid charging
- iv. Mains indicator
- v. Charging indicator (for Rapid as well as for normal charging).

Item No. 18. Battery charger for APCOM 398 Hand held set. Tentative Quantity 70 No

- i. Input voltage 150- 250 volts Ac.
- ii. Battery charging capacity Up to 3000 mAh

Features:-

- i. Regulator circuit
- ii. Normal charging
- iii. Rapid charging
- iv. Mains indicator
- v. Charging indicator (for Rapid as well as for normal charging)

Item No. 19. Battery charger cum adopter of GP 2000/2100 Hand held set. Tentative Quantity 100 No

- i. Input voltage 150- 250 volts Ac.
- ii. Battery charging capacity Up to 3000 mAh

Features:-

- i. Regulator circuit
- ii. Normal charging
- iii. Rapid charging
- iv. Mains indicator
- v. Charging indicator (for Rapid as well as for normal charging).

Item No. 20. Technical Specifications of Battery charger cum adopter for Motorola GP 900 Hand held set. Tentative Quantity 50 No

- i. Input voltage 150- 250 volts Ac.
- ii. Battery charging capacity Up to 3000 mAh

Features:-

- i. Regulator circuit
- ii. Normal charging
- iii. Rapid charging
- iv. Mains indicator
- v. Charging indicator (for Rapid as well as for normal charging)

Item No. 21. Technical Specifications of Battery charger cum adopter for VL-747 Hand held set. Tentative Quantity 50 No

- i. Input voltage 150- 250 volts Ac.
- ii. Battery charging capacity Up to 3000 mAh

Features:-

- i. Regulator circuit
- ii. Normal charging
- iii. Rapid charging
- iv. Mains indicator
- v. Charging indicator (for Rapid as well as for normal charging).

Item No. 22. Technical Specifications of Mains Battery Charger 36 Volt 10 Ampere. (Sample Must) Tentative Quantity 14 No

- 1. Input Voltage: 90 Volt to 240 Volt AC 50 Hz
- 2. Output Voltage: 12Volt -36 Volt DC Selectable through front Panel Rotor switch
- 3. Charging Current: 0-15 Ampere with current limiting resistance

Front Panel Fitted with:-

- 0 to 50 Volt DC Meter
- 0 to 15 Amp DC Ampere Meter
- ON/OFF Toggle Switch
- LED's (Line Voltage and Reverse polarity indicators)
- Voltage/Current Control Switch with Knob indicating steps
- DC Output terminals indicating Red for Positive and Black for negative fitted with battery terminals.

Protection:-

- Short circuit Protection
- Reverse Polarity Protection.
- Automatic circuit breaker switches for Output voltages and Glass fuse for input.
- Bridge Rectifier must be mounted on Heat sink for Maximum heat dissipation.
- Mains Lead Three Core 1.5 Mtrs. length with 16 Amps top.

Warranty:- At least 01 Year

Note:- There should be authorized service Centers of the offered item in J&K

Item No.23. Technical Specifications of Mains Battery Charger 12 Volt 10 Ampere (Sample Must) Tentative Qty 172 No

1. Input Voltage: 90 Volt to 240 Volt AC 50 Hz
2. Output Voltage: 12Volt -16 Volt DC **Selectable through front Panel Rotor switch**
3. Charging Current: 0-10 Ampere with current limiting resistance

Front Panel Fitted with:-

0 to 20 Volt DC Meter
0 to 15 Amp DC Ampere Meter
ON/OFF Toggle Switch
LED's (Line Voltage and Reverse polarity indicators)
Voltage/Current Control Switch with Knob indicating steps
DC Output terminals indicating Red for Positive and Black for negative fitted with battery terminals.

Protection:-

Short circuit Protection
Reverse Polarity Protection.
Automatic circuit breaker switches for Output voltages and Glass fuse for input.
Bridge Rectifier must be mounted on Heat sink for Maximum heat dissipation.
Mains Lead Three Core 1.5 Mtr length with top.

Warranty:-

At least 01 Year

Note: -

There should be authorized service Centers of the offered item in J&K.

Item No. 24. Technical specifications of Co-axial Cable (thick) 30 meters long roll fitted with PL 259 Plugs. (Sample of one feet required) Tentative Quantity 55 rolls

Generic Name	RG 217
Flex Type	Flexible
Impedance	50 Ohm
Dielectric type	PE
Jacket Material	PVC
No. of Shields	2
Max. Operating temperature	-35 °C to +80 °C
Centre conductor	Solid Copper
Inner conductor, No. of Strands	Multi No.
Type	Coax.

Item No.25 .Feeder 75 ohm thin (in Mtrs) (Sample of one feet required)
Tentative Quantity 1500 meters

Flex Type	Flexible
Impedance	75 Ohm
Dielectric type	PE
Jacket Material	PVC
No. of Shields	2
Max. Operating temperature	-35 °C to +80 °C
Centre conductor	Solid Copper
Inner conductor, No. of Strands	Multi No.
Type	Coax.

Item No 26. Technical Specifications of Duplex Radios with self supporting mast /tower height as per requirement Tentative Quantity 12 No

S.No	Specifications of Duplex Radios (PTP) System	Parameters
01	Radio Configuration	Radio Should Support on Multi-band , 2.4 to 2.485 or 5.825 to 5.875 GHz (WPC) licensed free band and capable to operate on PTP System
02	Frequency Band	2.4 to 2.485 GHz or 5.825 to 5.875 GHz as per WPC
03	Encryption	AES-128
04	Capacity	25 Mbps net aggregate or higher
05	Modulation	2x2 MIMO-OFDM, BPSK, QPSK, 16QAM, 64QAM
06	Data Rates	Minimum 48 Mbps
07	TX Out put	24dBm or better
08	Rx Sensitivity	-88dBm @ 13 Mbps, -86dBm @ 26Mbps or better
09	RF Channels	Max. 19 overlapping channels in frequency band 2.4 to 2.485 GHz or Max. 11 overlapping channels in frequency band 5.825 to 5.875 GHz in 5/10/20/40 MHz channel width configuration option as per user requirement or better.
10	Wireless Error correction	FEC
11	ODU enclosure	IP67
12	Ethernet ports	Should support minimum 02 ports

Operational

01	Standards compliance	Framing / Coding as per IEEE 802.3 /U
02	Operating Modes	PTP on E1 or Ethernet + TDM
03	Useful throughput	Minimum 18 Mbps or better
04	V LAN Support	Transparent
05	Repeater Configuration	Option if Necessary
06	Link span in repeater mode	Minimum 40 Kms (Optional) if required
07	Link Distance	Minimum 20 Kms
08	Spectrum Analyzer (in built)	Link-oriented Spectrum Analyzer: should show the results of both sites
09	Duplex Technology	TDD

Network Management and Security

01	Network Support	Ethernet, support should be available
02	Antenna Alignment tools	Buzzer / Visual LED's (SNR)
03	Management utilities	SNMP Based, Local and remote Loop back testing
04	Management interface	Ethernet or E1
05	Net work management system	Should support SNMP
06	Bridging	Self-learning up to 2047 MAC addresses IEEE 802.1Q
07	Ring Protection	Should support for redundancy without using External switch
08	Upgrade capabilities	Should have facility to software upgrade over the Air and should support software backup ,Restore through EMS

Minimum Specification for Switch

1	Ports	a) 08 /24 auto-sensing 10/100 ports (IEEE 802.3 Type
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		10Base-T, Media Type: Auto-MDIX; Duplex: half or full
		b) 1 RJ-45 serial console port
		c) 2 auto-sensing 10/100/1000 ports
		Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full Only
2	Memory and processor	MIPS @ 300 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 1 MB
3	Performance	
	a) 100 Mb Latency	< 4.1 μ s (LIFO)
	b) 1000 Mb Latency	< 2.9 μ s (LIFO)
	c) Throughput	up to 9.5 million pps
	d) Routing/Switching capacity	12.8 Gbps
	e) MAC address table size	8,000 entries
4	Management	command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
5	Layer 2 switching	Should support IEEE 802.1Q (4,094 VLAN IDs) and 256 VLANs simultaneously

Minimum Specification for FXO/FXS Gateway

1. Interface		10/100M Ethernet uplink port
i	WAN	
ii	LAN	10/100M Ethernet downlink port
iii	Phone	4 Port FXS + 4 Port FXO at PS Site Total 24 Port FXS + 24 Port FXO at Central Site for PTMP
2. Protocol		
i	VOIP control protocol	H.323/SIP, easy to switch
ii	Voice codec	G.711A, G.711U, G.729, G.723, G.726
3. Call Features		
a	Analogue telephone feature	DTMF detection and generation Call progress tones detection and generation Polarity reversal signal Echo cancellation, VAD, CNG Answer supervision, Disconnect supervision One-stage dialing and two-stage dialing
b	VoIP call feature	Call waiting, Call transfer, Call hold, Call forward
4. Other characteristics		
a	Voice feature	DTMF check and create, check and create voice during calls
b	Characteristics of data interface	Support DHCP Client
c	Configuration	Through WEB browser, TELNET
d	FAX	Support pass through, T.30 and T.38
e	Power	AC 220V, 50HZ
f	Switch	1 Reset Switch
Environmental and compliance parameters		
01	Network Connection	Ethernet or E1
02	External Antenna Connection	N Type Connector with weather proof casing
03	POE Adopter	IDU to provide power over Cat 6 cable to ODU

04	Power consumption	Less than 35 Watts (IDU + ODU)
05	LED Indicators	Power and line
06	Temperature	-35 to + 60° C or above
07	Enclosure	All weather casing for ODU
08	Environmental Compliance	EN 61000-4-5, Class 3 (2kv) or better
09	ETSI	EN 300 386, EN 301 489-1, EN 301 489-4
10	Power Source	230 Volts AC 50 Hz / POE
Hardware requirement for PTP per Station		
01	PTP Duplex Radio with POE	01
02	08 ports switch	01
03	4+4 port FXO/FXS Gateway	01 (Optional)
04	Cat 6 cable as per requirement	As per user need
05	Surge protector	01
06	External Antenna 26dBi or better	01 (Optional)
07	Self supporting Mast for Duplex Radio	As per requirement.

**Item No.27 Specifications of Jelly Filled Un-armored 05 Pair Cable
(Sample of one feet required) Tentative Quantity 1000 meters**

Conductor:	Copper Conductors
Conductor Dia:	0.5mm
Insulation:	Solid PE (Polyethylene)
Twisted Pair:	Two single wires are twisted to form a Pair
Pair configuration	1x 5P
Separator:	Polyester Tape
Core Filler:	Petroleum Jelly Compound
Inner Sheath:	Polyethylene
Outer Jacket	Polyethylene
Jacket Colour:	Black
Length marking	at a distance of one meter

**Item No. 28. Specifications of PVC 02 Pair Cable (in meters) Sample of
one feet required Tentative Quantity 800 meters**

Material	Annealed Tinned Copper
Diameter	0.50± .005 mm
Insulation	PVC Insulation
Twisted Pair:	Two single wires are twisted to form a Pair
Pair configuration	1x02P
Cable covering	unarmored

Item No. 29. Specifications of PVC 01 Pair Cable (in mtrs) (Sample of One feet required) Tentative Quantity 2000 meters

Material	Annealed Tinned Copper
Diameter	0.50± .005 mm
Insulation	PVC Insulation
Twisted Pair:	Two single wires are twisted to form a Pair
Pair configuration	1x01P
Cable covering	unarmored

Item No.30.Specifications of PVC 05 Pair Cable (in mtrs) (Sample of one feet required) Tentative Quantity 1500 meters

Material	Annealed Tinned Copper
Diameter	0.50± .005 mm
Insulation	PVC Insulation
Twisted Pair:	Two single wires are twisted to form a Pair
Pair configuration	1x05P
Cable covering	unarmored

Item No.31. Technical Specification of Jumper wire (in mtrs) (Sample of one feet required) Tentative Quantity 300 meters

Diameter	: 0.5MM
Insulation	: PVC
Conductor Type	: Copper
Conductor dia	: 0.5 M
Colour	: Red and White
Conductive material	: wire made of soft annealed electrolytic copper
Conductor insulation	: HDPE
The cable jacket	: PVC (polyvinyl chloride)

Item No. 32. Technical Specifications of Router 2900 series Tentative Quantity 06 No

Router Specifications

1. 3 Integrated 10/100/1000 Ethernet ports with 1 port capable of RJ-45 or SFP connectivity
2. 1 service module slot
3. 4 Enhanced High-Speed WAN Interface Card (EHWIC) slots
4. 3 onboard digital signal processor slots
5. 1 internal service module slot for application services
6. Fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE) and Cisco Enhanced PoE

Security

1. Embedded hardware-accelerated VPN encryption

2. Secure collaborative communications with Group Encrypted Transport VPN, Dynamic Multipoint VPN, or Enhanced Easy VPN
3. Integrated threat control using Cisco IOS Firewall, Cisco IOS Zone-Based Firewall, Cisco IOS IPS, and Cisco IOS Content Filtering
4. Identity management: Intelligently protecting endpoints using authentication, authorization, and accounting (AAA), and public key infrastructure

Voice

1. High-density packet voice DSP module, optimized for voice and video support
2. Standards-certified VoiceXML browser services
3. Cisco Unified Border Element capabilities
4. Cisco Unity Express voicemail support
5. Support for Cisco Communications Manager Express and Survivable Remote Site Telephony

Item No.33. Technical specification of SMD re-works station. Tentative

Quantity 03 No

Brand	Reputed
Input voltage	220 V Ac 50 Hz
PCB Holder	Standard
Vacuum	internal pump
Air source	internal blower
SMT nozzle kit	All type of nozzle
SMT rework Tool Kit	All type of tools required
SMT pick up assembly	Eeasy pickup

Features :-

1. Automatic SMT component pick up
2. Uniform heat distribution
3. Integrated digital timer
4. Digital close loop sensing
5. Quick change nozzle design

Item No.34. Technical specification of V101 Kit. Tentative Quantity 20 Kits (Sample Must be deposited in Police Central Store Jammu)

1. The Aerial kit should be made of heavy duty light weight material to with stand high velocity winds and weather conditions, each hallow tube should be of six feet length fitted with necessary hooks for guy wire.
2. Maximum dia of the base tube should be about 03 inches and other four tubes should be of such dia which can be adjusted with another tube in such a way that all the tubes remain erected.
3. It should have standard quality of nylon guy wire for installation along with other installation material like ½ kg Hammer and iron pegs.
4. The height of Ariel should be at least 30 feet adjustable.
5. All the material should be supplied in a good quality canvas bag with man pack carrying belts

Item No. 35. Technical specification of Meggar (Earthing Tester).
Tentative Quantity 02 No

General

3½ digit LCD display Max Reading 1999.
 Earth Resistance Range: 20Ω, 200 Ω & 2000Ω.
 Earth Voltage Measurement upto 200V
 Power Source Rechargeable Internal Ni-MH/Li-ion/Li-Polymer Battery.
 Soil Resistivity and Earth Resistance Measurement
 3 / 4 Pole Earth Resistance Measurement
 Type tested as per IS-9223.

Standard Accessories

Instruction Manual
 Battery Charger
 Carrying Bag Containing Four spikes with cable on a winder
 Hammer

Item No.36. Technical specification of Telescopic Mast
(Sample must be deposited in Police Central Store Jammu) Qty 20 No

S.No	Technical specification of Telescopic Mast	Sample must
1.	Length of the Mast:- At least 30 feet adjustable comprising of 5 sections of 6 feet each.	
2.	Diameter of base tube 03 inches or more.	
3.	Diameter of the remaining 04 sections should be adjustable successively with the base tube.	
4.	Base tube should have 03 legs adjusted at 120 degrees angle for proper erection on ground.	
5.	All the tubes and legs of the mast should be properly galvanized for protection against rust and it should be made of heavy duty light weight material to with stand high velocity winds and weather conditions.	
6.	Complete installation kit / erection material should be comprising of:-	
i.	Steel Guy wires (06 numbers of suitable length) with Guy locks.	
ii.	Base Plate.	
iii.	Hammer ½ kg.	
iv.	Steel Pegs	
v.	Nails for Base Plate and legs.	
vi.	Hooks fixed at appropriate points.	
vii.	Mounting Clamp for fixing aerial.	
viii.	Required Nuts and bolts.	
<p>Test report : Test report from any NABL Laboratory must be enclosed for Hot dip galvanizing as per IS-4759 and structured steel used in the fabrication of telescopic mast. Certificate: An ISO 9001 certification for manufacturer of Antenna mast.</p>		

Item No.37. Technical specification of Morse code Processor

Complete Morse code Kit Tentative Quantity 10 No

Item No.38. Technical specification of model Training Kit for Bit Error Rate

Qty 01 no

S.No	Parameters	Specifications
1	Supported Bit RATE	0.5-12.5Gb/sec or better
2	Error Detector Range	0.5-12.5Gb/sec or better
3	Data Inputs	
	Sensitivity a) single ended b) Differential c) I/p Voltage Swing d) PRBS patterns e) RAM patterns -User defined f) Synchronization	100mVp-p 50mVp-p 2Vp-p 7, 11, 15, 20, 23, 31 128 bits to 512 Mb, 1-bit increments Pattern Matching and Manual
4	Data Outputs	
	Patterns RAM patterns Pattern Modes Error Insertion Length	7, 11, 15, 20, 23, 31 128 bits to 512 Mbits total with support for 128 pattern sequencer states Bit Mode and Protocol aware mode 1, 2, 4, 8, 16, 32, 64 bit bursts
5	Error Detector Measurements	BER, Bits Received, Re-syncs, Measured Pattern Generator and Error Detector Clock Frequencies
6	Phase Noise	< -90 dBc/Hz at 10 kHz offset (typical) or better
7	DATA clock waveform performance	25 ps max, 23 ps typical (10-90%), 1 V amplitude
8	Jitter	<500 fs RMS Random Jitter (@10.3125 Gb/s), typical
9	Clock/Data delay	Above 1.1.GHz -3nsec
10	Trigger Output	Divided Clock mode and Pattern mode
11	Ref Input	10 MHz, 100 MHz, 106.25 MHz, 133.33 MHz, 156.25 MHz, 166.67 MHz, or 200 MHz
12	Error Location Analysis	To debug the errors precisely , locations of errors correlate to user-set correlation lengths like block size, system timescales measured in bits.

13	Built – In Operating System	Win7 Or Better with In-Built Hard disk to Store data
14	Interface	LAN ,USB ,GPIB

Note:- The firm must be An ISO 9001:2008 certified Company or Equivalent (Certificate required)

Item No.39. Technical specification of model Training Kit for Optical Fiber Communication System. Qty 01 No

Transmitter :	1 No. Fiber Optic LED, Wavelength 660 nm
Receiver :	1 No. Fiber Optic Photo detector
Modulation Techniques:	AM, FM, PWM
Drivers :	1 No. with Analog & Digital modes
Clock :	Crystal controlled Clock 4.096 MHz
PLL Detector :	1 No.
AC Amplifier :	1 No.
Comparator :	1 No.
Filter :	1 No. 4th order Butterworth, 3.4 KHz cut-off frequency
Analog Band Width :	350 KHz
Digital Bandwidth :	2.5 MHz
Function Generator :	1 KHz Sine wave (Amplitude adjustable)
	1 KHz Square wave (TTL)
	64 KHz/128 KHz/256 KHz (TTL)
Clock Generator :	15 Bit
Data Generator :	Variable level
Noise Generator :	Minimum 4 digits, 7 segment display
Bit Error Counter :	F. O. voice link using microphone & speaker (built in)
Voice Link :	8 No's in TX and RX
Switched Faults :	Standard SMA Connector type
Fiber Optic Cable :	Step indexed multimode PMMA plastic cable
Cable Type :	1.492
Core Refractive Index :	1.406
Clad Refractive Index :	Better than 0.5
Numerical Aperture :	Better than 60 deg.
Acceptance Angle :	1000 microns
Fiber Diameter :	2.2 mm
Outer Diameter :	0.5 m & 1 m
Fiber Length :	34 No's.
Test Points :	2 mm sockets
Inter connections :	Not more than 2Kgs
Weight :	0-40 °C, 80% RH
Operating conditions :	110-220 V, ±10%, 50/60 Hz
Power Supply :	Not more than 10 watts.
Power Consumption:	Measuring Jig, Mandrel, Fiber cables, Microphone, Headphone, Patch cords etc
Accessories:	

Note:- The offered instrument must be An ISO 9001:2008 certified Company or Equivalent standard

Features:-

- i. Simplex Analog and Digital Trans-receiver
- ii. 660 nm channel with Transmitter & Receiver

- iii. AM-FM-PWM modulation / demodulation
- iv. On board Function Generator
- v. On board Clock & Data Generator
- vi. On board Bit Error Counter
- vii. Crystal controlled Clock
- viii. Functional blocks indicated on-board mimic
- ix. Input-output & test points provided on board
- x. On board voice link
- xi. Built in DC Power Supply
- xii. Numerical Aperture measurement jig and mandrel for bending loss measurement
- xiii. Switched faults on Transmitter & Receiver

The trainer kit must be capable of performing the following experiments:-

- Experiment 1: Study of 650 nm Fiber Optic Analog link.
- Experiment 2: Study of 650 nm Fiber Optic Digital Link.
- Experiment 3: To obtain Intensity Modulation of the Analog Signal & Demodulation
- Experiment 4: To obtain Intensity Modulation of the Digital Signal & Demodulation
- Experiment 5: Study of Frequency Modulation (FM)
- Experiment 6 : Study of Pulse Width Modulation
- Experiment 7 : Measurement of Propagation or Attenuation Loss in the optical fiber
- Experiment 8 : Study of Bending Loss
- Experiment 9 : Measurement of Optical Power using optical power meter
- Experiment 10: Measurement of Propagation Loss in optical fiber using POM
- Experiment 11: Measurement of Numerical Aperture (NA) of optical fiber
- Experiment 12: Study of Characteristics of E-O converter using optical power meter
- Experiment 13: Study of Characteristics of Fiber Optic Communication Link
- Experiment 14: Study of Voice Communication through fiber Optic cable using Amplitude Modulation
- Experiment 15: Demonstration of Voice Transmission through optical fiber using FM
- Experiment 16: Study of Voice Transmission through optical fiber using PWM
- Experiment 17: Study of the effects of Switched Fault Number 1 & 8 on Amplitude Modulation System
- Experiment 18: Study of the effects of Switched Fault Number 4, 5 & 7 in FM System
- Experiment 19: Study of the effects of Switched Fault Number 2, 3 & 6 on Pulse Width Modulation System
- Experiment 20: Determination of Bit Rate supported by the fiber optic link
- Experiment 21: Determination of Sensitivity of the fiber optic link
- Experiment 22: Determination of Power Margin (Power Budget)
- Experiment 23: V-I characteristics of Photo LED
- Experiment 24: V-I characteristics of Photo Detector
- Experiment 25: To Measure Bit Error Rate
- Experiment 26: Study and Observation of Eye Pattern.

Item No. 40: Technical Specifications of model Trainer Kit for microwave communication test set:- Qty 01 No

Beam Supply:

- Voltage : 240 - 420 VDC, Variable
- Current : 50 mA
- Regulation : 0.5 % for 10% I/P variation
- Ripple : < 5m Vrms

Repeller Supply :

- Regulation: -18V to -270V DC Variable
- 0.25%, for 10% I/P variation

Filament Supply :	6.3 VDC (adjustable on rear panel)
Over-Load Trip Current:	65mA
Modulation:	AM (Square) FM (Saw-tooth)
Frequency Range:	180-1450 HZ \pm 5%, 72-195 Hz \pm 5%
Amplitude:	0-110 Vpp 0-40 Vpp
External :	Through External Modulating Signal
Display :	Digital display for
	1. Beam voltage
	2. Beam Current
	3. Repeller voltage
Modulation Selector:	FM/AM/CW/Ext
3 ½ Digital Panel Meter:	2V
Meter Selector:	Beam Voltage (V)/ Current (I)/ Rep. (Repeller)
Connectors:	a. 5-Pin connector
	b. BNC for External Modulation
Power Supply :	230 V AC \pm 10%, 50Hz
SWR Meter:-	LCD
Display :	0.1 μ V for 200 Ω input impedance
Sensitivity :	Less than 0.02 μ V
Noise Level :	0 – 60dB in 10dB steps
Range :	Un-biased low and high impedance crystal biased crystal (200 Ω & 200K)
Input :	SWR 1 – 9
Display Select :	dB 0 – 10
Modes :	Normal
	Audio
	PC (for Gunn based bench)
Gain Control:	Adjusts the reference level, variable range 0-10dB (approximately)
Input Connector :	BNC (F)
Input Frequency :	1000Hz \pm 10%
Power :	230 Volts AC \pm 10%, 50Hz

Note:- The firm must be An ISO 9001:2008 certified Company or Equivalent standard

The trainer kit must be capable of performing the following experiments:-

- Experiment 1:** Study of the characteristics of Klystron Tube and to determine its electronic tuning range
- Experiment 2:** To determine the frequency & wavelength in a rectangular wave-guide working mode
- Experiment 3:** To determine the Standing Wave-Ratio and Reflection Coefficient
- Experiment 4:** To measure an unknown Impedance with Smith chart
- Experiment 5:** Study of Attenuator
- Experiment 6:** To study the substitution method for attenuation measurement & determine the attenuation due to a component under test
- Experiment 7:** Study the voice communication by using microwave test bench.

Microwave
Communication
Test Bench

Microwave Test Bench (Klystron Based) :-

Technical Specification :-

Klystron power supply

Beam supply : Voltage 240-420 VDC variable
Current: 50 mA
Regulation: 0.5 % for 10 % I/P variation.