TENDER DOCUMENT FOR

SUPPLY, INSTALLATION, PROGRAMMING, TESTING & COMMISSIONING OF AUDIO VIDEO SYSTEM AT LIBRARY BLOCK OF KOZHIKODE MEDICAL COLLEGE.

TENDER NO.HLL/ID/14/52

August 2014

BY

HLL Lifecare Limited

(A GOVERNMENT OF INDIA ENTERPRISE)
Infrastructure Development Division
Trivandrum – 695006.
Website : www.lifecarehll.com

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HLL Lifecare Limited
(A GOVERNMENT OF INDIA ENTERPRISE)

TENDER NO. HLL/ID/14/52 **Dated: 27.08.2014**

NOTICE INVITING TENDERS (NIT)

Infrastructure Development Division of HLL Lifecare Limited (a Govt of India Enterprise) on behalf of Principal Medical college invites sealed tenders, from eligible Bidders for the Supply, Installation, Programming, Testing & Commissioning of Audio Video System at library block of Kozhikode Medical college.

SL NO	DESCRIPTION	SCHEDULE
I.	Estimated cost of work	Rs 87,21,267 /-
II.	Starting dates & closing date of downloading the docments	28.08.2014 -11.09.2014
III.	Tender documents	Tender docments can be downloaded from www.lifecarehll.com or Central Public Procurement Portal.The cost of document in the form of DD shall be submitted along with tender docment otherwise the tender may summarily be rejected .
IV.	Cost of tender form (Non-refundable)	Rs 1575/- (Rupees One thousand five hundred and seventy five only)Payable by a Demand draft drawn on a scheduled bank in India in favour of "HLL Lifecare Limited" at Thiruvananthapuram .

SL NO	DESCRIPTION	SCHEDULE
V.	Last date of Submission of queries	03.09.2014
VI.	Pre bid Meeting at **HLL Lifecare Limited** **Infrastructure Development Division** **Adarsh, T.C 6 /1718/ 1** **Vettamukku, Thirumala PO,** **Thiruvananthapuram- 695 006.** **Phone - 0471 2365873 /872** **Fax - 0471 2368144**	03.09.2014 at 11.15 am
VII.	Closing date & time of submission of tender	11.09.2014 at 11.00 am
VIII.	Time and date of opening of Techno-commercial tenders at ID Office at Vettamukku,Trivandrum	11.09.2014 at 11.30 am
IX.	Completion period of work	3 months from the date of LOA or handing over of site whichever is later
X.	Earnest Money deposit	Rs 1,74,425/-

1. Tenders, complete in all respects, along with requisite EMD may be submitted at the address given below on or before the closing date and time indicated above.
2. In the event of any of the above mentioned dates being declared as a holiday, received/opened on the next working day at the appointed time.
3. Two bid system will be followed. The first part **'Techno - Commercial Tender'**, shall consists of EMD as well as documents to satisfy eligibility criteria along with signed copy of technical bid and Pre bid minutes. and the second part **'Price Tender'** as specified in clause 11 of GIT. Bidders shall seal **'Techno - Commercial Tender'** and **'Price Tender'** separately and covers will be suitably super scribed.

   All Bidders are hereby cautioned that tenders containing any material deviation or reservation as described in Clause 27.5 of "General Instructions to Bidders"(GIT) and/ or without quoting the cost shall be considered as non-responsive and shall be summarily rejected.

   The quoted price shall be inclusive of all taxes and duties whether payable by the contractor or to be deducted at source. This shall include those applicable among VAT, Sales Tax, Income Tax, Customs Duty, Excise Duty, Turnover Tax, Service Tax, Work Contract Tax, Octroi, Labour Welfare Cess or any other Taxes and Duties prevailing in respect of this contract. ANY BID STATING THAT TAXES ARE EXTRA WILL BE SUMMARILY REJECTED.

Deputy Vice President (Tech)

HLL Lifecare Limited
Infrastructure Development Division

SECTION - II

GENERAL INSTRUCTIONS TO BIDDERS(GIT)
CONTENTS

SECTION – II
GENERAL INSTRUCTIONS TO BIDDERS(GIT)

A. PREAMBLE

1. Definitions and Abbreviations

1.1 The following definitions and abbreviations, which have been used in these documents shall have the meanings as indicated below:

1.2. Definitions:

(i) "Purchaser" means the organization purchasing goods and services as incorporated in the Tender Enquiry document.
(ii) "Tender" means Bids / Quotation / Tender received from a Firm / Bidders / Bidder.
(iii) "Bidders" means Bidder/ the Individual or Firm submitting Bids / Quotation / Tender
(iii) "Supplier" means the individual or the firm supplying the goods and services as incorporated in the contract.
(iv) "Goods" means the articles, material, commodities, furniture, fixtures, raw material, spares, instruments, machinery, equipment, medical equipment,etc. which the supplier is required to supply to the purchaser under the contract.
(v) "Services" means services allied and incidental to the supply of goods, such as transportation, loading & unloading, commissioning, provision of technical assistance, training, after sales service, maintenance service and other such obligations of the supplier covered under the contract.
(vi) "Earnest Money Deposit" (EMD) means Bid Security/ monetary or financial guarantee to be furnished by a Bidders along with its tender.
(vii) "Contract" means the written agreement entered into between the purchaser and/or consignee and the supplier, together with all the documents mentioned therein and including all attachments, annexure etc. therein.
(viii) "Performance Security" means monetary or financial guarantee to be furnished by the successful Bidders for due performance of the contract placed on it. Performance Security is also known as Security Deposit.
(ix) "Consignee" means the (Medical College) person to whom the goods are required to be delivered as specified in the Contract.
(x) "Specification" means the document/standard that prescribes the requirement with which goods or service has to conform.
(xi) "Inspection" means activities such as measuring, examining, testing, gauging one or more characteristics of the product or service and comparing the same with the specified requirement to determine conformity.
(xii) "Day" means calendar day.

1.3 Abbreviations:

(i) "T E Document" means Tender Enquiry Document
(ii) "NIT" means Notice Inviting Tenders
(iii) "GIT" means General Instructions to Bidders
(iv) "SIT" means Special Instructions to Bidders
(v) "GCC" means General Conditions of Contract
(vi) "SCC" means Special Conditions of Contract
(vii) "DGS&D" means Directorate General of Supplies and Disposals
(viii) "NSIC" means National Small Industries Corporation
(ix) "PSU" means Public Sector Undertaking
(x) "CPSU" means Central Public Sector Undertaking
(xi) "SSI" means Small Scale Industry
(xii) "LC" means Letter of Credit
(xiii) "DP" means Delivery Period
(xiv) "BG" means Bank Guarantee
(xv) "ED" means Excise Duty
(xvi) "CD" means Custom Duty
(xvii) "VAT" means Value Added Tax
(xviii) "CENVAT" means Central Value Added Tax
(xix) "CST" means Central Sales Tax
(xx) "RR" means Railway Receipt
(xxi) "BL" means Bill of Lading
(xxii) "FOB" means Free on Board
(xxiii) "FCA" means Free Carrier
(xxiv) "FOR" means Free On Rail
(xxv) "CIF" means Cost, Insurance and Freight
(xxvi) "CIP (Destinations)" means Carriage and Insurance Paid up to named port of destination. Additionally the Insurance, local transportation and storage shall be extended and borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery.
(xxvii) "DDP" means Delivery Duty Paid named place of destination (consignee site)
(xxviii) "INCOTERMS" means International Commercial Terms as on the date of Tender Opening

(xxix) "CMC" means Comprehensive Maintenance Contract
(xxx) "RT" means Re-Tender.

2. Introduction

2.1 The Purchaser has issued these TE documents for purchase of goods and related services as mentioned in Section – V – "List of Requirements", which also indicates, *interalia,* the required delivery schedule, terms and place of delivery.

2.2 This section (Section II - "General Instruction to Bidders") provides the relevant information as well as instructions to assist the prospective Bidders in preparation and submission of tenders. It also includes the mode and procedure to be adopted by the purchaser for receipt and opening as well as scrutiny and evaluation of tenders and subsequent placement of contract.

2.3 The Bidder shall also read the Special Instructions to Tenderers (SIT) related to this purchase, as contained in Section III of these documents and follow the same accordingly. Whenever there is a conflict between the GIT and the SIT, the provisions contained in the SIT shall prevail over those in the GIT.

2.4 Before formulating the tender and submitting the same to the purchaser, the Bidders should read and examine all the terms, conditions, instructions, checklist etc. contained in the TE documents. Failure to provide and/or comply with the required information, instructions etc. incorporated in these TE documents may result in rejection of its tender.

3. Availability of Funds

3.1 Expenditure to be incurred for the proposed purchase will be met from the funds available with the purchaser/consignee.

4. Language of Tender

4.1 The tender submitted by the Bidders and all subsequent correspondence and documents relating to the tender exchanged between the Bidders and the purchaser, shall be written in the English language, unless otherwise specified in the Tender Enquiry. However, the language of any printed literature furnished by the Bidders in connection with its tender may be written in any other language provided the same is accompanied by an English translation and, for purposes of interpretation of the tender, the English translation shall prevail**.**

4.2 The tender submitted by the Bidders and all subsequent correspondence and documents relating to the tender exchanged between the Bidders and the purchaser, may also be written in the Hindi language, provided that the same are accompanied by English translation, in which case, for purpose of interpretation of the tender etc, the English translations shall prevail.

5. Eligible Bidders

5.1 This invitation for tenders is open to all suppliers who fulfil the eligibility criteria specified in these documents.

6. Eligible Goods and Services

6.1 All goods and related services to be supplied under the contract shall have their origin in India or any other country with which India has not banned trade relations. The term "origin" used in this clause means the place where the goods are mined, grown, produced, or manufactured or from where the related services are arranged and supplied.

7. Tendering Expense

7.1 The Bidders shall bear all costs and expenditure incurred and/or to be incurred by it in connection with its tender including preparation, mailing and submission of its tender and for subsequent processing the same. The purchaser will, in no case be responsible or liable for any such cost, expenditure etc regardless of the conduct or outcome of the tendering process.

B. TENDER ENQUIRY DOCUMENTS

8. Content of Tender Enquiry Documents

8.1 In addition to Section I – "Notice inviting Tender" (NIT), the TE documents include:

- Section II – General Instructions to Bidders(GIT)
- Section III – General Conditions of Contract (GCC)
- Section IV – Special Conditions of Contract (SCC)
- Section V – List of Requirements
- Section VI – Technical Specifications
- Section VII – Quality Control Requirements
- Section VIII – Qualification Criteria
- Section IX – Tender Form
- Section X – Price Schedules
- Section XI – Check List
- Section XII
- Section XIII – Bank Guarantee Form for Performance Security/CMC Security
- Section XIV – Manufacturer's Authorisation Form
- Section XV – Contract Form' A '
- Section XVI - Contract Form 'B'
- Section XVII – Proforma of Consignee Receipt Certificate
- Section XVIII– Proforma of Final Acceptance Certificate by the consignee
- Section XIX – Consignee address postponed

8.2 The relevant details of the required goods and services, the terms, conditions and procedure for tendering, tender evaluation, placement of contract, the applicable contract terms and, also, the standard formats to be used for this purpose are incorporated in the above-mentioned documents. The interested Bidders are expected to examine all such details etc to proceed further.

9. Amendments to TE documents

9.1 At any time prior to the deadline for submission of tenders, the purchaser may, for any reason deemed fit by it, modify the TE documents by issuing suitable amendment(s) to it.

9.2 Such an amendment will be notified in writing by registered/speed post or by fax/telex/e-mail, followed by copy of the same by registered post to all prospective Bidders, which have received the TE documents and will be binding on them.

9.3 In order to provide reasonable time to the prospective Bidders to take necessary action in preparing their tenders as per the amendment, the purchaser may, at its discretion extend the deadline for the submission of tenders and other allied time frames, which are linked with that deadline.

10. Clarification of TE documents

10.1 A Bidders requiring any clarification or elucidation on any issue of the TE documents may take up the same with the purchaser in writing. The purchaser will respond in writing to such request provided the same is received by the purchaser not later than fifteen days (unless otherwise specified in the SIT) prior to the prescribed date of submission of tender.

C. PREPARATION OF TENDERS

11. Documents Comprising the Tender

11.1 The **Two Tender System**, i.e. "Techno – Commercial Tender" and "Price Tender" prepared by the Bidders shall comprise the following:

A) <u>Techno – Commercial Tender (Un priced Tender)</u>

i) Earnest money furnished in accordance with GIT clause 19.1 alternatively, documentary evidence as per GIT clause 19.2 for claiming exemption from payment of earnest money.
ii) Tender Form as per Section IX (Un priced).
iii) Documentary evidence, as necessary in terms of clauses 5 and 17 establishing that the Bidders is eligible to submit the tender and, also, qualified to perform the contract if its tender is accepted.
iv) Bidders/Agent who quotes for goods manufactured by other manufacturer shall furnish Manufacturer's Authorisation Form.
v) Power of Attorney in favour of signatory of TE documents and signatory of Manufacturer's Authorisation Form
vi) Documents and relevant details to establish in accordance with GIT clause 18 that the goods and the allied services to be supplied by the Bidders conform to the requirement of the TE documents.
vii) Price Schedule(s) as per Section X filled up with all the details including Make, Model etc. of the goods offered with prices blank (without indicating any prices).
viii) Certificate of Incorporation in the country of origin.

ix) Checklist as per Section XI.
x) Technical data/compliance sheets and pamphlets if any of all items

B) Price Tender:

The information given at clause no. 11.1 A) ii) & viii) above should be reproduced with the prices indicated.

N.B.

1. All pages of the Tender should be page numbered and indexed.
2. It is the responsibility of Bidders to go through the TE document to ensure furnishing all required documents in addition to above, if any.

11.2 The authorized signatory of the Bidders must sign the tender duly stamped at appropriate places and initial all the remaining pages of the tender.

11.3 A tender, which does not fulfil any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.

11.4 Tender sent by fax/telex/cable/electronically shall be ignored.

12. Tender currencies

12.1 The Bidders supplying indigenous goods or already imported goods shall quote only in Indian Rupees.

Tenders, where prices are quoted in any other way shall be treated as non -responsive and rejected.

13 Tender Prices

13.1 The Bidders shall indicate on the Price Schedule provided under Section X all the specified components of prices shown therein including the unit prices and total tender prices of the goods and services it proposes to supply against the requirement. All the columns shown in the price schedule should be filled up as required. If any column does not apply to a Bidders, same should be clarified as "NA" by the Bidders.

13.2 The Bidders shall quote for the complete requirement of goods and services as specified against a particular item.

13.3 The quoted prices for goods from are to be indicated in the applicable Price Schedules attached under Section X.

13.4 While filling up the columns of the Price Schedule, the following aspects should be noted for compliance:

13.4.1 For domestic goods or goods of foreign origin located within India, the prices in the corresponding price schedule shall be entered separately in the following manner:

a) the price of the goods, quoted ex-factory/ ex-showroom/ ex-warehouse/ off-the-shelf, as applicable, including all taxes and duties like sales tax, CST VAT, CENVAT, Custom Duty, Excise Duty etc. already paid or payable on the

components and raw material used in the manufacture or assembly of the goods quoted ex-factory etc. or on the previously imported goods of foreign origin quoted ex-showroom etc;

b) Any sales or other taxes and any duties including excise duty, which will be payable on the goods in India if the contract is awarded;
c) charges towards Packing & Forwarding, Inland Transportation, Insurance (local transportation and storage) would be borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery, Loading/Unloading and other local costs incidental to delivery of the goods to their final destination as specified in the List of Requirements and Price Schedule;
d) The price of Incidental Services, as mentioned in List of Requirements and Price Schedule;
e) The price of CMC, as mentioned in List of Requirements, Technical Specification and Price Schedule.

13.5 Additional information and instruction on Duties and Taxes:

13.5.1 The price will be taken inclusive of all duties and taxes and no claim for the same will be entertained later.

13.5.2 Excise Duty:

a) Bidders should quote a price inclusive of excise duty. If he desires to be reimbursed for variation, if any, in the excise duty during the time of supply, the Bidders must clearly mention the same and also indicate the rate and quantum of excise duty included in its price.
b) Subject to sub clauses 13.5.2 (a) above, any change in excise duty upward/downward as a result of any statutory variation in excise duty taking place within contract terms shall be allowed to the extent of actual quantum of excise duty paid by the supplier. In case of downward revision in excise duty, the actual quantum of reduction of excise duty shall be reimbursed to the purchaser by the supplier. All such adjustments shall include all reliefs, exemptions, rebates, concession etc. if any obtained by the supplier.

13.5.3 **Sales Tax, Service Tax and Works Contract Tax:**

Bidders should quote rates inclusive of sales tax/ VAT, Service Tax and Works Contract Tax. The rate and nature of sales tax applicable should be shown separately. The sales tax / VAT, Service Tax and Works Contract Tax will be paid as per the rate at which it is liable to be assessed or has actually been assessed provided the transaction of sale is legally liable to sales tax / VAT, Service Tax and Works Contract Tax and is payable as per the terms of the contract. If any refund of Tax is received at a later date, the Supplier must return the amount forth-with to the purchaser.

13.5.4 Octroi Duty and Local Duties & Taxes:

Normally, goods to be supplied to government departments against government contracts are exempted from levy of town duty, Octroi duty, terminal tax and other levies of local bodies. However, on some occasions, the local bodies (like town body,

municipal body etc.) as per their regulations allow such exemptions only on production of certificate to this effect from the concerned government department. Keeping this in view, the supplier shall ensure that the stores to be supplied by the supplier against the contract placed by the purchaser are exempted from levy of any such duty or tax and, wherever necessary, obtain the exemption certificate from the purchaser.

However, if a local body still insists upon payment of such local duties and taxes, the same should be paid by the supplier to the local body to avoid delay in supplies and possible demurrage charges and obtain a receipt for the same. The supplier should forward the receipt obtained for such payment to the purchaser to enable the purchaser reimburse the supplier and take other necessary action in the matter.

13.5.5 Customs Duty:

The Supplier will pay the Customs duty wherever applicable. The duty shall be specified in the quote and exemption if any will be passed on to the purchaser.

13.6 For transportation of imported goods offered from abroad, relevant instructions as incorporated under GCC Clause 10 shall be followed.

13.7 For insurance of goods to be supplied, relevant instructions as provided under GCC Clause 11 shall be followed.

13.8 The need for indication of all such price components by the Bidders, as required in this clause (viz., GIT clause 13) is for the purpose of comparison of the tenders by the purchaser and will no way restrict the purchaser's right to award the contract on the selected Bidders on any of the terms offered.

The quoted price shall be inclusive of all taxes and duties whether payable by the contractor or to be deducted at source. This shall include those applicable among VAT, Sales Tax, Income Tax, Customs Duty, Excise Duty, Turnover Tax, Service Tax, Work Contract Tax, Octroi, Labour Welfare Cess or any other Taxes and Duties prevailing in respect of this contract. ANY BID STATING THAT TAXES ARE EXTRA WILL BE SUMMARILY REJECTED.

14. Indian Agent

14.1 If a foreign Bidders has engaged an agent in India in connection with its tender, the foreign Bidders, shall also furnish the following information:

a) The complete name and address of the Indian Agent and its permanent income tax account number as allotted by the Indian Income Tax authority.
b) The details of the services to be rendered by the agent for the subject requirement.
c) Details of Service outlets in India, nearest to the consignee(s), to render services during Warranty and CMC period.

15. Firm Price

15.1 Unless otherwise specified in the SIT, prices quoted by the Bidders shall remain firm and fixed during the currency of the contract and not subject to variation on any account.

15.2 However, as regards taxes and duties, if any, chargeable on the goods and payable, the conditions stipulated in GIT clause 13 will apply.

16. Alternative Tenders

16.1 Alternative Tenders are not permitted.

16.2 However the Bidderscan quote alternate models meeting the tender specifications of same manufacturer with single EMD.

17 Documents Establishing Bidders Eligibility and Qualifications

17.1 Pursuant to GIT clause 11, the Bidders shall furnish, as part of its tender, relevant details and documents establishing its eligibility to quote and its qualifications to perform the contract if its tender is accepted.

17.2 The documentary evidence needed to establish the Bidders qualifications shall fulfil the following requirements:

a) in case the Bidders offers to supply goods, which are manufactured by some other firm, the Bidders has been duly authorised by the goods manufacturer to quote for and supply the goods to the purchaser. The Bidders shall submit the manufacturer's authorization letter to this effect as per the standard form provided under Section XIV in this document.

b) The Bidders has the required financial, technical and production capability necessary to perform the contract and, further, it meets the qualification criteria incorporated in the Section VIII in these documents.

c) in case the Bidders is not doing business in India, it is duly represented by an agent stationed in India fully equipped and able to carry out the required contractual functions and duties of the supplier including payment of duties, taxes, levies, clearance of goods, freight, transport, insurance after sale service, maintenance & repair etc. of the goods in question, stocking of spare parts and fast moving components and other obligations, if any, specified in the conditions of contract and/or technical specifications.

18. Documents establishing good's Conformity to TE document.

18.1 The Bidders shall provide in its tender the required as well as the relevant documents like technical data, literature, drawings etc. to establish that the goods and services offered in the tender fully conform to the goods and services specified by the purchaser in the TE documents. For this purpose the Bidders shall also provide a clause-by-clause commentary on the technical specifications and other technical details incorporated by the purchaser in the TE documents to establish technical responsiveness of the goods and services offered in its tender.

18.2 In case there is any variation and/or deviation between the goods & services prescribed by the purchaser and that offered by the Bidders, the Bidders shall list out the same in a chart form without ambiguity and provide the same along with its tender.

18.3 If a Bidders furnishes wrong and/or misguiding data, statement(s) etc. about technical acceptability of the goods and services offered by it, its tender will be liable to be ignored and rejected in addition to other remedies available to the purchaser in this regard.

19. Earnest Money Deposit (EMD)

19.1 Pursuant to GIT clauses 8.1 and 11.1(d) the Bidders shall furnish along with its tender, earnest money for amount as shown in the List of Requirements. The earnest money is required to protect the purchaser against the risk of the Bidders unwarranted conduct as amplified under sub-clause 19.6 below.

19.2 The earnest money shall be denominated in Indian Rupees or equivalent currencies as per GIT clause 12. The earnest money shall be furnished in one of the following forms:

Demand Draft/ Fixed Deposit Receipt (FDR)/ Banker's cheque of a scheduled bank issued in favour of HLL Lifecare Limited, Thiruvananthapuram

19.3 The demand draft shall be drawn on any scheduled bank in India or scheduled foreign banks in favour of the "HLL Lifecare Limited" payable at Trivandrum.

19.4 The earnest money shall be valid for a period of forty-five (45) days beyond the validity period of the tender. As validity period of Tender as per Clause 20 of GIT is 120 days, the EMD shall be valid for 165 days from Techno – Commercial Tender opening date.

19.5 Unsuccessful Bidders' earnest money will be returned to them without any interest, not later than thirty days after conclusion of the resultant contract. Successful Bidders earnest money will be returned without any interest, after receipt of performance security from that Bidders.

19.6 Earnest Money is required to protect the purchaser against the risk of the Bidders conduct, which would warrant the forfeiture of the EMD. Earnest money of a Bidders will be forfeited, if the Bidders withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender or if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged without prejudice to other rights of the purchaser. The successful Bidders earnest money will be forfeited without prejudice to other rights of Purchaser if it fails to furnish the required performance security within the specified period.

19.7 In the case of Bank Guarantee furnished from banks outside India (i.e. foreign Banks), it should be authenticated and countersigned by any nationalised bank in India by way of back-to-back counter guarantee.

20. Tender Validity

20.1 If not mentioned otherwise in the SIT, the tenders shall remain valid for acceptance for a period of **120 days** (one hundred and twenty days) after the date of tender opening prescribed in the TE document. Any tender valid for a shorter period shall be treated as unresponsive and rejected.

20.2 In exceptional cases, the Bidders may be requested by the purchaser to extend the validity of their tenders up to a specified period. Such request(s) and responses thereto shall be conveyed by surface mail or by fax/ telex/cable followed by surface mail. The Bidders, who agree to extend the tender validity, are to extend the same without any change or modification of their original tender and they are also to extend the validity period of the EMD accordingly.

20.3 In case the day up to which the tenders are to remain valid falls on/ subsequently declared a holiday or closed day for the purchaser, the tender validity shall automatically be extended up to the next working day.

21. Signing and Sealing of Tender

21.1 The Bidders shall submit their tenders as per the instructions contained in GIT Clause 11.

21.2 The tender shall either be typed or written in indelible ink and the same shall be signed by the Bidders or by a person(s) who has been duly authorized to bind the Bidders to the contract. The letter of authorization shall be by a written power of attorney, which shall also be furnished along with the tender.

21.3 The tender shall be duly signed at the appropriate places as indicated in the TE documents and all other pages of the tender including printed literature, if any shall be initialled by the same person(s) signing the tender. The tender shall not contain any erasure or overwriting, except as necessary to correct any error made by the Bidders and, if there is any such correction; the same shall be initialled by the person(s) signing the tender.

21.4 The Bidders is to seal the tender in a separate envelope, duly marking the same as "Techno- commercial tender", and so on and writing the address of the purchaser and the tender reference number on the envelope. The sentence "NOT TO BE OPENED" before _____ (The Bidders is to put the date & time of tender opening) are to be written on this envelope. The inner envelopes are then to be put in a bigger outer envelope, which will also be duly sealed, marked etc. as above. If the outer envelope is not sealed and marked properly as above, the purchaser will not assume any responsibility for its misplacement, premature opening, late opening etc.

21.5 Two bid system will be followed. The first part **'Techno - Commercial Tender'**, shall consists of EMD as well as documents to satisfy eligibility criteria along with signed copy of technical bid and Pre bid minutes. and the second part **'Price Tender'** as specified in clause 11 of GIT. Bidders shall seal **'Techno - Commercial Tender'** and **'Price Tender'** separately and covers will be suitably super scribed. Both these sealed covers shall be put in a bigger cover and sealed and procedure prescribed in Paras 21.1 to 21.4 followed.

D. SUBMISSION OF TENDERS

22. Submission of Tenders

22.1 Tenders shall be submitted to **DVP(Tech)** or his nominee at **HLL Lifecare Limited, Infrastructure Development Division, 'Adarsh', TC 6/1718, Vettamukku, Thirumala P.O., Trivandrum – 695006** on before **11.09.2014 at 11.00 am**. The Bidders must ensure that they deposit their tenders not later than the closing time and date specified for submission of tenders. It is the responsibility of the Bidders to ensure that their Tenders whether sent by post or by courier or by person, by the specified clearing date and time. In the event of the specified date for submission of tender falls on / is subsequently declared a holiday or closed day for the purchaser, the tenders will be received up to the appointed time on the next working day.

23. Late Tender

23.1 A tender, which is received after the specified date and time for receipt of tenders will be treated as "late" tender and will be returned to the concerned Bidders in unopened condition.

24. Alteration and Withdrawal of Tender

24.1 The Bidders, after submitting its tender, is permitted to withdraw/alter/modify its tender so long as such withdrawal/alterations/modifications are received duly signed, sealed and marked like the original tender, within the deadline for submission of tenders. Alterations / modifications to tenders received after the prescribed deadline will not be considered.

24.2 No tender should be withdrawn after the deadline for submission of tender and before expiry of the tender validity period. If a Bidders withdraws the tender during this period, it will result in forfeiture of the earnest money furnished by the Bidders in its tender.

E. TENDER OPENING

25. Opening of Tenders

25.1 The purchaser will open the tenders at the specified date and time and at the specified place as indicated in the NIT.
In case the specified date of tender opening falls on/ is subsequently declared a holiday or closed day for the purchaser, the tenders will be opened at the appointed time and place on the next working day.

25.2 Authorized representatives of the Bidders, who have submitted tenders on time, may attend the tender opening provided they bring with them letters of authority from the corresponding Bidders.

The tender opening official(s) will prepare a list of the representatives attending the tender opening. The list will contain the representatives' names & signatures and corresponding Bidders' names and addresses.

25.3 Two - Tender system as mentioned in para 21.6 above will be as follows. The **Techno - Commercial Tenders** are to be opened in the first instance, at the prescribed time and date as indicated in NIT. These Tenders shall be scrutinized and evaluated by the competent committee/ authority with reference to parameters prescribed in the TE document. During the Techno - Commercial Tender opening, the tender opening official(s) will read the salient features of the tenders like brief description of the goods offered, delivery period, Earnest Money Deposit and any other special features of the tenders, as deemed fit by the tender opening official(s). Thereafter, in the second stage, the Price Tenders of only the Techno - Commercially acceptable offers (as decided in the first stage) shall be opened for further scrutiny and evaluation on a date notified after the evaluation of the Techno – Commercial tender. The prices, special discount if any of the goods offered etc., as deemed fit by tender opening official(s) will be read out.

F. SCRUTINY AND EVALUATION OF TENDERS

26. Basic Principle

26.1 Tenders will be evaluated on the basis of the terms & conditions already incorporated in the TE document, based on which tenders have been received and the terms, conditions etc. mentioned by the Bidders in their tenders. No new condition will be brought in while scrutinizing and evaluating the tenders. For evaluating the Techno commercial bid, the purchaser may at its discretion call for demonstration/ presentation/ samples etc at Trivandrum.

27. Responsiveness

27.1 The Purchaser will examine the Tenders to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed stamped and whether the Tenders are generally in order.

27.2 Prior to the detailed evaluation of Price Tenders, pursuant to GIT Clause 34, the Purchaser will determine the substantial responsiveness of each Tender to the TE Document. For purposes of these clauses, a substantially responsive Tender is one, which conforms to all the terms and conditions of the TE Documents without material deviations. Deviations from, or objections or reservations to critical provisions such as those concerning Performance Security (GCC Clause 5), Warranty (GCC Clause 15), EMD (GIT Clause 19), Taxes & Duties (GCC Clause 20), Force Majeure (GCC Clause 26) and Applicable law (GCC Clause 31) will be deemed to be a material deviation. The Purchaser's determination of a Tender's responsiveness is to be based on the contents of the tender itself without recourse to extrinsic evidence.

27.3 If a Tender is not substantially responsive, it will be rejected by the Purchaser and cannot subsequently be made responsive by the Bidders by correction of the nonconformity.

27.4 The tenders will be scrutinized to determine whether they are complete and meet the essential and important requirements, conditions etc. as prescribed in the TE

document. The tenders, which do not they meet the basic requirements, are liable to be treated as non – responsive and will be summarily ignored.

27.5 The following are some of the important aspects, for which a tender shall be declared non – responsive and will be summarily ignored;

(i) Tender form as per Section IX (signed and stamped) not enclosed
(ii) Tender is unsigned.
(iii) Tender validity is shorter than the required period.
(iv) Required EMD (Amount, validity etc.)/ Exemption documents have not been provided.
(v) Bidders has quoted for goods manufactured by other manufacturer(s) without the required Manufacturer's Authorisation Form as per Section XIII.
(vi) Bidders has not agreed to give the required performance security.
(vii) Goods offered are not meeting the tender enquiry specification.
(viii) Bidders has not agreed to other essential condition(s) specially incorporated in the tender enquiry like terms of payment, liquidated damages clause, warranty clause, dispute resolution mechanism applicable law.
(ix) Poor/ unsatisfactory past performance.
(x) Bidders who stand deregistered/banned/blacklisted by any Govt. Authorities.
(xi) Bidders is not eligible as per GIT Clauses 5.1 & 17.1.

28. Minor Infirmity/Irregularity/Non-Conformity

28.1 If during the preliminary examination, the purchaser find any minor infirmity and/or irregularity and/or non-conformity in a tender, the purchaser may waive the same provided it does not constitute any material deviation and financial impact and, also, does not prejudice or affect the ranking order of the Bidders. Wherever necessary, the purchaser will convey its observation on such 'minor' issues to the Bidders by registered/speed post/Courier etc. asking the Bidders to respond by a specified date. If the Bidders does not reply by the specified date or gives evasive reply without clarifying the point at issue in clear terms, that tender will be liable to be ignored.

29 Discrepancies in Prices

29.1 If, in the price structure quoted by a Bidders, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless the purchaser feels that the Bidders has made a mistake in placing the decimal point in the unit price, in which case the total price as quoted shall prevail over the unit price and the unit price corrected accordingly.

29.2 If there is an error in a total price, which has been worked out through addition and/or subtraction of subtotals, the subtotals shall prevail and the total corrected; and

29.3 If there is a discrepancy between the amount expressed in words and figures, the amount in words shall prevail, subject to sub clause 29.1 and 29.2 above.

29.4 If, as per the judgement of the purchaser, there is any such arithmetical discrepancy in a tender, the same will be suitably conveyed to the Bidders by registered/speed post/Courier. If the Bidders does not agree to the observation of the purchaser, the tender is liable to be ignored.

30. Qualification Criteria

30.1 Tenders of the Bidders, who do not meet the required Qualification Criteria prescribed in Section VIII, will be treated as non - responsive and will not be considered further.

31. Tender currency (Indian Rupees)

31.1 The TE document permits the Bidders to quote their prices in Indian Rupees only and should be inclusive of all taxes and duties, **failing which the tender is likely to be rejected.**

32. Item-wise Evaluation

The List of Requirements contains more than one item; the responsive tenders will be evaluated and compared separately for each item. However, as already mentioned in GIT sub clause 13.2. The Bidders shall quote for the complete requirement of goods and services as specified against a particular item.

33. Comparison of Tenders

33.1 Unless mentioned otherwise in Section – III – Special Instructions to Bidders and Section – VI –Technical specification, the comparison of the responsive tenders shall be carried out on Delivery Duty Paid (DDP) consignee site basis. The quoted CMC prices will also be added for comparison/ranking purpose for evaluation.

34. Additional Factors and Parameters for Evaluation and Ranking of Responsive Tenders

34.1 Further to GIT Clause 34 above, the purchaser's evaluation of a tender will include and take into account the following:

In the case of goods manufactured in India or goods of foreign origin already located in India, sales tax & other similar taxes and excise duty & other similar duties, Customs Duties, Service Tax, Works Contract Tax etc which will be contractually payable by the Bidders

34.2 The purchaser's evaluation of tender will also take into account the additional factors, if any, incorporated in SIT in the manner and to the extent indicated therein.

35. Bidders capability to perform the contract

35.1 The purchaser, through the above process of tender scrutiny and tender evaluation will determine to its satisfaction whether the Bidders, whose tender has been determined as the lowest evaluated responsive tender is eligible, qualified and capable in all respects to perform the contract satisfactorily. If, there is more than one item in the List of Requirements, then, such determination will be made separately for each item.

35.2 The above-mentioned determination will, interalia, take into account the Bidders' financial, technical and production capabilities for satisfying all the requirements of the purchaser as incorporated in the TE document. Such determination will be based upon scrutiny and examination of all relevant data and details submitted by the

Bidders in its tender as well as such other allied information as deemed appropriate by the purchaser.

36. Contacting the Purchaser

36.1 From the time of submission of tender to the time of awarding the contract, if a Bidders needs to contact the purchaser for any reason relating to this tender enquiry and / or its tender, it should do so only in writing.

36.2 In case a Bidders attempts to influence the purchaser in the purchaser's decision on scrutiny, comparison & evaluation of tenders and awarding the contract, the tender of the Bidders shall be liable for rejection in addition to appropriate administrative actions being taken against that Bidders, as deemed fit by the purchaser.

G. AWARD OF CONTRACT

37. Purchaser's Right to accept any tender and to reject any or all tenders

37.1 The purchaser reserves the right to accept in part or in full any tender or reject any or more tender(s) without assigning any reason or to cancel the tendering process and

reject all tenders at any time prior to award of contract, without incurring any liability, whatsoever to the affected Bidders or Bidders.

38. Award Criteria

38.1 Subject to GIT clause 38 above, the contract will be awarded to the lowest evaluated responsive Bidders decided by the purchaser as follows :
Only those bidders who qualify at the techno- commercial stage will be considered for opening of price bids.

Total Price = Price of the quoted items as per technical specification

39. Variation of Quantities at the Time of Award/ Currency of Contract

39.1 At the time of awarding the contract, the purchaser reserves the right to increase or decrease by up to twenty five (25) per cent, the quantity of goods and services mentioned in the schedule (s) in the "List of Requirements" (rounded off to next whole number) without any change in the unit price and other terms & conditions quoted by the Bidders. However, if already indicated in this TE document, the purchaser can vary the quantity as indicated without applying the above limit.

39.2 If the quantity has not been increased at the time of the awarding the contract, the purchaser reserves the right to increase by up to twenty five (25) per cent, the quantity of goods and services mentioned in the contract (rounded off to next whole number) without any change in the unit price and other terms & conditions mentioned in the contract, during the currency of the contract after one year from the Date of Notification of Award.

40. Notification of Award

40.1 Before expiry of the tender validity period, the purchaser will notify the successful Bidders(s) in writing, by registered / speed post or by fax/ email (to be confirmed by registered / speed post) that its tender for goods & services, which have been selected by the purchaser, has been accepted, also briefly indicating there in the essential details like description, specification and quantity of the goods & services and corresponding prices accepted. The successful Bidders must furnish to the purchaser the required performance security within thirty days from the date of dispatch of this notification, failing which the EMD will forfeited and the award will be cancelled. Relevant details about the performance security have been provided under GCC Clause 5 under Section IV.

40.2 The Notification of Award shall constitute the conclusion of the Contract.

41. Issue of Contract

41.1 Promptly after notification of award, the Purchaser/Consignee will mail the contract form (as per Section XIV and XV), in duplicate, to the successful Bidders

41.2 Within twenty one days from the date of the contract, the successful Bidders shall return the original copy of the contract, duly signed and dated, to the Purchaser/Consignee by registered / speed post.

42. Non-receipt of Performance Security and Contract by the Purchaser/Consignee

42.1 Failure of the successful Bidders in providing performance security and / or returning contract copy duly signed in terms of GIT clauses 41 and 42 above shall make the Bidders liable for forfeiture of its EMD and, also, for further actions by the Purchaser/Consignee against it as per the clause 24 of GCC – Termination of default.

43. Return of E M D

43.1 The earnest money of the unsuccessful Bidders will be returned to them without any interest, whatsoever, in terms of GIT Clause 19.6.

44. Publication of Tender Result

44.1 The successful Bidders(s) receiving the contract(s) will be informed through telephone/web site of the purchaser.

45. Corrupt or Fraudulent Practices

45.1 It is required by all concerned namely the Consignee/Bidders/Suppliers etc to observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Purchaser: -

(a) defines, for the purposes of this provision, the terms set forth below as follows:
   (i) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and
   (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders(prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the Bidders recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract by the purchaser if it at any time determines that the firm has

engaged in corrupt or fraudulent practices in competing for, or in executing the contract.

SECTION - III
GENERAL CONDITIONS OF CONTRACT (GCC)
TABLE OF CLAUSES

SECTION - III
GENERAL CONDITIONS OF CONTRACT (GCC)

1. Application

1.1 The General Conditions of Contract incorporated in this section shall be applicable for this purchase to the extent the same are not superseded by the Special Conditions of Contract prescribed under Section V, List of requirements under Section VI and Technical Specification under Section VII of this document.

2. Use of contract documents and information

2.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract or any provision thereof including any specification, drawing, sample or any information furnished by or on behalf of the purchaser in connection therewith, to any person other than the person(s) employed by the supplier in the performance of the contract emanating from this TE document. Further, any such disclosure to any such employed person shall be made in confidence and only so far as necessary for the purposes of such performance for this contract.

2.2 Further, the supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC sub-clause 2.1 above except for the sole purpose of performing this contract.

2.3 Except the contract issued to the supplier, each and every other document mentioned in GCC sub-clause 2.1 above shall remain the property of the purchaser and, if advised by the purchaser, all copies of all such documents shall be returned to the purchaser on completion of the supplier's performance and obligations under this contract.

3. Patent Rights

3.1 The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.

4. Country of Origin

4.1 All goods and services to be supplied and provided for the contract shall have the origin in India or in the countries with which the Government of India has trade relations.

4.2 The word "origin" incorporated in this clause means the place from where the goods are mined, cultivated, grown, manufactured, produced or processed or from where the services are arranged.

4.3 The country of origin may be specified in the Price Schedule

5. Performance Security

5.1 Within thirty (30) days from date of the issue of notification of award by the Purchaser/Consignee, the supplier, shall furnish performance security to the Purchaser/Consignee for an amount equal to ten percent (10%) of the total value of the contract, valid up to sixty (60) days after the date of completion of all contractual obligations by the supplier, including the warranty obligations.

5.2 The Performance security shall be denominated in Indian Rupees

a) It shall be in any one of the forms namely Fixed Deposit Receipt drawn from any Scheduled bank in India or Bank Guarantee issued by a Scheduled bank in India, in the prescribed form as provided in section XV of this document in favour of the Purchaser/Consignee. The validity of the Fixed Deposit receipt or Bank Guarantee will be for a period up to sixty (60) days beyond Warranty Period.

5.3 In the event of any failure /default of the supplier with or without any quantifiable loss to the consignee/government the amount of the performance security is liable to be forfeited. The Administration Department may do the needful to cover any failure/default of the supplier with or without any quantifiable loss to the Government.

5.4 In the event of any amendment issued to the contract, the supplier shall, within twenty-one (21) days of issue of the amendment, furnish the corresponding amendment to the Performance Security (as necessary), rendering the same valid in all respects in terms of the contract, as amended.

5.5 The supplier shall enter into CMC as required by the consignee as per the 'Contract Form – B' in Section XVI with Medical College, 1 year prior to the completion of Warranty Period. The CMC will commence from the date of expiry of the Warranty Period.

5.6 Subject to GCC sub – clause 5.3 above, the Purchaser/Consignee will release the Performance Security without any interest to the supplier on completion of the supplier's all contractual obligations including the warranty obligations & after receipt of Consignee wise bank guarantee for CMC security in favour of Head of Medical College as per the format in Section XV.

6. Technical Specifications and Standards

6.1 The Goods & Services to be provided by the supplier under this contract shall conform to the technical specifications and quality control parameters mentioned in 'Technical Specification' and 'Quality Control Requirements' under Sections VI and VII of this document.

7. Packing and Marking

7.1 The packing for the goods to be provided by the supplier should be strong and durable enough to withstand, without limitation, the entire journey during transit including transhipment (if any), rough handling, open storage etc. without any damage, deterioration etc. As and if necessary, the size, weights and volumes of the packing cases shall also take into consideration, the remoteness of the final destination of the goods and

availability or otherwise of transport and handling facilities at all points during transit up to final destination as per the contract.

7.2 The quality of packing, the manner of marking within & outside the packages and provision of accompanying documentation shall strictly comply with the requirements as provided in Technical Specifications and Quality Control Requirements under Sections VI and VII and in SCC under Section IV. In case the packing requirements are amended due to issue of any amendment to the contract, the same shall also be taken care of by the supplier accordingly.

7.3 Packing instructions:
Unless otherwise mentioned in the Technical Specification and Quality Control Requirements under Sections VI and VII and in SCC under Section IV, the supplier shall make separate packages for each consignee (in case there is more than one consignee mentioned in the contract) and mark each package on three sides with the following with indelible paint of proper quality:

a. contract number and date
b. brief description of goods including quantity
c. packing list reference number
d. country of origin of goods
e. consignee's name and full address and
f. supplier's name and address

8. Inspection, Testing and Quality Control

8.1 The purchaser and/or its nominated representative(s) will, without any extra cost to the purchaser, inspect and/or test the ordered goods and the related services to confirm their conformity to the contract specifications and other quality control details incorporated in the contract. The purchaser shall inform the supplier in advance, in writing, the purchaser's programme for such inspection and, also the identity of the officials to be deputed for this purpose. The cost towards the transportation, boarding & lodging will be borne by the purchaser and/or its nominated representative(s).

8.2 The Technical Specification and Quality Control Requirements incorporated in the contract shall specify what inspections and tests are to be carried out and, also, where and how they are to be conducted. If such inspections and tests are conducted in the premises of the supplier or its subcontractor(s), all reasonable facilities and assistance, including access to relevant drawings, design details and production data, shall be furnished by the supplier to the purchaser's inspector at no charge to the purchaser.

8.3 If during such inspections and tests the contracted goods fail to conform to the required specifications and standards, the purchaser's inspector may reject them and the supplier shall either replace the rejected goods or make all alterations necessary to meet the specifications and standards, as required, free of cost to the purchaser and resubmit the same to the purchaser's inspector for conducting the inspections and tests again.

8.4 In case the contract stipulates pre-despatch inspection of the ordered goods at supplier's premises, the supplier shall put up the goods for such inspection to the purchaser's

inspector well ahead of the contractual delivery period, so that the purchaser's inspector is able to complete the inspection within the contractual delivery period.

8.5 If the supplier tenders the goods to the purchaser's inspector for inspection at the last moment without providing reasonable time to the inspector for completing the inspection within the contractual delivery period, the inspector may carry out the inspection and complete the formality beyond the contractual delivery period at the risk and expense of the supplier. The fact that the goods have been inspected after the contractual delivery period will not have the effect of keeping the contract alive and this will be without any prejudice to the legal rights and remedies available to the purchaser under the terms & conditions of the contract.

8.6 The purchaser's/consignee's contractual right to inspect, test and, if necessary, reject the goods after the goods' arrival at the final destination shall have no bearing of the fact that the goods have previously been inspected and cleared by purchaser's inspector during pre-despatch inspection mentioned above.

8.7 Goods accepted by the purchaser/consignee and/or its inspector at initial inspection and in final inspection in terms of the contract shall in no way dilute purchaser's/consignee's right to reject the same later, if found deficient in terms of the warranty clause of the contract, as incorporated under GCC Clause 15.

8.8 If required by the purchaser, Principal/ Foreign supplier shall also have the equipment inspected by recognised/ reputed agency like SGS, Lloyd or equivalent (acceptable to the purchaser) prior to despatch at the supplier's cost and furnish necessary certificate from the said agency in support of their claim.

8.9 For details of final inspection please refer section IV, special conditions of Contract.

9. Terms of Delivery

The consignee shall be the Govt: Medical College,Kozhikode.

Goods shall be delivered by the supplier in accordance with the terms of delivery as follows:

a) The goods shall be supplied, unpacked, and installed and commissioned at Medical College within 3 months of receipt of order. All costs including insurance, loading, unloading etc shall be borne by the supplier.

10. Transportation of Goods

The supplier shall at their own expenses, arrange transport (including air/sea/land), of goods up to the consignee address (Medical College)**.** Loading/Unloading charges if any has to be borne by the supplier.

11. Insurance:

11.1 Unless otherwise instructed in the SCC, the supplier shall make arrangements for insuring the goods against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the following manner:

i) In case of supply of domestic goods on Consignee (Medical College) site basis, the supplier shall be responsible till the entire stores contracted for arrival in good condition at destination. The transit risk in this respect shall be covered by the Supplier by getting the stores duly insured. The insurance cover shall be obtained by the Supplier and should be valid till testing and commissioning and handing over of the equipment.

If the equipment is not commissioned and handed over to the consignee within stipulated period, the insurance will be got extended by the supplier at their cost till the successful testing, commissioning and handing over of the goods to the consignee. In case the delay in the commissioning is due to handing over of the site to the supplier by the consignee, such extensions of the insurance will still be done by the supplier, but the insurance extension charges at actual will be reimbursed.

12. Spare parts

12.1 If specified in the List of Requirements and in the resultant contract, the supplier shall supply/provide any or all of the following materials, information etc. pertaining to spare parts manufactured and/or supplied by the supplier:

a) The spare parts as selected by the Purchaser/Consignee to be purchased from the supplier, subject to the condition that such purchase of the spare parts shall not relieve the supplier of any contractual obligation including warranty obligations; and

b) In case the production of the spare parts is discontinued:

i) Sufficient advance notice to the Purchaser/Consignee before such discontinuation to provide adequate time to the purchaser to purchase the required spare parts etc., and

ii) Immediately following such discontinuation, providing the Purchaser/Consignee, free of cost, the designs, drawings, layouts and specifications of the spare parts, as and if requested by the Purchaser/Consignee.

12.2 Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the goods so that the same are supplied to the Purchaser/Consignee promptly on receipt of order from the Purchaser/Consignee.

13. Incidental services

13.1 Subject to the stipulation, if any, in the SCC (Section – IV), List of items (Section – V) and the Technical Specification (Section – VI), the supplier shall be required to perform the following services.

i) commissioning, Supervision and Demonstration of the goods
ii) Providing required jigs and tools for assembly, minor civil, electrical and networking works required for the completion of the work.
iii) Training of Consignee's Doctors, Staff, operators etc. For operating and maintaining the goods
iv) Supplying required number of operation & maintenance / service manual for the goods

14. Distribution of Dispatch Documents for Clearance/Receipt of Goods

The supplier shall send all the relevant despatch documents well in time to the Purchaser/Consignee to enable the Purchaser/Consignee clear or receive (as the case may be) the goods in terms of the contract.
Unless otherwise specified in the SCC, the usual documents involved and the drill to be followed in general for this purpose are as follows.

A) For Domestic Goods, including goods already imported by the supplier under its own arrangement

Within 24 hours of despatch, the supplier shall notify the purchaser, consignee, and others concerned if mentioned in the contract, the complete details of despatch and also supply the following documents to them by registered post / speed post (or as instructed in the contract):

(i) Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
(ii) Consignee Receipt Certificate as per Section XVII in original issued by the authorized representative of the consignee;
(iii) Two copies of packing list identifying contents of each package;
(iv) Inspection certificate issued by the nominated Inspection agency, if any.
(v) Certificate of origin;
(vi) Insurance Certificate as per GCC Clause 11.
(vii) Manufacturers/Supplier's warranty certificate & In-house inspection certificate.

15. Warranty

15.1 The supplier warrants comprehensively that the goods supplied under the contract is new, unused and incorporate all recent improvements in design and materials unless prescribed otherwise by the purchaser in the contract. The supplier further warrants that the goods supplied under the contract shall have no defect arising from design, materials or workmanship or from any act or omission of the supplier, that may develop under normal use of the supplied goods under the conditions prevailing in India.

15.2 The **warranty** shall remain valid for a period of **2 years**
all the items after the goods or any portion thereof as the case may be, have been delivered to the final destination and commissioned at the final destination and accepted by the purchaser/CONSIGNEE in terms of the contract.

a. No conditional warranty like mishandling, manufacturing defects etc. will be acceptable.

15.3 In case of any claim arising out of this warranty, the Purchaser/Consignee shall promptly notify the same in writing to the supplier

15.4 Upon receipt of such notice, the supplier shall, within 8 hours on a 24(hrs) X 7 (days) X 365 (days) basis respond to take action to repair or replace the defective goods or parts thereof, free of cost, at the ultimate destination. The supplier shall take over the replaced parts/goods after providing their replacements and no claim, whatsoever shall lie on the purchaser for such replaced parts/goods thereafter. The penalty clause for non rectification will be applicable as per tender conditions

15.5 In the event of any rectification of a defect or replacement of any defective goods during the warranty period, the warranty for the rectified/replaced goods shall be extended to a further period of twenty four (24) months from the date such rectified / replaced goods starts functioning to the satisfaction of the purchaser.

15.6 During Warranty period, the supplier is required to visit at each consignee's site at least once in 6 months commencing from the date of the acceptance for preventive maintenance of the goods

15.7 The Purchaser/Consignee reserve the rights to enter into Annual Comprehensive Maintenance Contract between Consignee and the Supplier after the completion of warranty period.

15.8 The supplier along with its Indian Agent and the CMC provider shall ensure continued supply of the spare parts for the machines and equipments supplied by them to the purchaser for 10 years from the date of acceptance and handing over.

15.9 The Supplier along with its Indian Agent and the CMC Provider shall always accord most favoured client status to the Purchaser vis-à-vis its other Clients/Purchasers of its equipments/machines/goods etc. and shall always give the most competitive price for its machines/equipments supplied to the Purchaser/Consignee.

16. Assignment

16.1 The Supplier shall not assign, either in whole or in part, its contractual duties, responsibilities and obligations to perform the contract, except with the Purchaser's prior written permission.

17. Sub Contracts

17.1 The Supplier shall notify the Purchaser in writing of all sub contracts awarded under the contract if not already specified in its tender. Such notification, in its original tender or later, shall not relieve the Supplier from any of its liability or obligation under the terms and conditions of the contract.

17.2 Sub contract shall be only for bought out items and sub-assemblies.

17.3 Sub contracts shall also comply with the provisions of GCC Clause 4 ("Country of Origin").

18. Modification of contract

18.1 If necessary, the purchaser may, by a written order given to the supplier at any time during the currency of the contract, amend the contract by making alterations and modifications within the general scope of contract in any one or more of the following:

a) Specifications, drawings, designs etc. where goods to be supplied under the contract are to be specially manufactured for the purchaser,
b) Mode of packing,
c) Incidental services to be provided by the supplier
d) Mode of despatch,
e) Place of delivery, and
f) Any other area(s) of the contract, as felt necessary by the purchaser depending on the merits of the case.

18.2 In the event of any such modification/alteration causing increase or decrease in the cost of goods and services to be supplied and provided, or in the time required by the supplier to perform any obligation under the contract, an equitable adjustment shall be made in the contract price and/or contract delivery schedule, as the case may be, and the contract amended accordingly. If the supplier doesn't agree to the adjustment made by the Purchaser/Consignee, the supplier shall convey its views to the Purchaser/Consignee in writing within twenty-one days from the date of the supplier's receipt of the Purchaser's/Consignee's amendment / modification of the contract.

19. Prices

19.1 Prices to be charged by the supplier for supply of goods and provision of services in terms of the contract shall not vary from the corresponding prices quoted by the supplier in its tender and incorporated in the contract except for any price adjustment authorised in the SCC.

20. Taxes and Duties

20.1 Supplier shall be entirely responsible for all taxes, duties, fees, levies etc. incurred until delivery of the contracted goods to the purchaser.

20.2 Further instruction, if any, shall be as provided in the SCC.

21. Terms and Mode of Payment

21.1 Payment Terms

The bill shall be marked to "The Govt: Medical College Kozhikode" account to HLL Lifecare Ltd, Infrastructure development division , Trivandrum. The bill may be sent to the HLL Lifecare address.

Payment shall be made subject to recoveries, if any, by way of liquidated damages or any other charges as per terms & conditions of contract in the following manner.

Payment for Domestic Goods Or Foreign Origin Located Within India.

Payment shall be made in Indian Rupees as specified in the contract in the following manner:

a) On delivery:

70% payment of the contract price shall be paid on receipt of goods in good condition and upon the submission of the following documents:

(i) Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
(ii) Consignee Receipt Certificate as per in original issued by the authorized representative of the consignee;
(iii) Two copies of packing list identifying contents of each package;
(iv) Inspection certificate issued by HLL.
(v) Certificate of origin.

b) On Acceptance:

Balance 30% payment would be made after satisfactory completion against 'Final Acceptance Certificate' of the supplied items to be issued by the consignees and endorsed by HLL subject to recoveries, if any, either on account of non-rectification of defects/deficiencies not attended by the Supplier or otherwise.

Payment for CMC contract Charges:

21.1 The consignee will enter into CMC with the supplier at the rates as stipulated in the contract. The payment of CMC will be made on six monthly bases after satisfactory completion of said period, duly certified by the consignee on receipt of bank guarantee for an amount equivalent to 2.5 % of the cost of the equipment as per contract in the prescribed format given in Section XV valid till 2 months after expiry of entire CMC period.

21.2 The supplier shall not claim any interest on payments under the contract.

21.3 Where there is a statutory requirement for tax deduction at source, such deduction towards income tax and other tax as applicable will be made from the bills payable to the Supplier at rates as notified from time to time.

21.5 The payment shall be made in Indian Rupees.

21.6 The supplier shall send its claim for payment in writing, when contractually due, along with relevant documents etc., duly signed with date, to respective consignees.

21.7 While claiming payment, the supplier is also to certify in the bill that the payment being claimed is strictly in terms of the contract and all the obligations on the part of the supplier for claiming that payment has been fulfilled as required under the contract.

22. Delay in the supplier's performance

22.1 The supplier shall deliver of the goods and perform the services under the contract within the time schedule specified by the Purchaser/Consignee in the List of Requirements and as incorporated in the contract.

22.2 Subject to the provision under GCC clause 26, any unexcused delay by the supplier in maintaining its contractual obligations towards delivery of goods and performance of services shall render the supplier liable to any or all of the following sanctions:

(i) Imposition of liquidated damages,
(ii) Forfeiture of its performance security and
(iii) Termination of the contract for default.

22.3 If at any time during the currency of the contract, the supplier encounters conditions hindering timely delivery of the goods and performance of services, the supplier shall promptly inform the Purchaser/Consignee in writing about the same and its likely duration and make a request to the Purchaser/Consignee for extension of the delivery schedule accordingly. On receiving the supplier's communication, the Purchaser/Consignee shall examine the situation as soon as possible and, at its discretion, may agree to extend the delivery schedule, with or without liquidated damages for completion of supplier's contractual obligations by issuing an amendment to the contract.

22.4 When the period of delivery is extended due to unexcused delay by the supplier, the amendment letter extending the delivery period shall, interalia contain the following conditions:

(a) The Purchaser/Consignee shall recover from the supplier, under the provisions of the clause 23 of the General Conditions of Contract, liquidated damages on the goods and services, which the Supplier has failed to deliver within the delivery period stipulated in the contract.

(b) That no increase in price on account of any ground, whatsoever, including any stipulation in the contract for increase in price on any other ground and, also including statutory increase in or fresh imposition of customs duty, excise duty, sales tax/ VAT, Service Tax and Works Contract Tax or on account of any other tax or duty which may be levied in respect of the goods and services specified in the contract, which takes place after the date of delivery stipulated in the contract shall be admissible on such of the said goods and services as are delivered and performed after the date of the delivery stipulated in the contract.

(c) But nevertheless, the Purchaser/Consignee shall be entitled to the benefit of any decrease in price on account of reduction in or remission of customs duty, excise duty, sales tax/ VAT, Service Tax and Works Contract Tax or any other duty or tax or levy or on account of any other grounds, which takes place after the expiry of the date of delivery stipulated in the contract.

22.5 The supplier shall not dispatch the goods after expiry of the delivery period. The supplier is required to apply to the Purchaser/Consignee for extension of delivery

period and obtain the same before despatch. In case the supplier dispatches the goods without obtaining an extension, it would be doing so at its own risk and no claim for payment for such supply and / or any other expense related to such supply shall lie against the purchaser.

23. Liquidated damages

23.1 Subject to GCC clause 26, if the supplier fails to deliver any or all of the goods or fails to perform the services within the time frame(s) incorporated in the contract, the Purchaser/Consignee shall, without prejudice to other rights and remedies available to the Purchaser/Consignee under the contract, deduct from the contract price, as liquidated damages, a sum equivalent to 0.5% per week of delay or part thereof on delayed supply of goods and/or services until actual delivery or performance subject to a maximum of 10% of the contract price. Once the maximum is reached Purchaser/Consignee may consider termination of the contract as per GCC 24.

During the above-mentioned delayed period of supply and / or performance, the conditions incorporated under GCC sub-clause 22.4 above shall also apply.

24. Termination for default

24.1 The Purchaser/Consignee, without prejudice to any other contractual rights and remedies available to it (the Purchaser/Consignee), may, by written notice of default sent to the supplier, terminate the contract in whole or in part, if the supplier fails to deliver any or all of the goods or fails to perform any other contractual obligation(s) within the time period specified in the contract, or within any extension thereof granted by the Purchaser/Consignee pursuant to GCC sub-clauses 22.3 and 22.4.

24.2 In the event of the Purchaser/Consignee terminates the contract in whole or in part, pursuant to GCC sub-clause 24.1 above, the Purchaser/Consignee may procure goods and/or services similar to those cancelled, with such terms and conditions and in such manner as it deems fit and the supplier shall be liable to the Purchaser/Consignee for the extra expenditure, if any, incurred by the Purchaser/Consignee for arranging such procurement.

24.3 Unless otherwise instructed by the Purchaser/Consignee, the supplier shall continue to perform the contract to the extent not terminated.

25. Termination for insolvency

25.1 If the supplier becomes bankrupt or otherwise insolvent, the purchaser reserves the right to terminate the contract at any time, by serving written notice to the supplier without any compensation, whatsoever, to the supplier, subject to further condition that such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to the Purchaser/Consignee.

26. Force Majeure

26.1 Notwithstanding the provisions contained in GCC clauses 22, 23 and 24, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure.

26.2 For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of , the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are not restricted to, acts of the Purchaser/Consignee either in its sovereign or contractual capacity, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees , lockouts excluding by its management, and freight embargoes.

26.3 If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

26.4 If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side.

26.5 In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.

27. Termination for convenience

27.1 The Purchaser/Consignee (Medical College) reserves the right to terminate the contract, in whole or in part for its (Purchaser's/Consignee's) convenience, by serving written notice on the supplier at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of the Purchaser/Consignee. The notice shall also indicate interalia, the extent to which the supplier's performance under the contract is terminated, and the date with effect from which such termination will become effective.

27.2 The goods and services which are complete and ready in terms of the contract for delivery and performance within thirty days after the supplier's receipt of the notice of termination shall be accepted by the Purchaser/Consignee following the contract terms, conditions and prices. For the remaining goods and services, the Purchaser/Consignee may decide:

a) To get any portion of the balance completed and delivered at the contract terms, conditions and prices; and / or

b) To cancel the remaining portion of the goods and services and compensate the supplier by paying an agreed amount for the cost incurred by the supplier towards the remaining portion of the goods and services.

28. Governing language

28.1 The contract shall be written in English language following the provision as contained in GIT clause 4. All correspondence and other documents pertaining to the contract, which the parties exchange, shall also be written accordingly in that language.

29. Notices

29.1 Notice, if any, relating to the contract given by one party to the other, shall be sent in writing or by cable or telex or facsimile and confirmed in writing. The procedure will also provide the sender of the notice, the proof of receipt of the notice by the receiver. The addresses of the parties for exchanging such notices will be the addresses as incorporated in the contract.

29.2 The effective date of a notice shall be either the date when delivered to the recipient or the effective date specifically mentioned in the notice, whichever is later.

30. Resolution of disputes

30.1 If dispute or difference of any kind shall arise between the Purchaser/Consignee and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations.

30.2 If the party fail to resolve their dispute or difference by such mutual consultations within twenty one days of its occurrence the same shall be referred by the purchaser to the sole arbitration of an Officer, decided by HLL . In the event of the Arbitrator neglecting or refusing to act or resigning or being unable to act for any reason, or his award being set aside by the court for any reason, it shall be lawful for the purchaser to appoint another arbitrator in place of the outgoing arbitrator in the manner aforesaid.

30.3 It is further a term of contract that no person other than the person appointed by the purchaser as aforesaid should act as arbitrator and that, if for any reason that is not possible, the matter is not to be referred to Arbitration at all.

30.4 The arbitrator may from time to time with the consent of all parties to the contract enlarge the time for making the award.

30.5 Upon every and any such reference, the assessment of the costs incidental to the reference and award respectively shall be in the discretion of the arbitrator.

30.6 Subject as foresaid the Arbitration Act amended up to date and the rules there under and any statutory modification thereof for the time being a in force shall be deemed to apply to the Arbitration proceedings under this clause.

30.7 The arbitrator shall be requested to give reasoned award.

30.8 The venue of arbitration shall be the place from which formal Acceptance of Tender is issued or such other place as the purchaser at his discretion may determine.

31. Applicable Law

The contract shall be governed by and interpreted in accordance with the laws of India for the time being in force.

32. General/ Miscellaneous Clauses

32.1 Nothing contained in this Contract shall be constructed as establishing or creating between the parties, i.e. the Supplier/its Indian Agent/CMC Provider on the one side and the Purchaser on the other side, a relationship of master and servant or principal and agent.

32.2 Any failure on the part of any Party to exercise right or power under this Contract shall not operate as waiver thereof.

32.3 The Supplier shall notify the Purchaser/Consignee /the Government of India of any material change would impact on performance of its obligations under this Contract.

32.4 Each member/constituent of the Supplier/its Indian Agent/CMC Provider, in case of consortium shall be **jointly and severally liable** to and responsible for all obligations towards the Purchaser/Consignee/Government for performance of contract/services including that of its Associates/Sub Contractors under the Contract.

32.5 The Supplier/its Indian Agent/CMC Provider shall at all times, indemnify and keep indemnified the Purchaser/Government of India against all claims/damages etc. for any infringement of any Intellectual Property Rights (IPR) while providing its services under CMC or the Contract.

32.6 The Supplier/its Agent/CMC Provider shall, at all times, indemnify and keep indemnified the Purchaser/Consignee/Government of India against any claims in respect of any damages or compensation payable in consequences of any accident or injury sustained or suffered by its employees or agents or by any other third party resulting from or by any action, omission or operation conducted by or on behalf of the supplier/its associate/affiliate etc.

32.7 All claims regarding indemnity shall survive the termination or expiry of the contract

SECTION –IV
SPECIAL CONDITIONS OF CONTRACT (SCC)

The following Special Conditions of Contract (SCC) will apply for this purchase. The corresponding clauses of General Conditions of Contract (GCC) relating to the SCC stipulations have also been incorporated below.

These Special Conditions will modify/substitute/supplement the corresponding (GCC) clauses. Whenever there is any conflict between the provision in the GCC and that in the SCC, the provision contained in the SCC shall prevail.

SECTION - V
LIST OF REQUIREMENTS

Name of the work	Estimated cost (Rs)	EMD
Supply ,Installation, Programming ,Testing & Commissioning of Audio Video System at library block of Kozhikode Medical college.	**Rs 87,21,267/-**	**Rs 1,74,425/-**

Part II: Required Delivery Schedule: 3 Months from the date of issue of LOA

Note: The Purchaser/Consignee reserves the right to extend the delivery period up to one year from the date of LOA at its discretion.

Part III: Scope of Incidental Services:

Commissioning, Supervision, Demonstration, Trial run and Training etc. as specified in GCC Clause 13

Part IV:

Comprehensive Maintenance Contract (CMC) as per details in GCC.

Part V:

Required Terms of Delivery and Destination.

At Consignee Site – Specified in the List of Requirements
Insurance (local transportation and storage) would be borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery.

Destination/Consignee details are given in Section XXI

SECTION-VI
Technical specification

1	Auditorium- Second Floor
	Video & Display System
1.1	**Supply, Installation, Programming, Testing & Commissioning of 8500 lumens projector with the following specifications, complete with all accessories as required**
1.1.1	The brightness of the projectors should not be less than 8500 ANSI Lumens
1.1.2	The Display method should be DLP chip x 1 DLP projection system
1.1.3	The Panel size of the projector should be 17.0 mm (0.67 in) diagonal
1.1.4	The projector should have a aspect ratio of 16:10
1.1.5	The projector should features Dual-lamp drive system with two no's 420 W lamps to provide high brightness
1.1.6	The total Pixels should be 2,304,000 (1,920 x 1,200) pixels
1.1.7	The lens should have Powered zoom (throw ratio 1.7-2.4:1)
1.1.8	powered focus F 1.7-1.9, f 25.6-35.7 mm
1.1.9	The projector should be capable of achieving Screen size 50–600 inch diagonal from 1.27-15.24 m
1.1.10	The Center-to-corner uniformity should be 90%
1.1.11	The Contrast ratio should not be less than 10,000:1
1.1.12	The Resolution of the projector should be 1,920 x 1,200 pixels
1.1.13	The projector should have Optical axis shift of Vertical : +50 % from center of screen (powered) & Horizontal : ±10 % from center of screen (powered)

1.1.14	The projector should have Vertical Keystone correction range of ±40° & Horizontal Keystone correction range of ±15°
1.1.15	The projector should be able to mount on Ceiling
1.1.16	The projector mandatorily should have atleast one SDI (SD-SDI, HD-SDI & 3G-SDI) input
1.1.17	The projector mandatorily should have atleast one HDMI input which is compatible with HDCP
1.1.18	The Projector should also have at least 2 RGB input & 1 DVI D input
1.1.19	The projector mandatorily should have atleast one 3D SYNC input and output
1.1.20	The projector also should have atleast one Composite Video input
1.1.21	The Projector should have atleast 2 stereo Audio input, one RCA input & One Stereo Audio output
1.1.22	The Projector should also have Serial input for external control & Serial output for link control
1.1.23	The Projector should also have two remote control input for wired remote control & external control (parallel) & Remote control output for link control
1.1.24	The projector should be compatible with both passive and active 3D Projection System
1.1.25	Projector should achieve 10,000:1 contrast without lowering its high brightness in order to reproduce deeper, richer blacks, and provides images with more detailed textures.
1.1.26	Projector should features RGB Booster for achieving high image quality with levels of color reproduction and brightness that make each color stand out.
1.1.27	Projector should have the capability to optimizes the sharpness of each image, based on the super-high-, high-, medium-, and low-frequency components of the extracted image information
1.1.28	Projector should have the capability to optimizes image quality to improve the color perception of the projected image in bright rooms

1.1.29	Projector should have imaging mode is similar to DICOM part 14, a medical imaging standard in order to reproduces X-ray images with remarkable clarity
1.1.30	Projector should have Rec.709 mode for HDTV projection
1.1.31	Projector should features Waveform monitor function which shows waveforms on the screen and adjust the settings either automatically or manually as preferred during the instances wherein the output level of the source device fluctuates due to the performance of the device or its cable connections, the original black and white levels of the image content cannot be reproduced correctly
1.1.32	Projector should features native WUXGA resolution for full-HD viewing.
1.1.33	The projector should features 3D color management system , Full 10-bit image processing, Progressive cinema scan (3:2 pull down), Dynamic sharpness control & Digital noise reduction
1.1.34	The projector should features Dual lamp system in order to eliminate the threat of interruption if one lamp fail
1.1.35	Projector should equipped with a DIGITAL LINK terminal for transmission of HDMI, uncompressed HD digital video and control signals (Ethernet, RS-232C) for up to 100 meters (328 feet) through a single CAT5e (STP) cable or higher.
1.1.36	The projector should have lamp life of atleast 4000hrs in eco mode & 3000 hrs in normal mode
1.2	**Supply, Installation, Testing & Commissioning of Zoom lens for 8500 lumens Projector with the following specifications, complete with all accessories as required**
1.2.1	Zoom lens for above projector to achieve 222" diagonal at 16:10 aspect ratio from a distance between 3.8m (Minimum) & 4.75m (Maximum)

1.2.2	Focal distance of the lens should be 11.8 to 14.6mm
1.2.3	F value of the lens should be 1.85-2.20
1.2.4	Zoom Lens shall be from the same OEM of above projector
1.3	**Supply, Installation, Testing & Commissioning of ceiling mount for 8500 Lumens Projector of following specifications , complete with all accessories as required.**
1.3.1	Heavy Duty Universal Projector Mount to provide the strong support for mounting heavy LCD/CRT projectors.
1.3.2	The mount shall features independent roll : 5°, pitch : 20°and yaw 360°adjustments for quick and precise projector registration
1.3.3	The mount shall be flush mount to ceiling
1.3.4	The mount shall features quick connect/disconnect for convenient lamp and filter access on most projectors
1.3.5	The mount shall provide cable management through top of the mount without additional accessories
1.3.6	The mount shall include the universal HBU bracket that is compatible with above heavy duty projectors.
1.3.7	The mount shall be UL Listed
1.4	**Supply, Installation,, Testing & Commissioning of 222 inch motorized screen for projector with the following specifications, complete with all accessories as required.**
1.4.1	222inch (564 cm) diagonal motorized screen with built-in Low voltage controller
1.4.2	Screen shall have scratch-resistant steel case with white polyester finish and matching end caps.
1.4.3	Screen should operate instantly at the touch of a button and stops automatically in the "up" and "down" positions.
1.4.4	The motor shall be inside the roller, for a clean low-profile appearance
1.4.5	Viewing surface can be lowered to any position at the touch of a switch.
1.4.6	Screens shall have black borders on all four sides

1.4.7	Surface Material of the screen should be Matt White
1.4.8	Image Format of the screen should be 16:10
1.4.9	Image/Viewable Area of the screen should be 9.79ft Height x 15.67ft width
1.4.10	The screen weight should be less than 65kg
1.5	**Supply, Installation, Programming, Testing & Commissioning of desktop personal computer of following specifications, complete with all accessories as required.**
1.5.1	Slim tower PC with 4th Generation Intel® Core™ i3-4150 processor (3M Cache, 3.5 GHz)
1.5.2	The PC shall have integrated Intel® HD Graphics
1.5.3	The Memory of the PC shall be 4GB (1X4GB) Single Channel DDR3 1600MHz SDRAM Memory
1.5.4	The aspect ratio of the PC shall be 16:9
1.5.5	The PC shall be loaded with windows 7/windows 8 operating system
1.5.6	The PC shall have Integrated Giga bit 10/100/1000 Ethernet
1.5.7	The PC shall have DVD RW optical disk drive
1.5.8	The PC shall have 4 no's USB 2.0 & 2 No's USB 3.0 terminal
1.5.9	The PC shall have one embedded HDMI output
1.5.10	The PC shall provide two HDMI output by splitting the embedded HDMI output with suitable HDMI splitter
1.5.11	The PC shall also have one VGA, one RJ-45 (10/100/1000 Ethernet) terminal
1.5.12	The PC shall have 3-stack audio jacks supporting 5.1 surround sound
1.5.13	The PC package shall contain wireless mouse and keyboard
1.6	**Supply, Installation, Programming, Testing & Commissioning of tablet monitor of size of 15.6 inch or more with the following specifications, complete with all accessories as required.**
1.6.1	The Tablet Monitor shall have 15.6-inch or more active matrix TFT LCD display
1.6.2	The Tablet Monitor shall be of WXGA(1366 x 768) Resolution

1.6.3	The Cordless Pen used for annotation on the Tablet Monitor shall be battery free
1.6.4	The Cordless Pen shall have 512 level of pressure sensivity
1.6.5	The Tablet Monitor display shall have 16.77 M Colours
1.6.6	The response time of the tablet monitor should be less than 9ms
1.6.7	The Tablet Monitor shall have Luminance of not less than 250cd/m2
1.6.8	The Contrast Ratio of Tablet Monitor shall not be less than 400:1
1.6.9	The Tablet Monitor Shall have atleast one DVI-I Inputs & output Terminal
1.6.10	The aspect Ratio of Tablet Monitor shall be 16:9
1.6.11	The Cordless pen with the tablet monitor shall deliver more than 500 level of pressure sensitivity
1.6.12	The Tablet Monitor Shall have atleast 2no's built in USB interface
1.6.13	The Tablet Monitor shall be less than 5 kg
1.6.14	The Tablet Monitor should have adjustable stand that can be set to incline from 19 to 72 Degrees
1.6.15	The Tablet Monitor shall have VCCI Class B, FCC Part15 Subpart B (class B) and C,CE, KCC, BSMI, C-tick, CB, CCC, GOST-R, China RoHS,Korean RoHS, EU RoHS Certifications
1.6.16	The Tablet Monitor should be compatible with Windows 7 / Vista / XP / 2000, Mac OS X 10.4 or later
1.7	**Supply, Installation, , Testing & Commissioning of Type A to A USB cable of following specifications, complete with all accessories as required.**
1.7.1	10ft USB 3.0 Type A to Type A cable
1.7.2	USB 3.0 specification of the cable also works with USB 2.0/ 1.1 devices.
1.7.3	The cable shall suitable for data transfer speeds up to 5 GBps
1.7.4	The cable shall be fully shielded for error free connections

1.7.5	The cable shall be Compatible with PC windows 7 / vista / XP
1.8	**Supply, Installation, Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**
1.8.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input
1.8.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw
1.8.3	The wall plate shall be of one gang size
1.8.4	The wall Plate shall be HDCP Compliant
1.8.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.
1.8.6	The wall plate should be of metal construction
1.9	**Supply, Installation, Programming, Testing & Commissioning of switcher unit with the following specifications, complete with all accessories as required.**
1.9.1	The switcher shall transmits HDMI or analogue video, control, and analogue audio up to 70 meters over a shielded CATx cable
1.9.2	The switcher shall provide atleast two HDMI inputs, one VGA Video input and one twisted pair output.
1.9.3	The switcher shall provide audio input of atleast one analogue stereo, unbalanced & two digital audio, embedded in the HDMI and audio output of one analogue audio over twisted pair & one embedded digital audio over twisted pair signal
1.9.4	The Switcher shall support computer video up to 1920x1200, including 1080p/60 and 2K.
1.9.5	The switcher shall perform Digital conversion of analogue input signals.
1.9.6	The switcher shall features audio input assignment, and remote power capability.

1.9.7	The Switcher shall manage EDID communication between the display device and input sources in order to ensure the correct video formats are displayed reliably.
1.9.8	The Switcher shall allow auto-switching between inputs
1.9.9	The switcher shall support a maximum transmission distance of 70 meters for all compatible resolutions when used with CATx shielded twisted pair cable
1.9.10	The switcher shall accept stereo analogue audio signals for simultaneous transmission over the same shielded twisted pair cable and the analogue audio shall not embedded onto the digital video signal.
1.9.11	The analogue audio input of the switcher can be assigned to any of the video input
1.9.12	The switcher shall Support HDMI specification features including data rates up to 6.75 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats
1.9.13	The switcher should be compatible with a broad range of multi-channel audio signals, to provide reliable operation with HDMI sources.
1.9.14	The switcher shall transmit bidirectional RS-232 control and IR signals can be transmitted alongside the video signal, for controlling remote AV devices without the need for additional cabling.
1.9.15	The switcher shall be able to do remote powering of twisted pair transmitter or receiver over the twisted pair connection
1.9.16	The switcher shall continuously verifies HDCP compliance for quick & reliable switching
1.9.17	The switcher shall be HDCP compliant
1.9.18	The switcher shall have RS-232 Control port
1.9.19	The switcher shall provide visual indication of system status for real-time feedback and monitoring of key performance parameters.
1.9.20	The switcher shall provide a means for validating signal flow and operation for quick identification of connectivity issues.

1.9.21	The switcher should be capable of continuously maintaining DDC communication of EDID and HDCP between a source and display, to ensure direct compatibility and optimal signal transmission between devices.
1.10	**Supply, Installation, Testing & Commissioning of suitable mounting kit for switcher with the following specifications, complete with all accessories as required.**
1.10.1	The Mount kit shall be Low-Profile Mount Kit that can be used with quarter-rack and half-rack, two-piece enclosure products,.
1.10.2	The mount shall allow rack-mountable equipment to be installed under a table, desk, or other flat surface
1.10.3	The mount shall be perfectly fit for the above switcher
1.10.4	The under desk Mount Kit shall be from the same OEM of the above switcher
1.11	**Supply, Installation, Programming, Testing & Commissioning of digital twisted pair reciever of the following specifications complete with all accessories as required**
1.11.1	Digital twisted pair receiver for receiving HDMI, Analogue audio, bidirectional RS-232 and IR signals upto 70 meters over a shielded CATx cable
1.11.2	Digital twisted pair receiver also capable of receiving 4K@30 upto 40m over a shielded CATx cable
1.11.3	Digital twisted pair receiver shall supports computer video up to 2560x1600, HDTV 1080p/60 Deep Color, and 4K resolutions
1.11.4	Resolution range of the Digital twisted pair receiver shall be 1920x1200 or 1080p @ 60 Hz; 8, 10, or 12 bit color depth 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz
1.11.5	Digital twisted pair receiver is compatible with a broad range of multi-channel audio signals, to provide reliable operation with HDMI sources.

1.11.6	Digital twisted pair receiver shall supports HDMI specification features include data rates up to 10.2 Gbps (3.4 Gbps/colour), Deep Color up to 12-bit, 3D, embedded HD lossless audio formats, and CEC pass-through
1.11.7	Maximum Pixel clock of the receiver shall be 300MHz
1.11.8	Digital twisted pair receiver shall accepts analog stereo audio signals from a compatible transmitter over the same shielded twisted pair cable
1.11.9	Digital twisted pair receiver is capable of receiving 1080p/60 Deep Color, 1920x1200, and 2K signals up 70 meters
1.11.10	Outputs connector of the twisted pair receiver Input shall be one twisted pair input on RJ-45
1.11.11	Outputs connector of the twisted pair receiver should be HDMI connector, captive screw connector for stereo audio
1.11.12	The receiver can be remotely powered over the shielded twisted pair cable by compatible twisted pair transmitters, allowing both devices to share one power Supply, Installation, Programming, Testing & Commissioning
1.11.13	The Receiver should be capable of continuously maintaining DDC communication of EDID and HDCP between a source and display, to ensure direct compatibility and optimal signal transmission between devices.
1.11.14	The receiver should be capable of receiving analog stereo audio signal over the same twisted pair cable as the HDMI and control signals, in order to eliminate the need for a separate cable run to support analog audio at the receiver.
1.11.15	The Receiver should supports simultaneous transmission of bidirectional RS-232 and IR signals from a control system, providing remote control to source equipment or remote displays.
1.11.16	The receiver shall be capable of receiving the signal transmitted from the distance of 230 feet (70 meters) by the transmitter for all compatible resolutions when used with CAT 5e twisted pair cable

1.11.17	The receiver shall provide visual indication of system status for real-time feedback and monitoring of key performance parameters.
1.12	**Supply, Installation, Programming, Testing & Commissioning of Matrix switchers of following specifications complete with all accessories as required.**
1.12.1	4K, 8x4 matrix switcher with HDMI and twisted pair inputs and outputs, scaling, an integrated audio power amplifier, comprehensive audio DSP, and a built-in control processor
1.12.2	Matrix switcher should mandatorily be 4K-capable switcher for integration with computers equipped with compatible graphics cards, 4K media players, 4K cameras, and displays at 4K or UHD native resolution.
1.12.4	All HDMI and twisted pair inputs of the matrix switcher should accept high resolution signals up to 4K and UHD and can be passed only to the HDMI outputs
1.12.5	Minimum output of the matrix switcher shall be scaled output of 1920 x 1200 to match the native resolution of the display device
1.12.6	The matrix switcher shall have Six HDMI input, two twisted pair inputs on RJ-45, six stereo balanced/unbalanced audio inputs on captive screw, four mic/line audio inputs on captive screw
1.12.7	The device shall have Two HDMI output, two twisted pair outputs on RJ-45, one S/PDIF digital audio output on coaxial RCA, four variable audio outputs on captive screw & speaker outputs on 5 mm, 4-pole captive screw connector
1.12.8	Two twisted pair inputs and two twisted pair outputs of the device shall support digital signal transmission of HDMI or DVI plus control and analog audio up to minimum 70 meters over a shielded CATx cable

1.12.9	The output rate from 640x480 to 1920x1200, including HDTV 1080p/60 and 2K shall be individually selected for each of the two scaled twisted pair outputs of the matrix switcher
1.12.10	The twisted outputs of the device could be configured for compatibility with HDBaseT-enabled displays to send digital video and embedded audio, plus bidirectional RS-232 and IR signals up to minimum 70 meters over a shielded CATx cable
1.12.11	The device shall reshapes and restores timing of digital video signals at each HDMI output, eliminating high frequency jitter to ensure reliable transmission over long cables
1.12.12	The device shall supports a maximum transmission distance of minimum 70 meters for all compatible resolutions when used with CATx shielded twisted pair cable
1.12.13	The device shall provide power to atleast two twisted pair transmitters and two twisted pair receivers over the twisted pair connections
1.12.14	The device shall capable of managing EDID communication between the display devices and input sources to ensure that the correct video formats are displayed reliably.
1.12.15	The device shall automatically enables or disables embedded audio and InfoFrames, and sets the correct colour space for proper connection to HDMI and DVI displays
1.12.16	The device shall provides real-time verification of HDCP status for each digital video input and output
1.12.17	The device shall authenticate and maintains continuous HDCP encryption between input and output devices for HDMI signals with protected content, to ensure quick and reliable switching.
1.12.18	The device shall have four mic/line inputs with 48 volt phantom power that can be matrix mixed into any output.

1.12.19	The device shall have integrated audio DSP provides 32/64-bit floating point audio DSP processing in order to simplify management of gain staging while reducing the possibility of DSP signal clipping.
1.12.20	The device shall have studio grade 24-bit/48 kHz analogue-to-digital and digital-to-analogue audio converters
1.12.21	The device shall features HDMI Audio de-embedding & HDMI Audio embedding
1.12.22	The device shall automatically reduces program audio when a microphone or other incoming audio signal is detected, replacing the need for a separate audio ducking processor
1.12.23	The device shall provides master volume control for the variable line level and amplified audio outputs, as well as a separate control for mic volume.
1.12.24	Gain or attenuation can be adjusted for each two-channel audio input of the device to eliminate noticeable differences when switching between sources.
1.12.25	The device shall provide the capability to break two-channel audio away from its corresponding video signal and route to the audio outputs
1.12.26	The device shall provide an S/PDIF output for two-channel PCM audio or encoded bit stream audio for Dolby® or DTS® multi-channel surround sound
1.12.27	The device shall features fixed low latency DSP processing of not more than 4.5 ms within the device to keep the audio in sync with video, and prevents distractions to the presenter resulting from delayed live audio.
1.12.28	The device shall have digital audio expansion port for cascading digital Audio DSP
1.12.29	The device shall have inbuilt Class D stereo amplifier with atleast 50 watts per channel into 4 ohms and 25 watts per channel into 8 ohms.
1.12.30	The device shall have integrated control processor for AV system control and/or shall be controllable through a external control processor

1.12.31	The device should features bidirectional control insertion eliminates the need for control system wiring to remote devices
1.12.32	The device shall have captive screw serial ports that can control two RS-232 devices.
1.12.33	The device shall have Captive screw serial port that can communicate with one RS-232/RS-422/RS-485 serially controlled device.
1.12.34	The device shall have Two IR/Serial ports for one-way control of external devices
1.12.35	The device shall have four Digital I/O ports for interfacing with other systems in the room.
1.12.36	The device shall have Four relays for controlling room functions
1.12.37	The device shall have Integrated three port network switches for easy connection of touch panels or other network controlled devices.
1.12.38	The device shall supports 10/100/1000Base-T
1.12.39	The device shall support Ethernet-controllable devices for control of multiple Ethernet-enabled AV devices such as displays, switchers, and sources.
1.12.40	The device shall features automatic clock synchronization allows touch panel to display the accurate time and date
1.12.41	The device shall have RS-232 control port
1.12.42	The device should be 2U Rack-mountable
1.13	**Supply, Installation, Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**
1.13.1	3ft Ultra-flexible low bend radius HDMI cable
1.13.2	The cable shall be 1080p/60 verified
1.13.3	The cable shall of 36 AWG copper wire construction
1.13.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
1.13.5	The cable shall support Data rates to 10.2 Gbps
1.13.6	The cable shall support Refresh rates to 120 Hz
1.13.7	The cable shall support Color depth to 48 bits - 16 bits per colour
1.13.8	The cable shall have Gold plated contacts

1.14	**Supply, Installation, Testing & Commissioning of 6 ft HDMI cables of following specifications complete as required**
1.14.1	6ft Ultra-flexible HDMI cable
1.14.2	The cable shall be 1080p/60 verified
1.14.3	The cable shall of 30 AWG copper wire construction
1.14.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
1.14.5	The cable shall support Data rates to 10.2 Gbps
1.14.6	The cable shall support Refresh rates to 120 Hz
1.14.7	The cable shall support colour depth to 48 bits - 16 bits per colour
1.14.8	The cable shall have Gold plated contacts
1.15	**Supply, Installation, Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**
1.15.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.
1.15.2	The cable shall be Thin, flexible cable with low profile VGA connectors
1.15.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side
1.15.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end
1.15.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio
1.15.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection
1.15.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation
1.15.8	The cable shall be AWM 20276 rated
1.16	**Supply, Installation, Testing & Commissioning of 6 ft High resolution VGA cable of following specifications, complete as required**
1.16.1	6ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.
1.16.2	The cable shall be Thin, flexible cable with low profile VGA connectors

1.16.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side
1.16.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end
1.16.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio
1.16.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection
1.16.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation
1.16.8	The cable shall be AWM 20276 rated
1.17	**Supply, Installation, Testing & Commissioning of 6 ft HDMI to DVI-D cable of following specification, complete as required**
1.17.1	6ft Standard Speed HDMI to DVI-D cables
1.17.2	The cable shall be 1080p/60 verified
1.17.3	The cable shall of 28 AWG copper wire construction
1.17.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
1.17.5	The cable shall support Data rates to 4.95 Gbps
1.17.6	The cable shall support Refresh rates to 60 Hz
1.17.7	The cable shall support colour depth to 24 bits - 8 bits per colour
1.17.8	The cable shall have Gold plated contacts
1.17.9	The cable shall be NEC CL2 rated
	Audio System
1.18	**Supply, Installation, Testing & Commissioning of Gooseneck type microphone of following specifications complete with all accessories as required**
1.18.1	500 mm (20") length, condenser gooseneck microphone (cardioid), with led ring, switch and 3-pin male XLR connector
1.18.2	Should be insensitive to wireless Communication devices such as mobile phones.
1.18.3	Type of Transducer should be Electret condenser
1.18.4	Operating principle should be Pressure gradient
1.18.5	Polar pattern should be Cardioid
1.18.6	Frequency response of 50 - 19,000 Hz

1.18.7	Open circuit voltage of 17 mV/Pa
1.18.8	Nominal impedance should be less than 200 Ω
1.18.9	Load impedance should be greater than equal to 1 kΩ
1.18.10	Signal to noise ratio / noise voltage should be 69 dB [A] / 6.0 µV [A]
1.18.11	Max. SPL should be 107 dB [SPL @ 1% THD]
1.18.12	Equivalent SPL should be 25 dB [A]
1.18.13	Microphones can be able to get powered with phantom power source Supply, Installation, Programming, Testing & Commissioninging 8 to52 volts
1.18.14	Head diameter of the microphone should be less than 15mm
1.18.15	Gooseneck diameter should be less than 7mm
1.18.16	Shaft diameter should be less than 22mm
1.19	**Supply, Installation, Testing & Commissioning of shock mount for Gooseneck microphone of the following specification complete with all accessories as required**
1.19.1	Flexible shock mount fixture for above gooseneck microphone with XLR male providing maximum isolation from physical vibration
1.19.2	The shock mount should be from the same OEM of above Gooseneck Microphone
1.20	**Supply, Installation, Testing & Commissioning of wired type handheld microphone of following specifications , complete with all accessories as required.**
1.20.1	Wired dynamic microphone with a cardioid polar pattern
1.20.2	Microphone should features a noiseless on/off switch
1.20.3	Microphone shall have finely-tuned volume behind the diaphragm for free diaphragm vibrations and improved bass response
1.20.4	Should have treble resonator to expand the upper frequency range
1.20.5	Should have special sound holes behind the diaphragm for a frequency-independent polar pattern & maximum feedback reduction

1.20.6	The microphone should have a frequency response of 50 - 17000 Hz on close miking and 80 to 17000Hz at Distant(@1m) miking
1.20.7	The Operating principle of the microphone should be Pressure gradient
1.20.8	Open circuit voltage at 1 kHz should be 2.4 mV/Pa (-52.5 dBV) ±3 dB
1.20.9	Nominal impedance of the Microphone should be 600 ohms
1.20.10	Load impedance of the Microphone should be greater than or equal to 2 kΩ
1.20.11	Length of the Microphone should be less than 20cm
1.20.12	Weight of the Microphone should be less than 280g
1.20.13	The connector of the Microphone should be 3 Pin XLR Male
1.20.14	Should have accessories like XLR cable, clamp and storage bag along with Microphone System
1.21	**Supply, Installation, Programming, Testing & Commissioning of wireless handheld microphone of following specifications , complete with all accessories as required.**
1.21.1	Wireless handheld Microphone system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range
1.21.2	Wireless handheld Microphone system should have true diversity receiver & handheld transmitter
1.21.3	The receiver of wireless handheld system should be one-channel true diversity receiver
1.21.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.
1.21.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.

1.21.6	The receiver should have Scan function to start an automatic search for interference-free frequencies
1.21.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter
1.21.8	The receiver should have RF level indicator & AF level indicator
1.21.9	The receiver should have On/off switch with power on LED
1.21.10	The receiver should have Switching bandwidth of 24 MHz
1.21.11	Nominal deviation of the receiver should be ± 40 kHz
1.21.12	The receiver should have removable TNC antennae
1.21.13	The Sensitivity of the receiver should be 2 µV
1.21.14	Signal-to-noise ratio should be greater than 110 dB(A)
1.21.15	T.H.D of receiver should be less than 0.5% at 1 kHz
1.21.16	The modulation of handheld transmitter should be FM
1.21.17	The handheld transmitter shall operate in the frequency range 506 - 530 MHz, 668 - 692 MHz, 774 - 798 MHz, 790 - 814 MHz or 841 - 865 MHz
1.21.18	The handheld transmitter shall have Modular design with interchangeable microphone capsules
1.21.19	The handheld transmitter shall have Integrated antenna
1.21.20	The handheld transmitter shall have Plastic housing
1.21.21	The handheld transmitter ACT function (Automatic Channel Targeting) for automatic frequency setting
1.21.22	Max. SPL of the handheld transmitter should be 146 dB
1.21.23	The Signal-to-noise ratio of the handheld transmitter should be greater than 110 dB
1.21.24	The T.H.D of the handheld transmitter should be less than 0.5% at 1 kHz
1.21.25	Radiated transmitter power of handheld transmitter shall be 10 mW
1.21.26	AF transmission range should be 55 - 18,000 Hz at 80 dB SPL
1.21.27	Transmission range of the handheld transmitter should be more than 90 m

1.21.28	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries
1.21.29	Length of the handheld transmitter should be less than 200mm
1.21.30	Shaft of the handheld transmitter should be less than 40 mm
1.21.31	Weight of the handheld transmitter with batteries shall be less than 170g
1.21.32	The receiver & the handheld transmitter should have On/off switch with power on LED
1.21.33	Polar pattern of the microphone should be Hypercardioid
1.21.34	Transducer type should be Dynamic
1.21.35	Frequency response of the microphone should be 90 - 16,000 Hz
1.21.36	Nominal impedance of the microphone should be 280 Ω
1.21.37	Load impedance of the microphone should be 1 kΩ
1.21.38	Open circuit voltage of the microphone should be 3 mV / Pa
1.21.39	Magnetic field suppression of the microphone should be greater than 20 dB at 50 Hz Dimensions
1.21.40	Head diameter of the microphone shall be less than 60 mm
1.22	**Supply, Installation, Programming, Testing & Commissioning of clip on type microphone of following specification , complete with all accessories as required.**
1.22.1	Hypercardioid clip-on microphone designed for unobtrusive miking of speech and instruments
1.22.2	Clip-on microphone should have wide range frequency response
1.22.3	Microphone should be easily interfaces with the below wireless body pack transmitters
1.22.4	The microphone should have Lavaliere or instrument mounting capabilities
1.22.5	The microphone should be powered either by pocket transmitter or phantom power converter for wired use.
1.22.6	The transduser type of the microphone should be electret condenser

1.22.7	The microphone should have a frequency response of 40 - 20.000 Hz
1.22.8	The Operating principle of the microphone should be Pressure gradient
1.22.9	Max. SPL at 1 kHz for k = 1% should be 120 dB
1.22.10	S/N ratio rel. to 1 PA should be 60 dB
1.22.11	Open circuit voltage at 1 kHz should be 30 mV/Pa = -30 dBV
1.22.12	Nominal impedance of the Microphone should be 200 ohms
1.22.13	Load impedance of the Microphone should be 1 kΩ
1.22.14	Length of the Microphone should be less than 25mm
1.22.15	Weight of the Microphone should be less than 20g
1.22.16	The connector of the Microphone should be 3 Pin XLR Male
1.22.17	Should have accessories like XLR cable, clamp and storage bag along with Microphone System
1.23	**Supply, Installation, Programming, Testing & Commissioning of Wireless Lavaliere Microphone System of the following specifications, complete with all accessories as required.**
1.23.1	Wireless system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range
1.23.2	Wireless Microphone system should have true diversity receiver pocket transmitter & condenser lavaliere Microphone (Omni directional)
1.23.3	The receiver of wireless system should be one-channel true diversity receiver
1.23.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.

1.23.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.
1.23.6	The receiver should have Scan function to start an automatic search for interference-free frequencies
1.23.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter
1.23.8	The receiver should have RF level indicator & AF level indicator
1.23.9	The receiver should have On/off switch with power on LED
1.23.10	The receiver should have Switching bandwidth of 24 MHz
1.23.11	Nominal deviation of the receiver should be ± 40 kHz
1.23.12	The receiver should have removable TNC antennae
1.23.13	The Sensitivity of the receiver should be 2 µV
1.23.14	Signal-to-noise ratio should be greater than 110 dB(A)
1.23.15	T.H.D of receiver should be less than 0.5% at 1 kHz
1.23.16	The belt pack transmitter should have ACT infra red interface for frequency transmitting from receiver to transmitter
1.23.17	The belt pack transmitter should operates in the frequency range 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz or 841 to 865 MHz.
1.23.18	The belt pack transmitter should have adjustable gain control so as to adjust input sensitivity for various microphones or instruments
1.23.19	The belt pack transmitter should have 4-pin mini XLR input connector (male) to connect microphones or instruments
1.23.20	The belt pack transmitter should have GT/MT switch to select between microphone or instrument inputs
1.23.21	The belt pack transmitter should have Swiveling clip to attach to belts, waistbands or guitar straps

1.23.22	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries
1.23.23	The Modulation of the belt pack transmitter should be FM
1.23.24	Nominal deviation of the belt pack transmitter should be ± 40 kHz
1.23.25	Radiated transmitter power of the belt pack transmitter should be 20 mW
1.23.26	Signal-to-noise ratio of the belt pack transmitter should be greater than 110 dB(A)
1.23.27	T.H.D of belt pack transmitter should be less than 0.5% at 1 kHz
1.23.28	Frequency response of the belt pack transmitter should be 50 Hz - 18,000 Hz
1.23.29	Weight with batteries of the belt pack transmitter should be less than 150 g
1.23.30	The lavaliere Microphone should have omnidirectional polar pattern
1.23.31	The lavaliere Microphone should be battery or phantom powered
1.23.32	Transducer type should be Condenser (back electret)
1.23.33	Operating principle of the lavaliere Microphone should be Pressure
1.23.34	Frequency response of the lavaliere Microphone should be 25 - 20,000 Hz
1.23.35	Open circuit voltage at 1 kHz of the lavaliere Microphone should be30 mV
1.23.36	Nominal impedance of the lavaliere Microphone should be less than or equal to 200 ohms
1.23.37	Load impedance of the lavaliere Microphone should be greater than or equal to 1 KΩ
1.23.38	Max. SPL at 1 kHz of the lavaliere Microphone should be 120 dB
1.23.39	S/N ratio rel. to 1 Pa of the lavaliere Microphone should be approx. 60 dB
1.23.40	Length of the lavaliere Microphone should be less than 14 mm
1.23.41	Head diameter of the lavaliere Microphone should be less than 8mm
1.23.42	Weight of the lavaliere Microphone without cable should not exceed 2 grams

1.24	**Supply, Installation, Programming, Testing & Commissioning of Audio mixer of following specifications, complete with all accessories as required.**
1.24.1	The mixer shall have studio-grade, discrete Class-A mic preamps with individually switchable 48V phantom power in order to deliver more power with lower impedance.
1.24.2	The mixer shall have low-cut filter and a 26dB pad
1.24.3	The Mixer Shall have 10 Microphone Inputs with 48V Phantom Power and HPF per Channel
1.24.4	The Mixer Shall have 16 Line Inputs (8mono and 4 stereo)
1.24.5	The Mixer Shall have 2TR Inputs to accept the Output from Analogue Devices or iPod/iPhone
1.24.6	The Mixer shall have2 AUX Sends + 2 FX Sends
1.24.7	The Mixer shall have 4 GROUP Buses + ST Bus
1.24.8	The mixer should have professional 1-knob Compressors with LED Indicators
1.24.9	The mixer should have high-grade Dual Digital Effects Processors
1.24.10	The mixer shall have dedicated stereo Digital Hybrid channels
1.24.11	The mixer shall have Priority Ducker for prioritizing announcements and other signals,
1.24.12	The mixer shall have leveler for global level control
1.24.13	The mixer shall have Stereo Image feature to adjusts the width of stereo tracks,
1.24.14	The mixer shall feature 14 band and flex 9 band modes that can easily be controlled via internal display
1.24.15	Total harmonic distortion of the mixer should be 0.02% (20Hz-20kHz@ +14dBu)
1.24.16	Frequency response of the mixer should be +0.5/-1.0dB 20Hz - 20kHz, refer to the nominal output level @1kHz
1.24.17	The mixer shall feature a built-in USB port to connect and charge your iPod or iPhone for seamless playback with a single connection.
1.24.18	The mixer shall feature direct recording to a conventional USB storage device
1.24.19	The mixer should have Integrated Rack-ears for Easy Rack Mounting

1.24.20	The mixer shall have sweepable mid equalizer
1.24.21	The mixer shall feature very steep shelving of the high and low frequencies
1.25	**Supply, Installation, Programming, Testing & Commissioning of Digital system controller of following specifications, complete with all accessories as required.**
1.25.1	Two balanced XLR analogue inputs and six balanced XLR analogue outputs digital system controller that provides multiple X-Over, EQ, Delay and Limiting options
1.25.2	Digital system controller shall be network enabled fin order to facilitate networking capability with two XLR network link ports
1.25.3	Input Impedance should be greater than 10k Ohm electronically balanced
1.25.4	Maximum Input level should be +20dBu
1.25.5	Output Impedance should be less than 100 Ohm, ground balanced
1.25.6	Maximum Output Level should be +20dBu into 600 Ohm load
1.25.7	Frequency Response should be 10Hz to 40kHz, +/- 3dB (filters disabled) 20Hz to 20kHz, +/- 0.5dB (filters disabled)
1.25.8	THD should be less than 0.01%,(+10dBu, 20Hz to 20kHz, 30kHz bandwidth)
1.25.9	Dynamic Range should be >112dB (A weighted, 22kHz bandwidth) >109dB (un-weighted, 22kHz bandwidth
1.25.10	Digital system controller shall enable simple configuration and optimisation of loudspeakers in terms of speaker management and room EQ functionality using DSP-based digital crossovers with 96kHz sampling rates
1.25.11	Should features Intuitive signal flow based interface and 2 x 24 character backlit LCD
1.25.12	Digital system controller should have routing engine allows any input to be sent to any output.
1.25.13	Butterworth, Bessel, Linkwitz Riley and Hardman type filters are available on all outputs of the Digital system controller

1.25.14	Digital system controller shall have RS232 connector enables for enhanced control functions
1.25.15	Digital system controller shall provide equalisation on each input and output section with two shelving filters and six fully variable parametric sections
1.25.16	Low distortion limiter is incorporated on each output; threshold is user adjustable with two LED's provided for each output channel to indicate the signal level relative to the limiter threshold.
1.25.17	Input and output gain is adjustable in 0.2dB steps from -40dB to +15dB.
1.25.18	Input delay is adjustable in variable steps from 0 to 400ms and output delay is adjustable to 80ms
1.26	**Supply, Installation, Testing & Commissioning of USB/RS232 Interface of following specifications, complete with all accessories as required.**
1.26.1	USB/RS232 Interface for connecting a Windows PC to loudspeaker network to program network enabled speakers and Digital system controller. Also it allows full control, tuning and diagnostics of the network enabled Speakers and Digital system controller in the network.
1.26.2	The output should be RJ45 to connect speakers and Digital system controller
1.26.3	RS232 - Compliance EIA RS232C
1.26.4	USB - Compliance 1.1 and 2.0
1.27	**Supply, Installation, Programming, Testing & Commissioning of Loud speaker of following specifications , complete with all accessories as required.**
1.27.1	Digitally Beam-steering, multi- channel Column array loudspeaker comprising of 16x3"LF & 16x1"HF driver each with its own discrete channel of amplification and integrated DSP (total of 32 channels)
1.27.2	Speaker shall achieve even coverage and SPL across the listening plane

1.27.3	Speaker shall create an asymmetrical pattern in order to allow similar SPL's both in the near and far field.
1.27.4	Speakers should have the capability to steer the beam away from surfaces that cause reflections to frequencies beyond 12 kHz,
1.27.5	Speaker shall have intuitive BeamEngine GUI to define target areas by creating a steering algorithm tailored for that specific area.
1.27.6	Speaker should have the feature of switching between two preset steering configurations for variable or multi-purpose spaces
1.27.7	Speaker shall have integrated cutting edge DSP, network control and amplification
1.27.8	Speaker shall features class leading steering control(+/-70 degrees)
1.27.9	Speaker shall have densely spaced transducers to defeat the effects of aliasing
1.27.10	Frequency range(-10dB)of the speakers shall be 130Hz-20kHz
1.27.11	Integrated Class D Amplifier should have 32x100W @4ohm amplifier channels
1.27.12	Speaker should have horizontal dispersion 130 degrees
1.27.13	Vertical dispersion of the speaker shall variable between 10 - 100 degrees
1.27.14	LF beam control limit of the speaker shall be 400 Hz
1.27.15	Maximum SPL shall be 100 dB @ 30 m (100 ft)
1.27.16	Sampling rate shall be 96 kHz
1.27.17	Speaker should be Software configurable
1.27.18	Speaker should have RJ45 input
1.27.19	Speaker shall have analogue inputs as well as AES inputs
1.27.20	Speaker shall be capable of receiving and transporting digital audio via AES3 stream over long distances
1.28	**Supply, Installation, Testing & Commissioning of Subwoofer system of following specifications, complete with all accessories as required.**
1.28.1	High impact, powerful band-pass subwoofer system, designed to extend the low frequency response and increase system headroom.

1.28.2	The subwoofer should ensure well-defined low frequency reinforcement at high sound pressure levels, with extremely low distortion and power compression.
1.28.3	The subwoofer should have Frequency Response (-3dB) in the range of 40 Hz - 160 Hz
1.28.4	The subwoofer should have Frequency Response (-10dB) in the range of 35 Hz - 200 Hz
1.28.5	System Sensitivity (1W @1m) : 100 dB
1.28.6	Power Handling - Average: 800 watt, Programme: 1600 watt & Peak (10ms): 3200 watt
1.28.7	Subwoofer should be able to drive with Amplifier Power of 1600 W @ 4 ohms
1.28.8	Rated Maximum SPL Average: 129 dB & Peak: 135 dB
1.28.9	The subwoofer should have the nominal Impedance of 4 Ohms
1.28.10	The subwoofer should utilises a pair of high efficiency 300mm (12") drive units mounted in a compact and sturdy, black or white painted MDF cabinet.
1.28.11	Distortion **10% Full Power (12.65V)** **2nd Harmonic :** 50Hz: 1.38%, 100kHz: 1.29% **3rd Harmonic :** 50Hz: 0.62% , 100kHz: 0.14% **1% Full Power (4.0V)** **2nd Harmonic :** 50Hz: 0.32%, 100kHz: 0.29% **3rd Harmonic** : 50Hz: 0.18%, 100kHz: 0.16%
1.28.12	The mounting orientation should be Landscape
1.29	**Supply, Installation, Testing & Commissioning of stage monitor speakers of following specifications, complete with all accessories as required.**
1.29.1	The speaker should utilizes 305mm (12") latest generation Dual Concentric full-range driver
1.29.2	The speaker should have tightly controlled 90 degree dispersion for optimum coverage and forward gain
1.29.3	Peak output 126 dB, rec. amp power 400 W @ 8 Ohms
1.29.4	The speaker should have mounting points on the rear of the cabinet for Omni-mount/PowerDrive/Multi-Mount type fittings for flexible ceiling positioning

1.29.5	The Speaker shall have frequency range of 55Hz-38KHz
1.29.6	The sensitivity of the speaker at 1W @ 1M shall be 97dB
1.29.7	The average power handling capacity of the Speaker shall be atleast 200 watts
1.29.8	The speaker shall have rugged and compact birch plywood construction
1.29.9	The weight of the speaker shall not be more than 17kgs
1.30	**Supply, Installation, Programming, Testing & Commissioning of 2 channel amplifier - Type II of following specifications , complete with all accessories as required.**
1.30.1	2 channel digital amplifier with 2x 1200 Watt / 4 Ohms
1.30.2	Amplifier should have internal DSP with total of 40 real-time, multi-slope parametric EQs along with adjustable gain, input and output delay, and both high and low-pass filters adjustable to any frequency ,crossover with multiple filter types & 100 User Presets
1.30.3	Amplifier should have AES3 and analogue inputs with redundant failover
1.30.4	Software-configured Speaker Protect Limiter
1.30.5	Peak output voltage per channel should be atleast 70 Vrms
1.30.6	Max. output current per channel should be atleast 20 Vrms
1.30.7	Max. Output Power Per Channel would be 800W @ 2ohms, 1200 ohms @ 4 Ohms, 600W @ 8 Ohms & 300W @ 16 Ohms
1.30.8	THD 20 Hz – 20 kHz for 1 W should be less than 0.1%
1.30.9	Signal To Noise Ratio should be greater than 102 dBA
1.30.10	Channel separation (Crosstalk) at 1 kHz should be greater than 80 dB
1.30.11	Frequency response should be in the range of 2 Hz–42 kHz
1.30.12	Input impedance should be 18KΩ
1.30.13	Output impedance should be 25mΩ
1.30.14	Sensitivity for full power should be 6dBu
1.30.15	Gain (all DSP controls set to 0dB) should be minimum 36.2 dBu

1.30.16	Amplifier should have backlit display with navigation buttons and encoder for front panel setup
1.30.17	Amplifier should have horizontal VU meters on display in operating mode
1.30.18	Amplifier should have mute buttons on front panel
1.30.19	Amplifier should have Dual fan & front to rear airflow for proper cooling
1.31	**Supply, Installation, Programming, Testing & Commissioning of 2 channel amplifier - Type III of following specifications, complete with all accessories as required.**
1.31.1	Amplifier shall deliver 2 x 100 watts @ 4 or 8 ohms, or 1 x 200 watts @ 8 ohms (bridged)
1.31.2	Amplifier shall be ENERGY STAR qualified
1.31.3	Amplifier shall have 105 dB signal-to-noise ratio and THD+N of less than 0.05%
1.31.4	Amplifier shall have the capability to eliminate the high frequency switching ripple characteristic of Class D amplifiers
1.31.5	The amplifier shall feature less heat generation
1.31.6	The amplifier shall have the capability to smoothes out the high peak currents of the amplifier's current draw, in order to minimize the presence of high frequency harmonics on the AC power line
1.31.7	Amplifier shall have auto power-down feature to automatically places the amplifier into standby after 25 minutes of inactivity
1.31.8	The amplifier shall provide attenuation of input signals for adjusting audio system gain staging as well as two-zone applications.
1.31.9	The amplifier shall detect actual onset of clipping by comparing input and output waveforms.
1.31.10	The amplifier shall feature automatic gain reduction without audible artifacts to protect speakers from clipping distortion
1.31.11	The input impedance of the amplifier shall be greater than 10k ohms unbalanced/balanced, DC coupled

1.31.12	The input nominal level of the amplifier shall be +4 dBu (1.23 Vrms), balanced
1.31.13	The Maximum level of the amplifier shall be +20 dBu (7.75 Vrms), balanced
1.31.14	The input sensitivity at 8 ohm or higher speaker load shall be +4 dBu (1.23 Vrms)
1.31.15	The input sensitivity at 4 ohm speaker load shall be +1 dBu (0.87 Vrms
1.31.16	The amplifier shall be 1U rack mountable
1.32	**Supply, Installation, Testing & Commissioning of Digital Video disc player capable of reading multi formats with the following specifications, complete as required with all accessories.**
1.32.1	The DVD Player should be compatible with Dual-Layer DVD-R/DVD/DVDR/DVRW/DVD+R/DVD+RW/SVCD/ VCD/CD/CD-R/CD-RW
1.32.2	The DVD Player Should Have 1080p Up scaling facility
1.32.3	The DVD Player shall be WMV Compatible
1.32.4	The DVD Player shall be Compatible with All Versions of DivX Video (including DivX 6) with Standard Playback of DivX Media Files
1.32.5	The DVD Player Shall have 108 MHz/12-bit Video DAC
1.32.6	The DVD Player shall have PureCinema 2:3 Progressive Scan
1.32.7	The DVD Player shall have facility for I/P Simultaneous Output
1.32.8	The DVD Player Shall have USB Input for Compressed Video (DivX/WMV), JPEG and Compressed Music
1.32.9	The DVD Player shall have HD JPEG Playback and JPEG Photo viewer
1.32.10	The DVD Player shall have controls for adjusting sharpness/Brightness/Contrast/Gamma/Hue/Chroma Level
1.32.11	The Player should have Zoom Function
1.32.12	The DVD Player Shall have 96 kHz/24-bit Audio DAC
1.32.13	The DVD Player shall be Compatible with WMA (Windows /MP3/MPEG-4 AAC
1.32.14	The DVD Player shall have Dolby Digital Output

1.32.15	The DVD Player shall have Dialogue Enhancer and Sound Equalizer
1.32.16	The DVD Player shall have CD to USB Recording
1.32.17	The DVD Player shall have option for Photo + Music Mix (JPEG Slideshow with Music)
1.32.18	The DVD Player shall have Disc Navigator for Easy Browsing
1.32.19	The Player should have atleast one USB Input Terminals
1.32.20	The Player should have atleast one HDMI Terminal for Digital Audio/Video Out
1.32.21	The player should have atleast one Coaxial Digital Output, one S-Video Output ,one Audio/one Video Output , one Component Video Output (DVD, Video CD) Output Terminals
1.32.22	The player shall have wireless Remote control for ease of operation
1	**Supply, Installation, Testing & Commissioning of Microphone Patch Bay of following specification, complete with all accessories as required**
1.33.1	4-point XLR patch bay to route and organize the XLR connections into a convenient central location on the stage
1.33.2	The patch bay offers 3 balanced channels with high-quality XLR connectors
1.33.3	Microphone patch bay shall have female XLR connections on front and male XLR connections on back
1.33.4	Microphone patch bay shall be floor mounted
1.33.5	Microphone patch bay shall of aluminium construction
	Control & Automation
1.34	**Supply, Installation, Programming, Testing & Commissioning of Serial Port Expander of following specifications, complete with all accessories as required.**
1.34.1	Control processor with atleast two bidirectional RS-232 serial ports & One bidirectional RS-232/RS-422/RS-485 serial port .

1.34.2	The device shall supports Building Management System protocols, such as BACnet, KNX, and DALI
1.34.3	The device shall manage, monitor, and control AV devices using a standard Ethernet network
1.34.4	The control processor should have the capacity to receive power and control over a single Ethernet cable
1.34.5	The device supports 10/100/1000Base-T
1.34.6	The device supports up to 32 Ethernet-controllable devices
1.34.7	The device shall features automatic clock synchronization allows compatible touch panel to display the accurate time and date
1.34.8	The device shall supports control system synchronization to retain and recover the state of their configured endpoints in case of network or power failure
1.34.9	The control processor shall have SDRAM & Flash memory of atleast 512MB
1.34.10	The control processor shall supports secure industry standard communications protocols including HTTP (insecure), HTTPS, SSH, SFTP, SMTP, NTP, Discovery Service, DHCP, DNS, ICMP, and IPv4.
1.34.11	The control processor shall compatible with above specified touch panel
1.35	**Supply, Installation, Programming, Testing & Commissioning of LED backlit touch panel of size 7 inch or more of following specifications , complete with all accessories as required.**
1.35.1	The display of the touch panel shall be 7" diagonal or more LED-backlit LCD touch screen with 800x480 resolution and 18-bit color depth.
1.35.2	The screen type shall be active matrix TFT colour display
1.35.3	The contrast ratio of the touch screen shall be atleast 400:1
1.35.4	The aspect ratio of the touch screen shall be 16:9
1.35.5	The device shall be resistive touch screen
1.35.6	The brightness of the touch screen shall be atleast 400 nits

1.35.7	The colour depth of the touch screen shall be 256k colours
1.35.8	Touch panel shall have the capability to receive power and control over a single Ethernet cable, to eliminate the need for a local power Supply, Installation, Programming, Testing & Commissioning
1.35.9	The touch panel shall support 10/100Base-T
1.35.10	The touch panel shall supports secure industry standard communications protocols including DHCP, DNS, HTTP, HTTPS, ICMP, SFTP, SSH, TCP/IP, UDP/IP
1.35.11	Touch panel shall have built-in speaker with improved audio performance.
1.35.12	Touch panel shall have Light sensor adjusts screen brightness as the ambient room lighting changes
1.35.13	Touch panel shall have configurable red and green status lights indicate a room's availability or call status
1.35.14	Touch panel shall have system connection status indicator to provide visual feedback if the touch panel is not communicating with a control processor
1.35.15	The device shall features automatic clock synchronization to display the accurate time and date
1.35.16	The touch panel shall have adjustable sleep timer to put touch panel into sleep mode & motion detector wakes touch panel
1.35.17	The touch panel shall have SDRAM & Flash memory of atleast 512MB
1.35.18	The touch panel shall be wall mounted
1	**Supply, Installation,Testing & Commissioning of of rack mount for touch panel with the following specifications, complete with all accessories as required.**
1.36.1	4RU rack plate that allows the above wall mount Touch panel to be mounted in a standard equipment rack for a clean, professional appearance

1.36.2	Rack mount shall be from the same OEM of the above Touch panel
1.37	**Supply, Installation, Programming, Testing & Commissioning of IR Emitter Kit of following specifications, complete with all accessories as required.**
1.37.1	The IR emitter Kit shall contains IR-emitting diode with a 3 m wire lead, IR emitter shield, and mounting adhesive
1.37.2	The kit shall be installed directly on the IR control window of the controlled equipment
1.37.3	The IR emitter Kit shall perform remote control of AV equipment via IR
1.37.4	The device shall also features a "Y" configuration with one IR source terminating in two emitters with shields for use in equipment racks and other applications requiring remote control of two devices.
1.38	**Supply, Installation, Programming, Testing & Commissioning of Single Port Power Injector of folowing specifications, complete with all accessories as required.**
1.38.1	Single port power injector to provides power to above control systems remotely to eliminate the need for a local power Supply, Installation, Programming, Testing & Commissioning
1.38.2	The device shall not impact video, audio, bidirectional RS-232 and IR, and Ethernet signal quality.
1.38.3	The device shall provide real-time status LEDs for troubleshooting and monitoring.
1.38.4	The Power output of the device shall be +48 VDC, 0.35 A, 16.8 watts
1.38.5	The device shall be UL/c-UL listed and CE compliant
1.38.6	The device shall be mount on a variety of surfaces, including rack rails, tables, lecterns, projector poles, and table legs

1.39	**Supply, Installation, Programming, Testing & Commissioning of Relay controller of following specifications, complete with all accessories as required.**
1.39.1	Low Voltage Relay Controller to control various electric appliances setting at one place through remote keypad or local keypad or RS 232 interface.
1.39.2	The device shall have 4 no's Low voltage relays
1.39.3	The Low Voltage Relay Controller shall have 2bit unit identifier for RS232C controller so that 4 Relay controller box can be controlled through one port of RS232C system controller
1.40	**Supply, Installation, Programming, Testing & Commissioning of Network Switch of following specifications, complete with all accessories as required.**
1.40.1	The network switch shall have eight 10/100/1000 Mbps Gigabit ports
1.40.2	The network switch shall have 16 Gbps switching fabric
1.40.3	The device shall features auto MDI/MDIX crossover for all ports
1.40.4	The device shall perform secure store-and-forward switching scheme
1.40.5	The device shall support Full/half-duplex for Ethernet/Fast Ethernet speeds
1.40.6	RAM Buffer of the device shall be 128 KBytes per device
1.40.7	The device shall support IEE 802.3x Flow Control
1.40.8	The device shall supports 9,216 Byte Jumbo Frames
1.40.9	The device shall be RoHS compliant
	Cables & Connectors
1.41	**Supply, Installation, Testing & Commissioning of 36U Equipment Rack of following specifications, complete with all accessories as required**
1.41.1	Equipment rack should be of 36U
1.41.2	Rack should have 20no's IEC socket
1.41.3	Rack should have Castor wheels with brake and without brake
1.41.4	Rack should have Cable manager

1.41.5	Rack should have 5 No's 250 mm canti lever shelf for placing non rack mountable equipment
1.41.6	Rack should have Monitor Tray – Ventilation & Fan assembly
1.41.7	Rack should also have Front and back doors
1.41.8	Rack should also have Cooling Fan
1.41.9	Rack should also have minimum 4 sets of Mounting H/W
1.42	**Supply & Laying of Speaker cable of following specifications, complete as required.**
1.42.1	Speaker cable for connecting speakers and amplifiers
1.42.2	Cable shall have single colour-coded pair, 16 AWG bare copper conductors.
1.42.3	Cable shall offers a higher conductor strand count than comparable cables in its class
1.42.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
1.43	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**
1.43.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.
1.43.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires
1.43.3	Cable shall have tinned copper drain wire on the inside of the foil shield.
1.43.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
1.44	**Supply & Laying of One twisted pair Audio Cable of following specifications, complete as required.**
1.44.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.
1.44.2	Cable should have one 22 AWG shielded twisted pairs with individual drain wires

1.44.3	Cable shall have tinned copper drain wire on the inside of the foil shield.
1.44.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
1.45	**Supply & Laying of Shielded twisted pair cable of following specifications, complete as required**
1.45.1	24 AWG solid copper construction shielded twisted pair cable
1.45.2	The cable shall be certified to 475 MHz bandwidth at distances up 100 meters and has been independently tested and verified to meet performance requirements set by the HDBaseT Alliance
1.45.3	Cable shall provides added protection from outside interference and ensures high quality signal transmission
1.45.4	Cable shall be Independently tested and verified to meet performance requirements set by HDBaseT Alliance
1.45.5	Cable shall utilize SF/UTP design with with four unshielded 24 AWG twisted pair conductors inside an overall braid and foil shield
1.45.6	Cable shall be non-plenum rated
1.46	**Supply & Termination of RJ-45 plug of following specifications, complete with all accessories as required.**
1.46.1	Shielded RJ-45 plug for twisted pair cable
1.46.2	RJ-45 plug shall have metal strain relief and ground bonding
1.46.3	RJ-45 plug shall be ideal for high EMI/RFI environments
1.46.4	RJ-45 plug shall have conductor alignment guide reduces crosstalk and signal interference
1.46.5	RJ-45 plug shall have Gold plated contacts
1.47	**Supply and Termination of Connectors of following specification, complete as required.**

	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers
	Recording System
1.48	**Supply, Installation, Programming, Testing & Commissioning of HD Recorder of following specifications, complete with all accessories as required.**
1.48.1	The Recorder shall have two removable HDD Enclosure for SATA HDD/SSD solid state device
1.48.2	The Recorder shall have atleast one HD/SD-SDI video input & analogue Stereo Pair 2-Channelsaudio inputs
1.48.3	The Recorder shall have atleast one HD/SD-SDI & HDMI video Outputs and Stereo Pair 2-Channels audio output
1.48.4	The Recorder shall support 1920x1080 50i/59.94i/60i, 1920x1080 24p/23,96p, 1280x720 50P/59.94P/60P, 720x576i or 720x480i Resolutions
1.48.5	The Recorder shall provide a choice of recording in MPEG-II Long-GOP or intra-frame (i-frame) with 4:2:2 color sampling
1.48.6	The Recorder shall have HD/SDI input, output and loop thru with embedded audio
1.48.7	The audio recording Format shall be PCM 24-bits / 8-Channels / 48KHz Sampling Rate
1.48.8	The Recorder shall support NTFS format
1.48.9	The Recorder shall have HDMI output with embedded audio
1.48.10	The Recorder Shall have 2-CH balanced audio inputs, support embedded Audio
1.48.11	The Recorder shall have Audio level indicators, earphone interface for audio monitoring with volume control
1.48.12	The Recorder shall have External Gen-Lock input and loop thru (B.B or tri-level),Time code(TC) input and loop through RS-232/422 and GPI remote interface
1.48.13	The recorder shall have SD and HD Mode Recording options

1.48.14	SD Mode Recording shall be selectable 8, 15, 30 or 50 Mbps Long GOP 4:2:0 or 4:2:2 and 25 or 50 Mbps i-frame only 8-bit 4:2:2
1.48.15	HD Mode Recording shall be selectable 10, 25, 35, 65 or 100 Mbps Long GOP 4:2:0 or 4:2:2 and 100/125 Mbps i-frame 8-bit 4:2:2
1.48.16	The recorded file shall MXF/OP1A file format
1.48.17	320GB Hard Drive with Enclosure shall be provided along with recorder
1.48.18	The recorder shall conform to the 292M SMTP Standard.
1.48.19	The recorder shall be rack mountable
1.49	**Supply, Installation, Programming, Testing & Commissioning of HD Camera of following specifications, complete with all accessories as required.**
1.49.1	The Camera shall be a PTZ one with 20X optical zoom
1.49.2	The camera shall offer a 1080/20 HD Resolution
1.49.3	The camera shall feature a ½ 8 type Exmor CMOS Sensor
1.49.4	The camera shall have the RS-232C/RS-422 interface protocol for external device control
1.49.5	The camera shall have 20x Optical Zoom and 12x Digital Zoom
1.49.6	The minimum object distance for the camera shall be 10mm (wide) - 800mm (tele)
1.49.7	The S/N Ratio of Camera shall be more than 50 db
1.49.8	The camera shall support 1080p/29.97, 1080p/25, 1080i/59.94 (frame out 1080PsF29.97), 1080i/50 (frame out 1080PsF25) 720p/59.94, 720p/50, 720p/29.97, 720p/25 HD signal system and NTSC/PAL SD signal
1.49.9	The camera shall have HD-SDI and VBS Video Output
1.49.10	The camera shall have atleast 6 Preset Positions
1.49.11	The camera shall have auto exposure
1.49.12	The Camera shall have Horizontal Viewing angle 55.4° (wide) to 2.9° (tele)
1.49.13	The Pan Angle of camera shall be ± 170°and the pan speed shall be 100°/sec
1.49.14	The Tilt Angle of camera shall be +90°/-20°and tilting Speed shall be 90°/sec

1.49.15	The Minimum Illumination of Camera in High Sensitivity Mode shall be0.5 lx (F1.6, 50 IRE) and Normal Mode shall be 1.7 lx (F1.5, 50 IRE)
1.49.16	The Minimum object Distance of camera shall be in the 10mm (wide) - 800mm (tele)
1.49.17	The shutter speed of camera shall not be less than 1 to 1/10,000 s
1.49.18	The camera shall be wall mounted or ceiling mounted
1.50	**Supply, Installation, Testing & Commissioning of Camera Mount for the HD camera , with the following specifications, complete with all accessories as required.**
1.50.1	Thin Profile Wall Mount Bracket for mounting above camera
1.50.2	Wall Mount Bracket shall mounts to drywall or 2-gang electrical box
1.50.3	Mounting hardware shall be provided along with camera mount
1.51	**Supply & Laying of RG6 Cable of following specifications, complete as required.**
1.51.1	Cable shall transmit the highest-resolution signals with the lowest losses for the most critical applications and longest cable runs including high scan rate analog and demanding digital SDI/HD-SDI applications
1.51.2	Cable shall have single, 18 AWG, 75 ohm coaxial conductor double-shielded with foil and tinned copper serve to reduce interference.
1.51.3	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering

2	Lecture Hall- First Floor
	Video & Display System
2.1	**Supply, Installation, Programming, Testing & Commissioning of 4300 Lumens Projector with the following specifications, complete with all accessories as required.**
2.1.1	The brightness of the projectors should not be less than 4300 ANSI Lumens

2.1.2	The LCD Panel size of the projector should be 15 mm (0.59 inches) diagonal (16:10 aspect ratio)
2.1.3	The projector should have a aspect ratio of 16:10
2.1.4	The Display method should be Transparent LCD panel (x 3, R/G/B)
2.1.5	The total Pixels should be 1,024,000 (1,280 x 800) x 3, total of 3,072,000 pixels
2.1.6	The Lens of the projector should have atleast 1.6x manual zoom
2.1.7	The lens should have throw ratio: 1.18–1.90:1 & manual focus of F 1.60-2.12, f 15.28-24.62 mm
2.1.8	The projector should be capable of achieving Screen size 30–300 inch diagonal from 0.76 –7.62 m
2.1.9	The Center-to-corner uniformity should be 85%
2.1.10	The Contrast ratio should not be less than 3,500:1
2.1.11	The Resolution of the projector should be 1,280 x 800 pixels
2.1.12	The projector should have vertical Optical axis shift of +48 %
2.1.13	The projector should have Vertical Keystone correction range of ±30°
2.1.14	The projector should be able to mount on Ceiling
2.1.15	The projector mandatorily should have HDMI input which is compatible with HDCP
2.1.16	The Projector shall have at least 1 VGA input & output
2.1.17	The projector also shall have atleast one Composite Video & one S-Video Input
2.1.18	The Projector should have atleast one stereo Audio input & output
2.1.19	The Projector should also have Serial input for external control & LAN
2.1.20	The Weight of the projector should not more than 5 kg
2.1.21	Wireless remote control unit, carrying bag & one RGB cable should be supplied along with the projector
2.1.22	The projector should have lamp replacement cycle of up to 4,000 hours

2.1.23	The sound of the cooling should not be more than 35dB on normal mode and 29db on eco mode.
2.1.24	The projector should have the Intelligent Lamp Control system to automatically adjust the lamp output in accordance with the brightness of the projected image.
2.1.25	The Standby Power Consumption of the projector should be less than 0.5 W
2.1.26	The Projector should have 10-Watt Speakers and a Microphone Input for audio Playback Directly from the Projector
2.1.27	The Projector should be Monitored remotely and Control over a LAN
2.1.28	The projector should have the feature of Direct Power Off right after use
2.2	**Supply, Installation, Testing & Commissioning of ceiling mount for 4300 lumens projector with the following specifications, complete with all accessories as required.**
2.2.1	Metal powder coated Ceiling mount kit for above projector
2.2.2	Ceiling mount shall flexible for height adjustment from 4 feet to 10 feet
2.2.3	Ceiling mount shall have Weight bearing capacity of atleast 10kg
2.2.4	Ceiling mount shall have the provision to carry cables inside the Stem Pipe.
2.2.5	The mounting hardware shall be provided along with the ceiling mount kit
2.3	**Supply, Installation,Testing & Commissioning of 137 inch motorized screen for projector with the following specifications, complete with all accessories as required.**
2.3.1	137 inch (348) diagonal motorized screen with built-in Low voltage controller
2.3.2	Screen shall have scratch-resistant steel case with white polyester finish and matching end caps.

2.3.3	Screen should operate instantly at the touch of a button and stops automatically in the "up" and "down" positions.
2.3.4	The motor shall be inside the roller, for a clean low-profile appearance
2.3.5	Viewing surface can be lowered to any position at the touch of a switch.
2.3.6	Screens shall have black borders on all four sides
2.3.7	Surface Material of the screen should be Matt White
2.3.8	Image Format of the screen should be 16:10
2.3.9	Image/Viewable Area of the screen should be 6.05ft Height x 9.68ft width
2.3.10	The screen weight should be less than 25kg
2.4	**Supply, Installation, Programming, Testing & Commissioning of desktop personal computer of following specifications, complete with all accessories as required.**
2.4.1	Slim tower PC with 4th Generation Intel® Core™ i3-4150 processor (3M Cache, 3.5 GHz)
2.4.2	The PC shall have integrated Intel® HD Graphics
2.4.3	The Memory of the PC shall be 4GB (1X4GB) Single Channel DDR3 1600MHz SDRAM Memory
2.4.4	The aspect ratio of the PC shall be 16:9
2.4.5	The PC shall be loaded with windows 7/windows 8 operating system
2.4.6	The PC shall have Integrated Giga bit 10/100/1000 Ethernet
2.4.7	The PC shall have DVD RW optical disk drive
2.4.8	The PC shall have 4 no's USB 2.0 & 2 No's USB 3.0 terminal
2.4.9	The PC shall have one embedded HDMI output
2.4.10	The PC shall provide two HDMI output by splitting the embedded HDMI output with suitable HDMI splitter
2.4.11	The PC shall also have one VGA, one RJ-45 (10/100/1000 Ethernet) terminal
2.4.12	The PC shall have 3-stack audio jacks supporting 5.1 surround sound

2.4.13	The PC package shall contain wireless mouse and keyboard
2.5	**Supply, Installation, Programming, Testing & Commissioning of tablet monitor of size of 15.6 inch or more with the following specifications, complete with all accessories as required.**
2.5.1	The Tablet Monitor shall have 15.6-inch or more active matrix TFT LCD display
2.5.2	The Tablet Monitor shall be of WXGA(1366 x 768) Resolution
2.5.3	The Cordless Pen used for annotation on the Tablet Monitor shall be battery free
2.5.4	The Cordless Pen shall have 512 level of pressure sensivity
2.5.5	The Tablet Monitor display shall have 16.77 M Colours
2.5.6	The response time of the tablet monitor should be less than 9ms
2.5.7	The Tablet Monitor shall have Luminance of not less than 250cd/m2
2.5.8	The Contrast Ratio of Tablet Monitor shall not be less than 400:1
2.5.9	The Tablet Monitor Shall have atleast one DVI-I Inputs & output Terminal
2.5.10	The aspect Ratio of Tablet Monitor shall be 16:9
2.5.11	The Cordless pen with the tablet monitor shall deliver more than 500 level of pressure sensitivity
2.5.12	The Tablet Monitor Shall have atleast 2no's built in USB interface
2.5.13	The Tablet Monitor shall be less than 5 kg
2.5.14	The Tablet Monitor should have adjustable stand that can be set to incline from 19 to 72 Degrees
2.5.15	The Tablet Monitor shall have VCCI Class B, FCC Part15 Subpart B (class B) and C,CE, KCC, BSMI, C-tick, CB, CCC, GOST-R, China RoHS,Korean RoHS, EU RoHS Certifications
2.5.16	The Tablet Monitor should be compatible with Windows 7 / Vista / XP / 2000, Mac OS X 10.4 or later

2.6	**Supply, Installation, Testing & Commissioning of Type A to A USB cable of following specifications, complete with all accessories as required.**
2.6.1	10ft USB 3.0 Type A to Type A cable
2.6.2	USB 3.0 specification of the cable also works with USB 2.0/ 1.1 devices.
2.6.3	The cable shall suitable for data transfer speeds up to 5 GBps
2.6.4	The cable shall be fully shielded for error free connections
2.6.5	The cable shall be Compatible with PC windows 7 / vista / XP
2.7	**Supply, Installation,Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**
2.7.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input
2.7.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw
2.7.3	The wall plate shall be of one gang size
2.7.4	The wall Plate shall be HDCP Compliant
2.7.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.
2.7.6	The wall plate should be of metal construction
2.8	**Supply, Installation, Programming, Testing & Commissioning of Scaler system with the following specifications, complete with all accessories as required.**
2.8.1	The scaler shall have three HDMI inputs, one universal 15-pin HD input for RGB, component video, S-video, or composite video input, stereo balanced/unbalanced audio inputs on captive screw; unbalanced stereo audio input on one 3.5 mm stereo mini jack and

2.8.2	The scaler shall have one twisted pair output & one stereo audio output on captive screw
2.8.3	The scaler shall features an advanced scaling engine that can scale HDMI, RGB, component, and standard definition video signals to a common high resolution output
2.8.4	The scaler shall have advanced scaling engine with 30-bit processing for enhanced colour accuracy and picture detail
2.8.5	The scaler shall perform deinterlacing for 1080i signals from HD sources delivers optimized image quality
2.8.6	The scaler shall allow signal extension up to 100 meters over shielded CATx cable
2.8.7	The scaler shall provide the convenience of fast and reliable switching, along with a high performance scaling engine for HDMI and analogue video sources
2.8.8	The scaler shall integrates HDMI, analogue video, and audio sources into presentation systems
2.8.9	The scaler shall support HDMI specification features include data rates up to 6.75 Gbps, Deep Colour, and HD lossless audio formats
2.8.10	The analogue audio signals on the input shall be embedded onto the twisted pair output.
2.8.11	The scaler shall perform audio de-embedding of HDMI two-channel PCM audio to the analogue output or multi-channel bitstream formats can be passed to the twisted pair output
2.8.12	The scaler shall manage EDID communication between the display device and input sources in order to ensure the correct video formats are displayed reliably.
2.8.13	The scaler shall authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching
2.8.14	The scaler shall features automatic 3:2 and 2:2 pulldown detection to maximize image quality for content sources originating from film.

2.8.15	The scaler shall accepts and outputs signals up to 1920x1200, including HDTV 1080p/60 and 2K.
2.8.16	The scaler shall provides real-time verification of HDCP status for each digital video input and output.
2.8.17	The scaler shall automatically enables or disables embedded audio and InfoFrames, and sets the correct color space for proper connection to HDMI and DVI displays
2.8.18	The scaler shall allow auto-switching between inputs
2.8.19	The scaler shall be HDCP compliant
2.8.20	The scaler shall provide master volume control for the analogue line level output, as well as DTP analogue audio
2.8.21	The audio output of the scaler shall be automatically delayed to compensate for latency introduced by the video processing.
2.8.22	The scaler shall features audio input assignment so that each video input can be assigned to either of the two available analogue audio inputs
2.8.23	The scaler shall be housed in a compact 1U, half rack width enclosure
2.8.24	The switcher shall have RS-232 Control port
2.9	**Supply, Installation, Testing & Commissioning of suitable mounting kit for scaler with the following specifications, complete with all accessories as required.**
2.9.1	The Mount kit shall be Low-Profile Mount Kit that can be used with 1/8, 1/4, and 1/2 Rack Width Products,.
2.9.2	The mount shall allow rack-mountable equipment to be installed under a table, desk, or other flat surface
2.9.3	The mount shall be perfectly fit for the above scaler
2.9.4	The under desk Mount Kit shall be from the same OEM of the above switcher

2.10	**Supply, Installation, Programming, Testing & Commissioning of digital twisted pair reciever of the following specifications complete with all accessories as required**
2.10.1	Digital twisted pair receiver for receiving HDMI, Analogue audio, bidirectional RS-232 and IR signals upto 70 meters over a shielded CATx cable
2.10.2	Digital twisted pair receiver also capable of receiving 4K@30 upto 40m over a shielded CATx cable
2.10.3	Digital twisted pair receiver shall supports computer video up to 2560x1600, HDTV 1080p/60 Deep Color, and 4K resolutions
2.10.4	Resolution range of the Digital twisted pair receiver shall be 1920x1200 or 1080p @ 60 Hz; 8, 10, or 12 bit color depth 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz
2.10.5	Digital twisted pair receiver is compatible with a broad range of multi-channel audio signals, to provide reliable operation with HDMI sources.
2.10.6	Digital twisted pair receiver shall supports HDMI specification features include data rates up to 10.2 Gbps (3.4 Gbps/colour), Deep Color up to 12-bit, 3D, embedded HD lossless audio formats, and CEC pass-through
2.10.7	Maximum Pixel clock of the receiver shall be 300MHz
2.10.8	Digital twisted pair receiver shall accepts analog stereo audio signals from a compatible transmitter over the same shielded twisted pair cable
2.10.9	Digital twisted pair receiver is capable of receiving 1080p/60 Deep Color, 1920x1200, and 2K signals up 70 meters
2.10.10	Outputs connector of the twisted pair receiver Input shall be one twisted pair input on RJ-45
2.10.11	Outputs connector of the twisted pair receiver should be HDMI connector, captive screw connector for stereo audio

2.10.12	The receiver can be remotely powered over the shielded twisted pair cable by compatible twisted pair transmitters, allowing both devices to share one power Supply, Installation, Programming, Testing & Commissioning
2.10.13	The Receiver should be capable of continuously maintaining DDC communication of EDID and HDCP between a source and display, to ensure direct compatibility and optimal signal transmission between devices.
2.10.14	The receiver should be capable of receiving analog stereo audio signal over the same twisted pair cable as the HDMI and control signals, in order to eliminate the need for a separate cable run to support analog audio at the receiver.
2.10.15	The Receiver should supports simultaneous transmission of bidirectional RS-232 and IR signals from a control system, providing remote control to source equipment or remote displays.
2.10.16	The receiver shall be capable of receiving the signal transmitted from the distance of 230 feet (70 meters) by the transmitter for all compatible resolutions when used with CAT 5e twisted pair cable
2.10.17	The receiver shall provide visual indication of system status for real-time feedback and monitoring of key performance parameters.
2.11	**Supply, Installation, Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**
2.11.1	3ft Ultra-flexible low bend radius HDMI cable
2.11.2	The cable shall be 1080p/60 verified
2.11.3	The cable shall of 36 AWG copper wire construction
2.11.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
2.11.5	The cable shall support Data rates to 10.2 Gbps
2.11.6	The cable shall support Refresh rates to 120 Hz
2.11.7	The cable shall support Color depth to 48 bits - 16 bits per colour
2.11.8	The cable shall have Gold plated contacts

2.12	**Supply, Installation, Testing & Commissioning of 6 ft HDMI cables of following specifications complete as required**
2.12.1	6ft Ultra-flexible HDMI cable
2.12.2	The cable shall be 1080p/60 verified
2.12.3	The cable shall of 30 AWG copper wire construction
2.12.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
2.12.5	The cable shall support Data rates to 10.2 Gbps
2.12.6	The cable shall support Refresh rates to 120 Hz
2.12.7	The cable shall support colour depth to 48 bits - 16 bits per colour
2.12.8	The cable shall have Gold plated contacts
2.13	**Supply, Installation,Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**
2.13.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.
2.13.2	The cable shall be Thin, flexible cable with low profile VGA connectors
2.13.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side
2.13.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end
2.13.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio
2.13.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection
2.13.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation
2.13.8	The cable shall be AWM 20276 rated
2.14	**Supply, Installation, Testing & Commissioning of 6 ft High resolution VGA cable of following specifications, complete as required**

2.14.1	6ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.
2.14.2	The cable shall be Thin, flexible cable with low profile VGA connectors
2.14.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side
2.14.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end
2.14.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio
2.14.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection
2.14.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation
2.14.8	The cable shall be AWM 20276 rated
2.15	**Supply, Installation, Testing & Commissioning of 6 ft HDMI to DVI-D cable of following specification, complete as required**
2.15.1	6ft Standard Speed HDMI to DVI-D cables
2.15.2	The cable shall be 1080p/60 verified
2.15.3	The cable shall of 28 AWG copper wire construction
2.15.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
2.15.5	The cable shall support Data rates to 4.95 Gbps
2.15.6	The cable shall support Refresh rates to 60 Hz
2.15.7	The cable shall support colour depth to 24 bits - 8 bits per colour
2.15.8	The cable shall have Gold plated contacts
2.15.9	The cable shall be NEC CL2 rated
	Audio System
2.16	**Supply, Installation, Programming, Testing & Commissioning of wireless handheld microphone of following specifications , complete with all accessories as required.**

2.16.1	Wireless handheld Microphone system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range
2.16.2	Wireless handheld Microphone system should have true diversity receiver & handheld transmitter
2.16.3	The receiver of wireless handheld system should be one-channel true diversity receiver
2.16.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.
2.16.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.
2.16.6	The receiver should have Scan function to start an automatic search for interference-free frequencies
2.16.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter
2.16.8	The receiver should have RF level indicator & AF level indicator
2.16.9	The receiver should have On/off switch with power on LED
2.16.10	The receiver should have Switching bandwidth of 24 MHz
2.16.11	Nominal deviation of the receiver should be ± 40 kHz
2.16.12	The receiver should have removable TNC antennae
2.16.13	The Sensitivity of the receiver should be 2 µV
2.16.14	Signal-to-noise ratio should be greater than 110 dB(A)
2.16.15	T.H.D of receiver should be less than 0.5% at 1 kHz
2.16.16	The modulation of handheld transmitter should

	be FM
2.16.17	The handheld transmitter shall operate in the frequency range 506 - 530 MHz, 668 - 692 MHz, 774 - 798 MHz, 790 - 814 MHz or 841 - 865 MHz
2.16.18	The handheld transmitter shall have Modular design with interchangeable microphone capsules
2.16.19	The handheld transmitter shall have Integrated antenna
2.16.20	The handheld transmitter shall have Plastic housing
2.16.21	The handheld transmitter ACT function (Automatic Channel Targeting) for automatic frequency setting
2.16.22	Max. SPL of the handheld transmitter should be 146 dB
2.16.23	The Signal-to-noise ratio of the handheld transmitter should be greater than 110 dB
2.16.24	The T.H.D of the handheld transmitter should be less than 0.5% at 1 kHz
2.16.25	Radiated transmitter power of handheld transmitter shall be 10 mW
2.16.26	AF transmission range should be 55 - 18,000 Hz at 80 dB SPL
2.16.27	Transmission range of the handheld transmitter should be more than 90 m
2.16.28	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries
2.16.29	Length of the handheld transmitter should be less than 200mm
2.16.30	Shaft of the handheld transmitter should be less than 40 mm
2.16.31	Weight of the handheld transmitter with batteries shall be less than 170g
2.16.32	The receiver & the handheld transmitter should have On/off switch with power on LED
2.16.33	Polar pattern of the microphone should be Hypercardioid
2.16.34	Transducer type should be Dynamic
2.16.35	Frequency response of the microphone should be 90 - 16,000 Hz
2.16.36	Nominal impedance of the microphone should be 280 Ω

2.16.37	Load impedance of the microphone should be 1 kΩ
2.16.38	Open circuit voltage of the microphone should be 3 mV / Pa
2.16.39	Magnetic field suppression of the microphone should be greater than 20 dB at 50 Hz Dimensions
2.16.40	Head diameter of the microphone shall be less than 60 mm
2.17	**Supply, Installation, Programming, Testing & Commissioning of clip on type microphone of following specification , complete with all accessories as required.**
2.17.1	Hypercardioid clip-on microphone designed for unobtrusive miking of speech and instruments
2.17.2	Clip-on microphone should have wide range frequency response
2.17.3	Microphone should be easily interfaces with the below wireless body pack transmitters
2.17.4	The microphone should have Lavaliere or instrument mounting capabilities
2.17.5	The microphone should be powered either by pocket transmitter or phantom power converter for wired use.
2.17.6	The transduser type of the microphone should be electret condenser
2.17.7	The microphone should have a frequency response of 40 - 20.000 Hz
2.17.8	The Operating principle of the microphone should be Pressure gradient
2.17.9	Max. SPL at 1 kHz for k = 1% should be 120 dB
2.17.10	S/N ratio rel. to 1 PA should be 60 dB
2.17.11	Open circuit voltage at 1 kHz should be 30 mV/Pa = -30 dBV
2.17.12	Nominal impedance of the Microphone should be 200 ohms
2.17.13	Load impedance of the Microphone should be 1 kΩ
2.17.14	Length of the Microphone should be less than 25mm
2.17.15	Weight of the Microphone should be less than 20g

2.17.16	The connector of the Microphone should be 3 Pin XLR Male
2.17.17	Should have accessories like XLR cable, clamp and storage bag along with Microphone System
2.18	**Supply, Installation, Programming, Testing & Commissioning of Wireless Lavaliere Microphone System of the following specifications, complete with all accessories as required.**
2.18.1	Wireless system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range
2.18.2	Wireless Microphone system should have true diversity receiver pocket transmitter & condenser lavaliere Microphone (Omni directional)
2.18.3	The receiver of wireless system should be one-channel true diversity receiver
2.18.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.
2.18.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.
2.18.6	The receiver should have Scan function to start an automatic search for interference-free frequencies
2.18.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter
2.18.8	The receiver should have RF level indicator & AF level indicator
2.18.9	The receiver should have On/off switch with power on LED

2.18.10	The receiver should have Switching bandwidth of 24 MHz
2.18.11	Nominal deviation of the receiver should be ± 40 kHz
2.18.12	The receiver should have removable TNC antennae
2.18.13	The Sensitivity of the receiver should be 2 µV
2.18.14	Signal-to-noise ratio should be greater than 110 dB(A)
2.18.15	T.H.D of receiver should be less than 0.5% at 1 kHz
2.18.16	The belt pack transmitter should have ACT infra red interface for frequency transmitting from receiver to transmitter
2.18.17	The belt pack transmitter should operates in the frequency range 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz or 841 to 865 MHz.
2.18.18	The belt pack transmitter should have adjustable gain control so as to adjust input sensitivity for various microphones or instruments
2.18.19	The belt pack transmitter should have 4-pin mini XLR input connector (male) to connect microphones or instruments
2.18.20	The belt pack transmitter should have GT/MT switch to select between microphone or instrument inputs
2.18.21	The belt pack transmitter should have Swiveling clip to attach to belts, waistbands or guitar straps
2.18.22	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries
2.18.23	The Modulation of the belt pack transmitter should be FM
2.18.24	Nominal deviation of the belt pack transmitter should be ± 40 kHz
2.18.25	Radiated transmitter power of the belt pack transmitter should be 20 mW
2.18.26	Signal-to-noise ratio of the belt pack transmitter should be greater than 110 dB(A)
2.18.27	T.H.D of belt pack transmitter should be less than 0.5% at 1 kHz

2.18.28	Frequency response of the belt pack transmitter should be 50 Hz - 18,000 Hz
2.18.29	Weight with batteries of the belt pack transmitter should be less than 150 g
2.18.30	The lavaliere Microphone should have omnidirectional polar pattern
2.18.31	The lavaliere Microphone should be battery or phantom powered
2.18.32	Transducer type should be Condenser (back electret)
2.18.33	Operating principle of the lavaliere Microphone should be Pressure
2.18.34	Frequency response of the lavaliere Microphone should be 25 - 20,000 Hz
2.18.35	Open circuit voltage at 1 kHz of the lavaliere Microphone should be30 mV
2.18.36	Nominal impedance of the lavaliere Microphone should be less than or equal to 200 ohms
2.18.37	Load impedance of the lavaliere Microphone should be greater than or equal to 1 KΩ
2.18.38	Max. SPL at 1 kHz of the lavaliere Microphone should be 120 dB
2.18.39	S/N ratio rel. to 1 Pa of the lavaliere Microphone should be approx. 60 dB
2.18.40	Length of the lavaliere Microphone should be less than 14 mm
2.18.41	Head diameter of the lavaliere Microphone should be less than 8mm
2.18.42	Weight of the lavaliere Microphone without cable should not exceed 2 grams
2.19	**Supply, Installation, Programming, Testing & Commissioning of Digital Matrix Processor of following specifications, complete with all accessories as required.**
2.19.1	Digital matrix processor shall have six inputs, all with mic level capability and 48 volt phantom power that can be routed and mixed to four line level outputs.
2.19.2	The inputs of the digital matrix processor shall be six balanced or unbalanced mic/line level on 3.5 mm, 3-pole captive screw connectors

2.19.3	The output of the digital matrix processor Output shall be four balanced or unbalanced line level on 3.5 mm, 3-pole captive screw connectors
2.19.4	Digital matrix processor shall features 32/64-bit floating point audio DSP processing to simplify management of gain staging while reducing the possibility of DSP signal clipping.
2.19.5	The Digital matrix processor shall be equipped with selectable 48 volt phantom power for each input, allowing the use of condenser microphones.
2.19.6	The Digital matrix processor shall have studio grade 24-bit/48 kHz analogue-to-digital and digital-to-analogue converters
2.19.7	The input to output latency shall be constant 4.5 ms within the Digital matrix processor regardless of the number of active channels or processes.
2.19.8	The Digital matrix processor shall be equipped with both primary and secondary RS-232 serial ports for divisible room applications.
2.19.9	Six mono mic/line inputs of the digital matrix processor shall be matrixed mixed into any of the four output buses to create finely tuned audio zones for the corresponding outputs
2.19.10	Six inputs of the digital matrix processor shall be routed to any of the four "virtual" buses to allow inputs to be processed together as a group, before routing back into the output buses
2.19.11	The audio gain of the digital matrix processor shall be Unbalanced output: -6 dB; balanced output: 0 dB
2.19.12	The Frequency response of the digital matrix processor shall be 20 Hz to 20 kHz, ±0.1 dB
2.19.13	The THD + Noise of the digital matrix processor shall be less than 0.01% @ 1 kHz, at maximum output level
2.19.14	The S/N of the digital matrix processor shall be greater than 105 dB, 20 Hz to 20 kHz, at maximum output, unweighted

2.19.15	The Crosstalk of the digital matrix processor shall be less than 90 dB @ 1 kHz, fully loaded
2.19.16	The Digital matrix processor shall have audio input impedance greater than 10 ohms unbalanced/balanced
2.19.17	The Digital matrix processor shall have audio output impedance of 50 ohms unbalanced, 100 ohms balanced
2.19.18	The Digital matrix processor shall perform digital audio signal processing function such as level control, dynamics, filters, delay, ducking, loudness, feedback suppression, and matrix mixing
2.19.19	The Digital matrix processor shall provides LEDs on the front panel for each input and output, for real-time monitoring of signal presence
2.19.20	The Digital matrix processor shall be controlled and configured via RS-232 serial control, Ethernet control, or USB.
2.19.21	The Digital matrix processor shall have digital I/O ports for external triggering such as mic activation and muting
2.20	**Supply, Installation, Programming, Testing & Commissioning of 2 channel amplifier- Type I of following specifications, complete with all accessories as required.**
2.20.1	Number of channels should be 2
2.20.2	Should be capable of delivering similar power per channel at 70 V, 2, 4, 8 and 16 ohms
2.20.3	Max total output all channels driven should not be less than 800 watts
2.20.4	Peak output voltage per channel should be 100 V / 70 Vrms
2.20.5	Max. output current per channel should be 16 Arms
2.20.6	THD 20 Hz – 20 kHz for 1 W should be less than 0.1%
2.20.7	THD at 1 kHz and 1 dB below clipping should be less than 0.05%
2.20.8	Signal To Noise Ratio should be greater than112 dBA

2.20.9	Channel separation (Crosstalk) at 1 kHz should be greater than 70 dB
2.20.10	Frequency response of 2 Hz – 40 kHz
2.20.11	Input impedance of 20 kOhm
2.20.12	Common Mode Rejection (CMR) : 50 dB
2.20.13	Output impedance of 25 mOhm
2.20.14	Should have a feature of mixing and matching of loads with different impedances
2.20.15	Should have RSL switch circuit for sensing rail voltage and optimizes output for instantaneous load conditions
2.21	**Supply, Installation,Testing & Commissioning of wall mount speakers of following specifications, complete with all accessories as required.**
2.21.1	Two-Way Surface Mount full range Speakers with a power rating of 60 watts continuous pink noise, 120 watts continuous program capacity
2.21.2	The speaker shall have 6.5" (16.5 cm) long-throw woofer with dual tuned bass reflex ports and a 1" (2.5 cm) silk dome tweeter
2.21.3	The speaker provide a wide frequency range from 70 Hz to 18 kHz
2.21.4	The speaker shall have integrated electrical contacts automatically mate with the pre-wired contacts on the mounting plate
2.21.5	The nominal sensitivity of the speaker shall be 90 dB SPL, 1 W, 1 m, full space
2.21.6	The nominal impedance of the speaker shall be 8 ohms
2.21.7	The Crossover frequency of the speaker shall be 2.5 kHz
2.21.8	0° mounting plate and 10° mounting adapter shall be provided along with the speaker
2.21.9	The speaker shall have full range power limiter protecting the tweeter, woofer, and crossover from overload
	Cables & Connectors

2.22	**Supply, Installation, Testing & Commissioning of 17U Equipment Rack of following specifications, complete with all accessories as required**
2.22.1	Equipment rack should be of 17U
2.22.2	Rack should have 8 PORT 5 Amp Power Distribution Unit
2.22.3	Rack should have Castor wheels with brake and without brake
2.22.4	Rack should have Cable manager
2.22.5	Rack shall have shelves for placing non rack mountable equipment
2.22.6	Rack should have Monitor Tray – Ventilation & Fan assembly
2.22.7	Rack should also have Front and back doors
2.23	**Supply & Laying of Speaker cable of following specifications, complete as required.**
2.23.1	Speaker cable for connecting speakers and amplifiers
2.23.2	Cable shall have single colour-coded pair, 16 AWG bare copper conductors.
2.23.3	Cable shall offers a higher conductor strand count than comparable cables in its class
2.23.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
2.24	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**
2.24.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.
2.24.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires
2.24.3	Cable shall have tinned copper drain wire on the inside of the foil shield.
2.24.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering

2.25	**Supply & Laying of Shielded twisted pair cable of following specifications, complete as required**
2.25.1	24 AWG solid copper construction shielded twisted pair cable
2.25.2	The cable shall be certified to 475 MHz bandwidth at distances up 100 meters and has been independently tested and verified to meet performance requirements set by the HDBaseT Alliance
2.25.3	Cable shall provides added protection from outside interference and ensures high quality signal transmission
2.25.4	Cable shall be Independently tested and verified to meet performance requirements set by HDBaseT Alliance
2.25.5	Cable shall utilize SF/UTP design with with four unshielded 24 AWG twisted pair conductors inside an overall braid and foil shield
2.25.6	Cable shall be non-plenum rated
2	**Supply & Termination of RJ-45 plug of following specifications, complete with all accessories as required.**
2.26.1	Shielded RJ-45 plug for twisted pair cable
2.26.2	RJ-45 plug shall have metal strain relief and ground bonding
2.26.3	RJ-45 plug shall be ideal for high EMI/RFI environments
2.26.4	RJ-45 plug shall have conductor alignment guide reduces crosstalk and signal interference
2.26.5	RJ-45 plug shall have Gold plated contacts
2.27	**Supply and Termination of Connectors of following specification, complete as required.**
	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers

3	Confrence Hall- Ground Floor
	Video & Display System

3.1	**Supply, Installation, Programming, Testing & Commissioning of display unit with a minimum size of 55 inch of following specifications , complete with all accessories as required.**
3.1.1	The Screen size of display shall be 55 inch Diagonal or more
3.1.2	The panel type shall be 60 Hz D-LED BLU Panel
3.1.3	The Display Resolution shall be 1920 x 1080
3.1.4	The Contrast Ratio Shall not be less than 5000:1
3.1.5	The Response Time of Display shall not be more than 6 ms
3.1.6	The Brightness of the display shall not be less than 350 nits
3.1.7	The display shall have maximum pixel frequency of 148.5MHz
3.1.8	The Display Colour shall be 16.7M
3.1.9	The display shall have Pixel Pitch of 0.21 (H) x 0.63 (V)
3.1.10	The Colour Gamut Shall not be less than 72%
3.1.11	The Viewing angle of Display shall be 178°/178°
3.1.12	The Display shall have atleast one HDMI input
3.1.13	The Display shall have atleast one DVI-D, D-SUB & Component video Input terminals
3.1.14	The Display shall have Stereo Mini jack Audio Output Terminal
3.1.15	The Display Shall have Stereo Mini jack Audio Input Terminal
3.1.16	The Device Shall have option of External Control Via RS232C(in/out) thru stereo jack, RJ45
3.1.17	Bezel Width of the display shall not be more than 9.5 mm on Top and side & 15.0mm on the bottom
3.1.18	The Display Shall have USB 2.0 input ports
3.1.19	The operating system of the display shall be LINUX
3.1.20	The Display shall have 2x 10W built In speaker
3.1.21	The Display shall have embedded media player
3.1.22	The Display shall have SD Card Slot
3.1.23	The Display shall have External Sensors for IR and Ambient Light
3.1.24	The display shall be Energy star 6.0 certified

3.1.25	The weight of the display shall be less than 16kg
3.1.26	The thickness of display shall be less than 50mm
3.2	**Supply, Installation, Testing & Commissioning of wall mount unit for display unit of following specifications, complete with all accessories as required.**
3.2.1	VESA Mount wall mount brackets compatible for above display
3.2.2	The weight of the mount should be less than 3 Kg.
3.2.3	Supplied with all the fastners, screws etc
3.3	**Supply, Installation, Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**
3.3.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input
3.3.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw
3.3.3	The wall plate shall be of one gang size
3.3.4	The wall Plate shall be HDCP Compliant
3.3.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.
3.3.6	The wall plate should be of metal construction
3.4	**Supply, Installation,Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**
3.4.1	3ft Ultra-flexible low bend radius HDMI cable
3.4.2	The cable shall be 1080p/60 verified
3.4.3	The cable shall of 36 AWG copper wire construction
3.4.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
3.4.5	The cable shall support Data rates to 10.2 Gbps
3.4.6	The cable shall support Refresh rates to 120 Hz
3.4.7	The cable shall support Color depth to 48 bits - 16 bits per colour

3.4.8	The cable shall have Gold plated contacts
3.5	**Supply, Installation, Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**
3.5.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.
3.5.2	The cable shall be Thin, flexible cable with low profile VGA connectors
3.5.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side
3.5.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end
3.5.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio
3.5.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection
3.5.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation
3.5.8	The cable shall be AWM 20276 rated
3.6	**Supply, Installation, Testing & Commissioning of 35 ft HDMI cable of following specification, complete as required.**
3.6.1	35ft standard speed HDMI cable
3.6.2	The cable shall be 1080p/60 verified
3.6.3	The cable shall of 22 AWG copper wire construction
3.6.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
3.6.5	The cable shall support Data rates to 4.95 Gbps
3.6.6	The cable shall support Refresh rates to 60 Hz
3.6.7	The cable shall support colour depth to 24 bits – 8 bits per colour
3.6.8	The cable shall have Gold plated contacts
3.6.9	The cable shall be NEC CM Rated
	Cables & Connectors
3.7	**Supply & Laying of VGA Cable of following specifications, complete as required.**

3.7.1	Cable shall carries red, green, blue, and separate horizontal and vertical sync on five conductors
3.7.2	Cable shall include five 26 AWG, 75 ohm coaxial conductors in a single jacket
3.7.3	Each conductor shall be individually double-shielded with foil and tinned copper to reduce interference.
3.7.4	The cable shall be sweep tested from 5 MHz to 1 GHz
3.7.5	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
3.7.6	Nominal impedance of the cable shall be 75ohms
3.8	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**
3.8.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.
3.8.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires
3.8.3	Cable shall have tinned copper drain wire on the inside of the foil shield.
3.8.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
3.9	**Supply and Termination of Connectors of following specification, complete as required.**
	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers

4	Confrence Hall - First Floor
	Video & Display System
4.1	**Supply, Installation, Programming, Testing & Commissioning of display unit with a minimum size of 55 inch of following specifications , complete with all accessories as required.**

4.1.1	The Screen size of display shall be 55 inch Diagonal or more
4.1.2	The panel type shall be 60 Hz D-LED BLU Panel
4.1.3	The Display Resolution shall be 1920 x 1080
4.1.4	The Contrast Ratio Shall not be less than 5000:1
4.1.5	The Response Time of Display shall not be more than 6 ms
4.1.6	The Brightness of the display shall not be less than 350 nits
4.1.7	The display shall have maximum pixel frequency of 148.5MHz
4.1.8	The Display Colour shall be 16.7M
4.1.9	The display shall have Pixel Pitch of 0.21 (H) x 0.63 (V)
4.1.10	The Colour Gamut Shall not be less than 72%
4.1.11	The Viewing angle of Display shall be 178°/178°
4.1.12	The Display shall have atleast one HDMI input
4.1.13	The Display shall have atleast one DVI-D, D-SUB & Component video Input terminals
4.1.14	The Display shall have Stereo Mini jack Audio Output Terminal
4.1.15	The Display Shall have Stereo Mini jack Audio Input Terminal
4.1.16	The Device Shall have option of External Control Via RS232C(in/out) thru stereo jack, RJ45
4.1.17	Bezel Width of the display shall not be more than 9.5 mm on Top and side & 15.0mm on the bottom
4.1.18	The Display Shall have USB 2.0 input ports
4.1.19	The operating system of the display shall be LINUX
4.1.20	The Display shall have 2x 10W built In speaker
4.1.21	The Display shall have embedded media player
4.1.22	The Display shall have SD Card Slot
4.1.23	The Display shall have External Sensors for IR and Ambient Light
4.1.24	The display shall be Energy star 6.0 certified
4.1.25	The weight of the display shall be less than 16kg
4.1.26	The thickness of display shall be less than 50mm

4.2	**Supply, Installation, Testing & Commissioning of wall mount unit for display unit of following specifications, complete with all accessories as required.**
4.2.1	VESA Mount wall mount brackets compatible for above display
4.2.2	The weight of the mount should be less than 3 Kg.
4.2.3	Supplied with all the fastners, screws etc
4.3	**Supply, Installation, Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**
4.3.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input
4.3.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw
4.3.3	The wall plate shall be of one gang size
4.3.4	The wall Plate shall be HDCP Compliant
4.3.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.
4.3.6	The wall plate should be of metal construction
4.4	**Supply, Installation, Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**
4.4.1	3ft Ultra-flexible low bend radius HDMI cable
4.4.2	The cable shall be 1080p/60 verified
4.4.3	The cable shall of 36 AWG copper wire construction
4.4.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
4.4.5	The cable shall support Data rates to 10.2 Gbps
4.4.6	The cable shall support Refresh rates to 120 Hz
4.4.7	The cable shall support Color depth to 48 bits - 16 bits per colour
4.4.8	The cable shall have Gold plated contacts

4.5	**Supply, Installation, Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**
4.5.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.
4.5.2	The cable shall be Thin, flexible cable with low profile VGA connectors
4.5.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side
4.5.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end
4.5.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio
4.5.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection
4.5.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation
4.5.8	The cable shall be AWM 20276 rated
4.6	**Supply, Installation, Testing & Commissioning of 35 ft HDMI cable of following specification, complete as required.**
4.6.1	35ft standard speed HDMI cable
4.6.2	The cable shall be 1080p/60 verified
4.6.3	The cable shall of 22 AWG copper wire construction
4.6.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60
4.6.5	The cable shall support Data rates to 4.95 Gbps
4.6.6	The cable shall support Refresh rates to 60 Hz
4.6.7	The cable shall support colour depth to 24 bits – 8 bits per colour
4.6.8	The cable shall have Gold plated contacts
4.6.9	The cable shall be NEC CM Rated
	Cables & Connectors
4.7	**Supply & Laying of VGA Cable of following specifications, complete as required.**
4.7.1	Cable shall carries red, green, blue, and separate horizontal and vertical sync on five conductors

4.7.2	Cable shall include five 26 AWG, 75 ohm coaxial conductors in a single jacket
4.7.3	Each conductor shall be individually double-shielded with foil and tinned copper to reduce interference.
4.7.4	The cable shall be sweep tested from 5 MHz to 1 GHz
4.7.5	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
4.7.6	Nominal impedance of the cable shall be 75ohms
4.8	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**
4.8.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.
4.8.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires
4.8.3	Cable shall have tinned copper drain wire on the inside of the foil shield.
4.8.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering
4.9	**Supply and Termination of Connectors of following specification, complete as required.**
	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers

List of Approved makes for Audio-Video System		
Sl. No	**Item**	**Approved Make**
1	Projector – 8500 lumens	BARCO, CHRISTIE, PANASONIC .
2	Zoom Lens for 8500 lumens projector	BARCO, CHRISTIE, PANASONIC .
3	Ceiling Mount Kit for 8500 lumens projector	BENTLEY, CHIEF, PEERLESS .
4	Projector 4300 lumens	BARCO, CHRISTIE, PANASONIC .
5	Ceiling Mount kit for 4300 lumens projector	CUSTOM , OEM MAKE
6	Motorized Screen 222 inch	DRAPER, DALITE, STEWART .
7	Motorized Screen 137 inch	DRAPER, DALITE, STEWART .
8	Professional Display	PANASONIC, SAMSUNG, SONY .
9	Wall mount for display	CUSTOM, OEM MAKE .
10	Desktop PC	APPLE, DELL, HP .
11	Tablet Monitor	ELO, WACOM, USYNC .
12	USB cable	CUSTOM , OEM MAKE .
13	Presentation Wall Plate	AMX, CRESTRON, EXTRON .
14	Switcher	AMX, CRESTRON, EXTRON .
15	Under Desk Mount for Switcher	AMX, CRESTRON, EXTRON .
16	Scaler	AMX, CRESTRON, EXTRON .
17	Under Desk Mount for Scaler	AMX, CRESTRON, EXTRON .
18	HDMI Twisted Pair Receiver	AMX, CRESTRON, EXTRON .
19	Matrix Switcher	AMX, CRESTRON, EXTRON .
20	3ft HDMI Cable	AMX, CRESTRON, EXTRON .
21	6ft HDMI Cable	AMX, CRESTRON, EXTRON .
22	35ft HDMI cable	AMX, CRESTRON, EXTRON .
23	3ft VGA cable	AMX, CRESTRON, EXTRON .
24	6ft VGA cable	AMX, CRESTRON, EXTRON .
25	6ft HDMI to DVI-D Cables	AMX, CRESTRON, EXTRON .
26	Gooseneck Microphone	BEYERDYNAMIC, SENNHEISER, COUNTRYMAN .
27	Shock Mount for Gooseneck Microphone	BEYERDYNAMIC, COUNTRYMAN, SENNHEISER .

28	Wired Handheld Microphone System	BEYERDYNAMIC, COUNTRYMAN, SENNHEISER .
29	Wireless Handheld Microphone System	BEYERDYNAMIC, COUNTRYMAN, SENNHEISER .
30	Clip-on Microphone	BEYERDYNAMIC, COUNTRYMAN, SENNHEISER .
31	Wireless Lavaliere Microphone System	BEYERDYNAMIC, COUNTRYMAN, SENNHEISER .
32	Audio Mixer	YAMAHA, LUCIA, ALLEN & HEATH .
33	Digital Matrix Processor	CLEARONE, EXTRON, YAMAHA .
34	Amplifier	D&B AUDIOTECHNIK, LABGRUPPEN , EXTRON .
35	Wall Mount Speaker	D&B AUDIOTECHNIK,EXTRON, TANNOY .
36	Digital System Controller	D&B AUDIOTECHNIK,RENKUS-HEINZ, TANNOY .
37	USB/RS232 Interface	D&B AUDIOTECHNIK,RENKUS-HEINZ, TANNOY .
38	Loud Speaker	D&B AUDIOTECHNIK,RENKUS-HEINZ, TANNOY .
39	Subwoofer	D&B AUDIOTECHNIK,RENKUS-HEINZ, TANNOY .
40	Stage Monitor Speakers	D&B AUDIOTECHNIK,RENKUS-HEINZ, TANNOY .
41	Multi-Format Disc Player	DENON, PIONEER, TASCAM .
42	Microphone patch Bay	CUSTOM, OEM MAKE
43	Serial Port Expander	AMX, CRESTRON, EXTRON .
44	Touch Panel	AMX, CRESTRON, EXTRON .
45	Touch Panel Rack Mount	AMX, CRESTRON, EXTRON .
46	IR Emitter Kit	AMX, CRESTRON, EXTRON .
47	Power Injector	AMX, CRESTRON, EXTRON .
48	Relay Controller	DRAPER, DALITE, MILESTONE .
49	Network Switch	CISCO, D LINK, NETGEAR .
50	17U Equipment Rack	APG, MIDDLE ATLANTIC VALRACK .
51	36U Equipment Rack	APG, MIDDLE ATLANTIC VALRACK .
52	Speaker Cable	AMX, CRESTRON, EXTRON .

53	VGA Cable	AMX, CRESTRON, EXTRON .
54	Dual twisted pair Audio Cable	AMX, CRESTRON, EXTRON .
55	One twisted pair Audio Cable	AMX, CRESTRON, EXTRON .
56	Shielded twisted pair Cable	AMX, CRESTRON, EXTRON .
57	RJ-45 plug	AMX, CRESTRON, EXTRON .
58	HD Recorder	BLACKMAGIC DESIGN, DATAVIDEO, TASCAM .
59	HD Camera	CISCO, SONY, VADDIO .
60	Camera mount	CUSTOM, OEM MAKE
61	RG6 Cable	AMX, CRESTRON, EXTRON .
62	Connectors	AMX, CRESTRON, EXTRON .

General Requirements

Note 1: Bidders attention is drawn to GIT clause 18 and GIT sub-clause 11.1(c). The Bidders is to provide the required details, information, confirmations, etc. accordingly failing which it's tender is liable to be ignored.

Note 2: General: Bidders are requested to make sure that they should attach the list of equipments for carrying out routine and preventive maintenance wherever asked for and should make sure that Electrical Safety Analyzer /Tester for Medical equipments to periodically check the electrical safety aspects as per BIS Safety Standards IS-13540 which is also equivalent to IEC electrical safety standard IEC-60601 is a part of the equipments.

Other Conditions

1. Comprehensive Warranty as per Conditions of Contract of the TE document for complete equipment from the date of satisfactory commissioning, trial run & handing over of equipment to Hospital/Institution
   a) 98% up time Warranty of complete equipment with extension of Warranty period by double the downtime period on 24 (hrs) X 7 (days) X 365 (days) basis.
   b) All software updates should be provided free of cost during Warranty period.

2. After Sales Service:

   After sales service centre should be available at the city of Hospital/Institution or nearest township (eg.Kozhikode) reachable within 4 hrs on 24 hrs X 7 days X 365 days basis. Complaints should be attended properly, maximum within 6 hrs. The service should be provided directly by Bidders/Indian Agent. Undertaking by the Principals that the spares for the equipment shall be available for at least 10 years from the date of supply.

3. Training:

   On Site training to Doctors/ Technicians/ staff is to be provided by Principal/ Indian Agents (if they have the requisite know-how) for operation and maintenance of the equipment to the satisfaction of the consignee.

4. Annual Comprehensive Maintenance Contract (CMC) of subject equipment with Turnkey:
   a) The cost of Comprehensive Maintenance Contract (CMC) which includes preventive maintenance including testing & calibration as per technical/ service /operational manual of the manufacturer, labour and spares, after satisfactory completion of .The supplier shall visit each consignee site as recommended in the manufacturer's technical/ service /operational manual, but at least once in six months during the CMC period
   b) The cost of CMC may be quoted along with taxes applicable on the date of Tender Opening. The taxes to be paid extra, to be specifically stated. In the absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
   c) Cost of CMC will not be considered for price comparison purpose.
   d) The payment of CMC will be made on six monthly basis after satisfactory completion of said period, duly certified by end user on receipt of bank guarantee for 2.5 % of the cost of the equipment as per Section XV valid till 2 months after expiry of entire CMC period.
   e) There will be 98% uptime warranty during CMC period on 24 (hrs) X 7 (days) X 365 (days) basis, with penalty, to extend CMC period by double the downtime period.
   f) During CMC period, the supplier is required to visit at each consignee's site at least once in 6 months commencing from the date of the successful completion of warranty period for preventive maintenance of the goods.
   g) All software updates should be provided free of cost during CMC.
   h) Failure of the above [4. e) to 4. g)] by the supplier, may lead to the forfeiture of the Bank Guarantee for Annual CMC.
   i) The payment of CMC will be made as stipulated in GCC Clause 21.

Section – VII
Quality Control Requirements

(Proforma for equipment and quality control employed by the manufacturer(s)

Tender Reference No.

Date of opening

Time

Name and address of the Bidders:

Note: All the following details shall relate to the manufacturer(s) for the goods quoted for.

01 Name of the manufacturer
   a. full postal address with e mail address.
   b. telephone number
   c. fax number

02 Plant and machinery details

03 Manufacturing process details

04 Monthly (single shift) production capacity of goods quoted for
   a. normal
   b. maximum

05 Total annual turn-over (value in Rupees)

06 Quality control arrangement details
   a. for incoming materials and bought-out components
   b. for process control
   c. for final product evaluation

07 Test certificate held
   a. type test
   b. BIS/ISO certification
   c. any other

08 Details of staff
   a. technical
   b. skilled
   c. unskilled

Signature and seal of the Bidders

Section – VIII
Qualification Criteria

01. The intending Bidders must be a Manufacturer or the Manufacturer's authorized Agent.

02. a) In last 5 years ,till the date of tender opening, the manufacturer should have supplied and installed ,two similiar works each costing not less than Rs 40 lakhs meeting major parameters of technical specification and is functioning satisfactorily from the client's performance report anywhere in India .

b) The Bidders quoting as **authorized representative** of the manufacturer meeting the above Criteria 2(a) should have executed two similar works each costing not less than Rs 40 lakhs in the last five years till the date of tender opening of similar work meeting major parameters of technical specification which is functioning satisfactorily, from the client's performance report ,anywhere in India.

03. If necessary, HLL may inspect similar works done by the Manufacturer or the Manufacturer's authorized Agent and will collect the first hand information from the client. In case of any adverse remarks on performance of the Bidders is received, contrary to the certificate produced by the Bidders, or if the works are found to be of a quality not acceptable to HLL, the offer will be rejected without calling for any explanation from the Bidders.

04. The Bidders should have an average annual turnover of not less than Rs. 26 Lakhs in the last three financial years ending 31st March 2014. The Bidders should not have incurred any loss in more than two years during the immediate last five consecutive financial years. The relevent pages of balance sheet showing annual turnover and profit and loss account duly certified by Chartered Accountant shall be enclosed– Proforma 'A'- I.

05. The Bidders should have a permanent service facility in Kerala /Tamilnadu/Karnataka.

06 The Bidders shall submit the complience for technical specifcations and requirement as given in Section V and VI.

07 The firms should be registered with Income tax , VAT and Service Tax Authorities and copies of PAN , Service Tax Registration, VAT Registration have to be submitted along with application.

FORM 'A'

FINANCIAL INFORMATION

I. Financial Analysis – Details to be furnished duly supported by figures in profit & loss account for the last five years duly certified by the Chartered Accountant. (Copies to be attached).

A. Gross Annual Turnover:

2008-09	2009-10	2010-11	2011-12	2012-13	Average Annual Turnover

B. Profit

	2008-09	2009-10	2010-11	2011-12	2012-13
Profit for the year					

II. The below certificate is enclosed:

PAN & Service Tax Registration copies

Signature of Chartered Accountant with Seal
Signature of Applicant

Note:

(1) All Manufacturers /supplier should have a standing of 5 years in the Indian Market for a similar product line.

(2) Any false submission of information or false interpretation of specification will automatically disqualify the Bidders.

(3) The original Literature or the relevant part of the user/service manual should be attached as proof.

(4) **The suppliers should give 2 years warranty after the final acceptance and handing over.**

(5) **Demo should be arranged when asked for**

- Proforma for warranty submitted undertaking to give CMC for 03 years.

The supplier should give CMC for 3 years after the warranty period.

Cost of CMC will not be considered for price comparison purpose.

Note

1. The Bidders shall furnish a brief write-up, packed with adequate data explaining and establishing his available capacity/capability (both technical and financial) to perform the Contract (if awarded) within the stipulated time period, after meeting all its current/present commitments. The Bidders shall also furnish details of Equipment and Quality Control in the enclosed Section VIII.

2. Notwithstanding anything stated above, the Purchaser reserves the right to assess the Bidders capability and capacity to perform the contract satisfactorily before deciding on award of Contract, should circumstances warrant such an assessment in the overall interest of the Purchaser.

3. The Purchaser reserves the right to ask for a free demonstration of the quoted equipment at a pre determined place acceptable to the purchaser for technical acceptability as per the tender specifications, before the opening of the Price Tender.

Section – IX

TENDER FORM

Date_____

To

DVP(Tech), HLL Lifecare Limited, Infrastructure Development Division, 'Adarsh', TC 6/1718, Vettamukku, Thirumala P.O., Trivandrum – 605006.

No. _____dated _____

We, the undersigned have examined the above mentioned TE document, including amendment/corrigendum No. _____, dated _____ (*if any*), the receipt of which is hereby confirmed. We now offer to supply and deliver_____ *(Description of goods and services)* in conformity with your above referred document for the sum of _____ (total tender amount in figures and words), as shown in the price schedule(s), attached herewith and made part of this tender.

If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause 5, read with modification, if any, in Section - V – "Special Conditions of Contract", for due performance of the contract.

We agree to keep our tender valid for acceptance as required in the GIT clause 20, read with modification, if any in Section - III – "Special Instructions to Bidders" or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender up to the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities.

We confirm that we fully agree to the terms and conditions specified in above mentioned TE document, including amendment/ corrigendum if any

(Signature with date)

(Name and
designation) Duly authorised to sign tender for and on behalf of

Section – IXB
TENDER FORM (for price bid)

Date_____

To

DVP (Technical), HLL Lifecare Limited, Infrastructure Development Division, 'Adarsh',TC 6/1718, Vettamukku, Thirumala P.O., Trivandrum – 605006.

No. _____dated _____

We, the undersigned have examined the above mentioned TE document, including amendment/corrigendum No. _____, dated _____ (*if any*), the receipt of which is hereby confirmed. We now offer to supply and deliver_____ *(Description of goods and services)* in conformity with your above referred document for the sum of _____ (total tender amount in figures and words), as shown in the price schedule(s), attached herewith and made part of this tender.

If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause 5, read with modification, if any, in Section - V – "Special Conditions of Contract", for due performance of the contract.

We agree to keep our tender valid for acceptance as required in the GIT clause 20, read with modification, if any in Section - III – "Special Instructions to Bidders" or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender up to the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities.

We confirm that we fully agree to the terms and conditions specified in above mentioned TE document, including amendment/ corrigendum if any

(Signature with date)

(Name and designation) Duly authorised to sign tender for and on behalf of

Sl No	Description of Item	Unit	Qty	Rate (in words and figures)	Amount (in words and figures)
1	**Auditorium- Second Floor**				
	Video & Display System				
1.1	**Supply, Installation, Programming, Testing & Commissioning of 8500 lumens projector with the following specifications, complete with all accessories as required**				
1.1.1	The brightness of the projectors should not be less than 8500 ANSI Lumens				
1.1.2	The Display method should be DLP chip x 1 DLP projection system				
1.1.3	The Panel size of the projector should be 17.0 mm (0.67 in) diagonal				
1.1.4	The projector should have a aspect ratio of 16:10				
1.1.5	The projector should features Dual-lamp drive system with two no's 420 W lamps to provide high brightness				
1.1.6	The total Pixels should be 2,304,000 (1,920 x 1,200) pixels				
1.1.7	The lens should have Powered zoom (throw ratio 1.7-2.4:1)				
1.1.8	powered focus F 1.7-1.9, f 25.6-35.7 mm				
1.1.9	The projector should be capable of achieving Screen size 50–600 inch diagonal from 1.27-15.24 m				
1.1.10	The Center-to-corner uniformity should be 90%				
1.1.11	The Contrast ratio should not be less than 10,000:1				
1.1.12	The Resolution of the projector should be 1,920 x 1,200 pixels				

1.1.13	The projector should have Optical axis shift of Vertical : +50 % from center of screen (powered) & Horizontal : ±10 % from center of screen (powered)				
1.1.14	The projector should have Vertical Keystone correction range of ±40° & Horizontal Keystone correction range of ±15°				
1.1.15	The projector should be able to mount on Ceiling				
1.1.16	The projector mandatorily should have atleast one SDI (SD-SDI, HD-SDI & 3G-SDI) input				
1.1.17	The projector mandatorily should have atleast one HDMI input which is compatible with HDCP				
1.1.18	The Projector should also have at least 2 RGB input & 1 DVI D input				
1.1.19	The projector mandatorily should have atleast one 3D SYNC input and output				
1.1.20	The projector also should have atleast one Composite Video input				
1.1.21	The Projector should have atleast 2 stereo Audio input, one RCA input & One Stereo Audio output				
1.1.22	The Projector should also have Serial input for external control & Serial output for link control				
1.1.23	The Projector should also have two remote control input for wired remote control & external control (parallel) & Remote control output for link control				
1.1.24	The projector should be compatible with both passive and active 3D Projection System				
1.1.25	Projector should achieve 10,000:1 contrast without lowering its high brightness in order to reproduce deeper, richer blacks, and provides images with more detailed textures.				

1.1.26	Projector should features RGB Booster for achieving high image quality with levels of color reproduction and brightness that make each color stand out.				
1.1.27	Projector should have the capability to optimizes the sharpness of each image, based on the super-high-, high-, medium-, and low-frequency components of the extracted image information				
1.1.28	Projector should have the capability to optimizes image quality to improve the color perception of the projected image in bright rooms				
1.1.29	Projector should have imaging mode is similar to DICOM part 14, a medical imaging standard in order to reproduces X-ray images with remarkable clarity				
1.1.30	Projector should have Rec.709 mode for HDTV projection				
1.1.31	Projector should features Waveform monitor function which shows waveforms on the screen and adjust the settings either automatically or manually as preferred during the instances wherein the output level of the source device fluctuates due to the performance of the device or its cable connections, the original black and white levels of the image content cannot be reproduced correctly				
1.1.32	Projector should features native WUXGA resolution for full-HD viewing.				
1.1.33	The projector should features 3D color management system , Full 10-bit image processing, Progressive cinema scan (3:2 pull down), Dynamic sharpness control & Digital noise reduction				

1.1.34	The projector should features Dual lamp system in order to eliminate the threat of interruption if one lamp fail				
1.1.35	Projector should equipped with a DIGITAL LINK terminal for transmission of HDMI, uncompressed HD digital video and control signals (Ethernet, RS-232C) for up to 100 meters (328 feet) through a single CAT5e (STP) cable or higher.				
1.1.36	The projector should have lamp life of atleast 4000hrs in eco mode & 3000 hrs in normal mode				
		Each	1.00		
1.2	**Supply, Installation, Testing & Commissioning of Zoom lens for 8500 lumens Projector with the following specifications, complete with all accessories as required**	Each	1.00		
1.2.1	Zoom lens for above projector to achieve 222" diagonal at 16:10 aspect ratio from a distance between 3.8m (Minimum) & 4.75m (Maximum)				
1.2.2	Focal distance of the lens should be 11.8 to 14.6mm				
1.2.3	F value of the lens should be 1.85-2.20				
1.2.4	Zoom Lens shall be from the same OEM of above projector				
1.3	**Supply, Installation, Testing & Commissioning of ceiling mount for 8500 Lumens Projector of following specifications , complete with all accessories as required.**	Each	1.00		

1.3.1	Heavy Duty Universal Projector Mount to provide the strong support for mounting heavy LCD/CRT projectors.				
1.3.2	The mount shall features independent roll : 5°, pitch : 20°and yaw 360°adjustments for quick and precise projector registration				
1.3.3	The mount shall be flush mount to ceiling				
1.3.4	The mount shall features quick connect/disconnect for convenient lamp and filter access on most projectors				
1.3.5	The mount shall provide cable management through top of the mount without additional accessories				
1.3.6	The mount shall include the universal HBU bracket that is compatible with above heavy duty projectors.				
1.3.7	The mount shall be UL Listed				
1.4	**Supply, Installation,, Testing & Commissioning of 222 inch motorized screen for projector with the following specifications, complete with all accessories as required.**	Each	1.00		
1.4.1	222inch (564 cm) diagonal motorized screen with built-in Low voltage controller				
1.4.2	Screen shall have scratch-resistant steel case with white polyester finish and matching end caps.				
1.4.3	Screen should operate instantly at the touch of a button and stops automatically in the "up" and "down" positions.				
1.4.4	The motor shall be inside the roller, for a clean low-profile appearance				
1.4.5	Viewing surface can be lowered to any position at the touch of a switch.				
1.4.6	Screens shall have black borders on				

	all four sides				
1.4.7	Surface Material of the screen should be Matt White				
1.4.8	Image Format of the screen should be 16:10				
1.4.9	Image/Viewable Area of the screen should be 9.79ft Height x 15.67ft width				
1.4.10	The screen weight should be less than 65kg				
1.5	**Supply, Installation, Programming, Testing & Commissioning of desktop personal computer of following specifications, complete with all accessories as required.**	Each	1.00		
1.5.1	Slim tower PC with 4th Generation Intel® Core™ i3-4150 processor (3M Cache, 3.5 GHz)				
1.5.2	The PC shall have integrated Intel® HD Graphics				
1.5.3	The Memory of the PC shall be 4GB (1X4GB) Single Channel DDR3 1600MHz SDRAM Memory				
1.5.4	The aspect ratio of the PC shall be 16:9				
1.5.5	The PC shall be loaded with windows 7/windows 8 operating system				
1.5.6	The PC shall have Integrated Giga bit 10/100/1000 Ethernet				
1.5.7	The PC shall have DVD RW optical disk drive				
1.5.8	The PC shall have 4 no's USB 2.0 & 2 No's USB 3.0 terminal				
1.5.9	The PC shall have one embedded HDMI output				
1.5.10	The PC shall provide two HDMI output by splitting the embedded HDMI output with suitable HDMI splitter				
1.5.11	The PC shall also have one VGA, one RJ-45 (10/100/1000 Ethernet) terminal				

1.5.12	The PC shall have 3-stack audio jacks supporting 5.1 surround sound				
1.5.13	The PC package shall contain wireless mouse and keyboard				
1.6	**Supply, Installation, Programming, Testing & Commissioning of tablet monitor of size of 15.6 inch or more with the following specifications, complete with all accessories as required.**	Each	1.00		
1.6.1	The Tablet Monitor shall have 15.6-inch or more active matrix TFT LCD display				
1.6.2	The Tablet Monitor shall be of WXGA(1366 x 768) Resolution				
1.6.3	The Cordless Pen used for annotation on the Tablet Monitor shall be battery free				
1.6.4	The Cordless Pen shall have 512 level of pressure sensivity				
1.6.5	The Tablet Monitor display shall have 16.77 M Colours				
1.6.6	The response time of the tablet monitor should be less than 9ms				
1.6.7	The Tablet Monitor shall have Luminance of not less than 250cd/m2				
1.6.8	The Contrast Ratio of Tablet Monitor shall not be less than 400:1				
1.6.9	The Tablet Monitor Shall have atleast one DVI-I Inputs & output Terminal				
1.6.10	The aspect Ratio of Tablet Monitor shall be 16:9				
1.6.11	The Cordless pen with the tablet monitor shall deliver more than 500 level of pressure sensitivity				
1.6.12	The Tablet Monitor Shall have atleast 2no's built in USB interface				
1.6.13	The Tablet Monitor shall be less than 5 kg				

1.6.14	The Tablet Monitor should have adjustable stand that can be set to incline from 19 to 72 Degrees				
1.6.15	The Tablet Monitor shall have VCCI Class B, FCC Part15 Subpart B (class B) and C,CE, KCC, BSMI, C-tick, CB, CCC, GOST-R, China RoHS,Korean RoHS, EU RoHS Certifications				
1.6.16	The Tablet Monitor should be compatible with Windows 7 / Vista / XP / 2000, Mac OS X 10.4 or later				
1.7	**Supply, Installation, , Testing & Commissioning of Type A to A USB cable of following specifications, complete with all accessories as required.**	Each	1.00		
1.7.1	10ft USB 3.0 Type A to Type A cable				
1.7.2	USB 3.0 specification of the cable also works with USB 2.0/ 1.1 devices.				
1.7.3	The cable shall suitable for data transfer speeds up to 5 GBps				
1.7.4	The cable shall be fully shielded for error free connections				
1.7.5	The cable shall be Compatible with PC windows 7 / vista / XP				
1.8	**Supply, Installation, Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**	Each	1.00		
1.8.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input				
1.8.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw				
1.8.3	The wall plate shall be of one gang size				
1.8.4	The wall Plate shall be HDCP				

	Compliant				
1.8.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.				
1.8.6	The wall plate should be of metal construction				
1.9	**Supply, Installation, Programming, Testing & Commissioning of switcher unit with the following specifications, complete with all accessories as required.**	Each	1.00		
1.9.1	The switcher shall transmits HDMI or analogue video, control, and analogue audio up to 70 meters over a shielded CATx cable				
1.9.2	The switcher shall provide atleast two HDMI inputs, one VGA Video input and one twisted pair output.				
1.9.3	The switcher shall provide audio input of atleast one analogue stereo, unbalanced & two digital audio, embedded in the HDMI and audio output of one analogue audio over twisted pair & one embedded digital audio over twisted pair signal				
1.9.4	The Switcher shall support computer video up to 1920x1200, including 1080p/60 and 2K.				
1.9.5	The switcher shall perform Digital conversion of analogue input signals.				
1.9.6	The switcher shall features audio input assignment, and remote power capability.				
1.9.7	The Switcher shall manage EDID communication between the display device and input sources in order to ensure the correct video formats are displayed reliably.				
1.9.8	The Switcher shall allow auto-switching between inputs				

1.9.9	The switcher shall support a maximum transmission distance of 70 meters for all compatible resolutions when used with CATx shielded twisted pair cable				
1.9.10	The switcher shall accept stereo analogue audio signals for simultaneous transmission over the same shielded twisted pair cable and the analogue audio shall not embedded onto the digital video signal.				
1.9.11	The analogue audio input of the switcher can be assigned to any of the video input				
1.9.12	The switcher shall Support HDMI specification features including data rates up to 6.75 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats				
1.9.13	The switcher should be compatible with a broad range of multi-channel audio signals, to provide reliable operation with HDMI sources.				
1.9.14	The switcher shall transmit bidirectional RS-232 control and IR signals can be transmitted alongside the video signal, for controlling remote AV devices without the need for additional cabling.				
1.9.15	The switcher shall be able to do remote powering of twisted pair transmitter or receiver over the twisted pair connection				
1.9.16	The switcher shall continuously verifies HDCP compliance for quick & reliable switching				
1.9.17	The switcher shall be HDCP compliant				
1.9.18	The switcher shall have RS-232 Control port				
1.9.19	The switcher shall provide visual indication of system status for real-time feedback and monitoring of				

	key performance parameters.				
1.9.20	The switcher shall provide a means for validating signal flow and operation for quick identification of connectivity issues.				
1.9.21	The switcher should be capable of continuously maintaining DDC communication of EDID and HDCP between a source and display, to ensure direct compatibility and optimal signal transmission between devices.				
1.10	**Supply, Installation, Testing & Commissioning of suitable mounting kit for switcher with the following specifications, complete with all accessories as required.**	Each	1.00		
1.10.1	The Mount kit shall be Low-Profile Mount Kit that can be used with quarter-rack and half-rack, two-piece enclosure products,.				
1.10.2	The mount shall allow rack-mountable equipment to be installed under a table, desk, or other flat surface				
1.10.3	The mount shall be perfectly fit for the above switcher				
1.10.4	The under desk Mount Kit shall be from the same OEM of the above switcher				
1.11	**Supply, Installation, Programming, Testing & Commissioning of digital twisted pair reciever of the following specifications complete with all accessories as required**	Each	1.00		
1.11.1	Digital twisted pair receiver for receiving HDMI, Analogue audio, bidirectional RS-232 and IR signals upto 70 meters over a shielded CATx cable				

1.11.2	Digital twisted pair receiver also capable of receiving 4K@30 upto 40m over a shielded CATx cable				
1.11.3	Digital twisted pair receiver shall supports computer video up to 2560x1600, HDTV 1080p/60 Deep Color, and 4K resolutions				
1.11.4	Resolution range of the Digital twisted pair receiver shall be 1920x1200 or 1080p @ 60 Hz; 8, 10, or 12 bit color depth 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz				
1.11.5	Digital twisted pair receiver is compatible with a broad range of multi-channel audio signals, to provide reliable operation with HDMI sources.				
1.11.6	Digital twisted pair receiver shall supports HDMI specification features include data rates up to 10.2 Gbps (3.4 Gbps/colour), Deep Color up to 12-bit, 3D, embedded HD lossless audio formats, and CEC pass-through				
1.11.7	Maximum Pixel clock of the receiver shall be 300MHz				
1.11.8	Digital twisted pair receiver shall accepts analog stereo audio signals from a compatible transmitter over the same shielded twisted pair cable				
1.11.9	Digital twisted pair receiver is capable of receiving 1080p/60 Deep Color, 1920x1200, and 2K signals up 70 meters				
1.11.10	Outputs connector of the twisted pair receiver Input shall be one twisted pair input on RJ-45				
1.11.11	Outputs connector of the twisted pair receiver should be HDMI connector, captive screw connector for stereo audio				

1.11.12	The receiver can be remotely powered over the shielded twisted pair cable by compatible twisted pair transmitters, allowing both devices to share one power Supply, Installation, Programming, Testing & Commissioning				
1.11.13	The Receiver should be capable of continuously maintaining DDC communication of EDID and HDCP between a source and display, to ensure direct compatibility and optimal signal transmission between devices.				
1.11.14	The receiver should be capable of receiving analog stereo audio signal over the same twisted pair cable as the HDMI and control signals, in order to eliminate the need for a separate cable run to support analog audio at the receiver.				
1.11.15	The Receiver should supports simultaneous transmission of bidirectional RS-232 and IR signals from a control system, providing remote control to source equipment or remote displays.				
1.11.16	The receiver shall be capable of receiving the signal transmitted from the distance of 230 feet (70 meters) by the transmitter for all compatible resolutions when used with CAT 5e twisted pair cable				
1.11.17	The receiver shall provide visual indication of system status for real-time feedback and monitoring of key performance parameters.				
1.12	**Supply, Installation, Programming, Testing & Commissioning of Matrix switchers of following specifications complete with all accessories as required.**	Each	1.00		

1.12.1	4K, 8x4 matrix switcher with HDMI and twisted pair inputs and outputs, scaling, an integrated audio power amplifier, comprehensive audio DSP, and a built-in control processor				
1.12.2	Matrix switcher should mandatorily be 4K-capable switcher for integration with computers equipped with compatible graphics cards, 4K media players, 4K cameras, and displays at 4K or UHD native resolution.				
1.12.4	All HDMI and twisted pair inputs of the matrix switcher should accept high resolution signals up to 4K and UHD and can be passed only to the HDMI outputs				
1.12.5	Minimum output of the matrix switcher shall be scaled output of 1920 x 1200 to match the native resolution of the display device				
1.12.6	The matrix switcher shall have Six HDMI input, two twisted pair inputs on RJ-45, six stereo balanced/unbalanced audio inputs on captive screw, four mic/line audio inputs on captive screw				
1.12.7	The device shall have Two HDMI output, two twisted pair outputs on RJ-45, one S/PDIF digital audio output on coaxial RCA, four variable audio outputs on captive screw & speaker outputs on 5 mm, 4-pole captive screw connector				
1.12.8	Two twisted pair inputs and two twisted pair outputs of the device shall support digital signal transmission of HDMI or DVI plus control and analog audio up to minimum 70 meters over a shielded CATx cable				

1.12.9	The output rate from 640x480 to 1920x1200, including HDTV 1080p/60 and 2K shall be individually selected for each of the two scaled twisted pair outputs of the matrix switcher				
1.12.10	The twisted outputs of the device could be configured for compatibility with HDBaseT-enabled displays to send digital video and embedded audio, plus bidirectional RS-232 and IR signals up to minimum 70 meters over a shielded CATx cable				
1.12.11	The device shall reshapes and restores timing of digital video signals at each HDMI output, eliminating high frequency jitter to ensure reliable transmission over long cables				
1.12.12	The device shall supports a maximum transmission distance of minimum 70 meters for all compatible resolutions when used with CATx shielded twisted pair cable				
1.12.13	The device shall provide power to atleast two twisted pair transmitters and two twisted pair receivers over the twisted pair connections				
1.12.14	The device shall capable of managing EDID communication between the display devices and input sources to ensure that the correct video formats are displayed reliably.				
1.12.15	The device shall automatically enables or disables embedded audio and InfoFrames, and sets the correct colour space for proper connection to HDMI and DVI displays				
1.12.16	The device shall provides real-time verification of HDCP status for each digital video input and output				

1.12.17	The device shall authenticate and maintains continuous HDCP encryption between input and output devices for HDMI signals with protected content, to ensure quick and reliable switching.				
1.12.18	The device shall have four mic/line inputs with 48 volt phantom power that can be matrix mixed into any output.				
1.12.19	The device shall have integrated audio DSP provides 32/64-bit floating point audio DSP processing in order to simplify management of gain staging while reducing the possibility of DSP signal clipping.				
1.12.20	The device shall have studio grade 24-bit/48 kHz analogue-to-digital and digital-to-analogue audio converters				
1.12.21	The device shall features HDMI Audio de-embedding & HDMI Audio embedding				
1.12.22	The device shall automatically reduces program audio when a microphone or other incoming audio signal is detected, replacing the need for a separate audio ducking processor				
1.12.23	The device shall provides master volume control for the variable line level and amplified audio outputs, as well as a separate control for mic volume.				
1.12.24	Gain or attenuation can be adjusted for each two-channel audio input of the device to eliminate noticeable differences when switching between sources.				
1.12.25	The device shall provide the capability to break two-channel audio away from its corresponding video signal and route to the audio outputs				

1.12.26	The device shall provide an S/PDIF output for two-channel PCM audio or encoded bit stream audio for Dolby® or DTS® multi-channel surround sound				
1.12.27	The device shall features fixed low latency DSP processing of not more than 4.5 ms within the device to keep the audio in sync with video, and prevents distractions to the presenter resulting from delayed live audio.				
1.12.28	The device shall have digital audio expansion port for cascading digital Audio DSP				
1.12.29	The device shall have inbuilt Class D stereo amplifier with atleast 50 watts per channel into 4 ohms and 25 watts per channel into 8 ohms.				
1.12.30	The device shall have integrated control processor for AV system control and/or shall be controllable through a external control processor				
1.12.31	The device should features bidirectional control insertion eliminates the need for control system wiring to remote devices				
1.12.32	The device shall have captive screw serial ports that can control two RS-232 devices.				
1.12.33	The device shall have Captive screw serial port that can communicate with one RS-232/RS-422/RS-485 serially controlled device.				
1.12.34	The device shall have Two IR/Serial ports for one-way control of external devices				
1.12.35	The device shall have four Digital I/O ports for interfacing with other systems in the room.				
1.12.36	The device shall have Four relays for controlling room functions				

1.12.37	The device shall have Integrated three port network switches for easy connection of touch panels or other network controlled devices.				
1.12.38	The device shall supports 10/100/1000Base-T				
1.12.39	The device shall support Ethernet-controllable devices for control of multiple Ethernet-enabled AV devices such as displays, switchers, and sources.				
1.12.40	The device shall features automatic clock synchronization allows touch panel to display the accurate time and date				
1.12.41	The device shall have RS-232 control port				
1.12.42	The device should be 2U Rack-mountable				
1.13	**Supply, Installation, Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**	Each	2.00		
1.13.1	3ft Ultra-flexible low bend radius HDMI cable				
1.13.2	The cable shall be 1080p/60 verified				
1.13.3	The cable shall of 36 AWG copper wire construction				
1.13.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
1.13.5	The cable shall support Data rates to 10.2 Gbps				
1.13.6	The cable shall support Refresh rates to 120 Hz				
1.13.7	The cable shall support Color depth to 48 bits - 16 bits per colour				
1.13.8	The cable shall have Gold plated contacts				
1.14	**Supply, Installation, Testing & Commissioning of 6 ft HDMI cables of following specifications complete as required**	Each	5.00		
1.14.1	6ft Ultra-flexible HDMI cable				

1.14.2	The cable shall be 1080p/60 verified				
1.14.3	The cable shall of 30 AWG copper wire construction				
1.14.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
1.14.5	The cable shall support Data rates to 10.2 Gbps				
1.14.6	The cable shall support Refresh rates to 120 Hz				
1.14.7	The cable shall support colour depth to 48 bits - 16 bits per colour				
1.14.8	The cable shall have Gold plated contacts				
1.15	**Supply, Installation, Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**	Each	1.00		
1.15.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.				
1.15.2	The cable shall be Thin, flexible cable with low profile VGA connectors				
1.15.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side				
1.15.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end				
1.15.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio				
1.15.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection				
1.15.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation				
1.15.8	The cable shall be AWM 20276 rated				

1.16	**Supply, Installation, Testing & Commissioning of 6 ft High resolution VGA cable of following specifications, complete as required**	Each	1.00		
1.16.1	6ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.				
1.16.2	The cable shall be Thin, flexible cable with low profile VGA connectors				
1.16.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side				
1.16.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end				
1.16.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio				
1.16.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection				
1.16.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation				
1.16.8	The cable shall be AWM 20276 rated				
1.17	**Supply, Installation, Testing & Commissioning of 6 ft HDMI to DVI-D cable of following specification, complete as required**	Each	2.00		
1.17.1	6ft Standard Speed HDMI to DVI-D cables				
1.17.2	The cable shall be 1080p/60 verified				
1.17.3	The cable shall of 28 AWG copper wire construction				
1.17.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
1.17.5	The cable shall support Data rates				

	to 4.95 Gbps				
1.17.6	The cable shall support Refresh rates to 60 Hz				
1.17.7	The cable shall support colour depth to 24 bits - 8 bits per colour				
1.17.8	The cable shall have Gold plated contacts				
1.17.9	The cable shall be NEC CL2 rated				
	Audio System				
1.18	**Supply, Installation, Testing & Commissioning of Gooseneck type microphone of following specifications complete with all accessories as required**	Each	2.00		
1.18.1	500 mm (20") length, condenser gooseneck microphone (cardioid), with led ring, switch and 3-pin male XLR connector				
1.18.2	Should be insensitive to wireless Communication devices such as mobile phones.				
1.18.3	Type of Transducer should be Electret condenser				
1.18.4	Operating principle should be Pressure gradient				
1.18.5	Polar pattern should be Cardioid				
1.18.6	Frequency response of 50 - 19,000 Hz				
1.18.7	Open circuit voltage of 17 mV/Pa				
1.18.8	Nominal impedance should be less than 200 Ω				
1.18.9	Load impedance should be greater than equal to 1 kΩ				
1.18.10	Signal to noise ratio / noise voltage should be 69 dB [A] / 6.0 µV [A]				
1.18.11	Max. SPL should be 107 dB [SPL @ 1% THD]				
1.18.12	Equivalent SPL should be 25 dB [A]				
1.18.13	Microphones can be able to get powered with phantom power source Supply, Installation, Programming, Testing & Commissioninging 8 to52 volts				

1.18.14	Head diameter of the microphone should be less than 15mm				
1.18.15	Gooseneck diameter should be less than 7mm				
1.18.16	Shaft diameter should be less than 22mm				
1.19	**Supply, Installation, Testing & Commissioning of shock mount for Gooseneck microphone of the following specification complete with all accessories as required**	Each	2.00		
1.19.1	Flexible shock mount fixture for above gooseneck microphone with XLR male providing maximum isolation from physical vibration				
1.19.2	The shock mount should be from the same OEM of above Gooseneck Microphone				
1.20	**Supply, Installation, Testing & Commissioning of wired type handheld microphone of following specifications , complete with all accessories as required.**	Each	1.00		
1.20.1	Wired dynamic microphone with a cardioid polar pattern				
1.20.2	Microphone should features a noiseless on/off switch				
1.20.3	Microphone shall have finely-tuned volume behind the diaphragm for free diaphragm vibrations and improved bass response				
1.20.4	Should have treble resonator to expand the upper frequency range				
1.20.5	Should have special sound holes behind the diaphragm for a frequency-independent polar pattern & maximum feedback reduction				
1.20.6	The microphone should have a frequency response of 50 - 17000 Hz on close miking and 80 to 17000Hz at Distant(@1m) miking				

1.20.7	The Operating principle of the microphone should be Pressure gradient				
1.20.8	Open circuit voltage at 1 kHz should be 2.4 mV/Pa (-52.5 dBV) ±3 dB				
1.20.9	Nominal impedance of the Microphone should be 600 ohms				
1.20.10	Load impedance of the Microphone should be greater than or equal to 2 kΩ				
1.20.11	Length of the Microphone should be less than 20cm				
1.20.12	Weight of the Microphone should be less than 280g				
1.20.13	The connector of the Microphone should be 3 Pin XLR Male				
1.20.14	Should have accessories like XLR cable, clamp and storage bag along with Microphone System				
1.21	**Supply, Installation, Programming, Testing & Commissioning of wireless handheld microphone of following specifications , complete with all accessories as required.**				
1.21.1	Wireless handheld Microphone system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range	Each	2.00		
1.21.2	Wireless handheld Microphone system should have true diversity receiver & handheld transmitter				
1.21.3	The receiver of wireless handheld system should be one-channel true diversity receiver				

1.21.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.				
1.21.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.				
1.21.6	The receiver should have Scan function to start an automatic search for interference-free frequencies				
1.21.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter				
1.21.8	The receiver should have RF level indicator & AF level indicator				
1.21.9	The receiver should have On/off switch with power on LED				
1.21.10	The receiver should have Switching bandwidth of 24 MHz				
1.21.11	Nominal deviation of the receiver should be ± 40 kHz				
1.21.12	The receiver should have removable TNC antennae				
1.21.13	The Sensitivity of the receiver should be 2 µV				
1.21.14	Signal-to-noise ratio should be greater than 110 dB(A)				
1.21.15	T.H.D of receiver should be less than 0.5% at 1 kHz				
1.21.16	The modulation of handheld transmitter should be FM				
1.21.17	The handheld transmitter shall operate in the frequency range 506 - 530 MHz, 668 - 692 MHz, 774 - 798 MHz, 790 - 814 MHz or 841 - 865				

	MHz				
1.21.18	The handheld transmitter shall have Modular design with interchangeable microphone capsules				
1.21.19	The handheld transmitter shall have Integrated antenna				
1.21.20	The handheld transmitter shall have Plastic housing				
1.21.21	The handheld transmitter ACT function (Automatic Channel Targeting) for automatic frequency setting				
1.21.22	Max. SPL of the handheld transmitter should be 146 dB				
1.21.23	The Signal-to-noise ratio of the handheld transmitter should be greater than 110 dB				
1.21.24	The T.H.D of the handheld transmitter should be less than 0.5% at 1 kHz				
1.21.25	Radiated transmitter power of handheld transmitter shall be 10 mW				
1.21.26	AF transmission range should be 55 - 18,000 Hz at 80 dB SPL				
1.21.27	Transmission range of the handheld transmitter should be more than 90 m				
1.21.28	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries				
1.21.29	Length of the handheld transmitter should be less than 200mm				
1.21.30	Shaft of the handheld transmitter should be less than 40 mm				
1.21.31	Weight of the handheld transmitter with batteries shall be less than 170g				
1.21.32	The receiver & the handheld transmitter should have On/off switch with power on LED				

1.21.33	Polar pattern of the microphone should be Hypercardioid				
1.21.34	Transducer type should be Dynamic				
1.21.35	Frequency response of the microphone should be 90 - 16,000 Hz				
1.21.36	Nominal impedance of the microphone should be 280 Ω				
1.21.37	Load impedance of the microphone should be 1 kΩ				
1.21.38	Open circuit voltage of the microphone should be 3 mV / Pa				
1.21.39	Magnetic field suppression of the microphone should be greater than 20 dB at 50 Hz Dimensions				
1.21.40	Head diameter of the microphone shall be less than 60 mm				
1.22	**Supply, Installation, Programming, Testing & Commissioning of clip on type microphone of following specification , complete with all accessories as required.**				
1.22.1	Hypercardioid clip-on microphone designed for unobtrusive miking of speech and instruments				
1.22.2	Clip-on microphone should have wide range frequency response				
1.22.3	Microphone should be easily interfaces with the below wireless body pack transmitters	Each	1.00		
1.22.4	The microphone should have Lavaliere or instrument mounting capabilities				
1.22.5	The microphone should be powered either by pocket transmitter or phantom power converter for wired use.				
1.22.6	The transduser type of the microphone should be electret condenser				
1.22.7	The microphone should have a frequency response of 40 - 20.000				

	Hz				
1.22.8	The Operating principle of the microphone should be Pressure gradient				
1.22.9	Max. SPL at 1 kHz for k = 1% should be 120 dB				
1.22.10	S/N ratio rel. to 1 PA should be 60 dB				
1.22.11	Open circuit voltage at 1 kHz should be 30 mV/Pa = -30 dBV				
1.22.12	Nominal impedance of the Microphone should be 200 ohms				
1.22.13	Load impedance of the Microphone should be 1 kΩ				
1.22.14	Length of the Microphone should be less than 25mm				
1.22.15	Weight of the Microphone should be less than 20g				
1.22.16	The connector of the Microphone should be 3 Pin XLR Male				
1.22.17	Should have accessories like XLR cable, clamp and storage bag along with Microphone System				
1.23	**Supply, Installation, Programming, Testing & Commissioning of Wireless Lavaliere Microphone System of the following specifications, complete with all accessories as required.**	Each	1.00		
1.23.1	Wireless system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range				
1.23.2	Wireless Microphone system should have true diversity receiver pocket transmitter & condenser lavaliere Microphone (Omni directional)				
1.23.3	The receiver of wireless system should be one-channel true				

	diversity receiver				
1.23.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.				
1.23.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.				
1.23.6	The receiver should have Scan function to start an automatic search for interference-free frequencies				
1.23.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter				
1.23.8	The receiver should have RF level indicator & AF level indicator				
1.23.9	The receiver should have On/off switch with power on LED				
1.23.10	The receiver should have Switching bandwidth of 24 MHz				
1.23.11	Nominal deviation of the receiver should be ± 40 kHz				
1.23.12	The receiver should have removable TNC antennae				
1.23.13	The Sensitivity of the receiver should be 2 µV				
1.23.14	Signal-to-noise ratio should be greater than 110 dB(A)				
1.23.15	T.H.D of receiver should be less than 0.5% at 1 kHz				
1.23.16	The belt pack transmitter should have ACT infra red interface for frequency transmitting from receiver to transmitter				

1.23.17	The belt pack transmitter should operates in the frequency range 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz or 841 to 865 MHz.				
1.23.18	The belt pack transmitter should have adjustable gain control so as to adjust input sensitivity for various microphones or instruments				
1.23.19	The belt pack transmitter should have 4-pin mini XLR input connector (male) to connect microphones or instruments				
1.23.20	The belt pack transmitter should have GT/MT switch to select between microphone or instrument inputs				
1.23.21	The belt pack transmitter should have Swiveling clip to attach to belts, waistbands or guitar straps				
1.23.22	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries				
1.23.23	The Modulation of the belt pack transmitter should be FM				
1.23.24	Nominal deviation of the belt pack transmitter should be ± 40 kHz				
1.23.25	Radiated transmitter power of the belt pack transmitter should be 20 mW				
1.23.26	Signal-to-noise ratio of the belt pack transmitter should be greater than 110 dB(A)				
1.23.27	T.H.D of belt pack transmitter should be less than 0.5% at 1 kHz				
1.23.28	Frequency response of the belt pack transmitter should be 50 Hz - 18,000 Hz				
1.23.29	Weight with batteries of the belt pack transmitter should be less than 150 g				
1.23.30	The lavaliere Microphone should have omnidirectional polar pattern				
1.23.31	The lavaliere Microphone should be battery or phantom powered				

1.23.32	Transducer type should be Condenser (back electret)				
1.23.33	Operating principle of the lavaliere Microphone should be Pressure				
1.23.34	Frequency response of the lavaliere Microphone should be 25 - 20,000 Hz				
1.23.35	Open circuit voltage at 1 kHz of the lavaliere Microphone should be30 mV				
1.23.36	Nominal impedance of the lavaliere Microphone should be less than or equal to 200 ohms				
1.23.37	Load impedance of the lavaliere Microphone should be greater than or equal to 1 KΩ				
1.23.38	Max. SPL at 1 kHz of the lavaliere Microphone should be 120 dB				
1.23.39	S/N ratio rel. to 1 Pa of the lavaliere Microphone should be approx. 60 dB				
1.23.40	Length of the lavaliere Microphone should be less than 14 mm				
1.23.41	Head diameter of the lavaliere Microphone should be less than 8mm				
1.23.42	Weight of the lavaliere Microphone without cable should not exceed 2 grams				
1.24	**Supply, Installation, Programming, Testing & Commissioning of Audio mixer of following specifications, complete with all accessories as required.**	Each	1.00		
1.24.1	The mixer shall have studio-grade, discrete Class-A mic preamps with individually switchable 48V phantom power in order to deliver more power with lower impedance.				
1.24.2	The mixer shall have low-cut filter and a 26dB pad				
1.24.3	The Mixer Shall have 10 Microphone Inputs with 48V Phantom Power and HPF per				

	Channel				
1.24.4	The Mixer Shall have 16 Line Inputs (8mono and 4 stereo)				
1.24.5	The Mixer Shall have 2TR Inputs to accept the Output from Analogue Devices or iPod/iPhone				
1.24.6	The Mixer shall have2 AUX Sends + 2 FX Sends				
1.24.7	The Mixer shall have 4 GROUP Buses + ST Bus				
1.24.8	The mixer should have professional 1-knob Compressors with LED Indicators				
1.24.9	The mixer should have high-grade Dual Digital Effects Processors				
1.24.10	The mixer shall have dedicated stereo Digital Hybrid channels				
1.24.11	The mixer shall have Priority Ducker for prioritizing announcements and other signals,				
1.24.12	The mixer shall have leveler for global level control				
1.24.13	The mixer shall have Stereo Image feature to adjusts the width of stereo tracks,				
1.24.14	The mixer shall feature 14 band and flex 9 band modes that can easily be controlled via internal display				
1.24.15	Total harmonic distortion of the mixer should be 0.02% (20Hz-20kHz@ +14dBu)				
1.24.16	Frequency response of the mixer should be +0.5/-1.0dB 20Hz - 20kHz, refer to the nominal output level @1kHz				
1.24.17	The mixer shall feature a built-in USB port to connect and charge your iPod or iPhone for seamless playback with a single connection.				
1.24.18	The mixer shall feature direct recording to a conventional USB storage device				
1.24.19	The mixer should have Integrated Rack-ears for Easy Rack Mounting				

1.24.20	The mixer shall have sweepable mid equalizer				
1.24.21	The mixer shall feature very steep shelving of the high and low frequencies				
1.25	**Supply, Installation, Programming, Testing & Commissioning of Digital system controller of following specifications, complete with all accessories as required.**				
1.25.1	Two balanced XLR analogue inputs and six balanced XLR analogue outputs digital system controller that provides multiple X-Over, EQ, Delay and Limiting options				
1.25.2	Digital system controller shall be network enabled fin order to facilitate networking capability with two XLR network link ports				
1.25.3	Input Impedance should be greater than 10k Ohm electronically balanced	Each	1.00		
1.25.4	Maximum Input level should be +20dBu				
1.25.5	Output Impedance should be less than 100 Ohm, ground balanced				
1.25.6	Maximum Output Level should be +20dBu into 600 Ohm load				
1.25.7	Frequency Response should be 10Hz to 40kHz, +/- 3dB (filters disabled) 20Hz to 20kHz, +/- 0.5dB (filters disabled)				
1.25.8	THD should be less than 0.01%,(+10dBu, 20Hz to 20kHz, 30kHz bandwidth)				
1.25.9	Dynamic Range should be >112dB (A weighted, 22kHz bandwidth) >109dB (un-weighted, 22kHz bandwidth				

1.25.10	Digital system controller shall enable simple configuration and optimisation of loudspeakers in terms of speaker management and room EQ functionality using DSP-based digital crossovers with 96kHz sampling rates				
1.25.11	Should features Intuitive signal flow based interface and 2 x 24 character backlit LCD				
1.25.12	Digital system controller should have routing engine allows any input to be sent to any output.				
1.25.13	Butterworth, Bessel, Linkwitz Riley and Hardman type filters are available on all outputs of the Digital system controller				
1.25.14	Digital system controller shall have RS232 connector enables for enhanced control functions				
1.25.15	Digital system controller shall provide equalisation on each input and output section with two shelving filters and six fully variable parametric sections				
1.25.16	Low distortion limiter is incorporated on each output; threshold is user adjustable with two LED's provided for each output channel to indicate the signal level relative to the limiter threshold.				
1.25.17	Input and output gain is adjustable in 0.2dB steps from -40dB to +15dB.				
1.25.18	Input delay is adjustable in variable steps from 0 to 400ms and output delay is adjustable to 80ms				
1.26	**Supply, Installation, Testing & Commissioning of USB/RS232 Interface of following specifications, complete with all accessories as required.**	Each	1.00		

1.26.1	USB/RS232 Interface for connecting a Windows PC to loudspeaker network to program network enabled speakers and Digital system controller. Also it allows full control, tuning and diagnostics of the network enabled Speakers and Digital system controller in the network.				
1.26.2	The output should be RJ45 to connect speakers and Digital system controller				
1.26.3	RS232 - Compliance EIA RS232C				
1.26.4	USB - Compliance 1.1 and 2.0				
1.27	**Supply, Installation, Programming, Testing & Commissioning of Loud speaker of following specifications , complete with all accessories as required.**	Each	2.00		
1.27.1	Digitally Beam-steering, multi-channel Column array loudspeaker comprising of 16x3"LF & 16x1"HF driver each with its own discrete channel of amplification and integrated DSP (total of 32 channels)				
1.27.2	Speaker shall achieve even coverage and SPL across the listening plane				
1.27.3	Speaker shall create an asymmetrical pattern in order to allow similar SPL's both in the near and far field.				
1.27.4	Speakers should have the capability to steer the beam away from surfaces that cause reflections to frequencies beyond 12 kHz,				
1.27.5	Speaker shall have intuitive BeamEngine GUI to define target areas by creating a steering algorithm tailored for that specific area.				

1.27.6	Speaker should have the feature of switching between two preset steering configurations for variable or multi-purpose spaces				
1.27.7	Speaker shall have integrated cutting edge DSP, network control and amplification				
1.27.8	Speaker shall features class leading steering control(+/- 70 degrees)				
1.27.9	Speaker shall have densely spaced transducers to defeat the effects of aliasing				
1.27.10	Frequency range(-10dB)of the speakers shall be 130Hz-20kHz				
1.27.11	Integrated Class D Amplifier should have 32x100W @4ohm amplifier channels				
1.27.12	Speaker should have horizontal dispersion 130 degrees				
1.27.13	Vertical dispersion of the speaker shall variable between 10 - 100 degrees				
1.27.14	LF beam control limit of the speaker shall be 400 Hz				
1.27.15	Maximum SPL shall be 100 dB @ 30 m (100 ft)				
1.27.16	Sampling rate shall be 96 kHz				
1.27.17	Speaker should be Software configurable				
1.27.18	Speaker should have RJ45 input				
1.27.19	Speaker shall have analogue inputs as well as AES inputs				
1.27.20	Speaker shall be capable of receiving and transporting digital audio via AES3 stream over long distances				
1.28	**Supply, Installation, Testing & Commissioning of Subwoofer system of following specifications, complete with all accessories as required.**	Each	2.00		
1.28.1	High impact, powerful band-pass subwoofer system, designed to extend the low frequency response				

	and increase system headroom.				
1.28.2	The subwoofer should ensure well-defined low frequency reinforcement at high sound pressure levels, with extremely low distortion and power compression.				
1.28.3	The subwoofer should have Frequency Response (-3dB) in the range of 40 Hz - 160 Hz				
1.28.4	The subwoofer should have Frequency Response (-10dB) in the range of 35 Hz - 200 Hz				
1.28.5	System Sensitivity (1W @1m) : 100 dB				
1.28.6	Power Handling - Average: 800 watt, Programme: 1600 watt & Peak (10ms): 3200 watt				
1.28.7	Subwoofer should be able to drive with Amplifier Power of 1600 W @ 4 ohms				
1.28.8	Rated Maximum SPL Average: 129 dB & Peak: 135 dB				
1.28.9	The subwoofer should have the nominal Impedance of 4 Ohms				
1.28.10	The subwoofer should utilises a pair of high efficiency 300mm (12") drive units mounted in a compact and sturdy, black or white painted MDF cabinet.				
1.28.11	Distortion				
	10% Full Power (12.65V)				
	2nd Harmonic : 50Hz: 1.38%, 100kHz: 1.29%				
	3rd Harmonic : 50Hz: 0.62% , 100kHz: 0.14%				
	1% Full Power (4.0V)				
	2nd Harmonic : 50Hz: 0.32%, 100kHz: 0.29%				
	3rd Harmonic : 50Hz: 0.18%, 100kHz: 0.16%				
1.28.12	The mounting orientation should be Landscape				

1.29	**Supply, Installation, Testing & Commissioning of stage monitor speakers of following specifications, complete with all accessories as required.**	Each	2.00		
1.29.1	The speaker should utilizes 305mm (12") latest generation Dual Concentric full-range driver				
1.29.2	The speaker should have tightly controlled 90 degree dispersion for optimum coverage and forward gain				
1.29.3	Peak output 126 dB, rec. amp power 400 W @ 8 Ohms				
1.29.4	The speaker should have mounting points on the rear of the cabinet for Omni-mount/PowerDrive/Multi-Mount type fittings for flexible ceiling positioning				
1.29.5	The Speaker shall have frequency range of 55Hz-38KHz				
1.29.6	The sensitivity of the speaker at 1W @ 1M shall be 97dB				
1.29.7	The average power handling capacity of the Speaker shall be atleast 200 watts				
1.29.8	The speaker shall have rugged and compact birch plywood construction				
1.29.9	The weight of the speaker shall not be more than 17kgs				
1.30	**Supply, Installation, Programming, Testing & Commissioning of 2 channel amplifier - Type II of following specifications , complete with all accessories as required.**	Each	1.00		
1.30.1	2 channel digital amplifier with 2x 1200 Watt / 4 Ohms				
1.30.2	Amplifier should have internal DSP with total of 40 real-time, multi-slope parametric EQs along with adjustable gain, input and output delay, and both high and low-pass filters adjustable to any frequency				

	,crossover with multiple filter types & 100 User Presets				
1.30.3	Amplifier should have AES3 and analogue inputs with redundant failover				
1.30.4	Software-configured Speaker Protect Limiter				
1.30.5	Peak output voltage per channel should be atleast 70 Vrms				
1.30.6	Max. output current per channel should be atleast 20 Vrms				
1.30.7	Max. Output Power Per Channel would be 800W @ 2ohms, 1200 ohms @ 4 Ohms, 600W @ 8 Ohms & 300W @ 16 Ohms				
1.30.8	THD 20 Hz – 20 kHz for 1 W should be less than 0.1%				
1.30.9	Signal To Noise Ratio should be greater than 102 dBA				
1.30.10	Channel separation (Crosstalk) at 1 kHz should be greater than 80 dB				
1.30.11	Frequency response should be in the range of 2 Hz–42 kHz				
1.30.12	Input impedance should be 18KΩ				
1.30.13	Output impedance should be 25mΩ				
1.30.14	Sensitivity for full power should be 6dBu				
1.30.15	Gain (all DSP controls set to 0dB) should be minimum 36.2 dBu				
1.30.16	Amplifier should have backlit display with navigation buttons and encoder for front panel setup				
1.30.17	Amplifier should have horizontal VU meters on display in operating mode				
1.30.18	Amplifier should have mute buttons on front panel				
1.30.19	Amplifier should have Dual fan & front to rear airflow for proper cooling				

1.31	**Supply, Installation, Programming, Testing & Commissioning of 2 channel amplifier - Type III of following specifications, complete with all accessories as required.**	Each	1.00		
1.31.1	Amplifier shall deliver 2 x 100 watts @ 4 or 8 ohms, or 1 x 200 watts @ 8 ohms (bridged)				
1.31.2	Amplifier shall be ENERGY STAR qualified				
1.31.3	Amplifier shall have 105 dB signal-to-noise ratio and THD+N of less than 0.05%				
1.31.4	Amplifier shall have the capability to eliminate the high frequency switching ripple characteristic of Class D amplifiers				
1.31.5	The amplifier shall feature less heat generation				
1.31.6	The amplifier shall have the capability to smoothes out the high peak currents of the amplifier's current draw, in order to minimize the presence of high frequency harmonics on the AC power line				
1.31.7	Amplifier shall have auto power-down feature to automatically places the amplifier into standby after 25 minutes of inactivity				
1.31.8	The amplifier shall provide attenuation of input signals for adjusting audio system gain staging as well as two-zone applications.				
1.31.9	The amplifier shall detect actual onset of clipping by comparing input and output waveforms.				
1.31.10	The amplifier shall feature automatic gain reduction without audible artifacts to protect speakers from clipping distortion				
1.31.11	The input impedance of the amplifier shall be greater than 10k ohms unbalanced/balanced, DC				

	coupled				
1.31.12	The input nominal level of the amplifier shall be +4 dBu (1.23 Vrms), balanced				
1.31.13	The Maximum level of the amplifier shall be +20 dBu (7.75 Vrms), balanced				
1.31.14	The input sensitivity at 8 ohm or higher speaker load shall be +4 dBu (1.23 Vrms)				
1.31.15	The input sensitivity at 4 ohm speaker load shall be +1 dBu (0.87 Vrms				
1.31.16	The amplifier shall be 1U rack mountable				
1.32	**Supply, Installation, Testing & Commissioning of Digital Video disc player capable of reading multi formats with the following specifications, complete as required with all accessories.**	Each	1.00		
1.32.1	The DVD Player should be compatible with Dual-Layer DVD-R/DVD/DVDR/DVRW/DVD+R/ DVD+RW/SVCD/ VCD/CD/CD-R/CD-RW				
1.32.2	The DVD Player Should Have 1080p Up scaling facility				
1.32.3	The DVD Player shall be WMV Compatible				
1.32.4	The DVD Player shall be Compatible with All Versions of DivX Video (including DivX 6) with Standard Playback of DivX Media Files				
1.32.5	The DVD Player Shall have 108 MHz/12-bit Video DAC				
1.32.6	The DVD Player shall have PureCinema 2:3 Progressive Scan				
1.32.7	The DVD Player shall have facility for I/P Simultaneous Output				

1.32.8	The DVD Player Shall have USB Input for Compressed Video (DivX/WMV), JPEG and Compressed Music				
1.32.9	The DVD Player shall have HD JPEG Playback and JPEG Photo viewer				
1.32.10	The DVD Player shall have controls for adjusting sharpness/Brightness/Contrast/Gamma/Hue/Chroma Level				
1.32.11	The Player should have Zoom Function				
1.32.12	The DVD Player Shall have 96 kHz/24-bit Audio DAC				
1.32.13	The DVD Player shall be Compatible with WMA (Windows /MP3/MPEG-4 AAC				
1.32.14	The DVD Player shall have Dolby Digital Output				
1.32.15	The DVD Player shall have Dialogue Enhancer and Sound Equalizer				
1.32.16	The DVD Player shall have CD to USB Recording				
1.32.17	The DVD Player shall have option for Photo + Music Mix (JPEG Slideshow with Music)				
1.32.18	The DVD Player shall have Disc Navigator for Easy Browsing				
1.32.19	The Player should have atleast one USB Input Terminals				
1.32.20	The Player should have atleast one HDMI Terminal for Digital Audio/Video Out				
1.32.21	The player should have atleast one Coaxial Digital Output, one S-Video Output ,one Audio/one Video Output , one Component Video Output (DVD, Video CD) Output Terminals				
1.32.22	The player shall have wireless Remote control for ease of operation				

1	**Supply, Installation, Testing & Commissioning of Microphone Patch Bay of following specification, complete with all accessories as required**	Each	2.00		
1.33.1	4-point XLR patch bay to route and organize the XLR connections into a convenient central location on the stage				
1.33.2	The patch bay offers 3 balanced channels with high-quality XLR connectors				
1.33.3	Microphone patch bay shall have female XLR connections on front and male XLR connections on back				
1.33.4	Microphone patch bay shall be floor mounted				
1.33.5	Microphone patch bay shall of aluminium construction				
	Control & Automation				
1.34	**Supply, Installation, Programming, Testing & Commissioning of Serial Port Expander of following specifications, complete with all accessories as required.**	Each	1.00		
1.34.1	Control processor with atleast two bidirectional RS-232 serial ports & One bidirectional RS-232/RS-422/RS-485 serial port .				
1.34.2	The device shall supports Building Management System protocols, such as BACnet, KNX, and DALI				
1.34.3	The device shall manage, monitor, and control AV devices using a standard Ethernet network				
1.34.4	The control processor should have the capacity to receive power and control over a single Ethernet cable				
1.34.5	The device supports 10/100/1000Base-T				
1.34.6	The device supports up to 32 Ethernet-controllable devices				

1.34.7	The device shall features automatic clock synchronization allows compatible touch panel to display the accurate time and date				
1.34.8	The device shall supports control system synchronization to retain and recover the state of their configured endpoints in case of network or power failure				
1.34.9	The control processor shall have SDRAM & Flash memory of atleast 512MB				
1.34.10	The control processor shall supports secure industry standard communications protocols including HTTP (insecure), HTTPS, SSH, SFTP, SMTP, NTP, Discovery Service, DHCP, DNS, ICMP, and IPv4.				
1.34.11	The control processor shall compatible with above specified touch panel				
1.35	**Supply, Installation, Programming, Testing & Commissioning of LED backlit touch panel of size 7 inch or more of following specifications , complete with all accessories as required.**				
1.35.1	The display of the touch panel shall be 7" diagonal or more LED-backlit LCD touch screen with 800x480 resolution and 18-bit color depth.				
1.35.2	The screen type shall be active matrix TFT colour display	Each	1.00		
1.35.3	The contrast ratio of the touch screen shall be atleast 400:1				
1.35.4	The aspect ratio of the touch screen shall be 16:9				
1.35.5	The device shall be resistive touch screen				
1.35.6	The brightness of the touch screen shall be atleast 400 nits				
1.35.7	The colour depth of the touch screen shall be 256k colours				

1.35.8	Touch panel shall have the capability to receive power and control over a single Ethernet cable, to eliminate the need for a local power Supply, Installation, Programming, Testing & Commissioning				
1.35.9	The touch panel shall support 10/100Base-T				
1.35.10	The touch panel shall supports secure industry standard communications protocols including DHCP, DNS, HTTP, HTTPS, ICMP, SFTP, SSH, TCP/IP, UDP/IP				
1.35.11	Touch panel shall have built-in speaker with improved audio performance.				
1.35.12	Touch panel shall have Light sensor adjusts screen brightness as the ambient room lighting changes				
1.35.13	Touch panel shall have configurable red and green status lights indicate a room's availability or call status				
1.35.14	Touch panel shall have system connection status indicator to provide visual feedback if the touch panel is not communicating with a control processor				
1.35.15	The device shall features automatic clock synchronization to display the accurate time and date				
1.35.16	The touch panel shall have adjustable sleep timer to put touch panel into sleep mode & motion detector wakes touch panel				
1.35.17	The touch panel shall have SDRAM & Flash memory of atleast 512MB				
1.35.18	The touch panel shall be wall mounted				

1	**Supply, Installation,Testing & Commissioning of of rack mount for touch panel with the following specifications, complete with all accessories as required.**	Each	1.00		
1.36.1	4RU rack plate that allows the above wall mount Touch panel to be mounted in a standard equipment rack for a clean, professional appearance				
1.36.2	Rack mount shall be from the same OEM of the above Touch panel				
1.37	**Supply, Installation, Programming, Testing & Commissioning of IR Emitter Kit of following specifications, complete with all accessories as required.**	Each	2.00		
1.37.1	The IR emitter Kit shall contains IR-emitting diode with a 3 m wire lead, IR emitter shield, and mounting adhesive				
1.37.2	The kit shall be installed directly on the IR control window of the controlled equipment				
1.37.3	The IR emitter Kit shall perform remote control of AV equipment via IR				
1.37.4	The device shall also features a "Y" configuration with one IR source terminating in two emitters with shields for use in equipment racks and other applications requiring remote control of two devices.				
1.38	**Supply, Installation, Programming, Testing & Commissioning of Single Port Power Injector of folowing specifications, complete with all accessories as required.**	Each	1.00		
1.38.1	Single port power injector to provides power to above control systems remotely to eliminate the need for a local power Supply,				

	Installation, Programming, Testing & Commissioning				
1.38.2	The device shall not impact video, audio, bidirectional RS-232 and IR, and Ethernet signal quality.				
1.38.3	The device shall provide real-time status LEDs for troubleshooting and monitoring.				
1.38.4	The Power output of the device shall be +48 VDC, 0.35 A, 16.8 watts				
1.38.5	The device shall be UL/c-UL listed and CE compliant				
1.38.6	The device shall be mount on a variety of surfaces, including rack rails, tables, lecterns, projector poles, and table legs				
1.39	**Supply, Installation, Programming, Testing & Commissioning of Relay controller of following specifications, complete with all accessories as required.**				
1.39.1	Low Voltage Relay Controller to control various electric appliances setting at one place through remote keypad or local keypad or RS 232 interface.	Each	1.00		
1.39.2	The device shall have 4 no's Low voltage relays				
1.39.3	The Low Voltage Relay Controller shall have 2bit unit identifier for RS232C controller so that 4 Relay controller box can be controlled through one port of RS232C system controller				
1.40	**Supply, Installation, Programming, Testing & Commissioning of Network Switch of following specifications, complete with all accessories as required.**	Each	1.00		

1.40.1	The network switch shall have eight 10/100/1000 Mbps Gigabit ports				
1.40.2	The network switch shall have 16 Gbps switching fabric				
1.40.3	The device shall features auto MDI/MDIX crossover for all ports				
1.40.4	The device shall perform secure store-and-forward switching scheme				
1.40.5	The device shall support Full/half-duplex for Ethernet/Fast Ethernet speeds				
1.40.6	RAM Buffer of the device shall be 128 KBytes per device				
1.40.7	The device shall support IEE 802.3x Flow Control				
1.40.8	The device shall supports 9,216 Byte Jumbo Frames				
1.40.9	The device shall be RoHS compliant				
	Cables & Connectors				
1.41	**Supply, Installation, Testing & Commissioning of 36U Equipment Rack of following specifications, complete with all accessories as required**	Each	1.00		
1.41.1	Equipment rack should be of 36U				
1.41.2	Rack should have 20no's IEC socket				
1.41.3	Rack should have Castor wheels with brake and without brake				
1.41.4	Rack should have Cable manager				
1.41.5	Rack should have 5 No's 250 mm canti lever shelf for placing non rack mountable equipment				
1.41.6	Rack should have Monitor Tray – Ventilation & Fan assembly				
1.41.7	Rack should also have Front and back doors				
1.41.8	Rack should also have Cooling Fan				
1.41.9	Rack should also have minimum 4 sets of Mounting H/W				

1.42	**Supply & Laying of Speaker cable of following specifications, complete as required.**				
1.42.1	Speaker cable for connecting speakers and amplifiers				
1.42.2	Cable shall have single colour-coded pair, 16 AWG bare copper conductors.	Mtr	200.00		
1.42.3	Cable shall offers a higher conductor strand count than comparable cables in its class				
1.42.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
1.43	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**				
1.43.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.				
1.43.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires	Mtr	180.00		
1.43.3	Cable shall have tinned copper drain wire on the inside of the foil shield.				
1.43.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
1.44	**Supply & Laying of One twisted pair Audio Cable of following specifications, complete as required.**				
1.44.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.	Mtr	200.00		
1.44.2	Cable should have one 22 AWG shielded twisted pairs with individual drain wires				

1.44.3	Cable shall have tinned copper drain wire on the inside of the foil shield.				
1.44.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
1.45	**Supply & Laying of Shielded twisted pair cable of following specifications, complete as required**	Mtr	130.00		
1.45.1	24 AWG solid copper construction shielded twisted pair cable				
1.45.2	The cable shall be certified to 475 MHz bandwidth at distances up 100 meters and has been independently tested and verified to meet performance requirements set by the HDBaseT Alliance				
1.45.3	Cable shall provides added protection from outside interference and ensures high quality signal transmission				
1.45.4	Cable shall be Independently tested and verified to meet performance requirements set by HDBaseT Alliance				
1.45.5	Cable shall utilize SF/UTP design with with four unshielded 24 AWG twisted pair conductors inside an overall braid and foil shield				
1.45.6	Cable shall be non-plenum rated				
1.46	**Supply & Termination of RJ-45 plug of following specifications, complete with all accessories as required.**	Mtr	10.00		
1.46.1	Shielded RJ-45 plug for twisted pair cable				
1.46.2	RJ-45 plug shall have metal strain relief and ground bonding				
1.46.3	RJ-45 plug shall be ideal for high EMI/RFI environments				
1.46.4	RJ-45 plug shall have conductor alignment guide reduces crosstalk				

	and signal interference				
1.46.5	RJ-45 plug shall have Gold plated contacts				
1.47	**Supply and Termination of Connectors of following specification, complete as required.**	Set	1.00		
	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers				
	Recording System				
1.48	**Supply, Installation, Programming, Testing & Commissioning of HD Recorder of following specifications, complete with all accessories as required.**	Each	1.00		
1.48.1	The Recorder shall have two removable HDD Enclosure for SATA HDD/SSD solid state device				
1.48.2	The Recorder shall have atleast one HD/SD-SDI video input & analogue Stereo Pair 2-Channelsaudio inputs				
1.48.3	The Recorder shall have atleast one HD/SD-SDI & HDMI video Outputs and Stereo Pair 2-Channels audio output				
1.48.4	The Recorder shall support 1920x1080 50i/59.94i/60i, 1920x1080 24p/23,96p, 1280x720 50P/59.94P/60P, 720x576i or 720x480i Resolutions				
1.48.5	The Recorder shall provide a choice of recording in MPEG-II Long-GOP or intra-frame (i-frame) with 4:2:2 color sampling				
1.48.6	The Recorder shall have HD/SDI input, output and loop thru with embedded audio				
1.48.7	The audio recording Format shall be PCM 24-bits / 8-Channels / 48KHz Sampling Rate				

1.48.8	The Recorder shall support NTFS format				
1.48.9	The Recorder shall have HDMI output with embedded audio				
1.48.10	The Recorder Shall have 2-CH balanced audio inputs, support embedded Audio				
1.48.11	The Recorder shall have Audio level indicators, earphone interface for audio monitoring with volume control				
1.48.12	The Recorder shall have External Gen-Lock input and loop thru (B.B or tri-level),Time code(TC) input and loop through RS-232/422 and GPI remote interface				
1.48.13	The recorder shall have SD and HD Mode Recording options				
1.48.14	SD Mode Recording shall be selectable 8, 15, 30 or 50 Mbps Long GOP 4:2:0 or 4:2:2 and 25 or 50 Mbps i-frame only 8-bit 4:2:2				
1.48.15	HD Mode Recording shall be selectable 10, 25, 35, 65 or 100 Mbps Long GOP 4:2:0 or 4:2:2 and 100/125 Mbps i-frame 8-bit 4:2:2				
1.48.16	The recorded file shall MXF/OP1A file format				
1.48.17	320GB Hard Drive with Enclosure shall be provided along with recorder				
1.48.18	The recorder shall conform to the 292M SMTP Standard.				
1.48.19	The recorder shall be rack mountable				
1.49	**Supply, Installation, Programming, Testing & Commissioning of HD Camera of following specifications, complete with all accessories as required.**	Each	1.00		
1.49.1	The Camera shall be a PTZ one with 20X optical zoom				
1.49.2	The camera shall offer a 1080/20 HD Resolution				
1.49.3	The camera shall feature a ½ 8 type				

	Exmor CMOS Sensor				
1.49.4	The camera shall have the RS-232C/RS-422 interface protocol for external device control				
1.49.5	The camera shall have 20x Optical Zoom and 12x Digital Zoom				
1.49.6	The minimum object distance for the camera shall be 10mm (wide) - 800mm (tele)				
1.49.7	The S/N Ratio of Camera shall be more than 50 db				
1.49.8	The camera shall support 1080p/29.97, 1080p/25, 1080i/59.94 (frame out 1080PsF29.97), 1080i/50 (frame out 1080PsF25) 720p/59.94, 720p/50, 720p/29.97, 720p/25 HD signal system and NTSC/PAL SD signal				
1.49.9	The camera shall have HD-SDI and VBS Video Output				
1.49.10	The camera shall have atleast 6 Preset Positions				
1.49.11	The camera shall have auto exposure				
1.49.12	The Camera shall have Horizontal Viewing angle 55.4° (wide) to 2.9° (tele)				
1.49.13	The Pan Angle of camera shall be ± 170°and the pan speed shall be 100°/sec				
1.49.14	The Tilt Angle of camera shall be +90°/-20°and tilting Speed shall be 90°/sec				
1.49.15	The Minimum Illumination of Camera in High Sensitivity Mode shall be0.5 lx (F1.6, 50 IRE) and Normal Mode shall be 1.7 lx (F1.5, 50 IRE)				
1.49.16	The Minimum object Distance of camera shall be in the 10mm (wide) - 800mm (tele)				
1.49.17	The shutter speed of camera shall not be less than 1 to 1/10,000 s				
1.49.18	The camera shall be wall mounted or ceiling mounted				

1.50	**Supply, Installation, Testing & Commissioning of Camera Mount for the HD camera , with the following specifications, complete with all accessories as required.**	Each	1.00		
1.50.1	Thin Profile Wall Mount Bracket for mounting above camera				
1.50.2	Wall Mount Bracket shall mounts to drywall or 2-gang electrical box				
1.50.3	Mounting hardware shall be provided along with camera mount				
1.51	**Supply & Laying of RG6 Cable of following specifications, complete as required.**	Mtr	50.00		
1.51.1	Cable shall transmit the highest-resolution signals with the lowest losses for the most critical applications and longest cable runs including high scan rate analog and demanding digital SDI/HD-SDI applications				
1.51.2	Cable shall have single, 18 AWG, 75 ohm coaxial conductor double-shielded with foil and tinned copper serve to reduce interference.				
1.51.3	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
	Total Amount – Auditorium- Second Floor				

Sl No	Description of Item	Unit	Qty	Rate (in words and figures)	Amount (in words and figures)
2	**LECTURE HALL- FIRST FLOOR**				
	Video & Display System				
2.1	**Supply, Installation, Programming, Testing & Commissioning of 4300 Lumens Projector with the following specifications, complete with all accessories as required.**	Each	1.00		

2.1.1	The brightness of the projectors should not be less than 4300 ANSI Lumens				
2.1.2	The LCD Panel size of the projector should be 15 mm (0.59 inches) diagonal (16:10 aspect ratio)				
2.1.3	The projector should have a aspect ratio of 16:10				
2.1.4	The Display method should be Transparent LCD panel (x 3, R/G/B)				
2.1.5	The total Pixels should be 1,024,000 (1,280 x 800) x 3, total of 3,072,000 pixels				
2.1.6	The Lens of the projector should have atleast 1.6x manual zoom				
2.1.7	The lens should have throw ratio: 1.18–1.90:1 & manual focus of F 1.60-2.12, f 15.28-24.62 mm				
2.1.8	The projector should be capable of achieving Screen size 30–300 inch diagonal from 0.76 –7.62 m				
2.1.9	The Center-to-corner uniformity should be 85%				
2.1.10	The Contrast ratio should not be less than 3,500:1				
2.1.11	The Resolution of the projector should be 1,280 x 800 pixels				
2.1.12	The projector should have vertical Optical axis shift of +48 %				
2.1.13	The projector should have Vertical Keystone correction range of ±30°				
2.1.14	The projector should be able to mount on Ceiling				
2.1.15	The projector mandatorily should have HDMI input which is compatible with HDCP				
2.1.16	The Projector shall have at least 1 VGA input & output				
2.1.17	The projector also shall have atleast one Composite Video & one S-Video Input				
2.1.18	The Projector should have atleast one stereo Audio input & output				
2.1.19	The Projector should also have Serial input for external control & LAN				

2.1.20	The Weight of the projector should not more than 5 kg				
2.1.21	Wireless remote control unit, carrying bag & one RGB cable should be supplied along with the projector				
2.1.22	The projector should have lamp replacement cycle of up to 4,000 hours				
2.1.23	The sound of the cooling should not be more than 35dB on normal mode and 29db on eco mode.				
2.1.24	The projector should have the Intelligent Lamp Control system to automatically adjust the lamp output in accordance with the brightness of the projected image.				
2.1.25	The Standby Power Consumption of the projector should be less than 0.5 W				
2.1.26	The Projector should have 10-Watt Speakers and a Microphone Input for audio Playback Directly from the Projector				
2.1.27	The Projector should be Monitored remotely and Control over a LAN				
2.1.28	The projector should have the feature of Direct Power Off right after use				
2.2	**Supply, Installation, Testing & Commissioning of ceiling mount for 4300 lumens projector with the following specifications, complete with all accessories as required.**	Each	1.00		
2.2.1	Metal powder coated Ceiling mount kit for above projector				
2.2.2	Ceiling mount shall flexible for height adjustment from 4 feet to 10 feet				
2.2.3	Ceiling mount shall have Weight bearing capacity of atleast 10kg				
2.2.4	Ceiling mount shall have the provision to carry cables inside the Stem Pipe.				
2.2.5	The mounting hardware shall be provided along with the ceiling				

	mount kit				
2.3	**Supply, Installation,Testing & Commissioning of 137 inch motorized screen for projector with the following specifications, complete with all accessories as required.**	Each	1.00		
2.3.1	137 inch (348) diagonal motorized screen with built-in Low voltage controller				
2.3.2	Screen shall have scratch-resistant steel case with white polyester finish and matching end caps.				
2.3.3	Screen should operate instantly at the touch of a button and stops automatically in the "up" and "down" positions.				
2.3.4	The motor shall be inside the roller, for a clean low-profile appearance				
2.3.5	Viewing surface can be lowered to any position at the touch of a switch.				
2.3.6	Screens shall have black borders on all four sides				
2.3.7	Surface Material of the screen should be Matt White				
2.3.8	Image Format of the screen should be 16:10				
2.3.9	Image/Viewable Area of the screen should be 6.05ft Height x 9.68ft width				
2.3.10	The screen weight should be less than 25kg				
2.4	**Supply, Installation, Programming, Testing & Commissioning of desktop personal computer of following specifications, complete with all accessories as required.**	Each	1.00		
2.4.1	Slim tower PC with 4th Generation Intel® Core™ i3-4150 processor (3M Cache, 3.5 GHz)				
2.4.2	The PC shall have integrated Intel® HD Graphics				

2.4.3	The Memory of the PC shall be 4GB (1X4GB) Single Channel DDR3 1600MHz SDRAM Memory				
2.4.4	The aspect ratio of the PC shall be 16:9				
2.4.5	The PC shall be loaded with windows 7/windows 8 operating system				
2.4.6	The PC shall have Integrated Giga bit 10/100/1000 Ethernet				
2.4.7	The PC shall have DVD RW optical disk drive				
2.4.8	The PC shall have 4 no's USB 2.0 & 2 No's USB 3.0 terminal				
2.4.9	The PC shall have one embedded HDMI output				
2.4.10	The PC shall provide two HDMI output by splitting the embedded HDMI output with suitable HDMI splitter				
2.4.11	The PC shall also have one VGA, one RJ-45 (10/100/1000 Ethernet) terminal				
2.4.12	The PC shall have 3-stack audio jacks supporting 5.1 surround sound				
2.4.13	The PC package shall contain wireless mouse and keyboard				
2.5	**Supply, Installation, Programming, Testing & Commissioning of tablet monitor of size of 15.6 inch or more with the following specifications, complete with all accessories as required.**	Each	1.00		
2.5.1	The Tablet Monitor shall have 15.6-inch or more active matrix TFT LCD display				
2.5.2	The Tablet Monitor shall be of WXGA(1366 x 768) Resolution				
2.5.3	The Cordless Pen used for annotation on the Tablet Monitor shall be battery free				
2.5.4	The Cordless Pen shall have 512 level of pressure sensivity				
2.5.5	The Tablet Monitor display shall have 16.77 M Colours				

2.5.6	The response time of the tablet monitor should be less than 9ms				
2.5.7	The Tablet Monitor shall have Luminance of not less than 250cd/m2				
2.5.8	The Contrast Ratio of Tablet Monitor shall not be less than 400:1				
2.5.9	The Tablet Monitor Shall have atleast one DVI-I Inputs & output Terminal				
2.5.10	The aspect Ratio of Tablet Monitor shall be 16:9				
2.5.11	The Cordless pen with the tablet monitor shall deliver more than 500 level of pressure sensitivity				
2.5.12	The Tablet Monitor Shall have atleast 2no's built in USB interface				
2.5.13	The Tablet Monitor shall be less than 5 kg				
2.5.14	The Tablet Monitor should have adjustable stand that can be set to incline from 19 to 72 Degrees				
2.5.15	The Tablet Monitor shall have VCCI Class B, FCC Part15 Subpart B (class B) and C,CE, KCC, BSMI, C-tick, CB, CCC, GOST-R, China RoHS,Korean RoHS, EU RoHS Certifications				
2.5.16	The Tablet Monitor should be compatible with Windows 7 / Vista / XP / 2000, Mac OS X 10.4 or later				
2.6	**Supply, Installation, Testing & Commissioning of Type A to A USB cable of following specifications, complete with all accessories as required.**	Each	1.00		
2.6.1	10ft USB 3.0 Type A to Type A cable				
2.6.2	USB 3.0 specification of the cable also works with USB 2.0/ 1.1 devices.				
2.6.3	The cable shall suitable for data transfer speeds up to 5 GBps				
2.6.4	The cable shall be fully shielded for error free connections				
2.6.5	The cable shall be Compatible with PC windows 7 / vista / XP				

2.7	**Supply, Installation,Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**				
2.7.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input				
2.7.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw	Each	1.00		
2.7.3	The wall plate shall be of one gang size				
2.7.4	The wall Plate shall be HDCP Compliant				
2.7.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.				
2.7.6	The wall plate should be of metal construction				
2.8	**Supply, Installation, Programming, Testing & Commissioning of Scaler system with the following specifications, complete with all accessories as required.**				
2.8.1	The scaler shall have three HDMI inputs, one universal 15-pin HD input for RGB, component video, S-video, or composite video input, stereo balanced/unbalanced audio inputs on captive screw; unbalanced stereo audio input on one 3.5 mm stereo mini jack and	Each	1.00		
2.8.2	The scaler shall have one twisted pair output & one stereo audio output on captive screw				
2.8.3	The scaler shall features an advanced scaling engine that can scale HDMI, RGB, component, and standard definition video signals to a common high resolution output				
2.8.4	The scaler shall have advanced scaling engine with 30-bit processing for enhanced colour accuracy and				

	picture detail				
2.8.5	The scaler shall perform deinterlacing for 1080i signals from HD sources delivers optimized image quality				
2.8.6	The scaler shall allow signal extension up to 100 meters over shielded CATx cable				
2.8.7	The scaler shall provide the convenience of fast and reliable switching, along with a high performance scaling engine for HDMI and analogue video sources				
2.8.8	The scaler shall integrates HDMI, analogue video, and audio sources into presentation systems				
2.8.9	The scaler shall support HDMI specification features include data rates up to 6.75 Gbps, Deep Colour, and HD lossless audio formats				
2.8.10	The analogue audio signals on the input shall be embedded onto the twisted pair output.				
2.8.11	The scaler shall perform audio de-embedding of HDMI two-channel PCM audio to the analogue output or multi-channel bitstream formats can be passed to the twisted pair output				
2.8.12	The scaler shall manage EDID communication between the display device and input sources in order to ensure the correct video formats are displayed reliably.				
2.8.13	The scaler shall authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching				
2.8.14	The scaler shall features automatic 3:2 and 2:2 pulldown detection to maximize image quality for content sources originating from film.				

2.8.15	The scaler shall accepts and outputs signals up to 1920x1200, including HDTV 1080p/60 and 2K.				
2.8.16	The scaler shall provides real-time verification of HDCP status for each digital video input and output.				
2.8.17	The scaler shall automatically enables or disables embedded audio and InfoFrames, and sets the correct color space for proper connection to HDMI and DVI displays				
2.8.18	The scaler shall allow auto-switching between inputs				
2.8.19	The scaler shall be HDCP compliant				
2.8.20	The scaler shall provide master volume control for the analogue line level output, as well as DTP analogue audio				
2.8.21	The audio output of the scaler shall be automatically delayed to compensate for latency introduced by the video processing.				
2.8.22	The scaler shall features audio input assignment so that each video input can be assigned to either of the two available analogue audio inputs				
2.8.23	The scaler shall be housed in a compact 1U, half rack width enclosure				
2.8.24	The switcher shall have RS-232 Control port				
2.9	**Supply, Installation, Testing & Commissioning of suitable mounting kit for scaler with the following specifications, complete with all accessories as required.**	Each	1.00		
2.9.1	The Mount kit shall be Low-Profile Mount Kit that can be used with 1/8, 1/4, and 1/2 Rack Width Products,.				
2.9.2	The mount shall allow rack-mountable equipment to be installed under a table, desk, or other flat surface				
2.9.3	The mount shall be perfectly fit for the above scaler				

2.9.4	The under desk Mount Kit shall be from the same OEM of the above switcher				
2.10	**Supply, Installation, Programming, Testing & Commissioning of digital twisted pair reciever of the following specifications complete with all accessories as required**	Each	1.00		
2.10.1	Digital twisted pair receiver for receiving HDMI, Analogue audio, bidirectional RS-232 and IR signals upto 70 meters over a shielded CATx cable				
2.10.2	Digital twisted pair receiver also capable of receiving 4K@30 upto 40m over a shielded CATx cable				
2.10.3	Digital twisted pair receiver shall supports computer video up to 2560x1600, HDTV 1080p/60 Deep Color, and 4K resolutions				
2.10.4	Resolution range of the Digital twisted pair receiver shall be 1920x1200 or 1080p @ 60 Hz; 8, 10, or 12 bit color depth 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz				
2.10.5	Digital twisted pair receiver is compatible with a broad range of multi-channel audio signals, to provide reliable operation with HDMI sources.				
2.10.6	Digital twisted pair receiver shall supports HDMI specification features include data rates up to 10.2 Gbps (3.4 Gbps/colour), Deep Color up to 12-bit, 3D, embedded HD lossless audio formats, and CEC pass-through				
2.10.7	Maximum Pixel clock of the receiver shall be 300MHz				
2.10.8	Digital twisted pair receiver shall accepts analog stereo audio signals from a compatible transmitter over the same shielded twisted pair cable				

2.10.9	Digital twisted pair receiver is capable of receiving 1080p/60 Deep Color, 1920x1200, and 2K signals up 70 meters				
2.10.10	Outputs connector of the twisted pair receiver Input shall be one twisted pair input on RJ-45				
2.10.11	Outputs connector of the twisted pair receiver should be HDMI connector, captive screw connector for stereo audio				
2.10.12	The receiver can be remotely powered over the shielded twisted pair cable by compatible twisted pair transmitters, allowing both devices to share one power Supply, Installation, Programming, Testing & Commissioning				
2.10.13	The Receiver should be capable of continuously maintaining DDC communication of EDID and HDCP between a source and display, to ensure direct compatibility and optimal signal transmission between devices.				
2.10.14	The receiver should be capable of receiving analog stereo audio signal over the same twisted pair cable as the HDMI and control signals, in order to eliminate the need for a separate cable run to support analog audio at the receiver.				
2.10.15	The Receiver should supports simultaneous transmission of bidirectional RS-232 and IR signals from a control system, providing remote control to source equipment or remote displays.				
2.10.16	The receiver shall be capable of receiving the signal transmitted from the distance of 230 feet (70 meters) by the transmitter for all compatible resolutions when used with CAT 5e twisted pair cable				

2.10.17	The receiver shall provide visual indication of system status for real-time feedback and monitoring of key performance parameters.				
2.11	**Supply, Installation, Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**	Each	2.00		
2.11.1	3ft Ultra-flexible low bend radius HDMI cable				
2.11.2	The cable shall be 1080p/60 verified				
2.11.3	The cable shall of 36 AWG copper wire construction				
2.11.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
2.11.5	The cable shall support Data rates to 10.2 Gbps				
2.11.6	The cable shall support Refresh rates to 120 Hz				
2.11.7	The cable shall support Color depth to 48 bits - 16 bits per colour				
2.11.8	The cable shall have Gold plated contacts				
2.12	**Supply, Installation, Testing & Commissioning of 6 ft HDMI cables of following specifications complete as required**	Each	4.00		
2.12.1	6ft Ultra-flexible HDMI cable				
2.12.2	The cable shall be 1080p/60 verified				
2.12.3	The cable shall of 30 AWG copper wire construction				
2.12.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
2.12.5	The cable shall support Data rates to 10.2 Gbps				
2.12.6	The cable shall support Refresh rates to 120 Hz				
2.12.7	The cable shall support colour depth to 48 bits - 16 bits per colour				
2.12.8	The cable shall have Gold plated contacts				
2.13	**Supply, Installation,Testing & Commissioning of 3ft high resolution VGA cable of following**	Each	1.00		

	specification , complete as required				
2.13.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.				
2.13.2	The cable shall be Thin, flexible cable with low profile VGA connectors				
2.13.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side				
2.13.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end				
2.13.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio				
2.13.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection				
2.13.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation				
2.13.8	The cable shall be AWM 20276 rated				
2.14	**Supply, Installation, Testing & Commissioning of 6 ft High resolution VGA cable of following specifications, complete as required**	Each	1.00		
2.14.1	6ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.				
2.14.2	The cable shall be Thin, flexible cable with low profile VGA connectors				
2.14.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side				
2.14.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end				
2.14.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio				

2.14.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection				
2.14.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation				
2.14.8	The cable shall be AWM 20276 rated				
2.15	**Supply, Installation, Testing & Commissioning of 6 ft HDMI to DVI-D cable of following specification, complete as required**	Each	2.00		
2.15.1	6ft Standard Speed HDMI to DVI-D cables				
2.15.2	The cable shall be 1080p/60 verified				
2.15.3	The cable shall of 28 AWG copper wire construction				
2.15.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
2.15.5	The cable shall support Data rates to 4.95 Gbps				
2.15.6	The cable shall support Refresh rates to 60 Hz				
2.15.7	The cable shall support colour depth to 24 bits - 8 bits per colour				
2.15.8	The cable shall have Gold plated contacts				
2.15.9	The cable shall be NEC CL2 rated				
	Audio System				
2.16	**Supply, Installation, Programming, Testing & Commissioning of wireless handheld microphone of following specifications , complete with all accessories as required.**	Each	2.00		
2.16.1	Wireless handheld Microphone system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range				
2.16.2	Wireless handheld Microphone system should have true diversity receiver & handheld transmitter				
2.16.3	The receiver of wireless handheld system should be one-channel true				

	diversity receiver				
2.16.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.				
2.16.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-programmed Frequencies within these ranges.				
2.16.6	The receiver should have Scan function to start an automatic search for interference-free frequencies				
2.16.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter				
2.16.8	The receiver should have RF level indicator & AF level indicator				
2.16.9	The receiver should have On/off switch with power on LED				
2.16.10	The receiver should have Switching bandwidth of 24 MHz				
2.16.11	Nominal deviation of the receiver should be ± 40 kHz				
2.16.12	The receiver should have removable TNC antennae				
2.16.13	The Sensitivity of the receiver should be 2 µV				
2.16.14	Signal-to-noise ratio should be greater than 110 dB(A)				
2.16.15	T.H.D of receiver should be less than 0.5% at 1 kHz				
2.16.16	The modulation of handheld transmitter should be FM				
2.16.17	The handheld transmitter shall operate in the frequency range 506 - 530 MHz, 668 - 692 MHz, 774 - 798 MHz, 790 - 814 MHz or 841 - 865				

	MHz				
2.16.18	The handheld transmitter shall have Modular design with interchangeable microphone capsules				
2.16.19	The handheld transmitter shall have Integrated antenna				
2.16.20	The handheld transmitter shall have Plastic housing				
2.16.21	The handheld transmitter ACT function (Automatic Channel Targeting) for automatic frequency setting				
2.16.22	Max. SPL of the handheld transmitter should be 146 dB				
2.16.23	The Signal-to-noise ratio of the handheld transmitter should be greater than 110 dB				
2.16.24	The T.H.D of the handheld transmitter should be less than 0.5% at 1 kHz				
2.16.25	Radiated transmitter power of handheld transmitter shall be 10 mW				
2.16.26	AF transmission range should be 55 - 18,000 Hz at 80 dB SPL				
2.16.27	Transmission range of the handheld transmitter should be more than 90 m				
2.16.28	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries				
2.16.29	Length of the handheld transmitter should be less than 200mm				
2.16.30	Shaft of the handheld transmitter should be less than 40 mm				
2.16.31	Weight of the handheld transmitter with batteries shall be less than 170g				
2.16.32	The receiver & the handheld transmitter should have On/off switch with power on LED				
2.16.33	Polar pattern of the microphone should be Hypercardioid				
2.16.34	Transducer type should be Dynamic				

2.16.35	Frequency response of the microphone should be 90 - 16,000 Hz				
2.16.36	Nominal impedance of the microphone should be 280 Ω				
2.16.37	Load impedance of the microphone should be 1 kΩ				
2.16.38	Open circuit voltage of the microphone should be 3 mV / Pa				
2.16.39	Magnetic field suppression of the microphone should be greater than 20 dB at 50 Hz Dimensions				
2.16.40	Head diameter of the microphone shall be less than 60 mm				
2.17	**Supply, Installation, Programming, Testing & Commissioning of clip on type microphone of following specification , complete with all accessories as required.**	Each	1.00		
2.17.1	Hypercardioid clip-on microphone designed for unobtrusive miking of speech and instruments				
2.17.2	Clip-on microphone should have wide range frequency response				
2.17.3	Microphone should be easily interfaces with the below wireless body pack transmitters				
2.17.4	The microphone should have Lavaliere or instrument mounting capabilities				
2.17.5	The microphone should be powered either by pocket transmitter or phantom power converter for wired use.				
2.17.6	The transduser type of the microphone should be electret condenser				
2.17.7	The microphone should have a frequency response of 40 - 20.000 Hz				
2.17.8	The Operating principle of the microphone should be Pressure gradient				
2.17.9	Max. SPL at 1 kHz for k = 1% should be 120 dB				
2.17.10	S/N ratio rel. to 1 PA should be 60 dB				

2.17.11	Open circuit voltage at 1 kHz should be 30 mV/Pa = -30 dBV				
2.17.12	Nominal impedance of the Microphone should be 200 ohms				
2.17.13	Load impedance of the Microphone should be 1 kΩ				
2.17.14	Length of the Microphone should be less than 25mm				
2.17.15	Weight of the Microphone should be less than 20g				
2.17.16	The connector of the Microphone should be 3 Pin XLR Male				
2.17.17	Should have accessories like XLR cable, clamp and storage bag along with Microphone System				
2.18	**Supply, Installation, Programming, Testing & Commissioning of Wireless Lavaliere Microphone System of the following specifications, complete with all accessories as required.**	Each	1.00		
2.18.1	Wireless system equipped with the automatic frequency setting function, has 16 pre-programmed UHF frequency settings and can be operated with up to 16 channels per frequency range				
2.18.2	Wireless Microphone system should have true diversity receiver pocket transmitter & condenser lavaliere Microphone (Omni directional)				
2.18.3	The receiver of wireless system should be one-channel true diversity receiver				
2.18.4	The receiver should have adjustable squelch 2 µV - 1 mV so as to eliminate Interference by reducing the sensitivity of the channel affected by interference until only the main signal is being is received.				
2.18.5	The receiver should operate frequency range from 506 to 530 MHz, 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz and 841 to 865 MHz & able to select one of 16 pre-				

	programmed Frequencies within these ranges.				
2.18.6	The receiver should have Scan function to start an automatic search for interference-free frequencies				
2.18.7	The receiver should have ACT function (Automatic Channel Targeting) to transmit the automatic searched interference-free frequencies to the transmitter				
2.18.8	The receiver should have RF level indicator & AF level indicator				
2.18.9	The receiver should have On/off switch with power on LED				
2.18.10	The receiver should have Switching bandwidth of 24 MHz				
2.18.11	Nominal deviation of the receiver should be ± 40 kHz				
2.18.12	The receiver should have removable TNC antennae				
2.18.13	The Sensitivity of the receiver should be 2 µV				
2.18.14	Signal-to-noise ratio should be greater than 110 dB(A)				
2.18.15	T.H.D of receiver should be less than 0.5% at 1 kHz				
2.18.16	The belt pack transmitter should have ACT infra red interface for frequency transmitting from receiver to transmitter				
2.18.17	The belt pack transmitter should operates in the frequency range 668 to 692 MHz, 774 to 798 MHz, 790 to 814 MHz or 841 to 865 MHz.				
2.18.18	The belt pack transmitter should have adjustable gain control so as to adjust input sensitivity for various microphones or instruments				
2.18.19	The belt pack transmitter should have 4-pin mini XLR input connector (male) to connect microphones or instruments				

2.18.20	The belt pack transmitter should have GT/MT switch to select between microphone or instrument inputs				
2.18.21	The belt pack transmitter should have Swiveling clip to attach to belts, waistbands or guitar straps				
2.18.22	Operating time shall be atleast 20 hours with 2 no's AA alkaline Batteries				
2.18.23	The Modulation of the belt pack transmitter should be FM				
2.18.24	Nominal deviation of the belt pack transmitter should be ± 40 kHz				
2.18.25	Radiated transmitter power of the belt pack transmitter should be 20 mW				
2.18.26	Signal-to-noise ratio of the belt pack transmitter should be greater than 110 dB(A)				
2.18.27	T.H.D of belt pack transmitter should be less than 0.5% at 1 kHz				
2.18.28	Frequency response of the belt pack transmitter should be 50 Hz - 18,000 Hz				
2.18.29	Weight with batteries of the belt pack transmitter should be less than 150 g				
2.18.30	The lavaliere Microphone should have omnidirectional polar pattern				
2.18.31	The lavaliere Microphone should be battery or phantom powered				
2.18.32	Transducer type should be Condenser (back electret)				
2.18.33	Operating principle of the lavaliere Microphone should be Pressure				
2.18.34	Frequency response of the lavaliere Microphone should be 25 - 20,000 Hz				
2.18.35	Open circuit voltage at 1 kHz of the lavaliere Microphone should be30 mV				
2.18.36	Nominal impedance of the lavaliere Microphone should be less than or equal to 200 ohms				

2.18.37	Load impedance of the lavaliere Microphone should be greater than or equal to 1 KΩ				
2.18.38	Max. SPL at 1 kHz of the lavaliere Microphone should be 120 dB				
2.18.39	S/N ratio rel. to 1 Pa of the lavaliere Microphone should be approx. 60 dB				
2.18.40	Length of the lavaliere Microphone should be less than 14 mm				
2.18.41	Head diameter of the lavaliere Microphone should be less than 8mm				
2.18.42	Weight of the lavaliere Microphone without cable should not exceed 2 grams				
2.19	**Supply, Installation, Programming, Testing & Commissioning of Digital Matrix Processor of following specifications, complete with all accessories as required.**	Each	1.00		
2.19.1	Digital matrix processor shall have six inputs, all with mic level capability and 48 volt phantom power that can be routed and mixed to four line level outputs.				
2.19.2	The inputs of the digital matrix processor shall be six balanced or unbalanced mic/line level on 3.5 mm, 3-pole captive screw connectors				
2.19.3	The output of the digital matrix processor Output shall be four balanced or unbalanced line level on 3.5 mm, 3-pole captive screw connectors				
2.19.4	Digital matrix processor shall features 32/64-bit floating point audio DSP processing to simplify management of gain staging while reducing the possibility of DSP signal clipping.				
2.19.5	The Digital matrix processor shall be equipped with selectable 48 volt phantom power for each input, allowing the use of condenser microphones.				

2.19.6	The Digital matrix processor shall have studio grade 24-bit/48 kHz analogue-to-digital and digital-to-analogue converters				
2.19.7	The input to output latency shall be constant 4.5 ms within the Digital matrix processor regardless of the number of active channels or processes.				
2.19.8	The Digital matrix processor shall be equipped with both primary and secondary RS-232 serial ports for divisible room applications.				
2.19.9	Six mono mic/line inputs of the digital matrix processor shall be matrixed mixed into any of the four output buses to create finely tuned audio zones for the corresponding outputs				
2.19.10	Six inputs of the digital matrix processor shall be routed to any of the four "virtual" buses to allow inputs to be processed together as a group, before routing back into the output buses				
2.19.11	The audio gain of the digital matrix processor shall be Unbalanced output: -6 dB; balanced output: 0 dB				
2.19.12	The Frequency response of the digital matrix processor shall be 20 Hz to 20 kHz, ±0.1 dB				
2.19.13	The THD + Noise of the digital matrix processor shall be less than 0.01% @ 1 kHz, at maximum output level				
2.19.14	The S/N of the digital matrix processor shall be greater than 105 dB, 20 Hz to 20 kHz, at maximum output, unweighted				
2.19.15	The Crosstalk of the digital matrix processor shall be less than 90 dB @ 1 kHz, fully loaded				
2.19.16	The Digital matrix processor shall have audio input impedance greater than 10 ohms unbalanced/balanced				

2.19.17	The Digital matrix processor shall have audio output impedance of 50 ohms unbalanced, 100 ohms balanced				
2.19.18	The Digital matrix processor shall perform digital audio signal processing function such as level control, dynamics, filters, delay, ducking, loudness, feedback suppression, and matrix mixing				
2.19.19	The Digital matrix processor shall provides LEDs on the front panel for each input and output, for real-time monitoring of signal presence				
2.19.20	The Digital matrix processor shall be controlled and configured via RS-232 serial control, Ethernet control, or USB.				
2.19.21	The Digital matrix processor shall have digital I/O ports for external triggering such as mic activation and muting				
2.20	**Supply, Installation, Programming, Testing & Commissioning of 2 channel amplifier- Type I of following specifications, complete with all accessories as required.**	Each	1.00		
2.20.1	Number of channels should be 2				
2.20.2	Should be capable of delivering similar power per channel at 70 V, 2, 4, 8 and 16 ohms				
2.20.3	Max total output all channels driven should not be less than 800 watts				
2.20.4	Peak output voltage per channel should be 100 V / 70 Vrms				
2.20.5	Max. output current per channel should be 16 Arms				
2.20.6	THD 20 Hz – 20 kHz for 1 W should be less than 0.1%				
2.20.7	THD at 1 kHz and 1 dB below clipping should be less than 0.05%				
2.20.8	Signal To Noise Ratio should be greater than112 dBA				

2.20.9	Channel separation (Crosstalk) at 1 kHz should be greater than 70 dB				
2.20.10	Frequency response of 2 Hz – 40 kHz				
2.20.11	Input impedance of 20 kOhm				
2.20.12	Common Mode Rejection (CMR) : 50 dB				
2.20.13	Output impedance of 25 mOhm				
2.20.14	Should have a feature of mixing and matching of loads with different impedances				
2.20.15	Should have RSL switch circuit for sensing rail voltage and optimizes output for instantaneous load conditions				
2.21	**Supply, Installation,Testing & Commissioning of wall mount speakers of following specifications, complete with all accessories as required.**	Each	2.00		
2.21.1	Two-Way Surface Mount full range Speakers with a power rating of 60 watts continuous pink noise, 120 watts continuous program capacity				
2.21.2	The speaker shall have 6.5" (16.5 cm) long-throw woofer with dual tuned bass reflex ports and a 1" (2.5 cm) silk dome tweeter				
2.21.3	The speaker provide a wide frequency range from 70 Hz to 18 kHz				
2.21.4	The speaker shall have integrated electrical contacts automatically mate with the pre-wired contacts on the mounting plate				
2.21.5	The nominal sensitivity of the speaker shall be 90 dB SPL, 1 W, 1 m, full space				
2.21.6	The nominal impedance of the speaker shall be 8 ohms				
2.21.7	The Crossover frequency of the speaker shall be 2.5 kHz				
2.21.8	0° mounting plate and 10° mounting adapter shall be provided along with the speaker				

2.21.9	The speaker shall have full range power limiter protecting the tweeter, woofer, and crossover from overload				
	Cables & Connectors				
2.22	**Supply, Installation, Testing & Commissioning of 17U Equipment Rack of following specifications, complete with all accessories as required**	Each	1.00		
2.22.1	Equipment rack should be of 17U				
2.22.2	Rack should have 8 PORT 5 Amp Power Distribution Unit				
2.22.3	Rack should have Castor wheels with brake and without brake				
2.22.4	Rack should have Cable manager				
2.22.5	Rack shall have shelves for placing non rack mountable equipment				
2.22.6	Rack should have Monitor Tray – Ventilation & Fan assembly				
2.22.7	Rack should also have Front and back doors				
2.23	**Supply & Laying of Speaker cable of following specifications, complete as required.**	Mtr	100.00		
2.23.1	Speaker cable for connecting speakers and amplifiers				
2.23.2	Cable shall have single colour-coded pair, 16 AWG bare copper conductors.				
2.23.3	Cable shall offers a higher conductor strand count than comparable cables in its class				
2.23.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
2.24	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**	Mtr	100.00		
2.24.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.				

2.24.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires				
2.24.3	Cable shall have tinned copper drain wire on the inside of the foil shield.				
2.24.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
2.25	**Supply & Laying of Shielded twisted pair cable of following specifications, complete as required**	Mtr	70.00		
2.25.1	24 AWG solid copper construction shielded twisted pair cable				
2.25.2	The cable shall be certified to 475 MHz bandwidth at distances up 100 meters and has been independently tested and verified to meet performance requirements set by the HDBaseT Alliance				
2.25.3	Cable shall provides added protection from outside interference and ensures high quality signal transmission				
2.25.4	Cable shall be Independently tested and verified to meet performance requirements set by HDBaseT Alliance				
2.25.5	Cable shall utilize SF/UTP design with with four unshielded 24 AWG twisted pair conductors inside an overall braid and foil shield				
2.25.6	Cable shall be non-plenum rated				
2	**Supply & Termination of RJ-45 plug of following specifications, complete with all accessories as required.**	Mtr	10.00		
2.26.1	Shielded RJ-45 plug for twisted pair cable				
2.26.2	RJ-45 plug shall have metal strain relief and ground bonding				
2.26.3	RJ-45 plug shall be ideal for high EMI/RFI environments				
2.26.4	RJ-45 plug shall have conductor alignment guide reduces crosstalk				

	and signal interference				
2.26.5	RJ-45 plug shall have Gold plated contacts				
2.27	**Supply and Termination of Connectors of following specification, complete as required.** High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers	Set	1.00		
	Total Amount for LECTURE HALL- FIRST FLOOR				

Sl No	Description of Item	Unit	Qty	Rate (in words and figures)	Amount (in words and figures)
3	Conference Hall- Ground Floor				
	Video & Display System				
3.1	**Supply, Installation, Programming, Testing & Commissioning of display unit with a minimum size of 55 inch of following specifications , complete with all accessories as required.**	Each	1.00		
3.1.1	The Screen size of display shall be 55 inch Diagonal or more				
3.1.2	The panel type shall be 60 Hz D-LED BLU Panel				
3.1.3	The Display Resolution shall be 1920 x 1080				
3.1.4	The Contrast Ratio Shall not be less than 5000:1				
3.1.5	The Response Time of Display shall not be more than 6 ms				
3.1.6	The Brightness of the display shall not be less than 350 nits				
3.1.7	The display shall have maximum pixel frequency of 148.5MHz				
3.1.8	The Display Colour shall be 16.7M				
3.1.9	The display shall have Pixel Pitch of 0.21 (H) x 0.63 (V)				
3.1.10	The Colour Gamut Shall not be less than 72%				

3.1.11	The Viewing angle of Display shall be 178°/178°				
3.1.12	The Display shall have atleast one HDMI input				
3.1.13	The Display shall have atleast one DVI-D, D-SUB & Component video Input terminals				
3.1.14	The Display shall have Stereo Mini jack Audio Output Terminal				
3.1.15	The Display Shall have Stereo Mini jack Audio Input Terminal				
3.1.16	The Device Shall have option of External Control Via RS232C(in/out) thru stereo jack, RJ45				
3.1.17	Bezel Width of the display shall not be more than 9.5 mm on Top and side & 15.0mm on the bottom				
3.1.18	The Display Shall have USB 2.0 input ports				
3.1.19	The operating system of the display shall be LINUX				
3.1.20	The Display shall have 2x 10W built In speaker				
3.1.21	The Display shall have embedded media player				
3.1.22	The Display shall have SD Card Slot				
3.1.23	The Display shall have External Sensors for IR and Ambient Light				
3.1.24	The display shall be Energy star 6.0 certified				
3.1.25	The weight of the display shall be less than 16kg				
3.1.26	The thickness of display shall be less than 50mm				
3.2	**Supply, Installation, Testing & Commissioning of wall mount unit for display unit of following specifications, complete with all accessories as required.**	Each	1.00		
3.2.1	VESA Mount wall mount brackets compatible for above display				
3.2.2	The weight of the mount should be less than 3 Kg.				
3.2.3	Supplied with all the fastners, screws etc				

3.3	**Supply, Installation, Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**	Each	1.00		
3.3.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input				
3.3.2	The wall plate shall features a pass-through VGA female to VGA female on 6" pigtail, HDMI female adapter on 10" pigtail, and a 3.5 mm stereo mini jack to captive screw				
3.3.3	The wall plate shall be of one gang size				
3.3.4	The wall Plate shall be HDCP Compliant				
3.3.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.				
3.3.6	The wall plate should be of metal construction				
3.4	**Supply, Installation,Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**	Each	1.00		
3.4.1	3ft Ultra-flexible low bend radius HDMI cable				
3.4.2	The cable shall be 1080p/60 verified				
3.4.3	The cable shall of 36 AWG copper wire construction				
3.4.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60				
3.4.5	The cable shall support Data rates to 10.2 Gbps				
3.4.6	The cable shall support Refresh rates to 120 Hz				
3.4.7	The cable shall support Color depth to 48 bits - 16 bits per colour				
3.4.8	The cable shall have Gold plated contacts				
3.5	**Supply, Installation, Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**	Each	1.00		

3.5.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.				
3.5.2	The cable shall be Thin, flexible cable with low profile VGA connectors				
3.5.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the other side				
3.5.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end				
3.5.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio				
3.5.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection				
3.5.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation				
3.5.8	The cable shall be AWM 20276 rated				
3.6	**Supply, Installation, Testing & Commissioning of 35 ft HDMI cable of following specification, complete as required.**				
3.6.1	35ft standard speed HDMI cable				
3.6.2	The cable shall be 1080p/60 verified				
3.6.3	The cable shall of 22 AWG copper wire construction				
3.6.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60	Each	1.00		
3.6.5	The cable shall support Data rates to 4.95 Gbps				
3.6.6	The cable shall support Refresh rates to 60 Hz				
3.6.7	The cable shall support colour depth to 24 bits – 8 bits per colour				
3.6.8	The cable shall have Gold plated contacts				
3.6.9	The cable shall be NEC CM Rated				
	Cables & Connectors				
3.7	**Supply & Laying of VGA Cable of following specifications, complete as**	Each	15.00		

	required.				
3.7.1	Cable shall carries red, green, blue, and separate horizontal and vertical sync on five conductors				
3.7.2	Cable shall include five 26 AWG, 75 ohm coaxial conductors in a single jacket				
3.7.3	Each conductor shall be individually double-shielded with foil and tinned copper to reduce interference.				
3.7.4	The cable shall be sweep tested from 5 MHz to 1 GHz				
3.7.5	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
3.7.6	Nominal impedance of the cable shall be 75ohms				
3.8	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**	Mtr	10.00		
3.8.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.				
3.8.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires				
3.8.3	Cable shall have tinned copper drain wire on the inside of the foil shield.				
3.8.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
3.9	**Supply and Termination of Connectors of following specification, complete as required.**	Set	1.00		
	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers				
	Total amount for Conference Hall-Ground Floor				

Sl No	Description of Item	Unit	Qty	Rate (in words and figures)	Amount (in words and figures)
4	Conference Hall - First Floor				
	Video & Display System				
4.1	**Supply, Installation, Programming, Testing & Commissioning of display unit with a minimum size of 55 inch of following specifications , complete with all accessories as required.**	Each	1.00		
4.1.1	The Screen size of display shall be 55 inch Diagonal or more				
4.1.2	The panel type shall be 60 Hz D-LED BLU Panel				
4.1.3	The Display Resolution shall be 1920 x 1080				
4.1.4	The Contrast Ratio Shall not be less than 5000:1				
4.1.5	The Response Time of Display shall not be more than 6 ms				
4.1.6	The Brightness of the display shall not be less than 350 nits				
4.1.7	The display shall have maximum pixel frequency of 148.5MHz				
4.1.8	The Display Colour shall be 16.7M				
4.1.9	The display shall have Pixel Pitch of 0.21 (H) x 0.63 (V)				
4.1.10	The Colour Gamut Shall not be less than 72%				
4.1.11	The Viewing angle of Display shall be 178°/178°				
4.1.12	The Display shall have atleast one HDMI input				
4.1.13	The Display shall have atleast one DVI-D, D-SUB & Component video Input terminals				
4.1.14	The Display shall have Stereo Mini jack Audio Output Terminal				
4.1.15	The Display Shall have Stereo Mini jack Audio Input Terminal				
4.1.16	The Device Shall have option of External Control Via RS232C(in/out) thru stereo				

	jack, RJ45				
4.1.17	Bezel Width of the display shall not be more than 9.5 mm on Top and side & 15.0mm on the bottom				
4.1.18	The Display Shall have USB 2.0 input ports				
4.1.19	The operating system of the display shall be LINUX				
4.1.20	The Display shall have 2x 10W built In speaker				
4.1.21	The Display shall have embedded media player				
4.1.22	The Display shall have SD Card Slot				
4.1.23	The Display shall have External Sensors for IR and Ambient Light				
4.1.24	The display shall be Energy star 6.0 certified				
4.1.25	The weight of the display shall be less than 16kg				
4.1.26	The thickness of display shall be less than 50mm				
4.2	**Supply, Installation, Testing & Commissioning of wall mount unit for display unit of following specifications, complete with all accessories as required.**	Each	1.00		
4.2.1	VESA Mount wall mount brackets compatible for above display				
4.2.2	The weight of the mount should be less than 3 Kg.				
4.2.3	Supplied with all the fastners, screws etc				
4.3	**Supply, Installation, Testing & Commissioning of presentation wall plate with suitable ports of following specifications, complete with all accessories as required.**	Each	1.00		
4.3.1	The wall Plate shall have at least one HDMI ,VGA and Stereo input				
4.3.2	The wall plate shall features a pass-through VGA female to VGA female on 6″ pigtail, HDMI female adapter on 10″ pigtail, and a 3.5 mm stereo mini jack to				

	captive screw				
4.3.3	The wall plate shall be of one gang size				
4.3.4	The wall Plate shall be HDCP Compliant				
4.3.5	The HDMI & VGA input of the wall plate shall facilitate EDID communication and HDCP exchange between the display and source.				
4.3.6	The wall plate should be of metal construction				
4.4	**Supply, Installation, Testing & Commissioning of 3 ft HDMI cable of following specification complete as required.**				
4.4.1	3ft Ultra-flexible low bend radius HDMI cable				
4.4.2	The cable shall be 1080p/60 verified				
4.4.3	The cable shall of 36 AWG copper wire construction				
4.4.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60	Each	1.00		
4.4.5	The cable shall support Data rates to 10.2 Gbps				
4.4.6	The cable shall support Refresh rates to 120 Hz				
4.4.7	The cable shall support Color depth to 48 bits - 16 bits per colour				
4.4.8	The cable shall have Gold plated contacts				
4.5	**Supply, Installation, Testing & Commissioning of 3ft high resolution VGA cable of following specification , complete as required**				
4.5.1	3ft micro high resolution coax cable with a 15-pin HD male connector and audio cable with a 3.5 mm mini plug on each end.	Each	1.00		
4.5.2	The cable shall be Thin, flexible cable with low profile VGA connectors				
4.5.3	The audio cable shall be atleast 24 inches long one side and 8 inches long on the				

	other side				
4.5.4	Pin 9 of the 15-pin HD male connector shall be passed through from end to end				
4.5.5	The cable shall be capable of transmitting computer-video, ID bit signals, and audio				
4.5.6	VGA shell of the cable shall be grounded for ESD electrostatic discharge protection				
4.5.7	The cable shall features injection mold with overall foil shield for improved EMI electromagnetic interference isolation				
4.5.8	The cable shall be AWM 20276 rated				
4.6	**Supply, Installation, Testing & Commissioning of 35 ft HDMI cable of following specification, complete as required.**				
4.6.1	35ft standard speed HDMI cable				
4.6.2	The cable shall be 1080p/60 verified				
4.6.3	The cable shall of 22 AWG copper wire construction				
4.6.4	The cable shall supports signals up to 1920x1200 @ 60 Hz and 1080p/60	Each	1.00		
4.6.5	The cable shall support Data rates to 4.95 Gbps				
4.6.6	The cable shall support Refresh rates to 60 Hz				
4.6.7	The cable shall support colour depth to 24 bits – 8 bits per colour				
4.6.8	The cable shall have Gold plated contacts				
4.6.9	The cable shall be NEC CM Rated				
	Cables & Connectors				
4.7	**Supply & Laying of VGA Cable of following specifications, complete as required.**				
4.7.1	Cable shall carries red, green, blue, and separate horizontal and vertical sync on five conductors	Each	15.00		
4.7.2	Cable shall include five 26 AWG, 75 ohm coaxial conductors in a single jacket				

4.7.3	Each conductor shall be individually double-shielded with foil and tinned copper to reduce interference.				
4.7.4	The cable shall be sweep tested from 5 MHz to 1 GHz				
4.7.5	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
4.7.6	Nominal impedance of the cable shall be 75ohms				
4.8	**Supply & Laying of Dual twisted pair Audio Cable of following specifications , complete as required.**	Mtr	10.00		
4.8.1	Audio Cables/Serial Control Cables for transmission and distribution of audio and control signals.				
4.8.2	Cable should have Dual 22 AWG shielded twisted pairs with individual drain wires				
4.8.3	Cable shall have tinned copper drain wire on the inside of the foil shield.				
4.8.4	Cable shall have NEC CM non-plenum Super Flex jacket with sequential numbering				
4.9	**Supply and Termination of Connectors of following specification, complete as required.**	Set	1.00		
	High quality branded XLR, AUDIO. RCA, Stereo connectors with Hood covers				
	Total amount for Conference Hall - First Floor.				

SECTION – XI
CHECKLIST
Name of Bidders:
Name of Manufacturer:

Sl No.	Activity	Yes/ No/ NA	Page No. in the TE document	Remarks
1. a.	Have you enclosed EMD of required amount for the quoted schedules?			
b.	In form of EMD furnished in the REQUIRED along with the tender?			
c.	Have you kept its validity of 165 days from Techno Commercial Tender Opening date as per clause 19 of GIT?			
2. a.	Have you enclosed duly filled Tender Form as per format in Section IX?			
b.	Have you enclosed Power of Attorney in favour of the signatory?			
3. a.	Have you enclosed clause-by-clause technical compliance statement for the quoted goods vis-à-vis the Technical specifications?			
b.	In case of Technical deviations in the compliance statement, have you identified and marked the deviations?			
4.	Have you submitted manufacturer's authorization as per Section XIV?			
5.	Have you submitted prices of goods, CMC etc. in the Price Schedule as per Section X?			
6.	Have you kept validity of 120 days from the Techno Commercial Tender Opening date as per the TE document?			

Sl No.	Activity	Yes/ No/ NA	Page No. in the TE document	Remarks
7. a.	In case of Indian Bidders, have you furnished Income Tax Account No. as allotted by the Income Tax Department of Government of India?			
b.	In case of Foreign Bidders, have you furnished Income Tax Account No. of your Indian Agent as allotted by the Income Tax Department of Government of India?			
8.	Have you intimated the name an full address of your Banker (s) along with your Account Number			
9.	Have you fully accepted payment terms as per TE document?			
10.	Have you fully accepted delivery period as per TE document?			
11.	Have you submitted the certificate of incorporation?			
12.	Have you accepted the warranty as per TE document?			
13.	Have you accepted terms and conditions of TE document?			
14.	Have you furnished documents establishing your eligibility & qualification criteria as per TE documents?			

Date:

Name

Signature

Stamp and full address

SECTION – XIII

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY/ CMC SECURITY

To
Head of Dept/Institute/ Medical College

WHEREAS _____ (Name and address of the supplier) (Hereinafter called "the supplier") has undertaken, in pursuance of contract no_____ dated _____ to supply (description of goods and services) (herein after called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognised by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of. _____ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to 60 days beyond warranty period. i.e up to ---------- (indicate date)

…….
(Signature with date of the authorised officer of the Bank)
…….
Name and designation of the officer
…….
…….
Seal, name & address of the Bank and address of the Branch

SECTION – XIV
MANUFACTURER'S AUTHORISATION FORM

To

Deputy Vice President (Tech), ID Division, Adarsh, TC 6/1718, Vettamukku, Thirumala P.O., Trivandrum - 695006

Dear Sirs,

Ref. Your TE document No _____, dated _____

We, _____ who are proven and reputable manufacturers of_____(*name and description of the goods offered in the tender*) having factories at_____, hereby authorise Messrs_____(*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 TE documents for the above goods manufactured by us.

We further confirm that no supplier or firm or individual other than Messrs. _____ (*name and address of the above agent*) is authorised to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We also hereby extend our full warranty, CMC as applicable as per clause 15 of the General Conditions of Contract, read with modification, if any, in the Special Conditions of Contract for the goods and services offered for supply by the above firm against this TE document.

Yours faithfully,

[*Signature with date, name and designation*]
for and on behalf of Messrs_____

[*Name & address of the manufacturers*]

Note : 1. This letter of authorisation should be on the letter head of the manufacturing firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.

1. Original letter may be sent.

Any other additional services (if applicable) and cost thereof: _____

Total value (in figure) _____ (In words) _____

2. Delivery schedule

(iii) Details of Performance Security

(iv) Quality Control

(a) Mode(s), stage(s) and place(s) of conducting inspections and tests.

(b) Designation and address of purchaser's inspecting officer

(v) Destination and despatch instructions

(vi) Consignee, including port consignee, if any

3. Warranty clause
4. Payment terms
5. Paying authority

_____

(Signature, name and address

of the Purchaser's/Consignee's authorised official)

For and on behalf of_____

Received and accepted this contract

(Signature, name and address of the supplier's executive

duly authorised to sign on behalf of the supplier)

For and on behalf of _____

(Name and address of the supplier)

(Seal of the supplier)

Date: _____

Place: _____

SECTION – XV
CONTRACT FORM - A

CONTRACT FORM FOR SUPPLY HANDING OVER, TRIAL RUN, TRAINING OF OPERATORS & WARRANTY OF GOODS

(Address of the Purchaser's/Consignee's
office issuing the contract)

Contract No_____ dated_____

This is in continuation to this office's Notification of Award No_____ dated _____

1. Name & address of the Supplier: _____

2. Purchaser's TE document No_____ dated_____ and subsequent Amendment No_____, dated_____ (if any), issued by the purchaser

3. Supplier's Tender No_____ dated_____ and subsequent communication(s) No_____ dated _____ (if any), exchanged between the supplier and the purchaser in connection with this tender.

4. In addition to this Contract Form, the following documents etc, which are included in the documents mentioned under paragraphs 2 and 3 above, shall also be deemed to form and be read and construed as integral part of this contract:

    (i) General Conditions of Contract;
    (ii) Special Conditions of Contract;
    (iii) List of Requirements;
    (iv) Technical Specifications;
    (v) Quality Control Requirements;
    (vi) Tender Form furnished by the supplier;
    (vii) Price Schedule(s) furnished by the supplier in its tender;
    (viii) Manufacturers' Authorisation Form (if applicable for this tender);
    (ix) Purchaser's Notification of Award

Note : The words and expressions used in this contract shall have the same meanings as are respectively assigned to them in the conditions of contract referred to above. Further, the definitions and abbreviations incorporated under clause 1 of Section II – 'General Instructions to Bidders' of the Purchaser's TE document shall also apply to this contract.

5. Some terms, conditions, stipulations etc. out of the above-referred documents are reproduced below for ready reference:

(i) Brief particulars of the goods and services which shall be supplied/ provided by the supplier are as under:

Schedule No.	Brief description of goods/services	Accounting unit	Quantity to be supplied	Unit Price	Total price	Terms of delivery

(ii) Any other additional services (if applicable) and cost thereof: _____
Total value (in figure) _____ (In words) _____

6. Delivery schedule

(iii) Details of Performance Security

(iv) Quality Control

(a) Mode(s), stage(s) and place(s) of conducting inspections and tests.
(b) Designation and address of purchaser's inspecting officer

(v) Destination and despatch instructions

(vi) Consignee, including port consignee, if any

7. Warranty clause
8. Payment terms
9. Paying authority

_____
(Signature, name and address
of the Purchaser's/Consignee's authorised official)
For and on behalf of_____

Received and accepted this contract

(Signature, name and address of the supplier's executive
duly authorised to sign on behalf of the supplier)
For and on behalf of _____
(Name and address of the supplier)

(Seal of the supplier)
Date: _____

Place: _____

SECTION – XVI
CONTRACT FORM – B
CONTRACT FORM FOR CMC

Annual CM Contract No._____
Between

(Address of the head of the Consignee)
And

(Name & Address of the Supplier)

Ref: Contract No_____ dated_____ (Contract No. & date of Contract for supply, handing over, Trial run, Training of operators & warranty of goods)

In continuation to the above referred contract The Contract of Annual Comprehensive Maintenance is hereby concluded as under: - (a)

1	2	3	4			5
Schedule No.	**BRIEF DESCRIPTION OF GOODS**	**QUANTITY. (Nos.)**	**CMC Cost for Each Unit year wise*.**			**Total CMC Contract Cost for 3 Years**
			1st	**2nd**	**3rd**	
			a	**b**	**c**	
1						
2						
3						

Total value (in figure) _____ (In words) _____

b) The CMC commence from the date of expiry of all obligations under Warranty i.e. from_____ (date of expiry of Warranty) and will expire on _____ (date of expiry of CMC)

c) The cost of CMC which includes preventive maintenance, labour and spares, after satisfactory completion of Warranty period may be quoted for next 7 years as contained in the above referred contract on yearly basis for complete equipment (including Batteries for UPS).

d) There will be 98% uptime warranty during CMC period on 24 (hrs) X 7 (days) X 365 (days) basis, with penalty, to extend CMC period by double the downtime period.

e) During CMC period, the supplier shall visit at each consignee's site for preventive maintenance including testing and calibration as per the manufacturer's service/ technical/ operational manual. The supplier shall visit each consignee site as recommended in the manufacturer's manual, but at least once in 6 months commencing from the date of the successful completion of warranty period for preventive maintenance of the goods.

f) All software updates should be provided free of cost during CMC.

SECTION – XVII

CONSIGNEE RECEIPT CERTIFICATE

(To be given by consignee's authorized representative)

The following store (s) has/have been received in good condition:

1) Contract No. & date :_____

2) Supplier's Name :_____

3) Consignee's Name & Address with telephone No. & Fax No. : _____

4) Name of the item supplied :_____

5) Quantity Supplied :_____

6) Date of Receipt by the Consignee :_____

7) Name and designation of Authorized Representative of Consignee :_____

8) Signature of Authorized Representative of Consignee with date :_____

9) Seal of the Consignee :_____

SECTION – XVIII

Proforma of Final Acceptance Certificate by the Consignee

No_____
Date_____

To

M/s _____
_____
_____

Subject: Certificate of commissioning of equipment/plant.

This is to certify that the equipment(s)/plant(s) as detailed below has/have been received in good conditions along with all the standard and special accessories and a set of spares (subject to remarks in Para no.02) in accordance with the contract/technical specifications. The same has been installed and commissioned.

(a) Contract No_____ dated_____

(b) Description of the equipment(s)/plants:_____

(c) Equipment(s)/ plant(s) nos.:_____

(d) Quantity:_____

(e) Bill of Loading/Air Way Bill/Railway Receipt/ Goods Consignment Note no_____ dated _____

(f) Name of the vessel/Transporter:_____

(g) Name of the Consignee:_____

(h) Date of commissioning and proving test:_____

Details of accessories/spares not yet supplied and recoveries to be made on that account.

Sl. No.	Description of Item	Quantity	Amount to be recovered No.

The proving test has been done to our entire satisfaction and operators have been trained to operate the equipment(s)/plant(s).

The supplier has fulfilled its contractual obligations satisfactorily ## or

The supplier has failed to fulfil its contractual obligations with regard to the following:

He has not adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specifications'.

He has not supervised the commissioning of the equipment(s)/plant(s)in time, i.e. within the period specified in the contract from date of intimation by the Purchaser/Consignee in

respect of the installation of the equipment(s)/plant(s).
The supplier as specified in the contract has not done training of personnel.
The extent of delay for each of the activities to be performed by the supplier in terms of the contract is
The amount of recovery on account of non-supply of accessories and spares is given under Para no.02.
The amount of recovery on account of failure of the supplier to meet his contractual obligations is_____ (here indicate the amount).
Signature
Name
Designation with stamp

Explanatory notes for filling up the certificate:
He has adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specification'.
He has supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the time specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).
Training of personnel has been done by the supplier as specified in the contract
In the event of documents/drawings having not been supplied or installation and commissioning of the equipment(s)/plant(s) having been delayed on account of the supplier, the extent of delay should always be mentioned

Section – XIX
Consignee List

Consignee Code	Contact Address.	AirPort	Sea Port
Govt: Medical College, Kozhikode	Medical College	**Kozhikode**	**ERNAKULAM**