Directorate General of Training

GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI
H.J. BHABHA INDUSTRIAL TRAINING INSTITUTE, MAYUR VIHAR

TENDER / BID DOCUMENT

FOR

SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF CUSTOMIZED WORK BENCHES / TEST BENCHES FOR ICTSM TRADE (ITEM-WISE EVALUATION)

GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI
H.J. BHABHA INDUSTRIAL TRAINING INSTITUTE
(DEPARTMRNT OF TRAINING & TECHNICAL EDUCATION)
MAYUR VIHAR, PHASE-I
DELHI-110091
Ph. No.-011-22750621, 22753998
E-mail: hjbhabhaiti.delhi@yahoo.co.in

FACT-SHEET

S. No.	Particular	Details
1	Tender Reference No.	F.6(2)/HJBITI/PURCHASE/2017-2018/2161
2	Tender ID on Delhi Govt. e-procurement web-portal	2017_ITIHJ_141914_1
3	Selection Method	Technical Evaluation with Least Cost based selection
4	Availability of Tender / Bid Document	Tender/Bid Document can be downloaded from e-Procurement platform of Delhi Government i.e. https://govtprocurement.delhi.gov.in and can also be downloaded from website of the DTTE i.e. www.tte.delhigovt.nic.in
5	Earnest Money Deposit (EMD)	Earnest Money Deposit amounting to **Rs.01.60Lakhs (Rupees One Lakh Sixty Thousand Only)** in the form of FDR / Bank Guarantee in favour of **DDO, H.J. Bhabha ITI Mayur Vihar and payable at Delhi** and issued from any of the nationalized Scheduled Commercial Banks located in Delhi / NCR **valid for a period of 225days (180+ 45).** Original EMD must be submitted physically at the ***Reception / Office of the Principal*, H.J. Bhabha ITI Mayur Vihar *Delhi-110091***, before closing date & time of submitting / uploading the bid on e-procurement web-site i.e. **09/01/2018 up to 11.00AM**
6	Performance Bank Guarantee (PBG)	5% of the total cost of Work / Supply order in the form of FDR/Bank Guarantee in favour of **DDO, H.J. Bhabha ITI Mayur Vihar and payable at Delhi** and issued from any of the nationalized Scheduled Commercial Banks located in Delhi / NCR.
7	Nodal Officer for correspondence and clarification	Principal, H.J. Bhabha Industrial Training Institute (Department Of Training And Technical Education) Phase-I, Mayur Vihar Delhi-110091 e-mail: hjbhabhaiti.delhi@yahoo.co.in Tel. No.: 011-22750621, 22753998
8	Last date of bid submission / uploading	Bid must be uploaded on or before the 09/01/2018 up to 11:00AM only on e-procurement portal
9	Opening of Technical Bid	09/01/2018 at 02:00PM
10	Opening of Financial Bid	After Successful Clearance of Technical Evaluation

GOVERNMENT OF NCT OF DELHI
H.J. BHABHA INDUSTRIAL TRAINING INSTITUTE
MAYUR VIHAR, DELHI -110091
Ph. No.-011-22750621, 22753998
E-mail: hjbhabhaiti.delhi@yahoo.co.in

F.6(2)/HJBITI/PURCHASE/2017-2018/2161 **Dated: 14/12/2017**

E-PROCUREMENT
(https://govtprocurement.delhi.gov.in.)

TENDER DOCUMENT

On-line Bids are invited from the Reputed Manufacturers OR Authorized Distributors / Dealers of Manufacturer OR Suppliers for Supply, Installation, Testing & Commissioning of required **CUSTOMIZED WORK BENCHES / TEST BENCHES** for training purpose in **ICTSM TRADE**, as per the specification given in the **Annexure-I,** so as to upload on **E-Procurement web-site** i.e. https://govtprocurement.delhi.gov.in. not later than **09/01/2018 up to 11.00AM**

INSTRUCTIONS TO BIDDERS

1. Eligibility for Bidders:

1.1 The Bidder must be a Reputed Manufacturer OR Authorized Distributor / Dealer of Manufacturer OR Supplier. If, bidder is an authorized distributor / dealer of manufacturer, he must upload legible self attested scanned copy authorization certificate issued by the manufacturer.

1.2 The Bidder must have valid GST Number. Self attested copy of GSTIN must be uploaded.

1.3 The Bidder must have Permanent Account Number (PAN). Self attested copy of PAN must be uploaded.

1.4 The Bidder must have average financial Turnover of **Rs.09.85Lakhs** during the last 3 financial years (2016-2017, 2015-2016 & 2014-2015). The Bidder must upload Self attested scanned copy of Documentary proof indicating the annual Turnover for the last three financial years (2016-2017, 2015-2016 & 2014-2015) in the form VAT paid acknowledgment or any other relevant document duly signed by the concerned Government officer indicating the annual turnover therein or Balance Sheet duly signed by Charted Accountant or any other relevant document showing turnover duly signed by Charted Accountant.

1.5 The Bidder should quote the specifications & makes / brands of items as per specifications mentioned in annexure-I of the Bidding Documents. If, there is any deviation in the specifications & brands / makes of the Benches, Bidder must mention the deviation in the deviation column of Annexure-I and ***shall makes arrangement on their own expenses to demonstrate / show the Benches in this Institute or in any industry / Institute in Delhi / NCR, for which deviation in specifications / make w.r.t. tender document specification is quoted, to the***

Technical Expert Committee of this Institute up to 05/01/2018 for approval of committee.

Do not mention best quality / good quality / superior quality etc., but give make / brand of the item quoted. Self attested copy of duly filled Annexure-I must be uploaded.

1.6 The bid must be valid for 180 days from the date of opening of financial bid. A Bid valid for a shorter period will be rejected as non-responsive.

1.7 **EARNEST MONEY DEPOSIT (EMD)**

(a) Bidder shall submit, along with bid, EMD of **Rs. 01.60Lakh (Rupees One Lakh Sixty Thousand only)** in the form of FDR or Bank Guarantee only issued by any Nationalized commercial bank in an acceptable form in favour of **D.D.O, H.J. Bhabha ITI Mayur Vihar payable at Delhi, and should be valid** for a period forty five (45) days beyond the date of the bid validity i.e. 225days (180+45). In case the bid is not successfully closed within 180days, bidders may have submit renewed EMD.

(b) EMD of all unsuccessful bidders would be refunded by this Institute within 15 days of the bidder being notified as being unsuccessful. The EMD of successful bidder would be returned upon submission of Performance Guarantee.

(c) The EMD amount is interest free and will be refundable to the unsuccessful Bidders without any accrued interest on it.

(d) The bid / proposal submitted without EMD will be summarily rejected.

(e) The EMD may be forfeited:

- If a bidder withdraws its bid after closing date and time of bid and during the period of bid validity.
- In case of a successful bidder, if the bidder fails to sign the contract in accordance with this Tender/ Bid Document.

(f) Original EMD in a sealed envelope shall be dropped in the box placed at ***Reception of this Institute***, before closing date & time of submitting / uploading the bid on e-procurement web-site i.e. 09/01/2018 up to 11.00AM. Any tender without physical submission of requisite EMD will be rejected straightway.

1.8 Firms registered with NSIC are exempted from submitting the E.M.D only if they are registered for the same quoted item / items and with the condition that they submit / upload scanned copy of proof for its registration and its validity.

1.9 If, the Bidder is manufacturer, he must furnish the details of its organization, stating number of personnel employed, manufacturing facilities, after sales service facilities and quality control systems in the Annexure-II.

OR

If, the Bidder is Authorized Distributor / Dealer, he must furnish the details of its organization, stating no. of personnel employed, ties up for after –sales-service

facilities, whether he is authorized dealer or not for the items he is intending to supply, how he will provide after– sales- service etc. in the Annexure-II.

1.10 The Bidder must furnish details of their customers with full address, telephone no., etc. and details of similar supplies made, during the last two financial years, in the Annexure-II.

1.11 A self-certified letter by the authorized signatory of the bidder that "the bidder has not been blacklisted by any Central / State Government (Central/State Government and Public Sector) or under a declaration of ineligibility for corrupt or fraudulent practices" as on bid submission date must be submitted.

1.12 Bidder must agree to all Terms & Conditions of Bid Document and must upload duly filled self attested **Annexure-II** In token of acceptance.

2. Technical specifications

The detailed Technical specifications, quantity required are mentioned in **Annexure-I.**

3. Cost of Biding

3.1 The Bidder shall bear all the costs associated with the preparation and submission of its Bid, and the Principal hereinafter referred to as "the purchaser", will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.

3.2 The Bidder is expected to examine all instructions, forms, terms and conditions in the Bid documents. Failure to furnish all information required by the Bid documents or submission of a Bid not substantially responsive to the documents in every respect will be at the Bidder's risk and may result in the rejection of its Bid.

4. Documents to be uploaded with the Bid:

I "TECHNICAL BID"

(i) Self attested scanned copies of all the documents in support of the Eligibility of Bidder as mentioned in the **Clauses 1.1 to 1.12**.

(ii) Specifications & Makes of items quoted and deviation if any, w.r.t. Annexure-I of the bidding document.

II - "COMMERCIAL BID"

(i) A complete price in Rupees in the prescribed Performa of BOQ must be filled & signed and uploaded on the website.

5. Bid Validity

5.1 Bids shall remain valid for **180days** after the date of Financial Bid opening. **A Bid valid for a shorter period may be rejected as non-responsive.**

6. Delivery Period

6.1 8 (Eight) Weeks from the date of placing the supply order for all the items.

6.2 The Bidder quoted longer delivery period than the stipulated as above, for the purpose of evaluation only, an amount of 1% per week shall be added to the price to compare all the firms on equal footing.

7. Forfeiture of Bid Security

7.1 The Bid security will be forfeited

i) If, the Bidder withdraws its Bid during the period of Bid validity;

ii) In the case of successful Bidder, if the Bidder fails to sign the contract or fails to submit the Performance Security.

8. Extension of validity of Bids

8.1 In exceptional circumstances, the purchaser may solicit the Bidder's consent to an extension of the period of validity of 180days. The request and the responses thereto shall be made in writing. The validity of EMD provided shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid security. A Bidder granting the request will not be required nor permitted to modify its Bid.

9. Opening / Downloading of Technical Bid by purchaser

9.1 The purchaser will open / download "Technical Bids" in the presence of Bidders' representatives only who choose to attend, at **02.00PM on 09/01/2018** in the room of Principal, Sir CV Raman ITI, Dheerpur, Delhi.

9.2 The Bidders representatives, who are present, shall sign attendance register / sheet evidencing their attendance.

9.3 In the event of the specified date of Tender opening / downloading being declared a holiday for the purchaser, the Tenders shall be opened at the appointed time and location on the next working day.

9.4 The Bidders name, modifications or, Tender withdrawals and the presence or absence of the requisite EMD, registered with DGS&D/NSIC and such other details as the purchaser, at its discretion, may consider appropriate will be announced at the opening.

10. Bid Rejection

The Bid will be rejected under any one or more of the following cases: -

10.1 Non-production of original documents for verification, if required.

10.2 Non-submission of requisite Bid Security (EMD) physically, before closing date & time of submitting / uploading the bid on e-procurement web-site i.e. 09/01/2018 (up to 11.00AM)

10.3 Not meeting the Technical Specification.

10.4 If Bidder found indulging in malpractice of pooling of Bid.

10.5 If bidder is not found eligible as per requisite criteria mentioned in the clause 1.

10.6 If the quoted rates are not as per criteria.

10.7 If a firm quotes NIL rates, the bid shall be treated as unresponsive and will not be considered.

10.8 If the Technical Bid and / or Commercial Bid is not signed and stamped

11. Opening / Downloading of Commercial Bid by purchaser

11.1 The Commercial Bids of the bidders, who qualifies in technical Bid evaluation, ***will be opened after the successful clearance of Technical Evaluation*** in the office of Principal, H.J. Bhabha ITI, Mayur Vihar,Delhi in the presence of Bidders' representatives who choose to attend.

11.2 The Bidders' representatives who are present shall sign attendance register / sheet evidencing their attendance.

11.3 In the event of the specified date of Bid opening being declared a holiday for the purchaser, the Bids shall be opened at the appointed time and location on the next working day.

12. Evaluation and Comparison of Bids

12.1 The purchaser will evaluate and compare the total Bid Price for each item, which have been determined to be substantially responsive as per the clause-1 (Each item-wise L-1 Evaluation)

12.2 The purchaser's price evaluation of a Bid will be as per B.O.Q. No other charges will be paid or considered.

13. Purchaser's right to accept any Bid and to reject any or all Bids

13.1 The purchaser reserves the right to accept or reject any Bid, and to annul the Bid process and reject all Bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or Bidders of any obligation to inform the affected Bidder or Bidders of the grounds for the purchaser's action.

14. Notification of contract and placement of supply order

14.1 Prior to the expiration of the period of Bid validity, the purchaser will notify the successful Bidders in writing that its Bid has been accepted.

14.2 The notification of award will constitute the formation of the contract.

14.3 Upon the successful Bidder's furnishing of Performance Security, the purchaser will promptly notify each unsuccessful Bidder and will discharge its EMD.

15. Signing of contract

15.1 At the same time as the purchaser notifies the successful Bidder that its Bid has been accepted, the purchaser will send the Bidder the Contract Form provided in the Bid documents, incorporating all agreements between the parties.

15.2 Within 7 days of receipt of the contract form, the successful Bidder shall sign and date the contract and return it to the purchaser.

16. Warranty

16.1 The supplier warrants that the goods supplied under this contract are new, unused and most recent. The supplier further warrants that the goods supplied under this contract shall have no defect arising from design or materials or workmanship or from any act or omission of the supplier that may develop under normal use of the supplied goods in the conditions at consignee place.

16.2 This warranty as stated above shall remain valid for **12 months or more as given by the Original Equipment Manufacturer for all the items**, after the goods or any portion thereof as the case may be, have been delivered and commissioned to the final destination indicated in the contract.

16.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

16.4 Upon receipt of such notice, the supplier shall, with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.

16.5 If the supplier, having been notified, fails to remedy the defect(s) within a reasonable period, the Purchaser may proceed to forfeit the Performance Bank Guarantee.

17. Performance Security

17.1 The successful Bidder has to deposit a performance security, which will be the 5% (Five percent) of the total value of contract. The performance security should be in the form of FDR or Bank Guarantee from a Nationalized Commercial bank in favour of **"D.D.O. H.J. Bhabha ITI Mayur Vihar *Delhi-110091*"**. The Performance Security (Security Money) shall bear no interest. The Performance Security should valid for a period of 60days beyond the completion of all contractual obligations by the supplier including warranty / guarantee period. The performance security will be forfeited in case the successful Bidder fails to supply as per the contract /supply order or fail to meet the obligations under warranty / guarantee period.

17.2 Failure of the successful Bidder to furnish the Performance Security shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid security (EMD).

18. Inspection

18.1 The inspection of the Goods shall be carried out to check whether the Goods are in conformity with the technical specifications attached to the contract.

18.2 The final inspection of the ordered goods shall be carried out by the Technical Expert Committees duly constituted by the Principal / H.O.O. of the institute.

18.3 Firms fail to supply the items as per specification mentioned in the supply order within stipulated time, its performance security will be forfeited.

19. Penalty for late deliveries

19.1 If the supplier fails to deliver any or all of the goods or to perform the services within delivery period of **8 (Eight) Weeks,** the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as penalty for late deliveries @ 1% per week for undelivered items.

19.2 Once the maximum deduction of 5% is reached, the purchaser will terminate the contract and forfeits the Performance Security for undelivered goods.

20. Payment

20.1 The Supplier's request for payment shall be made to the Principal in writing, accompanied by an invoice describing, as appropriate, the Goods delivered, rate and amount.

20.2 Payments shall be made promptly by the Purchaser but in no case later than sixty days of after submission of an invoice / bill or claim by the supplier.

21. Purchaser right to vary quantities at the time of Award

21.1 The purchaser reserve the right at the time of award of contract to increase or decrease by up to 25% (Twenty Five Percent) the quantity of goods specified in the schedule of requirement without any change in price or other terms & conditions.

22. Termination for Default

22.1 The purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, terminate the contract in whole or in part:

(a) If the supplier fails to execute the supply order by the date specified in the order or within any extension thereof granted by the purchaser.
(b) If the supplier fails to perform any other obligation(s) under the contract.
(c) If the supplier, in the judgment of the purchaser has engaged in corrupt or fraudulent practices in executing the contract.

23. Force Majeure

23.1 Notwithstanding the provisions of clause 19 & 22 the supplier shall not be liable to forfeiture of its performance security, liquidated damages of termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the contract is the result of an event of force majeure.

23.2 "Force Majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and not foreseeable. Such invents may include, but are not restricted to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolution, fires, floods, epidemics, quarantine restrictions and freight embargoes.

23.3 If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternatives means for performance not prevented by the force majeure event.

24. Resolution of disputes

24.1 The Purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the contract.

24.2 Any dispute is subject to the jurisdiction of Delhi courts only.

25. Site Inspection

25.1 Bidders are advised to inspect the site at H.J. Bhabha ITI Mayur Vihar Delhi-110091 and its surroundings where these Machines are to be installed and satisfy them before submitting their tenders. A bidder shall be deemed to have full knowledge of the work whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.

26. Language

26.1 The Proposal should be filled by the bidders in English language only. If any supporting documents submitted are in any language other than English, translation of the same in English language is to be duly attested by the Bidders. For purposes of interpretation of the documents, the English translation shall govern.

27. Special Instructions:

27.1 ***Supplier/ Bidder must ensure to upload the self attested legible scanned copies of all the documents in support of the Eligibility of Bidder as mentioned in the Clauses 1.1 to 1.12.***

28.2 Tender/Bid will not be accepted, in any case, from the following firms/companies without citing any reason, being black-listed by DTTE:

1) M/S Impex Sales India
2) M/S Sachdeva Sales Corporation
3) M/S Sameer Traders
4) M/S India Tool House
5) M/S Usha & Co

NOTE: ANY CORRIGENDUM / ADDENDUM, IF ANY WILL BE PUBLISHED ON DELHI GOVT. E-PROCUREMENT WEB-SITE ONLY

****

ANNEXURE –I

IMPORTANT NOTE:

- **The Bidders may quote substitute alternative standards, Brand names in its Bid for any item, provided that it demonstrates equal or better to the specifications of Bidding Document. However, if bidder quotes alternate make / brand for any machine, then *shall makes arrangement on their own expenses to demonstrate / show the* Benches in this Institute or in any industry / Institute in Delhi / NCR, for which deviation in specifications / make w.r.t. tender document specification is quoted, to the Technical Expert Committee of this Institute up to 05/01/2018 for approval of committee.**
- **Do not mention best quality / good quality / superior quality etc., but give make / brand of the item quoted.**

S. No.	NAME OF THE ITEM WITH SPECIFICATIONS	QTY.	Unit	Deviation in specification & make / brand, if any
1	**Workbench for Hardware and Networking Training** Make: Scientech/ Technology Exchange/Magkraft (As per Specification Mentioned in the Tender Document)	2	Nos.	
2	**Workbench for Hardware and Network Security Training** Make: Scientech/ Technology Exchange/Magkraft (As per Specification Mentioned in the Tender Document)	1	No.	
3	**Electronic Work Bench** Make: Scientech/ Technology Exchange/Magkraft (As per Specification Mentioned in the Tender Document)	1	No.	
4	**Computer Networking Bench** Make: Scientech/ Technology Exchange/Magkraft (As per Specification Mentioned in the Tender Document)	1	No.	

Warranty shall not be less than 24 months or higher as per manufacturer warranty for all the items.

****

SPECIFICATIONS

Workbench for Hardware and Networking Training

The bench should have following detailed specifications:

- Bench should have wheels with locking mechanism at legs
- AC Supply : MCB with AC supply switches for safety purpose
- Horizontally aligned and should have sufficient legroom.
- The overall dimensions of Workbench should be not less than W = 1500 mm; D = 800 mm; H = 1500 mm
- The basic structure should be made of 30 x 30 x 1.5 mm tubular mild steel pipes with min. 1.5 mm in thickness for sturdiness
- It will provided with Power indicator & ON/OFF Control and Circuit Breaker of rating 3Amp with ON/OFF Control and along with over load protection
- Energy meter, LED tube light, Voltmeter and Ammeter should be fitted.
- Drawer should be available for keeping the components
- Antistatic mat with ESD Wrist Strap should be provided with workbench

Work Bench includes / fitted with the following items:

S. No.	Description	Item at STL		Qty.
		Page No.	Sr. No.	
1	Computer Hardware Training System	46	11	2
2	Network Training System	46	6	1
3	Managed Layer 2 Ethernet Switch 8/16/24 port	46	4	1
4	Managed Layer 3 Ethernet Switch 8/16/24 port	46	5	1
5	LAN Cards, wi-fi LAN Card	46	12	2
6	Media Convertor	46	15	2
7	8 port UTP jack panel	46	16	2
8	SC Couplers	46	17	6
9	SC Pigtails	46	18	6
10	Crimping Tools	46	21	6
11	Switch with POE ports	46	22	2
12	POE adapters	46	23	2
13	Network Camera (Outdoor / Indoor)	46	24	1
14	Digital Storage Oscilloscope 50 MHz 4 Channel	Not in STL, however essentially required for this bench for observation of wave forms		1
15	4.5 Digit Digital Multimeter			1

It also includes following:
Network cables – UTP
Network Cables – coaxial, flat, ribbon
Connectors for cables
RJ-45 connector
Fiber Optics cable with LC connector
LC connector module
Managed Layer 2 Ethernet Switch 8 port
Managed Layer 3 Ethernet Switch 8 port
LAN Cards, wi-fi LAN Card
Media Convertor
8/16/24 port UTP jack panel
SC Couplers
SC Pigtails
Crimping Tools
Switch with POE ports
POE adapters
Network Camera

Technical Specification:
Technical specification should be as

Hardware Training System:

This system has exposed the different circuit boards of PC/AT Computer on a PCB for identification of different parts of computer system .It should help to learn installation, troubleshooting and fault finding. Also should provision to insert faults in various sections by using switches. Test points should be provided for observation and measurement of waveforms and other electrical parameters.

- CPU with fan: Core i3 Processor with Window7/8 OS
- Mother Board : with Intel Chipset
- Memory (RAM) : 2 GB DDR 3 RAM
- Display Adaptor card : built in Mother Board
- Hard Disk :Above 160 GB (SATA)
- USB Based Floppy Disk Drive : 1.44 MB
- Monitor : 15" TFT Colour SVGA
- Key Board : Multimedia key board
- Mouse : Scroll Mouse (Optical)
- SMPS : 450 Watts
- DVD R/W Drive (SATA)
- Sound Cord : built in Mother Board
- Speakers & Mike : Stereo Speakers
- Video Camera : Web CAM

Network Training System

This training system should help to understanding of Local Area Network (LAN) including fundamentals of networking. It should assist for knowledge of all network layers, cable designing and building of a

complete network of computers. Students can study of various topologies using different standards given by IEEE with actual connections made in different topologies and data can be transferred. It should have provision to understand protocols, topologies used in networking, measurement of error rate, throughput and effect of errors on protocols. It should have PC to PC using RJ-45 Connector, Star topology using RJ45 Connector, Bus topology by using BNC end termination, Ring topology using DB9 Connector.

This training system should has software by which student can study Star, Bus & Ring selection, Protocols: CSMA /CD, CSMA /CA, Stop N Wait, Go back to N, Selective repeat, Sliding Window, Token Bus, Token Ring ,Packet size: 128, 256, 512, 1024, 2048, 4096, 8192, 16384Inter Packet delay: 1000 – 5000 ms, Error generation: Acknowledgment lost, bad packet, auto error generation ,Complete analysis of Network & Protocols, Real time Graphic representation of data on s/w screen with packet details, Network details like , Indication of computer name, IP address, MAC address, Port number, status of network, Network & protocol analysis like Indication of packet serial number, file name, file size, file number, receiver name, receiver IP address , total packets, packet length, time out, protocol, topology, receiver, MAC address, port number, file send start time, file sent completion time, transmission time data rate(Mbps),percentage error.

Digital Storage Oscilloscope

Digital storage oscilloscope should have minimum 4 channels to observe the various wave form also it should have following
Bandwidth: DC to 50 MHz
No. of Channel: 04 nos.
Memory : Minimum 12 MPoints
Display: 7 Inch color
Interface: USB and LAN

Digital Multimeter (Bench top Type)

Digital Multimeter should have facility of measurement of AC /DC voltage, AC/DC current, Resistance, other specification should have following:
4 ½- digit large LCD displays with back light max. Reading: 1.9999, Voltage measurement up to 1000 VDC and 750V AC,DC, AC Current up to 20A,ACV frequency Response: 50KHz,Frequency, Resistance, Capacitance measurement, Diode check and Continuity test.

Workbench for Hardware and Network Security Training

The bench should have following detailed specifications:

- Bench should have wheels with locking mechanism at legs
- AC Supply : MCB with AC supply switches for safety purpose
- Horizontally aligned and should have sufficient legroom.
- The overall dimensions of Workbench should be not less than W = 1500 mm; D = 800 mm; H = 1500 mm
- The basic structure should be made of 30 x 30 x 1.5 mm tubular mild steel pipes with min. 1.5 mm in thickness for sturdiness
- It will provided with Power indicator & ON/OFF Control and Circuit Breaker of rating 3Amp with ON/OFF Control and along with over load protection
- Energy meter, LED tube light, Voltmeter and Ammeter should be fitted.
- Drawer should be available for keeping the components
- Antistatic mat with ESD Wrist Strap should be provided with workbench

Work Bench includes / fitted with the following items:

S. No.	Description	Item at STL		Qty.
		Page No.	Sr. No.	
1	Computer Hardware Training System	46	11	2
2	Networking and Internet Security Training System	46	8	1
3	Optical Power Meter	46	14	1
4	LAN Tester	46	9	1
5	Digital Storage Oscilloscope 50 MHz 4 Channel	Not in STL, however essentially required for this bench for observation of wave forms		1
6	4.5 Digit Digital Multimeter	46	30	1

Technical Specification:
Technical specification should be as

Hardware Training System:

This system has exposed the different circuit boards of PC/AT Computer on a PCB for identification of different parts of computer system .It should help to learn installation, troubleshooting and fault finding. Also should provision to insert faults in various sections by using switches. Test points should be provided for observation and measurement of waveforms and other electrical parameters.

- CPU with fan: Core i3 Processor with Window7/8 OS
- Mother Board : with Intel Chipset
- Memory (RAM) : 2 GB DDR 3 RAM
- Display Adaptor card : built in Mother Board
- Hard Disk :Above 160 GB (SATA)
- USB Based Floppy Disk Drive : 1.44 MB

- Monitor : 15" TFT Colour SVGA
- Key Board : Multimedia key board
- Mouse : Scroll Mouse (Optical)
- SMPS : 450 Watts
- DVD R/W Drive (SATA)
- Sound Cord : built in Mother Board
- Speakers & Mike : Stereo Speakers
- Video Camera : Web CAM

Networking and Internet Security Training System

This training system should help to understanding of Networking and its security. It should provide Practice on firewall technologies to secure the network perimeter. Practice LAN security considerations and implement endpoint and Layer 2 security features. Wi-fi configuration to implement security considerations. It should provide understanding of Data Encryption and Decryption Techniques

It should have provision to understand protocols, topologies used in networking, measurement of error rate, throughput and effect of errors on protocols. It should have PC to PC using RJ-45 Connector, Star topology using RJ45 Connector, Bus topology by using BNC end termination, Ring topology using DB9 Connector.

This training system should has software by which student can study Star, Bus & Ring selection, Protocols: CSMA/CD, CSMA/CA, Stop N Wait, Go back to N, Selective repeat, Sliding Window, Token Bus, Token Ring , ,Error generation: Acknowledgment lost, bad packet, auto error generation ,Complete analysis of Network & Protocols, Real time Graphic representation of data on s/w screen with packet details, Network details like , Indication of computer name, IP address, MAC address, Port number, status of network, Network & protocol analysis like Indication of packet serial number, file name, file size, file number, receiver name, receiver IP address , total packets, packet length, time out, protocol, topology, receiver, MAC address, port number, file send start time, file sent completion time, transmission time data rate(Mbps),percentage error.

Optical Power Meter

It should have following specification

Detector : Silicon detector
Range : 0 dBm to -50 dBm
Display : 10 mm LCD
Wavelength : 660 & 950 nm
Connector : SMA
Accuracy : 0.7 dBm

Digital Storage Oscilloscope Digital storage oscilloscope should have minimum 4 channels to observe the various wave form also it should have following
Bandwidth: DC to 50 MHz
No. of Channel: 04 nos.
Memory : Minimum 12 M Points
Display: 7 Inch color
Interface: USB and LAN

Digital Multimeter (Bench top Type)

Digital Multimeter should have facility of measurement of AC /DC voltage, AC/DC current, Resistance, other specification should have following:
4 ½- digit large LCD displays with back light max. Reading: 1.9999, Voltage measurement up to 1000 VDC and 750V AC, DC, AC Current up to 20A, ACV frequency Response: 50KHz,Frequency, Resistance, Capacitance measurement, Diode check and Continuity test.

LAN Tester
It should testing of cables using in the Local Area Networking

ELECTRONIC WORK BENCH

An integrated Workbench consisting of instrument panel and working table on which students should be able to learn and perform experiments. The instruments should to be fitted in the panel such that only the front panel is accessible & they are internally electrically connected. The instruments fitted in the panel should be covered with 4mm transparent acrylic sheet with lock and key facility to protect the instruments.

The Workbench should be made of M.S. powder coated tubular steel pipes with top made up of good quality 19 mm thick plywood with 1.8 mm off white colour laminate covered with antistatic mat on the working area.

The Workbench details are as follows:

1. The basic structure should be made of 30 x 30 x 1.5 mm tubular mild steel pipes.
2. The MS sheet used in pipes should be min. 1.5 mm in thickness for sturdiness.
3. The overall dimensions of Workbench should be not less than W = 1800 mm; D = 900 mm; H = 1500 mm .
4. 4 nos. - MS drawers with handle & separate lock on each drawer should be provided.
5. Lockable Wheel on the base of the legs should be provided.
6. For the panel section, raised back height of 1500 mm from floor with matching height support from the side at a depth = 750 mm for instrument housing with a MS Panel strip below it for housing sockets and switches for external use. (6 nos modular 5 Amp switches and 5 pin, 5A, with shock proof protective sockets.)
7. 2 Pole MCB (32A) to be provided for safety of Workbench.
8. Workbench should work on Mains Supply - 230V AC, 50 Hz
9. Workbench should come with LED Tube Light 20 W –1 No & Energy Meter –1No.

Technical specifications of instruments to be installed on the Workbench are given as below.

Workbench should be fitted with the following Instruments / Equipments:

S. No.	Description	Item at STL		Qty. to be Purchased	Remark
		Page No.	Sr. No		
1	30 MHz Oscilloscope with LCD for parameter readout.	Not in STL, however essentially required for this bench for observation of wave forms		01 No.	
2	Function Generator	Not in STL, however essentially required for this bench for injecting the different type of wave forms to test the electronic devices.		01 No.	
3	DC Power Supply, 0-30 V, 0-2 Amp	Not in STL, however essentially required for this bench to operate the electronic circuit		01 No.	
4	Temperature controlled Soldering and De soldering station with SMD Iron.	Not in STL, however essentially required for this bench for soldering & De-soldering the SMD components during assembly & repairing work		01 No.	
5	4 ½ Digit LCD Large display Digital Multimeter	45	30	01 No.	
6	SMPS Trainer	45	47	01 No.	
7	UPS Trainer	45	48	01 No.	
8	Power Electronics Trainer	45	49	01 No.	

1. 30 MHz 2 Channel 4 Trace Digital Readout Oscilloscopes with colour LCD

It should have following features:

- Digital Readout on LCD
- 2 Channel
- 30MHz Bandwidth
- Component and Continuity Tester

Technical Specifications:

Operating Modes	:	Channel I, Channel II, Channel I & II alternate or chopped (Approx. 350 KHz), X-Y Operation (Ratio 1:1 Input via CHII), Add / Sub CH I ± CH II, Invert CH II
Vertical deflection (Y) (Identical channels)		
Band width	:	DC-30 MHz (-3 dB)
Rise time	:	12 ns approx.
Deflection coefficients	:	Micro-controller based 12 calibrated steps 5 mV / Div -20 V / Div 1-2-5 sequence.
Accuracy	:	+/- 3 %
Input Impedance	:	1 MΩ II 30 pF approx.
Input coupling	:	DC-AC-GND
Maximum Input voltage	:	350 V (DC + Peak AC)
Time base		
Time coefficients	:	Micro-controller based 18 calibrated steps, 0.5 ms / Div-0.2 s / Div 1-2-5 sequence

2. Function Generator

The instrument should have following features:

- Frequency Range : 3MHz
- Sine, Square, Triangle, Ramp, Pulse, TTL
- 20Vpp Output and DC Offset
- 40 MHz Frequency Counter
- 20 X4 LCD Display
- 60dB Attenuation
- DC Offset : ± 5 V adjustable
- Modulation : FM

3. 30V - 2A DC Power Supply

The instrument should have following features:

- Dual DC 0-30 V; 0-2 Amp – Digital display for Voltage and Current
- Constant Voltage and Constant Current Source

Technical Specifications:

DC Outputs	:	0 - 30 V, 2 A
Resolution	:	Voltage: 100 mV, Current: 10mA
Internal Resistance	:	10 mΩ
Stability	:	≤ 2.5 mV at 32 V / 2 A
Recovery Time	:	≤ 50 s
Load Regulation	:	≤ (0.05 % +10 mV) for 0 - 32 V (A & B)
Line Regulation	:	≤ (0.05 % +10 mV) for 0 - 32 V (A & B)
Ripple & Noise	:	≤ 1mVrms

Display Accuracy	:	± (1% +1 digit)
LED Indication	:	Glowing LED for respective O\P on or off
Protective modes	:	Over load, over voltage, over current, over heat and short circuit.

4. Soldering / De soldering Station

It should have following features :

- Set / Read of temperature
- Increase and Decrease of keys to set temperature once set the read temperature will display after two seconds by default
- Digital calibration will be done through micro controller to avoid analog components tolerances
- Burn proof silicon cable with thermal resistance up to 600°
- Blower with 12V DC SMD Iron

Technical Specifications :

Soldering

Power consumption	:	60 W
Input voltage	:	170 to 270 V
Temperature range	:	180 to 270V

De soldering	:	70 Watts
Input	:	170 to 270 V AC
Temp range	:	180 to 480°C
Pump	:	diaphragm type

5. 4 ½ Digit Bench top Digital Multimeter

It should have following features :

- 4 ½- digit large LCD display with back light max. reading: 1.9999
- Voltage measurement up to 1000 VDC and 750V AC
- DC, AC Current up to 20A.
- ACV frequency Response: 50KHz
- Frequency, Resistance, Capacitance measurement
- Diode check and Continuity test.

Technical Specifications:

DC VOLTAGE (DCV)

RANGE	:	200mV - 1000V
Input resistance	:	10MΩ for all ranges
Over load protection	:	200mV range: 250VDC or AC peak value
Other range	:	1000VDC or AC peak value

RESISTANCE (Ω)

RANGE	:	200Ω - 20MΩ
Open voltage	:	less than 3 V
Over load protection	:	250V DC or AC peak value

AC VOLTAGE (ACV)

RANGE	:	200mV – 750V

The input value for accuracy guarantee should be larger than 10% of range.
Input resistance : 2MΩ for all range.
Over load protection : 200mV range: 250V DC or AC peak value,
Other range : 1000V DC or AC peak value.

DC CURRENT (DCA)
RANGE : 20mA - 20A
Max. input voltage : drop, 200mV
Max. input current : 20A (within 15s)
Over load protection : 2A/250V fused. 20A/250V fused

AC CURRENT (ACA)
RANGE : 200mA - 20A
Max. input voltage : drop, 200mV
Max. input current : 20A
Over load protection : 2A/250V fused. 20A/250V fused

6. SMPS Trainer

Trainer should have following features

LCD Display to various relevant experiment parameters.
Facility to measure signals on Oscilloscope
Isolated Power supply for Input to avoid Shock Hazard
Diagrammatic representation of circuit for better understanding
Test Points should provided to observe signals at various stages
Fault identification switches for fault analysis
Protective shield to prevent shock
Should designed considering all safety standards

The training setup should have following specifications

Input	85 to 230V AC, 50Hz
Output	+12V DC regulated
	-12V DC regulated
	+5V DC regulated

Switching Transformer

Input	320V DC switching at 120KHz or above
Output	30V AC

Experiment can be performed

StudyofPrimaryrectifierandFiltersection
StudyofSwitchingTransformer
StudyofOptocoupler
StudyofRegulation
StudyofSMPSwithVariacinput(VariableAC)-RegulationTest
Studyofvariousfaultsandprocedureoftheirtroubleshooting

7. UPS Trainer

The training setup should have following features

- Understand the overall functioning of UPS
- Charging of Battery using Mains and Solar Panel are to be provided
- Switching of Charging from Mains to Solar Should be automatic
- Study of AVR transformer section of UPS
- Various test points must be provided to measures the voltages of different sections
- Analysis of different charging techniques on a single board
- Display to show various parameters
- Study of different charging technique for battery
- Diagrammatic representation of circuit for Better Understanding

The training setup should have following specifications

UPS

Input	80 to 230VAC, 50Hz
Output	+12V DC regulated
	-12V DC regulated
	+5V DC regulated

Switching Transformer

Input	320V DC switching at 132 kHz
Output	30V AC

Solar Charge Controller

Input	19 to 22V
Output	14 to 15V

Charging technique

Float
Trickle
Constant

Setup should support to perform following experiments:

- Study of UPS
- Study of different charging technique 1) Float, 2)Trickle,3) Constant
- Study of AVR (Automatic Voltage Regulator)
- Study of UPS in presence of variable AC mains
- Study of PWM Technology used in UPS
- Study of overall function of UPS trainer
- To test UPS trainer with appropriate load
- To identify various faults in UPS and to study the systematic procedure of their troubleshooting

8. Power Electronics Trainer

The training setup should have following features

- Functional blocks indicated on board mimic
- Breadboard for circuit design
- Built in DC Power Supplies
- Built in AC Power Supplies
- Onboard pulse generator with frequency and duty cycle control.
- On board single phase rectifier firing circuit with firing angle control

- On board thyristor devices
- On board pulse amplifier and isolation transformer
- On board variable load and circuit components
- Detailed learning content with teaching, learning and simulation software on Power Electronics

The training setup should have following specifications

DC Power Supply	:	+5 V, -5 V 500 mA,
	:	+12V, -12 V 500 mA
	:	+15 V, 250 mA
	:	+35V, -35V, 250 mA
AC Power Supply	:	18V-0V-18V
		0V-15V
Frequency range	:	30Hz to 900Hz variable
Amplitude	:	12V
		PWM Control of G1, G2, G3 and G4 Duty
		cycle control of "Gate" Signal is 0 to 100%
SCR Assembly	:	4 SCRs 2P4M, 400V/2A
Power Devices	:	IGBT-G4BC20S, MOSFETIRFZ44N, UJT-2N2646, DIACDB3, TRIAC-BT136, PUT-2N6027
Circuit Components on board	:	Electrolytic Capacitor 10uF, 63V
		Electrolytic Capacitor 1uF, 63V
		Met. Capacitor 0.33uF, 63V
		Diode 1N4007,
		Inductor 220uH, 4.7uH, 10mH.
Pulse transformer on board	:	2 nos. PT4502 1:1 and one is PT4503 1:1:1
Load selector	:	6 load resistances- 47E/7W, 1K/1W,
		1K/10W, 10K/10W, 120E/5W, 2K2/2W.
Test points	:	10 Nos
Power Supply (Mains)	:	220V/110V, 50Hz

Included Accessories

Bread boards	:	2 nos.
Connecting wires	:	20 nos.
2mm to 1mm Patch cords	:	15 nos.
2mm Patch cords (Red) 16"	:	4 nos.
2mm Patch cords (Black) 16''	:	4 nos.
2mm Patch cords (Blue) 16''	:	12 nos.

Scope of Learning

- VI characteristics of power devices
- Study of firing Schemes
- Controlled rectifiers
- DC-DC chopper
- Inverter
- Own circuit Development

Ready to use experimental boards

The boards are compact and ready to use. These boards will be useful for students to plot characteristics & various region of operation of PowerElectronics Devices such as SCR, UJT, DIAC, TRIAC, MOSFET, IGBT etc It can be used as standalone unit with external DC power supply and will bemade up of ABS non-breakable material with sufficient test points to observe signal at various block of a circuitry.

1. UJT Characteristics

Scope of Learning

Study of the characteristic of Uni junction Transistor (UJT) and to calculate interbase resistance and intrinsic standoff ratio

2. MOSFET Characteristics
Scope of Learning
To study the characteristics of n channel MOSFET

3. SCR Characteristics
Scope of Learning
Study of Characteristics of SCR and Plotting V-I Characteristics

4. TRIAC Characteristics
Scope of Learning
Study of the V-I Characteristics of TRIAC

5. DIAC Characteristics
Scope of Learning
Study of the characteristics of DIAC and plot its V-I characteristics

6. IGBT Characteristics`
Scope of Learning
Study of the characteristics of IGBT

1. **Teaching, Learning and Simulation Software**

Teaching, Learning and Simulation Software: Classroom/ laboratory teaching, learning and simulation software: on Power Electronics
The Software will cover following topics

- Introduction: Definition, Insulators, Semiconductors and Conductors, Types of Semiconductors, PN Junction Diode, Transistor PNP and NPN,Power Electronics Devices
- Triggering and Commutation: Turn-ON Method of a Thyristor, Gate Triggering Methods, Turn-OFF Method
- Gate Firing Circuits: General Firing Circuit, Resistance Firing Circuit, Resistance-Capacitance Firing Circuit for Half and Full Wave, UJT Oscillator,Synchronized UJT Triggering (Ramp Triggering), Ramp and Pedestal Triggering
- Phase Controlled Rectifier: Introduction, Classification, Uncontrolled Rectifiers (Half Wave, Full Wave and Bridge), Firing Circuits for ControlledRectifiers (using Triangular Comparator, Ramp Comparator, Cosine Firing Scheme, IC-TCA785), Controlled Rectifiers (Single Phase Half, Full, Semi convertor and Bridge Rectifiers with RLoad and RL-Load), Applications
- Chopper: Introduction, Classification, DC-DC Chopper (Introduction, Step-Down Chopper, Step-Up Chopper), AC Chopper, Applications
- Cycloconvertor: Introduction, Cycloconvertor Firing Scheme, Single Phase Cycloconvertor, Applications
- AC Voltage Controller: Introduction, Classification, AC Voltage Controller Half and Full Wave with R-Load and RL-Load, Application

Computer Networking Bench

An integrated Workbench consisting of instrument panel and working table on which students should be able to learn and perform experiments. The instruments should to be fitted in the panel such that only the front panel is accessible & they are internally electrically connected. The Workbench should be made of M.S. powder coated tubular steel pipes with top made up of good quality 19 mm thick plywood with 1.8 mm off white colour laminate covered with antistatic mat protect workbench top from hot soldering iron on the working area.

The Technical details of Workbench are as under:

1. The basic structure should be made of 30 x 30 x 1.5 mm tubular mild steel pipes
2. The MS sheet used in pipes should be min. 1.5 mm in thickness for sturdiness
3. The overall dimensions of Workbench should not be less than W=1200MM, D=750mm, H=1150mm
4. 3 nos. - MS drawers with handle & separate lock on each drawer should be provided
5. Fixed leveling screws on the base of the legs should be provided
6. For the panel section, raised back height of 1200mm from floor with matching height support from the side at a depth 500mm for instrument housing with a MS Panel strip below it for housing Electrical Sockets and Switches for external use.
7. 2 Pole MCB (32A) to be provided for safety of Workbench
8. Workbench should work on Mains Supply - 230V AC, 50 Hz

Work Bench includes / fitted with the following items:

S. No.	Description	Item at STL		Qty.
		Page No.	Sr. No.	
1	Wireless LAN with 803.11b/g	45	10	01No.
2	LAN Protocol Simulation and Analyzer	46	7	01No.
3	Network and Internet security trainer	46	8	01No.
4	Managed Layer 2 Ethernet Switch 8 port	46	4	01No.
5	Managed Layer 3 Ethernet Switch 8 port	46	5	01No.
6	LAN cable tester	46	9	01No.
7	Network cables – UTP	46	10	01No.
8	Network Cables – coaxial, flat, ribbon	46	11	01No.
9	LAN Cards, wi-fi LAN Card	46	12	01No.
10	Connectors for cables	46	13	01No.
11	Power Meter	46	14	01No.
12	Media Convertor	46	15	01No.
13	8/16/24 port UTP jack panel	46	16	01No.
14	SC Couplers	46	17	01No.
15	SC Pigtails	46	18	01No.
16	RJ-45 connector	46	19	01No.
17	Fluke Meter	46	20	01No.
18	Crimping Tools	46	21	01No.
19	Switch with POE ports	46	22	01No.
20	POE adapters	46	23	01No.
21	Network Camera	46	24	01No.
22	Fiber Optics cable with LC connector	46	25	01No.

23	LC connector module	47	26	01No.

Two set of open comport for troubled shooting and repairing learning

- The different circuit boards of PC/AT Computer are exposed on a PCB
- Learn installation, troubleshooting and fault finding
- Artificial fault creation by switches
- About more than 40 faults can be learnt
- Easy identification of different parts of Computer
- Easy measurement of voltages and observation of waveforms.
- Study of typical voltages and waveforms
- An exhaustive instructional Product Tutorial complete with theory.

Scope of Work / Experiments to be Performed;

- PC to PC communication with IEEE 802.3
- Client - Server network
- Design of Star topology using 100Base-Tx
- Design of Bus topology using 10Base-2
- Design of Ring topology using DB9
- Simulation of Distance Vectors and Link State Algorithms
- Socket Programming exercise for LINUX
- Encryption/Decryption Technique with seven type of CRC algorithm
- Creation of cables for network connections
- Subnet calculator
- Network design using RJ45 & DB9 connectors
- Socket programming and processing
- Network monitoring
- Data rate up to 100Mbps
- Variable packet size and delay
- Error generation (Manual and Auto)
- Color coded real time graphical representation of entire transmission & reception
- Graphical Analysis of LAN performance with various parameters and protocols
- Save / Print option for graphs
- Switch faults in both hardware & software

Technical specification:

Hardware:

(A)

- PC to PC using RJ-45 Connector
- Star topology using RJ45 Connector
- Bus topology by using BNC end terminator
- Ring topology using DB9 Connector
- Data transmission speed: 10/100 Mbps
- 4 Nodes

(B)

- CPU with fan: i 3 processor
- Mother Board : with Intel Chipset
- Memory (RAM) : 2 GB DDR 3 RAM
- Display Adaptor card : built in Mother Board
- Hard Disk : 500 GB
- USB Based Floppy Disk Drive : 1.44 MB
- Monitor : 15" TFT Colour SVGA
- Key Board : Multimedia key board
- Mouse : Scroll Mouse (Optical)
- SMPS : 450 Watts
- DVD R/W Drive (SATA)
- Sound Cord : built in Mother Board
- Speakers & Mike : Stereo Speakers
- Video Camera : Web CAM

(C)

- Training platform with fault creating facilities with: USB based Floppy Disk Drive + Sound Ports + Com Port + LPT(Parallel Port) + USB Ports + VGA Port +PS2 Ports (Mouse & Key Board).
- Training Package with Experiments. (Software CDs, Product Tutorials)

Software:

Star, Bus & Ring selection
Protocols: CSMA/CD, CSMA/CA, Stop N Wait, Go back to N, Selective repeat, Sliding Window, Token Bus, Token Ring
Packet size: 128, 256, 512, 1024, 2048, 4096, 8192, 16384
Inter Packet delay: 1000 – 5000 ms
Error generation: Acknowledgment lost, bad packet, auto error generation
Complete analysis of Network & Protocols

Graphical Representation:

Real time Graphic representation of data on s/w screen with packet details

Network details:

Indication of computer name, IP address, MAC address, Port number, status of network.

Network & protocol analysis:

Indication of packet serial number, file name, file size, file number, receiver name, receiver IP address , total packets, packet length, time out, protocol, topology, receiver, MAC address, port number, file send start time, file sent completion time, transmission time data rate(Mbps),percentage error.

General:

Power supply: 220V, 50 Hz (other on request)

Accessories:

RJ45 – RJ45 Connector Cable	: 4 no.
Four USB dongles	: 4 no.
Four DB9 connector cable	: 2 no.
Two END Terminators	: 2 no.
Mains cord	: 1 no.
Web Camera	: 1 no.
Speaker set	: 1 no.
PC Monitor, Mouse, Key Board	: 1 no.
Microphone, Head Phone	: 1 no.
BNC to Test prod cable	: 1 no.
Operating Software	: Windows 7 Starter/ Home Basic 1 no.

ANNEXURE-II

BID FORM

Date……..
Bid No……

To

The Principal
H.J. Bhabha ITI
Phase-I, Mayur Vihar
Delhi-110091

Sir,

Having examined the Bid Documents, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply in conformity with the said Bid documents in accordance with the schedule of prices attached herewith and made part of this Bid.

We undertake, if our Bid is accepted, to deliver the goods within the delivery period of Twelve Weeks, as specified in the Bid document.

If our Bid is accepted we will submit the Performance Guarantee for an amount equal to 5% of the contract value.

We agreed to all Terms and conditions of **this Bid valid for a period of 180 days from the date fixed for financial bid** opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding contract between us.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988", if we find in Bid pooling or against law against fraud and corruption my / our firm may be black listed.

Further we certify that our organization is not blacklisted by any Govt. Department.

Dated_____

(Signature)
SEAL

Contd. on page 2/- Bid Form-

Page 2/- of Bid Form

The other details required in the Bid documents are as under: Give all details attached separate sheets if required.

Nature of Firm: Manufacturer or Authorized dealer.

For "Manufacturers"

1. No. of personnel employed,
2. Manufacturing facilities,
3. After-sales-service facilities
4. Quality control systems.

For "Authorized Distributor / Dealer"

1. Stating no. of personnel employed,
2. Tie-ups for after-sales-service facilities,
3. Whether authorized dealer or not for the items he is supplying.
4. How he will provide the after-sales-service for the items he is supplying during the warrantee / Guarantee period.

The detail of customers during the last two years i.e. between 01.04.2015 to 31.03.2017 to whom they have supplied similar type of items

Sr. no.	Name of Customer	Address	Phone No.	Machine supplied

Dated_____

(Signature)
SEAL

****

CONTRACT FORM

THIS AGREEMENT made the _____day of _____, 201__ between (Name of Purchaser & address) (hereinafter "the Purchaser") of the one part and (Name of Supplier & address) (hereinafter "the Supplier") of the other part:

WHEREAS the purchaser is desirous that certain Goods and ancillary Services should be provided by the Supplier, viz, (Brief Description of Goods and Services) and has accepted a bid by the Supplier for the supply of those Goods and Services in the sum of (Contract Price in Words and Figures) (hereinafter "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
   (a) The Bid Form and the Price Schedule submitted by the Bidder:
   (b) The Schedule of Requirements;
   (c) The Technical Specifications;
   (d) The General Conditions of Contract;
   (e) The Special Conditions of Contract; and
   (f) The Purchaser's Notification of Award.

3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, Sealed and Delivered by the
Said_____ (For the Purchaser)
In the presence of: _____

Signed, Sealed and Delivered by the
Said _____ (For the Supplier)
In the presence of _____