

Tender Enquiry No: ASMC/Medical College/2020-21/1500 dated: 23.05.2020

**E-Tender for the
"Setting up of BSL-3 Laboratory Facility on Turnkey Basis for Autonomous State Medical
College, Shahjahanpur in the State of Uttar Pradesh"**

Tender published at Website: <https://etender.up.nic.in>

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Chief Secy

District Hospital, Bhopal

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वित्त निबंधक
महामौ राज्य विधित्त महानिधान
बलनगरी

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प्रधानाध्यक्ष

महामौ राज्य विधित्त महानिधान
बलनगरी-462 002 (मध्य प्रदेश)

Tender Enquiry No: ASMC/Medical College/2020-21/1500

dated: 23-05-2020

E-Tender Enquiry Details

Date of Publishing	Date: 25.05.2020 Time:10.00AM
Bid Document Download start date (Online)	Date: 25.05.2020 Time:10.00AM
Date and time of Pre-Bid meeting	Date: 29.05.2020 Time:02.00PM
Response to Pre-Bid queries	Shall be uploaded on the website post Pre-Bid meeting
Bid Submission End date and time (Online)	Date: 10.06.2020 Time:06.00PM
Receipt of EMD at (Autonomous State Medical College, Shahjahanpur)	Rs. 5,00,500 (Rupees Five Lakhs and five hundred)
Date of Technical Bid opening (Online)	Date:11.06.2020PM Time:02.00PM
Date of Financial Bid Opening	To be notified separately to the shortlisted bidder
Tender Document Fee (Non-Refundable), please enclosed the proof of payment in the technical proposal	Rs. 5900/- (including 18% GST) ACCOUNT NAME: Autonomous State Medical College, Shahjahanpur ACCOUNT NO. 38591214836 IFSC CODE: SBIN0004000

Earnest Money Deposit: Rs. 5,00,500 (Rupees Five Lakhs five hundred only)


EMD should reach this office in the form of Demand Draft/Bank Guarantee drawn in favour of "Principal, Autonomous State Medical College, Shahjahanpur" on or before Bid Submission End date.

Important Notes:


1. Tender documents may be downloaded from Public Procurement Portal <https://etender.up.nic.in>.
2. Only Bids received on our e-Tendering portal will be considered for opening. Bids in any physical form sent through fax/e-mail/courier/post/delivered personally will not be considered.
3. Any addendum/Corrigendum date extension in respect of above Tender shall be issued on our website <https://etender.up.nic.in> only and no separate notification shall be issued in the press. Bidders are therefore requested to regularly visit our website to keep themselves updated.

Place: Shahjahanpur

Date: 23.05.2020


Chief Medical Superintendent
District Hospital, Shahjahanpur

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विश्व निदेशक
राज्य विकास महानिदेशक
राजधानी

CHAPTER - 1

The Principal, Autonomous State Medical College, Shahjahanpur invites Bids from competent and experienced agencies having sound technical knowledge, expertise and experience in establishment of BSL-3 Laboratories for "Setting up of BSL3 Laboratory Facility on Turnkey Basis for Autonomous State Medical College, Shahjahanpur in the State of Uttar Pradesh"

1.0 QUALIFICATION CRITERIA REQUIREMENTS

The Bidder shall meet the following Qualification Criteria requirements:

Clause	Criteria
1.1	<p>The Firm shall have Experience of having successfully completed 'Similar work of Construction of Biosafety Level-3 or Higher Containment Laboratory' during the last 7 years for any Govt. Dept or reputed Organization/Institute, as under:</p> <p>One similar work having value of not less than Rs. 4,00,00,000 (Rupees Four Crore only)</p> <p>Or</p> <p>Two similar works each having value of not less than Rs. 3,00,00,000 (Rupees Three Crore only)</p> <p>Or</p> <p>Three similar works each having value of not less than Rs. 2,00,00,000 (Rupees Two Crore only)</p> <p>The experience of completed works shall be in the name of Bidder (being a single entity or a Consortium of two members). In case of a Consortium, the combined technical capacity and annual turnover of the Consortium Members, shall be taken into consideration to satisfy the conditions of eligibility laid down under Clause 1.1 and 1.2 of this Chapter 1.</p>
1.2	<p>The Firm shall have an average annual turnover of minimum Rs. 4,50,00,000/- (Rupees Four Crore Fifty Lakhs only) in the last 3 financial years (i.e. F/Y 2017-18, 2018-19 & 2019-20). Certified True Copy of Audited Balance Sheets or statutory auditor /CA certificate for all the three financial years shall be submitted. In case the annual accounts for the last financial year are not audited and therefore the Bidder cannot make it available, the Bidder shall give an undertaking to this effect, certified by the statutory auditor/reputed duly licensed chartered accountant.</p> <p>In such a case, the Bidder shall provide the audited annual reports for the three financial years preceding the latest financial year for which the audited annual report is not being provided.</p>
1.3	<p>The Firm shall have the experience for providing Operation and Maintenance Services and shall have at least one ongoing Operation and Maintenance Service Contract for BSL-3 or higher containment laboratories. Details shall be submitted along with copies of work orders from the client.</p>
1.4	<p>The Firm shall not have been blacklisted, debarred or expelled by any Central /State Government Department or any PSUs etc. in terms of clause 2.8 hereof during the last 5 years. The firm may provide the declaration on the letter head of the company duly signed by its authorized signatory and duly notarized affidavit certifying the</p>

- a. Made misleading or false representation in the statements and enclosures required in the Bid Document.
- b. Been blacklisted or debarred by any State/Central Government Department or any PSU.
- c. Any other reason as per the decision of the Employer/Bid Evaluation Committee, which shall be final and binding on the Bidder.

2.8. A Bidder may be reckoned to be blacklisted inter alia in the following circumstances:

- a. The Bidder has been disqualified by any State/Central Government Department or any PSU; or
- b. The Bidder is guilty of fraud in respect of the bidding process; or
- c. Any action of another government entity that amounts to blacklisting of bidder for any process and such blacklisting subsists at the time of issuance of this Tender; or
- d. The Bidder has submitted a false certificate of no Conflict of Interest.

2.9. A Bidder shall not have a conflict of interest ("Conflict of Interest") that affects the bidding process. Any Bidder found to have a Conflict of Interest shall be disqualified.

Without limiting the generality of the above, a Bidder shall be considered to have a Conflict of interest that affects the bidding process, if:

- a. The Bidder or Associate (or any constituent thereof) and any other Bidder or any Associate thereof (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of a Bidder or an Associate thereof (or any shareholder thereof having a shareholding of more than 25% (twenty five per cent) of the paid up and subscribed share capital; of such Bidder or Associate, as the case may be) in the other Bidder or Associate, is not more than 25% (twenty five per cent) of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in Section 2(72) of the Companies Act, 2013. For the purposes of this Clause, indirect shareholding held through one or more intermediate persons shall be computed as follows: (aa) where any intermediary is controlled by a person through management control or otherwise, the entire shareholding held by such controlled intermediary in any other person (the "Subject Person") shall be taken into account for computing the shareholding of such controlling person in the Subject Person; and (bb) subject always to sub-clause(aa) above, where a person does not exercise control over an intermediary, which has shareholding in the Subject Person, the computation of indirect shareholding of such person in the Subject Person shall be undertaken on a proportionate basis; provided, however, that no such shareholding shall be reckoned under this sub-clause (bb) if the shareholding of such person in the intermediary is less than 26% of the subscribed and paid up equity shareholding of such intermediary; or

- b. a constituent of such Bidder is also a constituent of another Bidder; or
- c. such Bidder or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Bidder or Associate, or has provided any such subsidy, grant, concessional loan or subordinated debt to any other Bidder or any Associate thereof; or
- d. such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
- e. such Bidder, or any Associate thereof, has a relationship with another Bidder, or any Associate thereof, directly or through common third party/ parties, that puts either or both of them in a position to have access to each other's information about, or to influence the Bid of either or each other; or
- f. such Bidder or any Associate thereof has participated as a consultant to the Authority in the preparation of any documents, design or technical specifications of the Project.

Explanation:

For purpose of this RFP, Associate means, in relation to the Bidder, a person who controls, is controlled by, or is under the common control with such Bidder (the "Associate"). As used in this definition, the expression "Control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly of more than 50% (fifty percent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person, by operation of law.

- 2.10 Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh reserves the right to accept or reject any Bidder or cancel the Bidding Process without assigning any reason and liability, whatsoever.

3.0 EVALUATION OF BIDS

- 3.1 The Bids shall be checked, evaluated and assessed on their merits as per the following Evaluation Procedure.

3.1.1 The first stage shall be checking of 'Bid Security'. If the Bid security is not submitted or in order, the Bid shall be summarily rejected.

3.1.2 The second stage will be evaluation of 'Qualification Criteria Requirements'.

3.1.3 The third stage will be evaluation of 'Technical Bids'.

3.1.4 The fourth stage will be 'Price Bid Evaluation' of only the technically qualified parties.

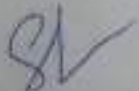
- 3.2 The Evaluation of Bids will be based on the details and information submitted by the Bidder and the Compliance and conformance of their Technical Bid to the Technical Requirements and Specifications given in the Bid Documents. It may be noted that merely copying the Tender Specifications as compliance shall not be accepted.

- 3.3 The Bidder shall submit details of compliance of their bid to the Technical Requirements, Specifications & Drawings given in the Tender documents by submitting their offered

Chief Medical Superintendent
District Hospital, Shahjahanpur

equipment and items like Wall & Ceiling panels, Doors, View panels, Biosafety Cabinets (class-II A2 and class-II B2 level), Autoclave, Pass box & dunk tank, 5 Electrical switches & sockets, Light fixtures, CCTV, Access Control, Air-conditioning system, containment housing, HEPA filters, garment cabinet etc. along with catalogues/brochures/ drawings and giving reference to BSL-3 laboratory facilities where similar items have been provided and installed by the bidder. Wherever required, references and enquiries shall be made by Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh.

- 3.4 If required, the Bidders may be called for a detailed explanation of their submitted Technical Bid or for a Technical Presentation to demonstrate the compliance of their Bid to the Technical Requirements and Specifications given in the Bid Documents.
- 3.5 'Financial Price Bids' of only those bidders shall be considered for evaluation, whose Bid shall meet the Technical Requirements and Specifications given in the Bid Documents, shall have the capacity and capability to execute and complete the Contract. The Decision of the Employer in this regard shall be final and binding on the Bidders.
- 3.6 The Bidder offering the Lowest Price Bid and whose offer is responsive to the tender requirements shall be considered for Award of Work.
- 3.7 If required, Price Negotiations may be carried out with the Lowest Bidder considered for award of work, before placement of Order.
- 4.0 The Firms are advised to read the Bid documents carefully and visit the site, at their own cost, to understand the site and to assess the work requirement and scope on any working day, prior to submission of Bids.
- 5.0 The completed Bid shall be submitted through e-procurement portal i.e. <https://etender.up.nic.in> in two bid system on or before the Bid Submission End Date. Bids received after due date and time shall automatically be rejected.


Chief Medical Superintendent
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BID FORM

(On Rs. 100/- stamp paper)

Name of Work: "Setting up of BSL3 Laboratory Facility on Turnkey Basis for Autonomous State Medical College, Shahjahanpur in the State of Uttar Pradesh" Having examined the Conditions of Contract, Specifications, Drawings, and schedule of requirements for the execution of the above works, we offer to execute and complete the works in conformity with the Contents of Bid Documents, Scope of Work, Specifications, Drawings and Contents of the Bid Document.

1. We undertake that if our tender is accepted, we will commence the works within two weeks from the date of issue of Letter of Acceptance/Award and will complete the whole of the works within the time stated in the tender document.
2. We agree to abide by this tender for the period of 180 days from the date fixed for receiving the same, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
3. We agree to treat the tender documents, other documents and records connected with the works as confidential documents and shall not communicate information described therein to any person other than the person authorized by you, or use the information in any manner prejudicial to the safety of the works.
4. Unless and until a formal Agreement is prepared and executed for this tender, subject to your written acceptance of our bid thereof, this Bid Form shall constitute a binding contract between us.
5. We undertake and confirm to agree and accept all the terms and conditions, specifications and contents given in the tender documents without any deviation or reservation.
6. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this day of 20__

Signature _____ in the capacity of _____ duly authorized to sign Bid for
and on behalf of _____
Name of Bidder: _____
Address _____

(Signed & Sealed by Bidder Firm)

Note: The bidder may submit this letter on bidding entity's letter head and subsequently submit the stamp paper if not able to procure at this stage.

Chief Medical Superintendent

विश्व निर्माण
महासंस्थान
महाराष्ट्र राज्य चिकित्सा महाविद्यालय
मुंबई

INSTRUCTIONS TO BIDDERS

1.0 GENERAL

1.1 SCOPE OF WORK

The Scope of work is "Setting up of BSL3 Laboratory Facility on Turnkey Basis for Autonomous State Medical College, Shahjahanpur in the State of Uttar Pradesh."

1.2 THE EMPLOYER

The Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh or any other person nominated by him shall be the Employer/Owner for the subject work and the contract.

In these documents wherever the word tender/ tenderer/tendering has been used the same may be considered synonymous with bid/ bidder/ bidding.

2.0 TIME FOR COMPLETION

The successful bidder shall complete the works in 4 (four) calendar months from the date of Award of Work including testing, commissioning and validation (including external validation).

The term contract period as referred in this Contract shall mean the period commencing from the Commencement Date till the completion of the operation and maintenance services as detailed in Clause 10 of Chapter II.

3.0 INFORMATION TO BE SUBMITTED ALONG WITH BID

Bids submitted shall include the following information:

- a. Copy of documents defining the constitution, legal status, place of registration and principal place of business of the company or firm.
- b. A work plan/Program clearly bringing out how the bidder proposes to carry out the work to achieve the quality and the time schedule.

4.0 COST OF BIDDING

The bidder shall bear all the costs and expenses associated with the preparation and submission of his bids and the Employer will in no case be responsible or shall have any

liability such costs or expenses, regardless of the conduct or outcome of the bidding process.

5.0 SITE VISIT

- 5.1 The bidder is advised to acquaint himself with the work involved, visit the Site and examine site conditions, assess the site preparatory works required to be carried out, the requirement and availability of space for erection of AC System, air handling units, exhaust blowers, etc. The bidder shall also examine the climatic conditions, availability of labour, power, water, material, local transportation, communication facilities, environmental regulations, laws and bye-laws of statutory bodies, and collect all information that will be necessary for preparing the bid and, if awarded the work, entering into a contract for successful execution and completion of the work. The cost of visiting the Site and collecting information for the purpose of submission of the bid shall be borne by the bidder. The site shall be handed over in its present existing condition, to the successful bidder for execution of the works. The existing fittings/fixtures and items to be dismantled shall be handed over to competent authorities.
- 5.2 The bidder and any of his personnel or agents will be granted permission by the Employer to enter upon the site for the purpose of such inspection, but only upon the condition that the bidder, his personnel or agents will release and indemnify the Employer and Employer's Personnel from and against all liability in respect thereof for personnel injury (whether fatal or otherwise), damage, loss, costs and expense however caused, to the bidder, his personnel or agents.

6.0 BID DOCUMENTS

The Bid Documents comprise the following:

- | | |
|-----------------|---|
| Section - I : | Experience and Other Criteria Requirement, Instructions to Bidders and Conditions of Contract |
| Section - II : | Scope of Work and Technical Specifications |
| Section - III : | Details of the equipment available |
| Section - IV : | Tender Drawings |

The bidder is expected to examine carefully all instructions, conditions, forms, terms and specifications etc. given in the Bid documents. Bids which are not substantially responsive to the requirements of the Bid Documents will be rejected.

7.0 CLARIFICATION ON BID DOCUMENT

A prospective bidder requiring any clarifications on the Bid Documents may notify the Employer in writing, at the Employer's mailing address indicated in the Bid

Documents, so as to reach the Employer on or before the date specified in the E-Tender Enquiry Details.

8.0 AMENDMENT OF BID DOCUMENT

At any time prior to the deadline for submission of bids, the Employer may for any reason, whether at his own initiative or in response to a clarification requested by prospective bidder, modify the Bid Documents by issuing amendment.

9.0 PREPARATION OF BIDS

The bid prepared by the bidders and all correspondence and documents relating to the bid, exchanged by the bidder and the Employer, shall be written in ENGLISH Language only.

10.0 BID PRICE

The Bidder shall quote rate for each item of the Bill of Quantities (Financial Price Bid) for the execution of Works on 'Turnkey Basis' and for comprehensive annual operation & maintenance services, including spares and consumables, as per Annexure II -Price Bid Formats, Scope of Work mentioned in Chapter 2 and subsequent corrigenda issued by the Employer. The Price Bid with rates and amount duly filled in and signed shall be submitted online, as given in Instructions to Bidders. For avoidance of doubt, the quoted rates for comprehensive annual operation & maintenance services, including spares and consumables as specified in the Scope of Work, Specification and Conditions of Contract shall be considered for evaluation of Financial Price Bid. The comprehensive annual operation and maintenance Services shall be provided for a period of 3 (three) years after the completion of warranty period of 5 years.

The quoted rates in Financial Price Bid shall be in Indian Rupees only and shall be inclusive of taxes, duties, etc. as applicable, material, labour, accessories, procurement of equipment/item, comprehensive maintenance of equipment, stores, freight, insurance, transit insurance, packing & forwarding, customs duty and clearance charges for imported goods, inspection/inspective certificate charges etc. and including all other incidental charges whichever is applicable for the equipment/item supply, erection, installation, testing and commissioning with all requisite manpower, material, tools & tackles complete in all respect, as per Annexure II - Price Bid Formats. Applicable GST rates should be claimed separately by the Successful Bidder against the supplies. The rates quoted by the Bidder for the complete Works shall remain firm, fixed and valid for acceptance for the entire duration and shall remain binding on the Bidder.

Chief Medical Officer
District Hospital, Shahjahanpur

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शहजहाँपुर

The price should be given both in figures and words. The rates quoted in ambiguous terms such as 'freight on actual basis' or 'taxes as applicable extra' or 'packing forwarding extra' or offers with price variation clause will not be accepted, and such Bids shall be summarily rejected.

It shall be deemed that by submitting a Financial Price Bid, the Bidder has made a complete and careful examination of all the provisions of Tender Document, including but not limited to Chapter 2 of the Tender Document.

11.0 EARNEST MONEY DEPOSIT

11.1 EMD in original hard copy for an amount of Rs. 5,00,500 (Rupees Five Lakhs five hundred only) in the form of Demand Draft/Bank Guarantee drawn/issued by a Scheduled Commercial bank in India in favour of "Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh" payable at Shahjahanpur should reach the Authority's office (Principal, Autonomous State Medical College, Piprola, Shahjahanpur, Uttar Pradesh, 242001) on or before Bid Submission End Date, and scanned copy of same shall be uploaded along with tender documents. The EMD shall be valid till the expiry of 90 days from the bid validity period. The EMD submitted by unsuccessful bidder shall be refunded within 30 days' time.

11.2 PERFORMANCE SECURITY & BID VALIDITY

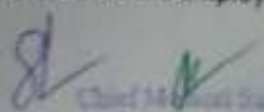
The bidder shall be required to submit a performance security equivalent to 5% of the contract value in the form of bank guarantee/demand draft drawn in favour of "Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh" payable at Shahjahanpur.

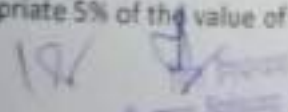
No interest will be payable by the Employer on the performance security submitted by the Bidder. The performance security shall be withheld until expiry of two months beyond completion of Defects Liability Period. However, the EMD of successful bidder will be adjusted towards performance security.

The bid shall remain valid and open for acceptance for a period of 180 days from the date of submission of Bid.

The bid security may be forfeited:

- a) If a bidder withdraws his bid during the period of bid validity.
- b) In the case of successful bidder, if he fails to:
 - i) enter into the contract with Employer, or
 - ii) furnish the necessary performance security
- c) Stands disqualified. However, if disqualification is due to applicability of 'Conflict of Interest' clause then the Employer shall forfeit and appropriate 5% of the value of the Bid


Chief Medical Superintendent
District Hospital, Shahjahanpur


Principal
Autonomous State Medical College
Shahjahanpur

Security or Performance Security, as the case may be, as mutually agreed genuine pre-estimated compensation and damages payable to the Authority for, inter alia, the time, cost and effort of the Employer, including consideration of such Bidder's proposal, without prejudice to any other right or remedy that may be available to the Employer hereunder or otherwise.

12.0 FORMAT AND SIGNING OF BID

- 12.1 The bid shall be typed and signed by a person or persons duly authorized to sign the bid and enter into the contract. Authorization shall be furnished in the form of Notarized Power of Attorney which shall be submitted with the bid. Alternatively, the bidder may submit this letter on bidding entity's letter head and subsequently submit the stamp paper if not able to procure at this stage. This shall be applicable for all notarized documents wherever required in the tender document.

In case of Consortium, the Consortium members shall submit a Power of Attorney or authorization letter signed by both the Consortium members in favour of any member, which member shall thereafter be identified as the "Lead Member, authorising the Lead Member to execute the bidding documents on behalf of the Consortium and to conduct all business for and on behalf of the Consortium. The Lead Member shall further submit a power of Attorney or authorization letter, authorising the signatory of the bid and in case of the Bidder being a Consortium, the Lead Member shall sign each page of the Bid and enter into the Contract on behalf of the Consortium, as required under this tender document.

- 12.2 All pages of the bid shall be signed and stamped by the authorized person/s signing the bid, including where entries or amendments have been made.
- 12.3 The complete bid shall be without alterations, interlining and erasures except those to accord with instruction issued by the Employer or as necessary to correct errors made by the bidder in which case such correction shall be initialed by authorized person/s signing the bid.



विश्व निर्माण
संस्था का नाम विनिर्माण मालिकाना
अवधारित

Chief Medical Superintendent
District Hospital, Indraprastha

13.0 ONLINE SUBMISSION OF BID

The tender shall be submitted online in two cover system duly scanned and digitally signed by the authorized representative of the bidder as follows:

- i. **Cover 1 (Technical Bid):** The "Technical Bid" submitted through online should contain a Cover Letter in the tenderer's letter head with fully furnished information and supporting documents required in the Qualification Criteria of the Bid document, the Power of attorney of person authorised to sign the bid, including the following :
 - a. Original bid documents of all pages or Bid Documents duly signed by authorized person and stamped.
 - b. The Bidders detailed Technical Proposal comprising of offered equipment, clause by clause compliance to the technical requirements and specifications given in the tender, proposed equipment and item along with their specifications and drawings, catalogues/ brochures and reference to BSL-3 laboratory facilities where similar items have been installed by the bidder. It may be noted that merely copying the technical requirements and specifications given in the tender shall not be accepted. The technical compliance sheet (Annexure-I) should be furnished clearly without leaving any column unattended failing which the tender will be summarily rejected.
 - c. The schedule/program for execution and completion of the Project Works
 - d. Scanned copy of EMD must be attached
 - e. Copies of past work experiences and income tax return for the past three financial years as mentioned above.
- ii. **Cover 2 (Price Bid):** Shall contain only the Financial/Price Bid with rates & prices (as given in Annexure II) duly filled in and signed and stamped without any conditions whatsoever. Applicable GST rates should be mentioned separately in the price bid.

Please provide hard copies of technical specifications, original EMD and all other supporting documents (except price bid) promptly sealed in an envelope and send it in the address of the "Principal, Autonomous State Medical College, Piprola, Shahjahanpur, Uttar Pradesh, 242001" soon after submission of the bid online.

A Bidder (single entity or Consortium) shall submit only one bid for the above specified work. In case more than one Bid is submitted by a bidder, none of their bids will be considered.

14.0 DEADLINE FOR SUBMISSION OF BIDS

- 14.1 Bids must be received by the Employer, not later than the Bid Submission End Date on the e-procurement portal i.e. <https://etender.up.nic.in> and the hard copies of

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the specific documents mentioned in Clause 13 above shall be submitted at the address detailed thereunder.

- 14.2 The Employer may, at his discretion, extend the deadline for submission of bids through the issuance of an amendment in accordance with Clause 8.0

15.0 LATE BIDS

- 15.1 Any bid received by the Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh after the prescribed deadline for submission will not be considered and opened/Bid will not be able to be uploaded after the prescribed deadline.

16.0 MODIFICATION AND WITHDRAWAL OF BIDS

- 16.1 The bidder may modify or withdraw his bid after bid submission, provided that modification or notice of withdrawal is received in writing by the Employer prior to the prescribed deadline for submission of bids.
- 16.2 No bid shall be allowed to be modified subsequent to the deadline for submission of bids. No bid shall be allowed to be withdrawn in the period between the deadline for submission of bids and the expiration of the period of validity of the bid specified. Withdrawal of a bid during this period may result in the forfeiture of the bid security.

17.0 BID OPENING AND EVALUATION

17.1 Bid Opening

Bids shall be opened at the office of the Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh on the date and time mentioned in the 'E-Tender Enquiry Details' in this tender document with proper intimation to the tenderers and in presence of their representatives.

Cover-1 (Technical Bid): Technical Bid shall be opened first. If the Bid Security is not found as prescribed, the bid shall be rejected on the spot. The Technical Bid downloaded and compliance sheet (Annexure-I) submitted by the tenderers will be evaluated by the Internal Technical Committee for qualifying the tenderers for price bid opening.

Cover-2 (Price Bid) The Financial/Price Bid (Annexure-II) of parties shall be opened on a suitable day after uploading the technically evaluated compliance sheet which will be intimated to the qualified Bidders in advance.

- 17.2. The Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh will examine the complete bid to determine whether they are complete, whether

the requisite bid securities have been furnished, whether the bids have been properly signed and stamped, whether the bidders meet the laid down Experience and other Criteria requirements, whether the bidder meets the Technical requirements and whether the bids are generally in order. Bids of parties who do not accept the conditions laid down in the bid documents are also liable to be rejected.

Only detailed and complete bids received prior to the closing time and date of the bids will be considered as valid.

The bidder's names, the presence of the requisite bid security, summary of prices quoted by the Bidders and such other details as the Employer, at his discretion may consider appropriate will be announced at the time of bid opening.

18.0 PROCESS TO BE CONFIDENTIAL

18.1 After opening the bids, information relating to the examination, clarification, evaluation and comparisons of bids and recommendations concerning the award of contract shall not be disclosed to any bidder or other persons not officially concerned with such process other than the rules prescribed as per publicly available procurement rules & handouts. Any disclosure or declaration in this regard shall be at the sole discretion of the Employer.

18.2 Any effort by the Bidder to influence the Employer in the process of examination, clarification, evaluation and comparison of bids and decision concerning award of contract may result in the rejection of the bidder's bid.

19.0 CLARIFICATION OF BIDS

19.1 To assist in the examination, evaluation and comparison of bids, the Employer may ask bidders individually for clarification of their bids or for Technical Presentation. The request for clarification and the response shall be in writing, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction or arithmetical errors discovered by the Employer during the evaluation of the bids in accordance with Clause 22 hereof.

20.0 EVALUATION OF BIDS

The evaluation of Bids shall be strictly done in accordance with the procedure given in the Instructions to Bidders. The bids will be evaluated to assess their merits and compliance to the Technical Specifications and the Bid requirements. The evaluation will be based on the information and details furnished by the bidders, clarifications/presentation given by the bidders, the conformance of the Bid to the Tender Requirements and Specifications, bidders similar experience and competency to execute and complete the work.

21.0 DETERMINATION OF ELIGIBILITY AND RESPONSIVENESS

- 21.1** The Employer will determine whether the bid is substantially responsive to the requirements of the Bid Documents.

For the purpose of this clause, a substantially responsive bid is one which shall conform to all the requirements, terms, conditions and technical specifications of the bid documents without any deviation or reservation and which fulfils and meets all the criteria and has the required experience, expertise, technical competency and resources to design and execute the project.

- 21.2** A bid which in relation to the cost estimate of the Employer is unrealistically priced and which cannot be substantiated satisfactorily by the bidder may be rejected as non-responsive.

22.0 CORRECTION OF ERRORS

- 22.1** Bids determined to be substantially responsive will be checked by the Employer for any arithmetical errors in computation and summation. Errors will be dealt by the Employer as follows:

- a. Where there is discrepancy between amounts in figures and in words, amount in words shall prevail.
- b. Incorrectly added totals will be corrected.
- c. In case there is any inconsistency between the rate and the value extended (after multiplication with the tender quantity), the unit rate quoted shall prevail.

- 22.2** If a bidder does not accept the correction of errors as outlined above, his bid will be rejected.

23.0 AWARD OF CONTRACT

The Employer will Award the Contract to the Bidder whose Bid has been determined to be eligible and to be substantially responsive to the Bid documents and who has offered the Lowest Evaluated Bid Price. In case two or more Bidders quote the same Lowest Bid Price, the Employer may ask such Bidders to provide their Best and Final Offer, which shall be lower than the Bid Price originally quoted. If the tie still subsists, the Employer may, at its discretion cancel the bidding process and invite fresh bids.

24.0 EMPLOYERS RIGHT TO ACCEPT ANY BID OR REJECT ANY OR ALL BIDS

Notwithstanding Clause 23.0 above, the Employer reserves the right to accept or reject any Bid including the Lowest Bid and to annul the bidding process and reject all bids, at any time prior to award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligations to inform the affected

bidder or bidders of the reasons and grounds for the Employer's action. The Employer's decision in this regard shall be final and binding on the Bidders.

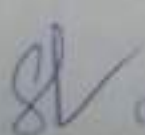
25.0 NOTIFICATION OF AWARD



Prior to the expiration of the prescribed period of bid validity, the Employer will notify the successful bidder in writing that his bid has been accepted. The notification of award will constitute the formation of the Contract.

Upon the furnishing by the successful bidder of a performance security the Employer will promptly return the Bid Security of other bidders.

26.0 SIGNING OF AGREEMENT

Upon the receipt of the notification of award by the successful bidder, the successful bidder shall fill the Agreement in accordance with form of Agreement included in the Bid Documents, on a Stamp Paper at his Cost, and submit the same to the Employer within two weeks of the date of receipt of notification of award.


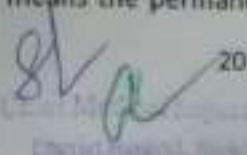
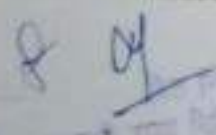
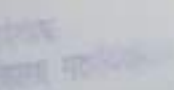

Chief Medical Superintendent
Ethical Hospital, Shikharpur



प्रमुख चिकित्सा अधिकारी
एथिकल हॉस्पिटल, शिकारपुर

CONDITIONS OF CONTRACT

Definitions

- 1.0 In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:
- i. "Appendix to Tender" means the appendix comprised in the form of Tender annexed to these Conditions.
 - ii. "Commencement Date" means the date upon which the Contractor receives the notice to commence the works as issued by the Employer
 - iii. "Contract" means these Conditions of Contract, the Specifications, the Drawings, the Price Schedule, the Letter of Acceptance, the Contract Agreement and such further documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement.
 - iv. "Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.
 - v. "Contractor" means an individual or firms (proprietary, partnership, Pvt. Ltd. or Limited Company) whether incorporated or not, that has entered into contract (with the employer) and shall include his / its heirs, legal representatives, successors and assigns, successors in interest of individuals or persons. Changes in the constitution of the firm, if any shall be immediately notified to the employer, in writing and approval obtained for continued performance of the contract.
 - vi. "Contractor's Equipment" means all appliances and things of whatsoever nature (other than Temporary Works) required for the execution and completion of the Works and the remedying of any defects therein.
 - vii. "Cost" means all expenditure properly incurred or to be incurred, whether on or off the Site, including overhead and other charges properly allowable there but does not include any allowance for profit.
 - viii. "Day" means calendar day and "Month" means calendar month.
 - ix. "Drawings" means all drawings, calculations and technical information of a like nature provided by the Employer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature either provided to the Contractor or submitted by the Contractor and approved by the Employer.
 - x. "Employer's Representative/Engineer" means a person appointed from time to time by the Employer.
 - xi. "Foreign Currency" means a currency of a country other than that in which the Works are to be located.
 - xii. "Letter of Acceptance/Award" means the formal acceptance by the Employer of the Tender.
 - xiii. "Permanent Works" means the permanent works to be executed (including Plant) in

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Contract Manager, Bangalore
Contract Manager, Bangalore

- accordance with the Contract.
- xiv. "Plant" means machinery, apparatus and the like intended to form or forming part of the Permanent Works.
- xv. "Price Schedule" means the priced and completed bill of quantities forming part of the Tender and Agreement.
- xvi. "Principal Employer/Employer" means The Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh or the legal successors in title to such person.
- xvii. "Retention Money" means the aggregate of all money retained by the Employer.
- xviii. "Section" means a part of the Works specifically identified in the Contract as a Section.
- xix. "Site" means the places provided by the Employer where the Works are to be executed and any other places as may be specifically designated in the Contract as forming part of the Site.
- xx. "Specification" means the specification of the Works included in the Contract and any modification thereof or addition thereto made or submitted by the Contractor and approved by the Employer.
- xxi. "Subcontractor" means any person named in the Contract as a Subcontractor for a part of the Works or any person to whom a part of the Works has been subcontracted by the contractor with the consent of the Employer and the legal successors in title to such person, but not any assignee of any such person.
- xxii. "Taking-Over Certificate" means a certificate issued by the Employer of having accepted and taken over the completed works.
- xxiii. "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.
- xxiv. "Tender" means the Contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance. The word Tender is synonymous with "Bid" and the words "Tender Documents" with "Bidding Documents".
- xxv. "Tests on Completion" means the tests specified in the Contract or otherwise agreed by the Employer and the Contractor which are to be made by the Contractor before the Works or any Section or part thereof are taken over by the employer.
- xxvi. "Time for Completion" means the time for completing the execution of and passing the Tests on Completion of the Works or any Section or part thereof as stated in the Contract calculated from the Commencement Date.
- xxvii. "Works" means the Permanent Works and the Temporary Works or either of them to be executed in accordance with the contract.
- xxviii. "Writing" means any hand-written, type-written, or printed communication, including telex, cable, email and facsimile transmission.

2.0 Employer's Representative

- (a) The Employer's Representative shall be appointed by and be responsible to the Employer and shall carry out such duties and exercise such authority as may be delegated to him by the Employer under Sub-Clause (b) below.
- (b) **Employer's Authority to Delegate:** The Employer may from time to time delegate to the Employer's Representative any of the duties and authorities vested in the Employer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Contractor.

3.0 Instructions in Writing

Instructions given by the Employer shall be in writing, provided that if for any reason the Employer considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Employer, whether before or after carrying out of the instruction shall be deemed to be an instruction, within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the Employer any oral instruction of the Employer and such confirmation is not contradicted in writing within 7 days by the Employer, it shall be deemed to be an instruction of the Employer.

The provisions of this Sub-Clause shall equally apply to instructions given by the Employer's Representative and any assistants of the Employer or the Employer's Representative

4.0 Employer to Act Impartially

Wherever, under the Contract, the Employer is required to exercise his discretion by :

- (a) giving his decision, opinion or consent, or
- (b) expressing his satisfaction or approval, or
- (c) determining value, or
- (d) otherwise taking action which may affect the rights and obligations of the Employer or the Contractor, he shall exercise such discretion impartially within the terms of the Contract and having regard to all the circumstances. Any such decision, opinion, consent, expression of satisfaction, or approval, determination of value or action may be opened up, reviewed or revised.

5.0 Priority of Contract Documents

The several documents forming the Contract are to be taken as mutually explanatory to

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one another.

In case of discrepancy between the schedule of quantities, the specifications and or the drawings, the following order of preference shall be observed:

1. Description of schedule of quantities and scope of work
2. Particular specifications and special condition, if any
3. Drawings
4. Specifications (As, applicable and given in tender documents and as approved by the Employer)
5. Indian Standard specifications of B.I.S and other relevant reference standards, wherever applicable

If there are varying or conflicting provisions made in any one document forming part of the Contract, the Employer shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.

Any error in description, quantity or rate in schedule of quantities or any omission there from shall not vitiate the Contract or release the contractor from the responsibility of execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the Contract.

6.0 Site Operations and Works Method

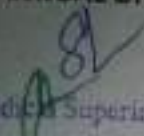
The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction. Provided that the Contractor shall not be responsible (except as stated hereunder or as may be otherwise agreed) for the design or specification of Permanent Works, or for the design or specification of any Temporary Works not prepared by the Contractor. Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall be fully responsible for that part of such Works, notwithstanding any approval by the Employer.

It is hereby understood and recorded between the Parties that in case the strength of the designated civil construction that is made available by the Employers hereunder for setting up of the BSL 3 laboratory is reasonably not up to the required standards [as may be determined by an independent expert engaged by the Employer in its discretion; cost whereof to be borne by the Contractor], then the Employer may make available suitable alternative space as promptly as practicable.

6A. Handover of available equipment to the Contractor

Autonomous State Medical College, Shahjahanpur, Uttar Pradesh is not in possession of any equipment which may be used in the proposed BSL-3 lab of the Institution.

6B. COMPREHENSIVE ANNUAL OPERATION & MAINTENANCE SERVICES


Chief Medical Superintendent
District Hospital, Shahjahanpur




- 1) After Completion of Works and Handing Over, the Authority may ask the Contractor to provide Comprehensive Operation and Maintenance services for a period of 3 years commencing after the end of 5 years warranty period at the quoted and pre-approved rates invited in the tender.

The Comprehensive Operation and Maintenance Services to be provided by the Contractor shall include:

- i. Providing qualified, experienced and trained manpower for handling operation of the Laboratory Facility on day-to-day basis on all working days
- ii. To carry out routine and preventive servicing and maintenance of the equipment, system and services like Condensing Unit, AHU, Exhaust Blowers, Autoclave, Biosafety Cabinet, Pass Box, Access Control System, BMS, Building Electrical System, Fire Alarm system etc., installed in the facility.
- iii. Attend to and carry out any breakdown maintenance works required from time to time, as and when it occurs and notified by the Employer.
- iv. Maintain daily Log Sheet of laboratory operating parameters
- v. Providing Spares and Consumables for various equipment, systems and services like BMS, Access Control System, Gaskets (for Doors and Pass Box), Filters, Valves, Light Fittings, spare switches and sockets etc. and maintain suitable inventory at site during the period.
- vi. Maintenance of electrical system, services and other works executed by the Contractor
- vii. Annual Validation of the Laboratory Facility; and
- viii. Any other operation and maintenance service that may be reasonably required by the Employer for the purpose of this Contract.
- ix. The following works and consumables shall not be included and covered in the scope of Contractor in the Comprehensive Operation and Maintenance Services:
 - a) Supply of power, water and fuel
 - b) Internal and External Painting of the Building
 - c) Chemicals/reagents for use in laboratory for Fumigation/Decontamination
 - d) Water and Power including change of batteries for UPS and Inverter
 - e) General Housekeeping works including associated consumables
 - f) Day-to-day operation of equipment/item installed for the BSL-3 Lab.
 - g) Maintenance of any external works or roads
 - h) Maintenance of lab equipment supplied directly by the Authority

In case the performance of the Contractor during the Comprehensive Operation and Maintenance Services is found to be unsatisfactory, the Authority may terminate the Contract by giving one month notice to the Contractor and proceed to appoint a new agency

- 2) During the operation and maintenance period, the RESPONSE TIME by the Contractor should not exceed 24 hours from the time the breakdown intimation is given by the user.

During the operation and maintenance period, it is expected that the Contractor shall attend the breakdown and rectify the fault/s promptly with minimum possible downtime. The maximum permitted DOWNTIME shall be 48 Hours from the time the intimation is given by the user.

If the repair/rectification is not carried out by the Contractor within the maximum permitted DOWNTIME, the Employer shall charge penalty, for each breakdown instance, subject to a maximum of 10% of the applicable value of operation and maintenance services for the relevant year ("Annual Contract Value"), as follows:

Above 48 hours & Below 96 hours - Penalty of 1% of the Annual Contract Value

Above 96 hours & Below 192 hours- Penalty of 1.5% of the Annual Contract Value

Above 192 Hours- Penalty of 2% of the Annual Contract Value and get the work repair/rectification done from third party at the Contractor's Risk and Cost.

The contractor shall maintain sufficient Inventory of required spares and consumables at site to minimize the downtime and to ensure smooth operation and functioning of the Laboratory.

Before rendering the Comprehensive Operation and Maintenance services as detailed in this Contract, the Contractor shall submit details of manpower proposed to be deployed at site, detailed schedule of preventive servicing and maintenance works, the formats for maintaining daily log sheet and servicing and maintenance records and details of spares and consumables to the Employer.

6C. Joint and Several Liability

If the Contractor has formed a Consortium of two persons for implementing the Project:

(a) these persons shall, without prejudice to the provisions of this Agreement, be deemed to be jointly and severally liable to the Employer for the performance of the Agreement; and

(b) the Contractor shall ensure that no change in the composition of the Consortium is effected without the prior consent of the Employer.

Without prejudice to the joint and several liability of all the members of the Consortium, the Lead Member shall represent all the members of the Consortium and shall at all times be liable and responsible for discharging the functions and obligations of the Contractor. The Contractor shall ensure that each member of the Consortium shall be bound by any

decision, communication, notice, action or inaction of the Lead Member on any matter related to this Agreement and the Employer shall be entitled to rely upon any such action, decision or communication of the Lead Member. The Employer shall have the right to release payments solely to the Lead Member and shall not in any manner be responsible or liable for the inter se allocation of payments among members of the Consortium.

7.0 Performance Security

The Contractor shall provide security for his proper performance of the Contract to the Employer within 15 days after the receipt of the Letter of Acceptance/Award. The performance security shall be in the form of bank guarantee or demand draft. The amount of the performance security shall be 5% (five percent) of the Contract Price. The Employer may, without prejudice to any other method of recovery, deduct the amount of any damages as may be prescribed under this Contract from the Performance Security.

8.0 Period of Validity of Performance Security

The performance security shall be valid until the Contractor has executed and completed the Works and remedied any defects therein in accordance with the Contract. No claim shall be made against such security after the completion of Defect Liability period and such security shall be returned to the Contractor within 14 days of the completion of Defects Liability Period.

9.0 Cost of Securities

The cost of complying with the requirements of performance security and/or other securities, shall be borne by the Contractor

10.0 Inspection of Site

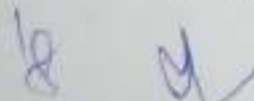
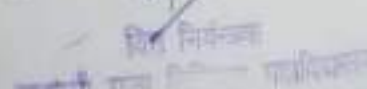
The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself (so far as is practicable, having regard to considerations of cost and time) before submitting his Tender, as to:

- (a) the form and nature thereof, including the site conditions,
- (b) the climatic conditions,
- (c) the extent and nature of work and materials necessary for the execution and completion of the Works and the remedying of any defects therein, and
- (d) the means of access to the Site and the accommodation, transportation etc., he may require.

And in general, the Contractor shall be deemed to have obtained all necessary information, as above mentioned, as to cover the risks, contingencies and all other circumstances which may influence or affect his Tender

11.0 Sufficiency of Tender


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The Contractor shall be deemed to have based his offer on the data made available by the Employer in the Tender document and on his own inspection and examination, all as aforementioned. The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the offer and of the rates and prices stated in the Financial Bid, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

12.0 Programme to be submitted

The Contractor shall, within 07 days from the date of issue of Letter of Acceptance/Award, submit to the Employer, a detailed programme including labour & material resources, in such form and detail as the Employer shall reasonably prescribe, for the execution and completion of the Works. The Contractor shall, whenever required by the Employer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution and completion of the Works.

13.0 Contractor's Superintendence

The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Employer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract.

The Contractor, or a competent and authorised representative approved of by the Employer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the Works. Such authorised representative shall receive, on behalf of the Contractor, instructions from the Employer or, the Employer's Representative. If approval of the representative is withdrawn by the Employer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove the representative from the Works and shall not thereafter employ him again on the Works in any capacity and shall replace him by another representative approved by the Employer.

14.0 Contractor's Employees

The Contractor shall provide on the Site in connection with the execution and completion of the Works and the remedying of any defects therein:

- (a) only such technical assistants as are skilled and experienced in their respective disciplines and such foremen and leading hands as are competent to give proper superintendence of the Works, and
- (b) such skilled, semi-skilled and un-skilled labour as is necessary for the proper and

timely fulfilling of the Contractor's obligations under the Contract.

15.0 Setting-out

The Contractor shall be responsible for:

- (a) the accurate setting-out of the Works in relation to original points, lines and levels of reference given by the Employer or as required,
- (b) the correctness, subject as above mentioned, of the position, levels dimensions and alignment of all parts of the Works, and
- (c) the provision of all necessary instruments, appliances and labour in connection with the foregoing responsibilities

If, at any time during the execution of the works, any error appears in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required to do so by the Employer, shall, at his own cost, rectify such error to the satisfaction of the Employer.

16.0 Safety, Security and Protection of the Environment

The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

- (a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons, and
- (b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Employer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others. Storage space, if any, available at site may be provided to the contractor by the Employer. However all necessary security, safety arrangements for the materials, equipment, goods so stored shall be provided by the contractor
- (c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods or operation.
- (d) Screen all lights provided by the Contractor so as not to interfere with any signal light on the railways or with any traffic or signal lights of any local authority.

17.0 Care of Works

The Contractor shall take full responsibility for the care of the Works and materials and Plant for incorporation therein from the Commencement Date until the date of issue of the Taking-Over Certificate, when the responsibility for the said care shall pass to the Employer, Provided that:

- (a) if the Employer issues a Taking-Over Certificate for any Section or part of the

- Permanent Works the Contractor shall cease to be liable for the care of that Section or part from the date of issue of the Taking-Over Certificate, when the responsibility for the care of that Section or part shall pass to the Employer, and
- (b) the Contractor shall take full responsibility for the care of any outstanding Works and materials and Plant for incorporation therein which he undertakes to or is otherwise required to finish such outstanding Works till the works have been completed

18.0 Responsibility to Rectify Loss or Damage

If any loss or damage happens to the Works, or any part thereof, or materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever, other than the risks defined in Clause 20.0, the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Employer.

19.0 Loss or Damage Due to Employer's Risk

In the event of any loss or damage happening from any of the risks defined in Clause 20.0, the Contractor shall, if and to the extent required by the Employer, rectify the loss or damage and the Employer shall determine a corresponding addition to the Contract Price and shall notify the Contractor accordingly. In the case of combination of risks causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the Employer.

20.0 Employer's Risks

The Employer's risks are:

- (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, rebellion, revolution, insurrection, or military or usurped power, or civil war,
- (ii) ionising radiations, or contamination by radioactivity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,
- (iii) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speed,
- (iv) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract,
- (v) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible, and any operation of the forces of nature (insofar as it occurs on the site) which a contractor could not have reasonably foreseen.

21.0 Insurance of Works

The Contractor shall, without limiting its or the Employer's obligations and responsibilities under Clause 17.0 to 20.0, insure:

- (a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost and it being understood that such insurance shall provide for compensation to be payable to rectify the loss or damage incurred.
- (b) an additional sum of 15 percent of such replacement cost, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature, and it being understood that such insurance shall provide for compensation to be payable to rectify the loss or damage incurred.
- (c) The Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

The insurance policy (All Risk Covered Policy) under this clause shall be issued by an acceptable insurance company. The insurance policy shall be in the joint names of the Contractor and the Employer and shall cover:

'The Employer and the Contractor against all loss or damage from whatsoever cause arising (including natural calamities, earthquake, subsidence, landslide, rock slide, flood, storm, cyclone, fire, theft, burglary, strike, riot, sabotage, terrorism), from the commencement date until the date of completion and issue of Taking-Over Certificate in respect of the Works.

22.0 Third Party Insurance

The Contractor shall, without limiting his or the Employer's obligations and responsibilities, insure, in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person or loss of or damage to person or any property, arising out of the performance of the Contract.

23.0 Damage to Persons and Property

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

- a. death of or injury to any person, or
- b. loss or damage to any property

Which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

24.0 Compliance with Statutes, Regulations

The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provision of:

- a. any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and
- b. the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works, and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provision.

25.0 Opportunities for other Contractors

The Contractor shall, in accordance with the requirements of the Employer, afford all reasonable opportunities for carrying out their work to:

- a. any other contractors employed by the employer and their workmen,
- b. the workmen of Employer, and
- c. the workmen of any duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the employer may enter into in connection with or ancillary to the Works, to the extent that carrying out of such works does not obstruct or hinder the carrying out of Works by the Contractor under this Contract.

26.0 Clearance of Site on Completion

Before the issue of any Taking-Over Certificate, the Contractor shall clear away and remove from that part of the Site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Employer. Provided that the Contractor shall be entitled to retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

27.0 Observance of Legislation

The Contractor shall at all times during the continuance of the Contract comply fully with all existing Acts, regulations and bylaws including all statutory amendments and re-enactments and acts that may be passed either by the state or the Central Government or local authority, including, Indian Workmen's Compensation Act, Contract Labour (Regulation and Abolition) Act 1970 and Equal remuneration Act 1976, Factories Act, Minimum Wages Act, Provident Fund regulations Employees provident Fund Act and schemes made under said Acts, Health and Sanitary Arrangements for workmen, Insurance and other benefits and

shall keep the Employer indemnified in case any action is commenced against the Employer for contravention of the above laws in respect of or arising in any manner whatsoever, from the Contract.

If the Employer is caused to pay or reimburse any amounts for non-observance of the provisions of this clause on the part of the contractor, the Employer shall have the right to deduct from any moneys due to the contractor or recover from the contractor personally any sum required or estimated to be required for making good the loss or damage suffered by the Employer. All registration and inspection fees if any, in respect of his work pursuant to the contract shall be to the account of the contractor.

28.0 Safety Provisions

The Contractor shall comply with all the precautions as required for the safety of the workman by the I.L.O Convention as far as they are applicable to the Contract. The Contractor shall provide all necessary safety appliances, gears like goggles, helmets, masks, etc. to the workmen and the staff deputed for execution and completion of works. The Contractor shall be responsible for observance by his sub-Contractors of the foregoing provisions.

29.0 Suspension of Work

The Contractor shall, on the instructions of the Employer, suspend the progress of the Works or any part thereof for such time and in such manner as the Employer may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Employer. Unless such suspension is:

- (a) otherwise provided for in the Contract, or
- (b) necessary by reason of extra-ordinary climatic conditions on the Site, or
- (c) necessary for the proper execution of the Works or for the safety of the Works or any part thereof (save to the extent that such necessity arises from any act or default by the Employer or from any of the risks defined in Clause 20.0).

30.0 Employer's Determination following Suspension

Where, pursuant to Sub-Clause 29.0, this Sub- Clause applies the Employer shall, after due consultation with the Contractor determine

- (a) any extension of time to which the Contractor is entitled under Clause 32, and
- (b) the amount, which shall be added to the Contract Price, in respect of the cost incurred by the Contractor by reason of such suspension, and shall notify the Contractor accordingly.

31.0 Time for Completion

The whole of the Works shall be completed within the time Completion Time stated in the Contract, calculated from the Commencement Date, or such extended time as may be allowed under Clause 32.0

32.0 Extension of Time for Completion

The Employer may consider extension of time for completion of the works by the Contractor, if requested by the Contractor, on the basis of:

- (a) the amount or nature of any extra or additional work, or
- (b) any cause of delay referred to in these Conditions is by reference to clause 29.0 or Force Majeure event under Clause 38, or
- (c) exceptionally adverse climatic conditions, or
- (d) any delay, impediment or prevention is caused by the Employer, or
- (e) other special circumstances which may occur, other than through a default of or breach of contract by the Contractor or for which he is responsible,

being such as fairly to entitle the contractor to extension of time for completion of the works or any section or part thereof, and in such a case the Employer shall after due consultation with the contractor, determine the amount of such extension and shall notify the contractor accordingly.

33.0 Liquidated Damages for Delay

If the Contractor fails to complete the execution of the works by the stated time for completion given in the Contract (for causes attributable to the Contractor and not on account of Force Majeure or solely by reason of the Employer's default), then the Contractor shall pay to the Employer a sum of 1/100 of Contract Price per week of delay (or proportionate amount for any part thereof), as liquidated damages for such default and not as a penalty. The maximum amount of Liquidated Damages shall be 5% of the Contract Price. Provided that the provisions of this clause shall not be applicable for the extended time for completion in accordance with Clause 32.0

The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the contract.

34.0 Taking-Over Certificate

Chief Medical Superintendent
District Hospital, Shishajiangui

When the whole of the Works have been completed and all the equipment and systems have satisfactorily passed the Tests on Completion and the equipment and systems and the complete BSL-3 Laboratory has been satisfactorily validated in accordance with the Contract, the works shall be considered as completed by the Contractor. The Employer shall, within 21 days of the date of receiving a completion notice from the Contractor, shall either issue to the Contractor, a Taking-Over Certificate / Completion Certificate, stating the date on which, in his opinion, the Works were completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the work which in the Employer's opinion, is required to be done by the Contractor before the issue of such Certificate.

In respect of equipment which are not manufactured by the Contractor, the Authority shall instruct the Contractor to furnish prior to the issuance of such certificate, an undertaking from the Original Equipment Manufacturer (OEM) stating that they would "facilitate the Contractor on a regular basis with technology/product updates and extend support for the warranty period" as well as specifically declaring that "everything supplied by us hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document." Submission of such undertaking by the Contractor shall be an essential prerequisite for the issuance of the Taking-Over Certificate / Completion Certificate by the Authority.

Provided that upon the completion of Works and prior to the issue of the Taking Over Certificate, the Contractor shall be required to furnish a Certificate issued by an authorized agency stating that the said Works are in compliance with the quality and other parameters prescribed under the NIH Guidelines.

35.0 Defects Liability Period

The expression "Defects Liability Period" shall be for 1 year (One year) and shall mean the specified period calculated from the date of completion and acceptance of the Works in accordance with Clause 34.0 and issuance of Taking-Over Certificate. The Contractor shall rectify and execute all such work of remedying defects, shrinkages or other faults, excluding fair wear and tear excepted, as the Employer may instruct the Contractor to execute, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection or observation made by the Employer.

All the installations, equipment/s, items, systems and services executed by the Contractor shall remain under Guarantee and Defects Liability for a period of one year, for delivering the design and approved performance of individual equipments and systems and the complete facility as a whole. Any defect or damage due to faulty material or improper workmanship, whenever notified during the Guarantee and Defects Liability period to the

Contractor, shall be repaired and rectified by the Contractor to the satisfaction of the Employer, at his own cost.

If the contractor fails to timely rectify and execute any such instructed work of remedying defects, the Employer shall reserve the right to proceed and get all such work executed by another agency and debit the entire cost to the contractor and recover the amount from the money due or will become due for payment to the contractor.

36.0 Variations

The Employer may make any variation to the form, or the Scope of Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do any of the following:

- (a) execute additional work of any kind necessary for the completion of the Works.
- (b) change any specified sequence or timing of construction of any part of the Works.

The provisions under this clause shall apply only to the varied works, which are not covered and included in the scope of the work given in the Contract.

Provided that, no such variation shall in any way vitiate or invalidate the Contract, but the effect and financial implication, if any, of all such variations shall be valued in accordance with Clause 37.0.

37.0 Valuation of Variations

All variations referred to in Clause 36.0 and any additions to the Contract Price which are required to be determined, shall be valued in the following order of preference:

- a) shall be valued at the rates and prices set out in the Contract if, in the opinion of the Employer, the same shall be applicable.
- b) If the contract does not contain any such rates or prices applicable to the varied work, the rates and prices in the Contract for similar works shall be used as the basis for valuation so far as may be reasonable and the same shall be agreed upon between the Employer and the Contractor.
- c) In the event of disagreement, the varied works shall be derived, as appropriate based on CPWD norms as per market rate analysis.

Until such time as rates or prices are agreed or fixed, the Employer shall determine provisional rates or prices to enable on-account payments to be included in interim/adhoc payments certificates issued.

38.0 Force Majeure

The Contractor shall be under no liability for damage to the works, destruction of or damage to property (whether of the Institute or third party) or injury or loss of life, in consequence of any of the following risks whether by way of indemnity or otherwise:

- a) as a consequence of war, hostilities (whether war be declared or not), invasion, act of foreign enemies.
- b) Rebellion, revolution, insurrection, or military or usurped power or civil war.
- c) Ionizing radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any nuclear assembly or nuclear component thereof,
- d) Pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speed.

39.0 Terms of Payment

The Contractor shall submit invoice in 2 copies to the Employer for the payment of the price quoted by it in Annexure II (Price Bid Format), which shall be made as per the following payment terms:

The Contractor shall, subject to terms of the contract, be paid an amount equivalent to 80% (eighty percent) of the lumpsum amount (viz aggregate of both sums quoted in Annexure II Part I and Part II) as per the following payment milestones:

- i) On supply of item/material/equipment at site - 50% of the lumpsum amount
- ii) On completion of installation/erection - 10% of the lumpsum amount
- iii) On completion of Testing & Commissioning - 10% of the lumpsum amount
- iii) On completion of Validation and Handover - 10% of the lumpsum amount

The Contractor shall, subject to terms of this contract, be paid the remaining 20% (twenty percent) of the said lumpsum amount in twelve equal quarterly instalments, each such instalment to be paid subject to terms of the contract, at the end of relevant quarter. (The CMC period will start from expiry of warranty period of 5 years and accordingly payment for CMC shall be initiated).

Notwithstanding the terms of this Clause or any other Clause of the Contract, no amount will be certified by the Employer for payment or actually paid, until the performance security of value of 5% of lumpsum fee amount has been provided and is kept valid in full force and effect by the Contractor.

40.0 Place of Payment

Payments to the Contractor shall be made by the Employer, within 15 days of submission of Bill, in Indian Rupees into a bank account or accounts nominated by the Contractor or by Account Payee Cheque/Demand Draft/ RTGS transfer.

41.0 Retention Money

A retention amounting to 10 (Ten) percent of the Running Bill Amount (milestone payments), determined in accordance with the procedure set out in Clause 39.0 shall be made by the Employer in the first and following Interim Payment Certificates, until the amount so retained reaches a limit of retention money, which will be Five Percent (5%) of the Contract Price. (Not applicable if a valid performance security is furnished as per the terms of this RFP).

42.0 Payment of Retention Money

The retention money amount shall be released to the contractor on successful completion of the works and acceptance of the Works in accordance with Clause 34.0 and Issuance of Taking-Over Certificate by the Employer.

No interest shall be paid to the contractor on retention money.

43.0 Advance Payment

The Employer will not make any advance payment to the Contractor for the works.

44.0 Breakdown of Lump-Sum Price

To facilitate release of Running Account Bill payments, the Contractor shall submit a detailed Price Breakup of Lump-Sum Priced item/s, if any, given in the Price/Financial Bid.

45.0 Taxation

The contractor shall pay all taxes, duties, levies, GST etc. as applicable. Deduction of Income-Tax and other statutory taxes shall be made from each certificate of payment as per the relevant provisions of the Income Tax and/or other statutory authority.

46.0 Settlement of Disputes

If a dispute of any kind whatsoever arise between the Employer and the Contractor in connection with , or arising out of, the Contract or the execution of the Works, whether

during the execution of the Works or after their completion and whether before or after repudiation or other termination of the Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Employer, the matter in dispute shall, in the first place, be referred in writing to the Employer. Such reference shall state that it is made pursuant to this Clause. On receipt of such reference the Employer shall give notice of his decision to the Contractor. Such decision shall state that it is made pursuant to this Clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Work with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Employer unless and until the same shall be revised, as hereinafter provided in an amicable settlement or an arbitral award.

If either the Employer or the Contractor be dissatisfied with any decision, then either the Employer or the Contractor may give notice to the other party of his intention to commence arbitration as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute. The Arbitrator/s shall be appointed by the Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh.

Where notice of intention to commence arbitration as to dispute has been given, arbitration of such dispute shall not be commenced unless, the parties have explored the possibility of conciliation as per the provisions of the Arbitration and Conciliation Act, 1996. When such conciliation has failed, the parties shall adopt the procedure for arbitration, as per Indian Arbitration and Conciliation Act 1996.

For settlement of all disputes & Arbitration the place of jurisdiction shall be Shahjahanpur, Uttar Pradesh.

47.0 Default of Contractor

If the Contractor is deemed by law unable to pay his debts as they fall due, or enters into voluntary or involuntary bankruptcy, liquidation or dissolution (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or becomes insolvent, or makes an arrangement with, or assignment in favour of, his creditors or agrees to carry out the Contract under a committee of inspection of his creditors, or if a receiver, administrator, trustee or liquidator is appointed over any substantial part of his assets, or if, under any law or regulation relating to reorganisation, arrangement or readjustment of debts proceedings are, commenced against the Contractor or resolution passed in connection with dissolution or liquidation or, if any, step are taken to enforce any security interest over a substantial part of the assets of the Contractor, or if, any act is done or event occurs with respect to the

Contractor or his assets which under any applicable law has a substantially similar effect to any of the foregoing acts or events, or if the Contractor has an execution levied on his goods, or if the Employer certifies, with a copy to the Contractor, that, in his opinion the contractor

- (a) has repudiated the Contract, or
- (b) without reasonable excuse has failed
 - (i) to commence and complete the work in accordance with contract, or
 - (ii) to proceed with the Works, or any section thereof, within 28 days after receiving notice, or
- (c) despite previous warning from the Employer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of the obligation under the Contract except for default caused by Force Majeure or for reasons attributable to the Employer, then for the avoidance of doubt the contractor shall be in default of its obligations under this contract and furthermore the Employer may, after giving fourteen days' notice to the Contractor, enter upon the Site and expel the Contractor there from without thereby voiding the Contract, or releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and powers conferred on the Employer by the Contract, and may himself complete the Works or may employ any other contractor to complete the Works.

48.0 Valuation at Date of Expulsion

The Employer, as soon as may be practicable after any such entry and expulsion by the Employer, shall fix and determine ex parte, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify and pay the following:

- (a) amount (if any) due and payable in accordance with the payment milestones given in this contract, at the time of such entry and expulsion, in respect of work then actually done by the Contractor under the Contract, and
- (b) the value of any of the said unused or partially used materials, any Contractor's Equipment and any Temporary Works.

49.0 Default of Employer

In the event of the Employer:

- a) becoming bankrupt or being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or
- b) giving notice to the Contractor that for unforeseen reasons, due to economic dislocation, it is impossible for him to continue to meet his contractual obligations, the Contractor shall be entitled to terminate his employment under the contract by giving

notice to the Employer, with a copy to the Employer. Such termination shall take effect 14 days after the giving of the notice.

50.0 Payment on Termination

In the event of such termination by the Contractor as per Clause 49.0, the Employer shall determine the amount due or payable to the contractor, but in addition, the Employer shall pay to the Contractor the amount of any loss or damage to the Contractor arising out of or in connection with or by consequence of such termination.

51.0 Water Supply & Power Supply

Water and power supply at site for drinking purpose as well as for construction purpose shall be made available to the contractor. However, the contractor shall make his own arrangements at his cost to avail water and power from the source/s made available at site by the Employer. Non availability of power supply and/or water from whatever source shall not entail any additional claims or extension of contract period.

52.0 Arrangement of Labour and workers

The contractor shall make his own arrangement for labour and workers required to execute and complete the works and shall make all the required arrangements for travel, food, lodging etc. at his own cost and the cost of the same is deemed to have been included in the quoted price. Labour hutments shall not be allowed inside the campus of the Hospital/Institute/Notified location for Lab.

53.0 Training

On completion of the work, the contractor shall provide training to the Employer's staff. The training shall cover the following aspects:

- a) Handling, operation, servicing and maintenance of all the equipment/s, systems, services and engineering installations in the facility.
- b) Training on emergency response in situation like fire, spill, power outage etc.
- c) Training on carrying out laboratory fumigation
- d) Training on loading & unloading of autoclave and selection and operation of decontamination cycle
- e) Training on operation of effluent decontamination system
- f) Any other training, as desired and requested by the Employer on the installations made by the contractor.


Chief Medical Superintendent
District Hospital, Shahjahanpur

Three sessions of training shall be organized by the Contractor for the Employer's staff, wherein the first training will be completed within 10 days of commissioning of the BSL-3 laboratory, and the remaining sessions will be organized as the Employer's deems fit.


54.0 PRICE ESCALATION

No price escalation shall be considered or paid during the contract period including the operations and maintenance period. The price quoted by the bidders for executing the works on 'Turnkey Basis' in the Price/Financial Bid shall remain fixed and firm during the entire contract period.

55. PRE BID MEETING:

Pre bid meeting will be held for the vendors for any further clarifications on the date and time mentioned in the 'E-Tender Enquiry Details' in this tender document. Participation in the pre-bid meeting and visiting the lab site is recommended before submitting the tender.


Chief Medical Superintendent
Datta Hospital, Bhakyanagar


Joint District Magistrate
राजकी राज्य विधिलेख महाविद्यालय
राजमहानगर

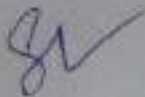
FORM- A: FORMAT OF AGREEMENT
(on Rs. 100/- non-judicial stamp paper)

This Agreement is made on the ____ day of _____ 2020, between Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh represented by _____ (hereinafter called "The Employer") who enters into this Agreement of the one part and M/s _____ (hereinafter called "The Contractor") of the other part.

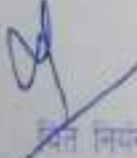
Whereas The Employer is desirous that certain Works should be executed by the Contractor, viz "Setting up of BSL3 Laboratory Facility on Turnkey Basis for Autonomous State Medical College, Shahjahanpur in the State of Uttar Pradesh ("The Works") and has accepted a Bid/Offer by the Contractor for the execution and completion of The Works and the remedying of any defects therein during the defect liability period, at a total estimated contract value of Rs. _____.

Now this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz :
 - (a) The Letter of Award Ref. No. _____
 - (b) The said Bid and the offer Ref. No. _____;
 - (c) The Tendered Scope of Work and Technical Specifications;
 - (d) The Tender Drawings;
 - (e) Instructions to Bidders;
 - (f) The Conditions of Contract;
 - (g) The Priced Bill of Quantities;
 - (h) Any other relevant documents referred to and attached in this Agreement or in the aforementioned documents;
3. In consideration of the payments to be made by the Employer to the contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of this Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by this Contract.
5. This Contract shall remain valid and continue to be in-force until the Contractor has successfully completed The Works and has remedied the defects therein and completed the defects liability period.


Chief Medical Officer
District Hospital, Shahjahanpur

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District Collector
Shahjahanpur

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written.

Binding Signature & Stamp of [Employer] _____

For and on Behalf of Autonomous State Medical College, Shahjahanpur, Uttar Pradesh:

Name & Designation _____

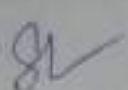
Binding Signature & Stamp of [Contractor] _____

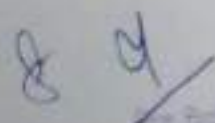
Name & Designation _____

In the presence of:

Witness (1)

Witness (2)





Chief Medical Officer
Shahjahanpur, Uttar Pradesh

श्री निदेश
आर्य समाज शिक्षण संस्थान
आर्य समाज

CHAPTER - 2

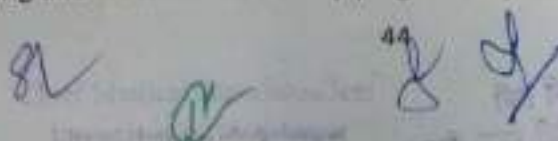
1.0 SCOPE OF WORK

The Scope of work shall be *"Setting up of BSL3 Laboratory Facility on Turnkey Basis Autonomous State Medical College, Shahjahanpur in the State of Uttar Pradesh"* in accordance with the Fifth edition of BMBL Guidelines issued by the U.S. Department of Health, Human Services, CDC, USA and W.H.O.' for all works including Civil works, Infrastructure, Testing, Commissioning and Validation of the facility. All equipment to be installed by the Contractor in the laboratory (whose specification has not been included in the tender document) shall be as per the specifications mentioned in the ICMR guidelines for VRDL for Medical College standards (attached as Annexure III).

The scope under the contract shall cover and include the following works to be executed by the Contractor on 'Turnkey Basis':

- **Preparation and submission of Detailed Design & Engineering including preparation of working drawings** for internal construction (and civil construction if required) and finishing work, Plumbing System and associated PHE drawings, Electrical power distribution SLD and Panel GA drawings, Electrical light, power, data & voice Layout, FDA system drawing, HVAC System details and drawings, Door Interlock and Access Control system details and drawings, Shower System, CCTV system details and drawings, Building Management System details and drawings, Furniture Layout plan, construction drawings and details of shed for effluent decontamination system and CO2 cylinder bank and details and other required and associated systems and services for the proposed BSL-3 Laboratory Facility,
- **Submission of Technical Data Sheet, Catalogues, drawings and Literatures for equipment** including Autoclave, Bio-Safety Cabinet, Pass Box, Air Handling Units, Compressors, Exhaust Blower, CCTV system, Access Control system etc.,
- The Contractor to provide all brand new/unused original equipment. All equipment should be USFDA/European CE certified wherever applicable.
- **Submission of any other relevant drawing and technical details considered essential and required** for successful completion of the works and asked by the employer,
- Submission of the working drawings, technical literature, brochure, literature, technical specifications and other details, sufficiently in advance for approval of the Employer, giving sufficient time for its review. The work shall be taken up only after approval of the drawings and specifications.
- Dismantling of existing internal partition walls, floors etc. including removal of malba/debris and site clearance works as required.
- Civil/Construction works as required and as per approved drawing
- Internal construction works with prefabricated partition wall and ceiling panels, doors and view panels etc. in complete facility, as per approved drawing
- Self-levelling epoxy flooring in approved shade in complete facility
- Drain piping and water distribution piping in complete facility, as required

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- Providing the following equipment, systems and associated accessories within the BSL-3 lab:
 - Access control system such as biometrics & door interlocks
 - Ensure single air directional air flow with a visual monitoring device to confirm directional airflow at the laboratory entry
 - Air differential of -12.5 Pa
 - Exhaust system independent from remainder building
 - Supply system independent from remainder building
 - Independent power backup from remaining building
 - Single HEPA Filtered exhaust
 - Containment HEPA filter housing with gas-tight isolation dampers, decontamination ports, and/or bag-in/bag-out (with appropriate decontamination procedures) capability
 - Supply, return and exhaust fans & ducting with insulation, diffusers/grilles, volume control dampers and fire dampers
 - Exhaust blowers (1 working+ 1 standby) for BSL-3 laboratory
 - Centralised HVAC system including Air Conditioning outdoor Compressor & condensing unit, as required/ Air Handling units for air distribution in the facility, as required (minimum 6 air changes/hour) and isolation dampers
 - Refrigerant piping between Compressor unit and Air Handling Unit, as required
 - Utilities backflow prevention (Double vacuum seal)
 - Wiring for light, power, networking, communication/intercom, fire alarm system, CCTV system, access control system etc. in complete facility
 - Light fittings and fixtures, switches, sockets, power distribution boards for light and power including MCB's etc., and main power supply LT panel. in complete facility
 - Fire alarm system, CCTV system, EPABX, telephone handsets in complete facility (intercom & LAN)
 - 2 nos. Bio-Safety Cabinets (1 no. class II A2 type, 1 no. class II B2 type) should be located out of the mainstream of traffic
 - Inverter for providing power backup to internal lights of complete facility
 - A central UPS (3kva online) console should be provided to cater to the extreme essential power requirement of the laboratory
 - Building management system including pressure sensors, temperature & Rh sensors, VAV for BSL-3 Lab, VFD's for AHU and Exhaust blower motors, control wiring and BMS Control Panel with PLC with software, complete as required
 - AHU Control Panel
 - HVAC failure alarm
 - Pressure differential monitors
 - Deep-seal floor traps
 - Hand wash sinks and emergency eye wash

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 Chief Medical Superintendent
 District Hospital, Shahjahanpur

विश्व नियंत्रक
 श्री राज्य चिकित्सा महाविद्यालय
 शाहजहाँपुर

- Double Door Autoclave for BSL-3 Lab
- Emergency Shower system for BSL-3 Lab Exit Change room
- Pass Box and Dunk tank for BSL-3 Lab
- Workstation in BSL-3 Lab with chairs
- Garment Cabinet for BSL-3 Lab Entry and Exit change room (ventilated/non-ventilated)
- Portable Fire Extinguishers (CO₂ /Dry Powder type)
- CO₂ Cylinder Bank and associated piping for CO₂ Incubators
- Aerosol Chamber
- Incubator Room
- Laboratory Biological Effluent Decontamination system
- Vacuum Pump and associated piping with outlet point
- Refrigerated high speed centrifuge (>15000 rpm) backed by 2KVA online UPS with 3 rotors-24*2 ml, 6X50 ml (adaptor for 5ml & 15ml tubes) & PCR plate motor
- Vertical Autoclave (Steam jacketed with all digital sensors)
- RT-PCR Machine (3Kva online UPS) (USFDA or European CE or NIV approved) for in-vitro diagnosis of Covid-19 emergency use
- PCR workstation (with UV & white light)
- Automated Nucleic acid extraction system (for 96 samples)
- Zonline UPS, One for thermocycler, other for nucleic acid extraction system.
- Deep Freezer -80 (>500l, digital display, alarm) with accessories & UPS
- Deep Freezer -20C (with digital display) with UPS
- Fridge (4 degrees Celsius)
- Pipettes fully autoclavable with high durability (0.2-2 μ l x 1, 1 x 20 μ l, 10-200 μ l x 3, 50-1000 μ l x 2)
- Pipettes fully autoclavable with high durability (0.2-2 μ l x 1, 1- 20 μ l, 20-200 μ l, 100-1000 μ l)
- Computer desktop/laptop with UPS & printer (i3 with genuine Windows and 1TB HDD)
- Water Bath (Single sheet inner chamber stillness steel and digital)
- Water purification System to make molecular grade water
- Vortex
- Micro spin for 1.5ml MCT (3000-6000rpm)
- Mini spin for 8 well strip
- DG set
- Laboratory Fumigation machine
- Microwave Oven (For agarose gels)
- Laminar flow vertical 2 feet
- Thermocycler
- Gel electrophoresis & documentation unit

- ELISA Plate Washer
- ELISA Plate Reader
- All furniture to be provided as per requirement of BSL-3 laboratory
- All basic equipment and accessories required to conduct tests including COVID-19 tests to be provided as per requirement of BSL-3 laboratory including the following:

Small Instruments:

- Refrigerated Micro-centrifuge machine 6000 RPM
- Midi PCR Workstation (H*W*D=45*60*30) cm
- Tabletop Centrifuge machine 14000 RPM
- Vortex Mixer- 2 nos.
- Plate centrifuge
- Stirring water bath
- Dry Bath
- pH meter
- Genei coolers
- Pipette- 0.2-2 μ l
- Pipette- Vol 2-20 μ l
- Pipette- Vol 10-100 μ l
- Pipette- Vol 20-200 μ l
- Pipette- 100-1000 μ l
- Electronic micropipette
- Magnetic Stirrer
- Pan Electronic Weighing Balance

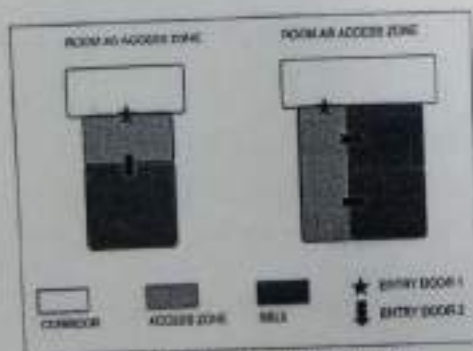
*power backup as required (online UPS where necessary)

- The Contractor must ensure the following layout considerations:
 - Controlled Access to be restricted
 - BSL 3 laboratory shall be separated from areas that are open to unrestricted traffic flow within the building.
 - The BSL 3 shall have a single directional air flow with an air pressure differential of -12.5/ 22 Pa. (or as per BMBL guidelines)
 - Air lock should be provided
 - A clothing change room (anteroom) shall be included in the passageway between the two self-closing doors.
 - Anteroom doors should be interlocked or alarmed so only one door may be opened at a time or placed sufficiently apart so that one person cannot open both doors at the same time.
 - The anteroom shall have ventilation separate from the laboratory
 - The laboratory must be designed so that it can be easily cleaned and decontaminated. Cleanliness level 10000 has to be maintained.

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- Carpets and rugs shall not be permitted.
- Seams, floors, walls, and ceiling surfaces shall be sealed and finished with chemical resistant finishes. Spaces around doors and ventilation openings shall be capable of being sealed to facilitate space decontamination.
- All shutoffs (steam, water, natural gas) shall be external to containment.
- Access to critical mechanical equipment (ventilation ducts, fans, piping, etc.) shall be outside containment.
- Access panels are allowed in retrofits if they are piano-type hinged and gasketed with gas-tight gaskets.
- There shall be a room for large equipment decontamination. The room shall be capable of being sealed for decontamination/fumigation with compatible reagents and must have a connection to the HVAC exhaust system.
- The BSL-3 lab shall have a monolithic ceiling with chemical resistant finishes
- All fixtures and casework need to have chemical resistant finishes
- Exhaust ventilation should be provided above the exterior door of the autoclave to remove the heat and steam when the door is opened.
- Temperature within the BSL 3 laboratory shall be maintained at 22 Celsius (+/-2 degree Celsius), Lighting to be maintained at 300-500 lux and noise less than NC 45
- The Contractor shall consider one out of the 4 layout options listed below. This shall be finalized after discussion with the Principal after site visit. The 4 layout options are:
 - i. Anteroom or workroom as an access zone
 - ii. BSL-3 laboratory with restricted corridor as an access zone
 - iii. BSL-3 laboratory suite
 - iv. Enhanced BSL-3 laboratories



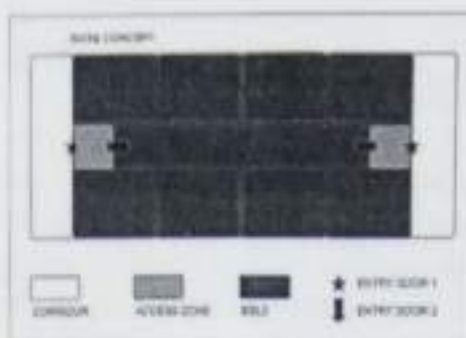
Model-1: BSL3 Laboratory with Anteroom or Workroom as an Access Zone³



Model-2: BSL3 Laboratory with Restricted Corridor as Access Zone



Model-3: BSL3 laboratory with BSL2 laboratory as Access Zone



Model-4: BSL3 Suite

- a) The Tender Drawings are given in the Bid Documents for the purpose of understanding the layout and work requirements by the bidders. However, the bidders are advised to visit the site and assess the site conditions and the work requirements. The bidders may also seek clarification on queries they may have by making written submission to the Employer. The Employer reserves the right to do minor changes in the given layout plan and scope and accordingly vary the quantities of electrical power points, light fixtures, switches etc. to meet the performance requirements of the BSL-3 Laboratory, and the same shall be executed and completed by the contractor without any additional cost. The contractor may also give suggestions to improve the ergonomics and the process of the facility and if accepted and approved by the Employer, the same shall be executed by the contractor without additional cost.
- b) Site preparatory works including dismantling/demolition of existing walls, clearance of malba, making opening in walls and any other ancillary works required to complete the works. The contractor shall take all precautions not to damage any part of the existing building and the structure. The contractor will also be required to carry out essential civil works/construction work as deemed necessary. All the opening and dismantling works required for the execution of the works shall be repaired by the contractor in good condition at no extra cost.
- c) Testing and commissioning of all the equipment/s, items, systems and services supplied and installed in the Laboratory Facility and Validation of the BSL-3 Laboratory as per the BSL-3 Laboratory Certification Guidelines of NIH, USA in the presence of representative/s of Employer and submission of compiled report.
- d) Preparation and submission of 3 sets of 'As Built Drawings and 'Operation & Maintenance Manuals and Instructions for the complete installation.
- e) Providing training to the Employer's staff on operation, servicing and maintenance of all engineering installations and handling of emergencies due to fire or engineering system failures. 3 training sessions to be organized by the Contractor, out of which the first will be held within 10 days of completion of the BSL-3 laboratory and the remaining 2 will be held as the Employer deems fit.

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विश्व निर्यातक
महाराष्ट्र राज्य चिकित्सा महाविद्यालय
शाहवाडीपुर

2.0 TENDER DRAWINGS

- 2.1 The tender drawings of the proposed BSL-3 Laboratory facility are attached for reference purpose and guidance to the Bidders to understand the scope of work. The Bidder/executing agency shall check and verify the correctness of dimensions and quantities given and indicated in the tender drawings' so as to meet the performance requirements specified in the contract. The work shall be executed as given and detailed in the scope of work, technical specifications and the final working drawings approved by the Employer.

3.0 TECHNICAL SPECIFICATIONS - INTERNAL CONSTRUCTION & FINISHES GENERAL

- 3.a The specifications for Civil and Plumbing works shall be in accordance with latest C.P.W.D. specifications, including revisions/correction slips issued till date.

Unless otherwise specified in the nomenclature or description of individual item or in the specifications, the works shall be carried out as per the C.P.W.D. specifications with up to date correction slips.

- 3.b For the item not covered under CPWD Specifications mentioned above, the work shall be executed as per latest relevant standards/codes published by B.I.S. inclusive of all amendments issued thereto or revision thereof, if any, till date.

- 3.c In case of B.I.S. codes/specifications are not available, the decision of the Engineer based on acceptable sound engineering practice and local usage shall be final and binding on the contractor.

3.1 MODULAR WALL AND CEILING PANELS

- 3.1.1 All the internal partition walls and ceiling construction in BSL-3 and other areas shall be carried out in prefabricated, non-particle shredding panels in Powder Coating finish. The prefabricated wall and ceiling panels shall provide impervious and monolithic construction and surface finish. The existing external brick walls shall be provided with cladding from inside with similar prefabricated wall panels.

- 3.1.2 The modular wall and ceiling panels shall be constructed in minimum 0.8 mm thick GSS sheet of 0.8 mm thickness on both sides, in-filled with PUF insulation (density approx. 40kg/m³), finished with epoxy plaster powder coating, oven lacquered smooth to 60 to 80 micron thickness. All the joints between panels, cutouts and openings shall be sealed with silicone sealant.

- 3.1.3 The overall thickness of the wall and ceiling panels shall be 82 mm as indicated in the layout plan drawing, with minimal tolerance.

- 3.1.4 The wall and ceiling panels shall be supported on heavy duty aluminium profile supported by anchoring, minimum 70 mm (R-70) aluminium coving on the wall and ceiling corners shall be provided in the wall and ceiling colour, corners shall be rounded at turn from X-Y direction, milled solid aluminium spheres shall be provided in same color at the 3-D(wall/ceiling/wall junction) and 2-D(wall/ceiling junction). The ceiling shall be adequately supported with suspension and hangar system.

- 3.1.5 The conduits for providing wires and cables for light, power, data, voice and other services shall be factory inserted in the wall panels.

3.2 VIEW PANEL

The view panels shall be double glazed and designed to fit flush into the wall panel system on both sides with 5 mm thick toughened glass. Glass shall be fixed onto aluminium frame work with high performance double coated black colour structural glazing tape (3 M VHB or equivalent). Aluminum frames shall be with 2 mm thick sheet formed to match panel thickness with epoxy powder coating of 60 to 80 micron thickness. The gap between the glasses shall have anti-moisture with silica gel granules/molecular sieve. Glazing shall be perfectly flush with the outer surface of the frame and wall panel. All joints shall be taped and sealed with silicon sealant.

3.3 DOORS

- 3.3.1 Door frames shall be fabricated from 1.25 mm thick galvanized steel sheet to the required profile and dimensions. The door shutters shall be manufactured from 0.8 mm galvanized sheets press formed to double skin hollow profile with lock seam joints at stile edges. Shutters to have no visible screws or fasteners on either face. Frames and shutter shall have factory finish in thermo setting polyurethane aliphatic grade paint (35 micron DFT) or powder coated in approved color.

- 3.3.2 Frames and shutters to have factory finishes pre-punched cutouts to receive specific hardware like hinges, lock etc.

- 3.3.3 Double glazed vision panel to be provided in door shutters with toughened float glass of 5 mm thickness. Glass to be fixed with high performance structural glazing tape (3 M VHB or equivalent)

- 3.3.4 The Biosafety Doors of fumigation airlock and shower of BSL-3 Laboratory shall be fabricated in double profiled stainless steel in hollow section with all round gasket. The doors shall be provided with sealed vision glass and shall be complete with door closers and stainless steel handles.

3.4 DRAINS AND WATER LINES

- 3.4.1 Floor traps/U-traps in BSL-3 Lab area shall provide double pass and shall have minimum 2" W.C head. The effluent drainage piping from the BSL-3 Lab shall be in chemical resistant material like HDPE with all joints welded and tested to be leak proof.

- 3.4.2 Water distribution piping in BSL-3 Containment area shall be provided in PP/uPVC and shall be provided with non-return valve/backflow prevention device.

3.5 EPOXY FLOORING

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Shri M. B. N. Superintendent.
District Hospital, Shikharpur

Dr. P. K. Singh
District Hospital, Shikharpur

The jointless Epoxy flooring consists of Epoxy resin based jointless flooring over concrete surface including preparing the surface as required, application of epoxy primer, 5-6 mm or more in thickness epoxy screed and self levelling 2mm minimum epoxy topping in required approved shades. The entire job is to be undertaken by manufacturer's trained and skilled technicians to lay the Epoxy based floor.

Surface Preparation:

Applicator for the works should check out the moisture content in the existing RCC surface and if the percentage of moisture content is high same to be removed by using hot compressed air machine and the surface irregularities shall be removed by using floor scarifier. The concrete floors shall be roughened using hand grinders to provide a mechanical key for the epoxy screed to bond well the substrate. Presence of dust, laitance etc. should be completely cleaned before commencing the application. Moisture testing should be done to ensure moisture limit not exceeding 5%.

Epoxy Primer:

On the prepared floor surface epoxy primer with high penetrating properties shall be applied, as per manufacturer's recommendations.

Self levelling Epoxy topping:

The self levelling topcoat mixture shall be spread evenly by means of rollers and serrated trowels. The floor should be rolled by a spike roller to remove trapped airs to uniform level and smoothness.

EPOXY COVING

Epoxy primer shall be applied at the junctions of wall corner. Epoxy coving of size 70 mm on either side shall be applied to the junctions between wall & floor. It is to be made with solvent less epoxy screed/resin incorporating very high abrasion resistant aggregates. Screed mortar shall be applied by trowel. The material should be compacted and finished with a round trowel to a smooth concave finish as per manufacturer's specifications. Sealing of screed surface shall be made with sealer coat to ensure that a smooth finish is obtained in desired colour matching that of the floor finish as per manufacturer's specifications.

Performance properties shall meet or exceed the following:

Finish - Gloss/ Semi-Gloss (as approved)

Compressive strength (ASTM C 579) - > 60Mpa

Tensile strength (ASTM C 307)- > 30Mpa

Hardness (ASTMD 2240)- 80 Taber Abrasion Loss/1000 cycles (ASTM D 4060) - 45 mg

4.0 PERFORMANCE REQUIREMENTS FOR HVAC SYSTEM

4.1 GENERAL

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Chief Mechanical Superintendent
Dormitory, Dhaka Engineering College and University

14/01/2024

The proposed BSL-3 Laboratory shall be air-conditioned through a separate dedicated AC System comprising of DX-type Compressor and Condensing Unit, Air Handling Units, Exhaust System, Air Filtration System and Air Distribution System complete in all respect. The Condensing and Compressor Units shall be with multiple outdoor units and one standby unit shall be provided to ensure un-interrupted operation.

The following design and performance conditions shall be maintained in the BSL-3 Laboratories:

- 4.1.1 Inside Temperature : $22 \pm 2^{\circ}\text{C}$
- 4.1.2 Relative humidity : Between 40-60%
- 4.1.3 Negative Pressure gradient : As per tender or as approved
- 4.1.4 The negative pressure room where BSC cabinets are placed shall be $-12.5\text{ Pa}(-0.05\text{ "WG})$ relative to the ante room, ante room shall be $-12.5\text{ Pa}(-0.05\text{ "WG})$ relative to change room, change room shall be $-12.5\text{ Pa}(-0.05\text{ "WG})$ relative to the outside atmospheric pressure
- 4.1.5 ACPH in BSL-3 Lab: -12.5 Pa
- 4.1.6 Filtration: HEPA Filter Supply Air in BSL-3 Lab HEPA Filter Exhaust Air in BSL-3
- 4.1.7 Exhaust Fan location for BSL-3: Minimum 25 ft from AHU intake
- 4.1.8 Air velocity at exhaust discharge : $15\text{--}20\text{ m/s}$ ($3000\text{--}4000\text{ fpm}$) for BSL-3


4.2 DOUBLE SKINNED AIR HANDLING UNITS

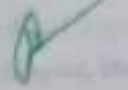
The housing/ casing of the air handling unit shall be of double skin construction. The framework shall be of extruded aluminium hollow sections fitted with pre-formed insulated sections. All the members shall be assembled thru mechanical joints to make a sturdy and strong framework for various sections. Double skin panels (each not exceeding 750mm wide) shall be made of 0.60mm pre-plasticised coated galvanised sheet steel and 0.60mm galvanised sheet inside with minimum 43mm thick P.U.F insulation of 38 Kg/Cu.M injected between the panels.

The Fan and the motor arrangement shall be mounted on to the extruded aluminum framework. The entire housing i.e. The Air Handling Unit shall be mounted on GI Base channel framework.

Drain pan shall be constructed of 18 gauge SS sheet with 25 mm thick 38 Kg/Cu.M nitrile foam insulation. The K-value shall not be more than $0.014\text{ Kcal/hr-sq.mtr-}^{\circ}\text{C/M}$ at 10°C mean temperature. The pan shall have necessary slope to facilitate for fast removal of condensate. The coil shall be mounted on the rollers in order to facilitate easy removal of the coil from the drain pan for cleaning. Outlet shall be provided on both the sides of drain pan.

Fan motors shall be energy efficient (IE-3) and shall be $415 \pm 10\%$ volts, 50 cycles, three phase, totally enclosed fan-cooled class F, with IP-55 protection. Motors shall be especially designed for quiet operation and motor speed shall not exceed 1440 rpm . Drive to fan shall be provided through belt-drive arrangement. Belts shall be of the oil-resistant type.





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महाराष्ट्र

Fans shall be centrifugal type. Fans driven by variable frequency drive shall be backward inclined irrespective of static pressure value. Fan casing shall be made of galvanised steel sheet. Fan wheels shall be made of galvanised steel. Fan shaft shall be grounded C40 carbon steel and supported in self-aligning Plummer block operating less than 75% of first critical speed, grease lubricated bearings. Fan wheels and pulleys shall be individually tested and precision balanced dynamically. Fan motor assembly shall be statically and dynamically balanced to G6.3 grade as per relevant ISO/AMCA standard. Motors shall be mounted inside the AHU casing on slide rails for easy belt tensioning, and be totally enclosed, EFF1 fan cooled, to be class 'F' insulation. Motors shall drive heavy duty V-belt, constant pitch, drive selected at 110% of motor horsepower.

The AHU shall be complete with Dx Cooling Coil. Face and surface areas shall be such as to ensure rated capacity from each unit and such that the air velocity across each coil shall not exceed 150 meters per minute. The cooling coils shall be ARI certified.

Each unit shall be provided with a factory assembled filter section containing washable synthetic type air filters having anodized aluminium frame. The filter shall have minimum 90% efficiency down to 10 microns. The media shall be supported with HDPE mesh on one side and aluminium mesh on other side. Filter banks shall be easily accessible and designed for easy withdrawal and renewal of filter cells. Filter framework shall be fully sealed and constructed from aluminium alloy.

4.3 SHEET METAL DUCT WORK

All duct work shall be constructed out of best quality cold annealed, flat galvanized sheet steel (galvanized to specifications of IS: 277 (latest edition). The grade of coat for GS sheet shall be 120 gm / sq m (table 2 of IS 277-1992). The joints shall be finished straight and neat. The duct work shall be supported / secured from roof slab or any other building member using angles, rods as may be required.

Thickness of sheets shall be as shown in the tables given below:

Maximum size of Rectangular Duct (in m)	Round Duct dia (mm)	Thickness of GS Sheet in mm
Upto 750	Upto 600	0.63 (24 G)
751 to 1500	601 to 750	0.80 (22 G)
1501 to 2250	750 to 900	1.00 (20G)
2251 & above	901 & above	1.25 (18 G)

The fabrication of duct shall be done as per IS: 655 (latest edition). Transverse joints, connections, bracing, seam etc. shall be as per IS: 655. All the ducts over 300 mm in either dimension shall be cross broken except those on which rigid board insulation is applied. Stiffening angles shall be black structural steel and riveted to the duct work. The longitudinal seam on all ducts may be Pittsburgh seam hooked and hammered. Ducts of size 600 mm and above shall be reinforced between the joints. Where drive-slips are used, angles shall be riveted to the ducts 50mm from slips.

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मुख्य अभियंता
राज्य विद्युत महविभाग
आगरा

Dampers shall be provided in the duct work for proper control and balancing of air distribution. Dampers shall have easily accessible operating mechanism. The operating mechanism shall consist of links, levers and quadrants as required for proper control and setting in a desired position. The position of the handle of Damper operating mechanism shall be clearly visible and it shall indicate the position of the damper in duct. Dampers, splitters and their operating mechanism shall be fabricated of GS sheets of two gauges heavier than duct piece having these fittings and shall be easily accessible through suitable access doors in the ducts.

FIRE DAMPERS

The fire dampers shall be fabricated out of 1.6 mm galvanized sheet steel and shall be multi leaf type. The damper blades shall be provided on both ends using chrome plated spindles in self-lubricating bushes. The damper shall have spring type motorized actuators, control panels and temperature sensors. Stop seals shall be provided on top and bottom of the damper housing made of 16G GSS. For preventing smoke leakage side seals shall be provided. The fire dampers of at least one-and-a-half-hour rating.

DIFFUSERS & GRILLES

All side wall supply grills shall be double deflection type with both horizontal and vertical vanes being adjustable. Grilles shall be provided with multi-louver damper for volume control with adjustable handle. Supply air ceiling diffuser shall be provided with volume control dampers which can be operated from below.

All the diffusers and grilles shall be of powder coated aluminium. Diffusers and grilles shall be provided with sponge rubber gasket between flanges and wall or ceiling. The shade of Grills and Diffuser shall match the ceiling finish and got approved by Engineer.

4.4 FILTERS

PRE-FILTERS

Air flow	As required for specific system
Frame	Aluminium anodised, cassette type made of 2.00 mm thick sheet
Medium	Polypropylene non woven supported by anodised aluminium mesh on one side HDP mesh on other side, 11 folds per feet of face area
Sealing of media	By means of ductile epoxy resin
Efficiency	85-98% AS PER en779 2002 90 % down to 10 micron particle size (minimum)
I.P.D.	<3mm wg at rated cfm
F.P.D.	6 mm wg (maximum)
Thickness	50mm
Filter face	500FPM (maximum)

MICRO VEE (FINE FILTER)

AIR FLOW	As required for specific system
FRAME	Aluminum anodized, flanged type made of 2 mm sheet
Medium	Polypropylene non-woven supported by anodized aluminum mesh on one side HDP mesh on other side 11 folds per feet of face area.
Sealing of media	By means of ductile epoxy resin
Efficiency	85-95% for 1 micron size 99.9 % down to 5 micron particle size (minimum)
I.P.D.	<8mm wg at rated cfm
F.P.D.	15 mm wg
Thickness	305mm or as specified in schedule of quantities
Filter face velocity	500 FPM (maximum) for 305 mm thick
Gaskets	Rubber gasket on flange.
Packing	Each filter shall be packed in a polythene bag and then placed in carton box.

HEPA FILTER (ABSOLUTE)

AIR FLOW	As required for specific system
FRAME	Aluminium anodised, flanged type made of 18G sheet
Medium	Micro Fibre glass paper, Borosilicate.
Sealing of media	By means of ductile epoxy resin
Efficiency	99.97 % down to 0.3 micron particle size (minimum)
I.P.D.	<15mm wg at rated cfm
F.P.D.	40 mm wg
Separators	Corrugated aluminium
Thickness	305 mm or as specified in schedule of quantities
Filter face	500 FPM (maximum) for 305 mm thickness
Gaskets	Rubber gasket, 6 mm thick to be fixed on flange and sealed on internal edges with epoxy resin.
Packing	Each filter shall be packed in a polythene bag with either face protected by flat hard board/ ply. Assembly to be packed in strong cardboard cartons printed with handling and opening instructions.


 Chief Medical Superintendent
 District Hospital, Shukhsangur


 District Medical Officer
 District Hospital, Shukhsangur

4.5 CONTAINMENT HOUSING FOR BSL-3 LAB HEPA FILTERS

The Containment Housing shall be made in SS 304 (14 gauge) with air tight and leak proof construction. The HEPA filter plenums shall have provision to carry out on site HEPA filter scanning, testing and validation, magnehelic gauge to monitor pressure drop across the HEPA filter, fumigation ports to allow IN-SITU decontamination of HEPA filters and Bag- In-Bag-Out facility for filter change.

4.6 CENTRIFUGAL FANS

- i) Fans, Aerofoil, forward or backward curved, SISW or DIDW, shall be licensed to bear the AMCA Air and Sound Certified Ratings Seal. The test standard used shall be ANSI/AMCA 210-85, ANSI/ASHRAE Standard 51-1985 "Laboratory Method of Testing Fans for Rating" and AMCA 300 "Reverberant Room Method for Sound Testing of fans".
- ii) All fans shall be dynamically trim-balanced to ISO1940 and AMCA 204/3 - G2.5 quality grade after assembly.
- iii) Fans housing shall be of an appropriate thickness to prevent vibration and drumming.
- iv) Motor installed shall be of a minimum 130% of the fan power absorbed (Brake horsepower) and shall have sufficient torque available for starting and continuous operation.
- v) Belts and pulleys shall be sized for a minimum 150% of the installed motor horsepower. The belt speed shall not exceed 30m/s. The pulley shall be of Taper Lock SPZ, SPA, SPB or SPC type. Conventional type of pulley is not acceptable. Both fan and motor pulley shall be balanced to the quality grade G2.5.
- vi) Fan outlet velocity shall not exceed 10% of the main duct air velocity designed (0.1" per 100 ft or 1 Pascal per meter duct length). Pressure Loss is as referred to in SMACNA Standard, unless otherwise specified.

4.7 INSULATION

- i) Thermal insulation material for Duct & Pipe insulation shall be closed cell Aluminium faced Elastomeric Nitrile Rubber. The duct insulation shall have self-adhesive backing with a peel-off cover for easy installation at site. Thermal conductivity of the insulation material shall not exceed 0.038 W/moK or 0.212 BTU / (Hr-ft²-oF/inch) at an average temperature of 30oC. Density of the nitrile rubber shall be 40-60 Kg/m³. The product shall have temperature range of -40 oC to 105oC. The insulation material shall be fire rated for Class 0 as per BS 476 Part 6 :

1989 for fire propagation test and for Class 1 as per BS 476 Part 7, 1987 for surface spread of flame test.

ii) The insulation thickness for duct work shall be as follows:

a) Supply Air duct - Minimum 19 mm

b) Return/exhaust Air duct - Minimum 13 mm

4.8 BUILDING MANAGEMENT SYSTEM ROOM PRESSURE CONTROL

Building Management System shall provide control and monitor the operation of HVAC system and laboratory operating parameters in the BSL-3 Lab rooms/zones:

4.8.1 Room/Area/zone pressure

4.8.2 Room/Area/zone temperature & RH

4.8.3 Ambient temperature & RH

4.8.4 AHU and Exhaust Blower operating status

4.8.5 VFD status & VAV status

4.8.6 OPEN/Close dampers status

The Building Management System shall allow START/STOP operation of the Complete HVAC system in AUTO Mode. However, the system shall have the provision to over-ride the parameters (password protected) and to enable START/STOP operation of the HVAC system in MANUAL mode, as well. The BMS shall provide alarm in case of HVAC system failure, collapse in room/zone negative pressure and deviation of any operating parameter from the set limits.

Each BSL-3 Laboratory Rooms/Zones area shall be provided with Pressure Sensors, Temperature Sensors and RH Sensors, wired and integrated with the BMS to display the operating conditions.

The Building Management System shall be complete with PLC, Sensors, Controllers, power and control wiring, customized Software and other associated field devices, hardware and accessories complete in all respect, as per requirement and approved design. The HVAC system START and STOP sequence shall be interlocked to prevent positive pressurization of the BSL-3 laboratory, at any point of time. A dedicated desktop PC shall be provided for the BMS operation and control along with a parallel secondary display screen of 32" size at the BSL-3 laboratory entrance to show the operating parameters.

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राजस्थान
जयपुर

शहनाईपुर

The BMS control panel shall be powered through UPS. Upon restoration of power after a power failure, the BMS shall start the HVAC system automatically without any human interface and restore the normal operational set points of the system.

5.0 TECHNICAL SPECIFICATIONS - ELECTRICAL AND ASSOCIATED WORKS

5.1 Standards

The complete wiring facilities system shall be manufactured, supplied, installed and tested in accordance with the latest revision of the Indian standards and the appropriate BS / IEC include:

1	Steel Conduit and Fitting	IS:9537 (Part-II)/ BS4568 & BS731
2	PVC Conduit and Fitting	IS-9537/1983 (Part-III)/BS6099 &
3	Cable Tray	BS729
4	Cable Ladder	BS729
5	Cable Trunking	BS4678

The complete wiring facility system shall conform to the requirements of all relevant local codes, as applicable, together with the additional requirements referred to in the approved specification and drawings.

5.2 PVC Conduit , Accessories and Wiring PVC Conduit

5.2.1 All conduits shall be high impact rigid 2mm thickness PVC heavy duty type and shall comply with I.E.E. regulations for non-metallic conduit as per IS-9537/1983 (Part- III).

5.2.2 All sections of conduit and relevant boxes shall be properly cleaned and glued by using epoxy resin glue and the proper connecting pieces.

5.2.3 Inspection type conduit fittings such as inspection boxes, drawn boxes, fan boxes and outlet boxes shall be of M.S. or otherwise mentioned.

5.2.4 Conduit shall be terminated with adopter/PVC glands as required.

PVC Conduit Accessories

1. Accessories used for conduit wiring shall be of an approved type conforming to IS: 3837-1966.

2. Standard PVC circular junction boxes are to be used with conduits for intersection, Tee-junction, angle-junction and terminal. For the drawing-in of cables, standard circular through boxes shall be used.

3. All jointing of PVC conduits shall be by means of adhesive jointing. Adequate expansion joints shall be allowed to take up the expansion of PVC conduits.


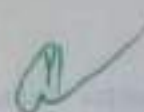


Wiring / Cabling

1. All the wiring installation shall be as per IS: 732 with latest amendment.
2. Cables shall be continuous throughout conduit lengths and no joints are permitted. There shall be no kink in cables, neither any cut, abrasion or chink in the cable insulation.
3. Cables for power and lighting circuits and extra low voltage systems shall not be drawn into the same conduit. Lighting and power circuits shall run in separate conduits. In the case of three phase circuits, all three phases including neutral, if any, shall be drawn into the same conduit.
4. Maximum number of PVC insulated 650/1100V grade/copper conductor cable shall conform to IS:694-1990

Nominal	20mm		25mm		32mm		38mm		51mm		64mm	
Cross-Sectional area of Conductor in Sq.mm												
	S	B	S	B	S	B	S	B	S	B	S	B
1.0	2	3	4	5	6	7	8	9	10	11	12	13
1.5	5	4	10	8	18	12	-	-	-	-	-	-
2.5	5	3	8	6	12	10	-	-	-	-	-	-
4.0	3	2	6	5	10	8	-	-	-	-	-	-
6.0	2	-	5	4	8	7	-	-	-	-	-	-
10	2	-	4	3	6	5	8	6	-	-	-	-
16	-	-	2	2	3	3	5	5	10	7	12	8
25	-	-	-	-	3	2	5	3	8	6	9	7
35	-	-	-	-	-	-	3	2	6	5	8	6
50	-	-	-	-	-	-	-	-	5	3	6	5
70	-	-	-	-	-	-	-	-	4	3	5	4

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- i. The above table shows the maximum capacity of drawing in of cables in conduits
- ii. The columns Head 'S' apply to runs of conduits which have distance not exceeding 4.25 m between draw in boxes and which do not deflect from the straight run by an angle of more than 15 degrees. The columns heads 'B' apply to runs of conduit which deflect from the straight by an angle of more than 15 degrees.
- iii. Conduit sizes are the nominal external diameters.

5.3 Cable Tray/ Cable Ladder

The cable trays / ladders shall be fabricated according to the design specified by IEC 61537 and should be tested for Safe Working Load (SWL).

5.4 WIRES AND CABLES

The wires shall be single core PVC insulated 1.1 KV grade stranded twisted wires and shall comply with following standards with update amendments under the specifications.

- IS-3961: Current rating for cables.
- IS-5831: PVC insulation and sheath of electric cables.
- IS-694: PVC insulated cables for working voltage up to and including 1100 volts.
- IEC-54 (I): PVC insulated cable.

The wires shall be color coded - (red, yellow, blue) for Phases, black for Neutral and green for Earth. All LT cables for normal power/control circuits within buildings shall be XLPE insulated and PVC sheathed Aluminum conductor and control cables shall be PVC insulated and PVC sheathed copper conductor respectively. Cables in service duct, open trench, direct-laid underground in soil shall be by means of armoured cables. Non- armored cables shall only be laid in conduits, trunkings or tray/ladder for mechanical protection.

All cables shall be manufactured and constructed in accordance of the following standards with the latest revision:

1.	IS: 694	HRPVC/XLPE insulated (heavy duty) electric cables for working voltage up to and including 1100 volts.
2.	IS: 424-1475(F-3)	Power cable-flammability test.
3.	IS: 7098(I)	Specification for cross-linked polyethylene insulated LSZHPVC sheathed cable for working voltage up to 1.1 KV.

4.	IS: 1554	Specification for PVC insulated (heavy duty) electric cables for working voltages up to and including 1100 volts.
5.	ASTM-D: 2863	Standard method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (Oxygen Index).
6.	ASTM-D: 2843	Standard test method for measuring the density of smoke from the burning or decomposition.
7.	IEEE: 383	Standard for type of tests Class-IE, Electric cables, field splices and connections for power generation station.
8.	ASTME: 662/ IEC: 754(x)	Standard test method for specific optical density of smoke generated by solid materials
9.	IS: 10418	Cable drums.
	IS-10810	Testing method of cable.
	IS-6121	Cable glands.

5.5

SWITCHES & SOCKETS

Lighting switches outside the containment area shall be Modular Type, single pole, quick make and break, silent action type and totally enclosed for flush or surface mounting as required.

Lighting switch inside BSL-3 Lab containment area shall be IP 66 rated 6/16AMP Switch Socket Outlets

Switch socket outlets shall be as per BS: 1363 single pole 6Amp 3round pin, except otherwise specified and suitable for surface or flush mounting according to location.

Switches shall be of the quick-make and break type silent action totally enclosed with solid silver alloy contacts. Switched socket outlets for indoor use shall be housed in suitable galvanized steel boxes as per BS: 4662 with conduit knockouts. Types and finishes of socket plates shall match those for the lighting switches.


6/16 AMP Switch Socket inside BSL-3 Lab containment area shall be IP 66 rated

5.6 Miniature Circuit Breaker

The MCB shall be suitable for manual closing, opening and automatic tripping under overload and short circuit. The MCB shall be rated for 10KA fault level. The MCB shall generally conform to IEC/ IS: 60898

The MCB shall be suitable for housing in the lighting boards and is suitable for connection at the outgoing side by tinned cable lugs and for bus-bars connection on the incoming side.

5.7 Earth Leakage Circuit Breaker


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ELCB shall be 4 pole 415 volts 50Hz, 30-300mA sensitivity. The rating of the ELCB shall be as required and approved. These shall be suitable for manual closing and opening and for automatic tripping under earth fault circuit of 30-300 mA. The enclosure of the ELCB shall be molded from high quality insulating material. The material shall be fire retardant, anti-tracking, non-hygroscopic, impact resistant and shall withstand high temperature. All parts of switching mechanism shall be non-greasing, self-lubricating material so as to provide consistent and trouble free operation. Operation of ELCB shall be independent of mounting position and trip free type.

5.8 Lighting/Small Power Distribution Boards

Distribution boards shall be of standard make with MCBs as per approved make given. Distribution boards shall be of steel sheet construction double door all welded enclosure of IP42 protection and powder coated painted. Distribution boards shall be recessed in wall or mounted on surface of wall with necessary mounting arrangement.

Distribution board shall be provided with proper circuit identification name plate and danger sticker/plate as per requirement. All the distribution boards shall be provided with engraved name plates with 'lighting', 'power' or 'UPS' with DB Nos., as the case may be. Each DB shall be provided with circuit list giving details of each circuit. All the outgoing circuit wiring shall be provided with identification ferrules giving the circuit number & phase. Each distribution board shall have separate neutral and earth connection bar mounted within the DB each having the same number of terminals as the total number of outgoing individual circuits from the distribution board. Conduit & cable armouring shall be bonded together & connected to the distribution board earth bar.

Distribution Boards shall be tested as per IEC61439-III standards.

5.9 MAIN LT PANEL

Medium Voltage power control centers (generally termed as switchboard panels) shall be in sheet steel clad cubicle pattern, free floor standing type, totally enclosed, compartmentalized design having multi-tier arrangement of the incomers and feeders as per details given in the schedule of quantities. The panels shall be of extensible type with provision of bus bar extensions. All panels shall conform to the requirements of the latest addition of IS and shall be suitable for 415 V, 3 phase AC supply or 230 V single phase AC supply as required.

All switch board panels or power control centers of free standing type shall have a bus bar chamber at the top and the cable compartment at the bottom or as approved. The space between the bus chamber and cable compartment shall be suitably compartmentalized to accommodate either air circuit breakers or molded case circuit breaker of various ratings. The cable terminations shall be carried out on

the rear side of the panels for which adequate space and clamping arrangements shall be provided. Where panels have to be installed with very little access space at the rear, the cable terminations shall be carried out in suitable cable alleys provided on the front of the panel. All the live parts shall be properly shrouded with Bakelite barriers. All the equipment shall be accessible from the front. However, protection relays, KWH meters, etc. may be mounted on the rear side/front side. Arrangements and marking of bus bars, main connections and wiring shall be in accordance with latest IS code. The structure of the panel shall be robust and provided with adequate bracing's to withstand the operation of the equipment and stresses due to system short circuit. The panels shall be fabricated out of best quality heavy gauge sheet steel. The panel shall be machine pressed with punched openings for meters, indicating lamps etc. The enclosure system shall be Modular in nature with bolted on construction. Enclosure parts/kits shall be interchangeable to reduce downtime during modification or maintenance work. Enclosure system and switchgear components shall be from same manufacturer.

Busbar

The bus bars shall be suitable for 4 wire, 415 Volts, 50 Hz, system. The main bus bar shall be made of high conductivity electricity conductor grade electrolytic AL 91E Aluminum and shall be liberally sized. In case of copper bus bar it shall be electrically conductor grade electrolytic copper and at the time of joining of two copper buses tinning will be done on the copper strips ends to a length equal to the lap length of the joint plus one each. The bus bars shall have uniform cross section throughout. The bus bars shall be capable of carrying the rated current at 415 Volts continuously. The bus bar will run in a separate busbarbus bar chamber using bus insulators made of non-deteriorating, vermin proof, non-hygroscopic materials such as epoxy fiber, reinforced polyester or molding compound. The interval between the two insulators will be designed after considering:

- a. Strength and safe load rating of the insulator,
- b. The vibrating force generated during a fault,
- c. A Factor of safety of 1.8
- d. A set of insulators at both ends of the bus.

The bus bars shall be designed to withstand a temperature rise of 45° above the ambient. To limit the temperature rise in the bus bar chamber a set of louvers can be provided at strategically places considering the air circulation. The louvers provided will have a brass wire mesh covering from inside with more than 100 openings per sq. inch. The overall temperature of bus bar shall not exceed 85°C in any case. A current density of 1.0 Amps/Sq. mm shall not be exceeded for Aluminum bus bars.

All the bus bars shall be insulated with PVC heat shrinking sleeves suitably throughout (except at joints) the length. The electro galvanized galvanized high

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tensile steel nuts, bolts, plain or spring washers of suitable size will be used in connecting the various section of the bus bar. A minimum of 1.6 times the width of bus bar will be the lapping length of each joint.

Earthing

The panels shall be provided with an aluminum or copper earth bus of suitable size running throughout the length of the switchboard. Suitable earthing eyes/bolts shall be provided on the main earthing bus to connect the same to the earth grid at the site.

Interlocking

The panels shall be provided with the following interlocking arrangement.

- The door of the switch-fuse compartments is so interlocked with the switch drive or handle that the door can be opened only if the switch is in 'OFF' position. De-interlocking arrangement shall also be provided for occasional inspection.
- It shall not be possible for the breaker to be withdrawn when in 'ON' position.
- It shall not be possible for the breakers to be switched on unless it is either in fully inserted positions or for testing purposes in fully isolated position.
- The breaker shall be capable of being raked in to 'testing' 'isolated' and 'maintenance' positions and kept locked in any of these position.
- A safety latch to ensure that the movement of the breaker as it is withdrawn, is checked before it is completely out of the cubicle shall be provided.

Protection & Instrumentation

Protection and instrumentation shall be as per standard specifications. All ACBs, MCCBs of Main LT Panel and Incomer MCCBs shall have inbuilt Earth Fault Protection

Control Wiring

The control wiring of all the panels will be done with PVC single core flexible copper wires of cross section 1.5 sq. mm and 2.5 sq. mm. All the wiring involving current transformers or circuits with currents of more than 5 Amps will be wired with 2.5 sq. mm cross section wire and the others with 1.5 sq. mm. Similarly all the interconnecting between the incoming bus and the outgoing of 100 Amps and above rating shall be done by insulated copper strips of suitable sizes and equipment below 100 Amps rating shall be wired with insulated copper conductors. All of the control wiring will be done by properly dressing all the wires in a laminar manner either in a PVC duct of liberal size or bunched together by PVC strapping tapes at a distance not exceeding 150 mm. Each wire will terminate with a copper ferule crimped to the wire.

Surface Treatment

Each part of the fabricated panel will be subjected to seven tank treatment and all sheet metal accessories and components of power control centers and switchboard panels shall be thoroughly cleaned, degreased, de-rusted and hot dip phosphatized before red oxide primer is applied. The panel shall be stove enameled gray shade finish and the interior surfaces of the panel shall be painted to an off-white shade.

Enclosure

The panel enclosure shall be totally dust and vermin proof and shall be suitable for indoor installation. All the cubical will be adopted with front located, outward openings, lockable doors having hidden hinges and a bolted back cover both using no deteriorating neoprene rubber gasket. Enclosure design shall be in accordance with degree of protection IP 54 as per latest IS code. All the nut bolts handles, meters, knobs etc. appearing from outside of the panel should be in symmetry so as to give a neat appearance.

Name Plate

The panel as well as the feeder compartment doors shall be provided with name plate giving the switchboard/feeder descriptions as indicated on the approved drawings.

Metering, Instrumentation And Protection

Ratings, type and quantity of meters, instruments and protective devices shall be as per approved SLD and GA Drawing.

Current Transformers

CTs shall conform to latest IS codes in all respects. All CTs used for medium Voltage application shall be rated for 1 kV. CTs shall have rated primary current, rated burden and class of accuracy as specified in schedule of quantities/drawings. Rated secondary current shall be 5A unless otherwise stated. Minimum acceptable class for measurement shall be 0.5 to 1 and for protection class 10. CTs shall be capable of withstanding magnetic and thermal stresses due to short circuit faults. Terminals of CTs shall be paired permanently for easy identification of poles. CTs shall be provided with earthing terminals for earthing chassis, frame work and fixed part of metal casing (if any). Each CT shall be provided with rating plate indicating:

- Name and make
- Serial number
- Transformation ratio
- Rated burden
- Rated Voltage
- Accuracy class

CTs shall be mounded such that they are easily accessible for inspection, maintenance and replacement. Wiring for CT shall be with copper conductor PVC insulated wires with proper termination works and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner.

Potential Transformer

PTs shall conform to latest amendment up to to date IS Codes.

Measuring Instruments

Direct reading electrical instruments shall conform to latest IS codes in all respects. Accuracy of direct reading shall be 1.0 of Voltmeter and 1.5 for Ammeters. Other instruments shall have accuracy of 1.5. Meters shall be suitable for continuous operation between -100C and +5000C. Meters shall be flush mounting and shall be enclosed in dust tight housing. The housing shall be of steel or phenolic mould. Design and manufacture of meters shall ensure prevention of fogging of instrument glass. Pointer shall be black in colour and shall have Zero position adjustment device operable from outside. Direction of deflection shall be from left to right. Selector switches shall be provided for Ammeters and Volt meters used in three phase system.

MCCB's & RCCB's

MCCBs shall comply with standards IS/IEC 60947-1 & 2. The breaking capacity performance certificates shall be available for category A to the above mentioned standards.

MCCB shall have a rated operational voltage (U_e) of 415V, insulation voltage (U_i) of 750 V (AC 50/60 Hz) & Impulse voltage (U_{imp}) of not less than 8kV. MCCBs shall be current limiting type with trip time of less than 10 m-sec under short circuit conditions. The MCCBs should be either 3 or 4 poles fixed type. The design is required to minimize the effects of short circuit currents i.e. limit the let through energy and improve the life of cables.

RCCBs must conform to IS12640 -1 and IEC/EN 61008 standards.

RCCBs shall be suitable for operation at 240V/415V, 50Hz supply. The RCCB ratings shall be available from 25A-125A in SPN and TPN versions with the sensitivity of 30mA (for personal protection) and 100/300mA (for Fire protection), as per the BOQ requirements. Rated conditional short circuit shall be 10KA RMS

RCCBs shall carry ISI marking. RCCBs shall have clear indication of 'Tripping on earth leakage fault' on front facia. RCCBs shall have Electrical life of 10,000 operations for all ratings. RCCBs shall have bi-connect facility to terminate fork type busbar and wires, simultaneously. Terminal capacity shall be minimum 25 sq.mm. for ratings up to 32A, and 35 sq.mm. for ratings above 32A, to ensure perfect termination of wires and cables. Terminals of RCCBs shall have captive screws.

5.10 EARTHING

A complete earthing network comprising cables, copper tapes, electrodes and earth bonding of all relevant necessary non-current carrying metal parts of equipments/ apparatus shall be connected as required. The Earthing shall conform to IS 3043.

All earthing conductors shall be of high conductivity copper/ G.I. and able to protect against mechanical damage as per requirement. The cross-sectional area of earth conductor shall not be smaller than half that of the largest current carrying conductor.

Pipe Earth Electrode

G.I. pipe shall be of medium class 100mm dia and 3m in length.

G.I. Pipe electrode shall be cut tapered at bottom and provided with holes of 12mm dia drilled not less than 7.5cm from each other up to 2m of length from bottom. The electrode shall be buried in the ground vertically with its top being 20cm minimum below ground level. Clamping of the earth leads to the earth rod shall be made by earth clamp. The clamps shall be capable of providing high pressure contact between the earth rod and the earth leads to achieve low contact resistance.

When two or more electrodes are driven to form a group, the heads of the electrodes in the group shall be bonded to each other by means of a 25 mm x 3mm GI / Copper strip, laid at a depth of at least 600 mm in soil.

Plate Earth Electrode

The plate earth electrode shall consist of copper plate or G.I. plate. The plate electrode shall be buried in ground with its faces vertical and top not less than 4.5m below Ground level. The plate shall be filled with charcoal dust and common salt filling, extending 15cm around it's on all sides. A watering pipe of 50mm dia of medium class pipe shall be provided.

The top of the pipe shall be provided with a funnel and a G.I. mesh screen for watering the earth. In the case of pipe electrode a removable plug shall be provided.

The earthing lead from electrode onwards shall be suitably protected from mechanical injury by suitable dia medium class G.I. pipe in case of wire and size according to strip size. The overlapping of strips at joints shall done in approved manner

- a. GI strips shall be riveted with rivets/ bolted and welded.
- b. Copper strips shall be riveted with rivets/ bolted brass nuts, bolts and washers and brazed.

Earth Strip

Earth strips/grids shall be of bare GI/ Copper strips of 25 mm x 3 mm as specified. Earth strips shall be riveted or joint with proper connector to earth electrodes. In order to

minimize the mutual inductance between strips, earth strips shall be positioned at a distance not less than 6m apart unless otherwise specified.

5.11 LIGHT FIXTURES AND FITTINGS

The Laboratory rooms lighting shall provide 400-450 lighting Lux level. All the Light Fixtures shall be LED and surface mounted type constructed in CRCA Powder coated housing, powder coated bottom frame, LED panel with suitable driver. The construction shall be in slim panel.

Rating -40 W and 20 W, as indicated in drawing. Light Fixtures shall be IP 55 rated

5.12 Fire Detection and Alarm System

The complete BSL-3 and support areas shall be provided with Addressable type Fire Detection and Alarm System conforming to relevant NBC/BIS code. The Fire Detection & Alarm System shall be complete with Smoke detectors, Heat detectors, Fire Alarm Panel, manual call points, response indicators, power and control wiring and cabling etc. complete in all respect.

5.13 Communication Facility (Intercom & LAN)

The intercom and LAN shall be fully wired in CAT 6 cable, as indicated in drawing. The system shall be complete with required conduit and wiring and RJ outlets.

A suitable EPABX shall be provided for upto 2 incoming lines and 30 outgoing lines. The incoming telephone lines and internet shall be arranged by the Employer. All the rooms shall be provided with intercom connection and telephone instrument set.

5.14 Door Interlock & Access Control System

The door interlock and access control system shall be provided with combination of proximity card based, numerical key pad lock based and push button based system. The system shall be complete with access logic controllers, door electromagnets, proximity cards and card reader/s, numerical keypad locks, door release push buttons, emergency door release buttons, PC communicator, control and power wiring and cabling and other required accessories, hardware, and software, complete in all respect as required.

A suitable software shall be programmed/loaded on the computer to allow perform the following operations.

- Assign the access rights to the individual proximity cardholder/s
- Create database for bio-metric readers for the authorized persons and assign them access rights.
- Enable/disable access for specified time periods (for visitors etc.)
- Record the transactions and generate transaction reports

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Proximity Card Reader and Access Logic Controller shall in general meet the following specifications:

No. of doors control per ALC - Upto 4
Card Reading Time- Less than 1 second
Output interface- RS-232 / RS-422 / RS 485
Power - 12 to 24 VDC
ID Number- 1 to 10 digits from keypad or card
Use capacity- Not less than 100

Access Control Software shall be suitable to operate on latest Windows OS.

The electromagnetic lock shall conform to the following specifications as minimum.
Holding Force - Atleast 650 Lb per door

Operating Voltage- 12/24 VDC or 12/24 VAC

Protect against corrosion - The electromagnetic lock and its accessories shall be of anticorrosive material/finish

Residual Magnetism- There should be no residual magnetism after release of electromagnetic lock

The access control system shall be powered through UPS supply for uninterrupted operation even during mains power failure.

5.15 Closed Circuit TV System (CCTV)

CCTV System shall be provided as per drawing and shall be complete with wall/ceiling mounted high resolution color cameras, multiplexer cum DVR, LED color monitor 40" size, associated power and control cabling etc. and required hardware and software. The output of the CCTV system cameras shall be displayed on a 40" LED monitor, to be installed at approved location.

The cameras shall be high resolution color cameras and shall be suitable for indoor installation and shall be equipped with varifocal lenses to enable adjustment for best view. The cameras shall also have auto Iris lens to control the aperture according to the light fluctuations.

The multiplexer cum DVR shall be suitable for saving up-to 12 channels data, with play back feature. The DVR memory/Hard disk capacity shall be 1 TB or higher. For convenient backups the DVR shall be compatible with Windows based OS so that it can be backed up through a PC.

6.0 TECHNICAL SPECIFICATIONS - EQUIPMENTS AND SYSTEMS

6.1 AUTOCLAVE

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The autoclave shall be rectangular, steam operated, high pressure high vacuum, double door suitable for horizontal loading of waste. The chamber size shall be approximately 600 mm x 600 mm x 1200 mm. The autoclave shall be free standing type. The autoclave should be complete with a compatible in built steam generator.

CONSTRUCTION

1. The chamber shall be constructed of heavy duty SS of 316 with full argon welding. The chamber material and construction shall meet ASME standards for unfired vessels. The chamber shall be duly reinforced with the help of carbon steel.
2. Doors and jacket shall be constructed of stainless steel sheet of 304 grade. Doors must be provided with automatic safety locking and unlocking devices. All doors must be gasketed to ensure a high temperature seal.
3. Chamber and doors must be designed for working under positive pressures upto 31 psig at temperature upto 135o C.
4. The autoclave shall be insulated with 50 mm thick resin bonded glass wool to minimise heat loss and restrict the skin temperature within reasonable limits.
5. Pipes and fittings shall be of stainless steel and bronze. Valves shall be ball type, self-cleaning type.
6. Key locked main power switch should be provided for additional safety and security.
7. The autoclave must be complete with a vacuum pump of required capacity.
8. The autoclave shall be complete with steam generator compatible with the autoclave. The steam generator shall be fabricated from SS 316 L with industrial immersion heater of reputed make. The immersion heaters shall be heavy duty type in stainless steel construction.

The heater shall be of suitable capacity so as to give the required operating temperature and pressure in less than 30 minutes of switching it on and should be capable of maintaining the pressure and temperature thereafter during various load cycles of the autoclave.


The steam generators should have automatic pressure control and other safety features like low water cut-off to safeguard heaters etc. The steam generator should be complete with all accessories, inlet, outlet, drain connections etc. Shall be electrical operated, shell and tube type and should be compatible with the autoclave.

CONTROLS

The autoclave shall be fully programmable type with microprocessor and designed to control and monitor a wide variety of sterilizing cycles, depending upon the load to

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be sterilized. A manual operation facility shall also be provided as a standby in case of control failure. The automatic control shall have following features (but not limited to):

- Audible alarms in case of any cycle interruption or cycle failure.
- The autoclave should be equipped with a printer to record and print relevant information concerning operation during the cycle such as temperature, pressure, cycle time etc.
- The control system should be self-diagnostic and must provide fault message to the operator.
- Cycle parameters should be adjustable with the help of codes to prevent adjustments by non-authorized persons.
- The autoclave should have following safety features to prevent the opening of door in following instances (but not limited to).
 - * When the chamber is pressurised
 - * When the sterilization cycle has not completed

ACCESSORIES

The Autoclave shall be complete with following accessories:

- Jacket Steam Valve
- Chamber Steam Valve
- Safety Valve Exhaust to Drain
- Pressure Reducing Valve
- Jacket and Chamber Steam inlets
- Moisture separator
- Rupturing Disc
- Non return valves and strainers
- Steam Filter
- Solenoid Valve/s
- Vacuum break valve
- Vacuum break filter
- Compound Gauge
- Pressure Gauge
- Safety Valves
- Steam Trap
- Jacket drain valve
- Digital Thermometer
- Electrical Control Console/Panel with printer to record cycle parameter at defined frequency.

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OPERATING STANDARDS

- a. The vacuum autoclave shall give a minimum of three vacuum cycles to purge the autoclave of all the air.
- b. Operating temperature shall be 121o C or 135o C, as per programmed cycle parameters, which will be discussed and finalized with the Engineer.
- c. The autoclave should completely kill the approved biological indicator at the maximum design capacity. Biological indicator shall be *Bacillus stearothermophilus* spores using vials or spore strips, with at least 1×10^6 spores per milliliter. The steam condensate shall meet EU WFI specifications.

INSTALLATION AND TESTING

- Installation: The autoclave shall be installed/ mounted on a sturdy tubular stand of SS.
- Hydraulic Test: The autoclave chamber shall be tested to 1.5 times of the working pressure, sterilization jacket to twice the working pressure. The test pressure will be maintained for a minimum of 2 hours.

6.2 DYNAMIC PASS BOX

Pass Boxes (Dynamic) shall be provided at required locations for transfer of samples, chemicals and materials into the laboratory.

The Pass Box shall be constructed in SS 304 (18 gauge). The corners inside the Pass Box chamber shall be coved for easy cleaning. The pass box chamber dimension shall be approximately 610 mm x 610 mm x 610 mm. The unit shall be complete with HEPA filters, blower, motor, door electromagnets, door interlock, UV Lamp with timer, necessary wiring, controls and all other accessories. etc. complete.

The Pass Box doors shall be interlocked by providing suitable electromagnet, so that both the door cannot be opened simultaneously. The interlock shall provide visual indicator for door open/close conditions. The blower motor of Pass Box shall of suitable rating and shall be dynamically and statistically balanced. Magnehelic differential pressure gauge shall be provided to indicate the pass box chamber pressure. The pass box shall be provided with UV light with ON/OFF switch and shall be interlocked with the pass box doors.

The Supply Air velocity across the terminal HEPA filter in Pass Box shall be approximately 0.45 m/sec. Noise level shall be less than 70 dB. The pass box shall be installed flushed with the wall on BSL-3 Lab side and projected on the other side. The projected side shall be provided with SS coving at the pass box and wall junction.

The Pass Box shall be complete with following filters: Pre-filter: 95% efficiency down to 5 microns

Final Filter: HEPA Filter with 99.97 % efficiency down to 0.3 microns

The blower motor shall of suitable rating and shall be dynamically and statistically balanced.

Magnehelic differential pressure gauge shall be provided to indicate ΔP across the HEPA filter.

6.3 BIOSAFETY CABINET

The Biosafety Cabinets shall be *2 nos. including 1 no. Class II A2 type and 1 no. Class II B2 type* and shall conform to NSF 49 standards. Refer to ICMR VRDL Indicative List for Medical College VRDL Laboratories (annexure III). The Biosafety Cabinet shall be factory tested and certified and shall be validated on-site after installation.

6.4 DUNK TANK

Dunk tank shall be provided as per drawing. The dunk tank shall be constructed in SS 304 (16 gauge) for active use of disinfectant chemical like NaOH, Sodium Hypo-Chloride Solution. Approx size of dunk tank shall be 550x550x900 mm.

6.5 LABORATORY WORK STATION

The BSL-3 Laboratory rooms shall be provided with workstations, as per approved layout drawing. The work stations shall be provided with the most optimum utilization of space in the laboratories. Hand wash sinks and emergency eye wash stations shall be provided integrated with the work station. Taps shall elbow operated laboratory taps.

The emergency eye wash shall conform to ANSI/ISEA Z358.1 standards.

The workstations in BSL-3 Laboratory shall be constructed in SS 304 (16 gauge). The workstation shall have under counter storage space and drawers. Each work station and Bio-safety cabinet shall be provided with a laboratory chair. The chair in BSL-3 Laboratory shall be in SS frame and seat (fabric and non-leather finish seats shall not be accepted).

6.6 EMERGENCY SHOWER AND EYE WASH SYSTEM

An emergency deluge shower shall be provided in the exit air lock. The shower system shall be with hand operated lever and shall conform to ANSI/ISEA Z358.1 standards

6.7 UVGI

UVGI system shall be installed in BSL-3 Laboratory room. The UV lamp wattage/capacity shall be selected as per the laboratory floor area conforming to standards.

6.8 GARMENT STORAGE CABINET

The garment storage cabinet shall be constructed in mild steel sheet in powder coated finish. Each garment storage cabinet shall have 6 lockers of approx. 600x600x600 mm size and two nos. storage racks. Leveling lugs shall be provided for alignment at site.

6.9 WATER PURIFICATION SYSTEM

General: Reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical: A compact water purification system with ISO 9001 certified designed to be fed directly by potable tap water visual display for quality parameter, filter condition etc. Reservoir capacity of approx. 30 ltr. Necessary prefilters, cartridges and accessories to get ultra-pure, laboratory grade water for molecular biology work. Quality of ultra-pure water provided by system should fulfil following criteria:

Resistivity	:	18 or more meg-ohms-cm
Conductivity	:	90 – 100 micro-ohms
Pyrogen level	:	To the levels 0.001 eu/ml with disposable / add on ultra-filtration cartridge
Microorganisms	:	<1 cfu/ml
TOC values	:	<5 ppb
Final filtration	:	Through 0.22-micron filter
Volume of pure and ultrapure water/day:		~2lit/hr.
Power Supply	:	210-240V/50-60 Hz
Warranty	:	5 years from till date of installation/supply
CMC	:	3 years from till date of installation Which includes cartridges

6.10 EFFLUENT DECONTAMINATION SYSTEM

The Chemical Decontamination System for BSL-3 Laboratory effluent shall comprise of Two nos. Effluent Collection tanks (1 Working +1 Standby), each of 1000 Ltrs. Capacity. The decontamination tanks shall be constructed in SS 304 (14 gauge). The drain line from

BSL-3 Laboratory containment area shall be terminated to the effluent decontamination tanks. The effluent decontamination tanks shall be provided with motorized OPEN/CLOSE valves connected with liquid level sensor such that when one tank get filled up to approx. 800 Ltrs volume, the supply valve shall automatically close and the supply valve of the standby tank shall automatically open to allow collection of effluent. During this time, the effluent collected in filled up tank can be decontaminated by introducing disinfectant chemical. This cycle shall be repeated automatically vice-versa with both the decontamination tanks and the process shall be automatically controlled through a control panel.

One number chemical storage tank in SS 304 (14 gauge) fitted with transfer pump and measuring device, piped and connected to both the decontamination tanks shall also be provided for introducing disinfectant chemical into the decontamination tanks.

The system shall be complete with following items:

- Two nos. Decontamination Tanks, each of 1000 Ltrs. capacity
- Motorized valve connected with liquid level sensor through control panel
- Disinfectant Chemical storage tank
- Disinfectant Chemical dosing pump
- Non return valves
- Interconnecting piping including piping for chemical dosing
- Pumps for discharging decontaminated effluent into sewer/drain (1W+1S)
- Power and control cabling/wiring for pumps and motorized valves with control panel

6.11 SERVICE & UTILITIES

6.11.1 Power:

The required Power for the BSL-3 Laboratory shall be arranged and provided by Autonomous State Medical College, Shahjahanpur/Competent Authority. The contractor shall make arrangements for connections from existing LT Panel including laying of Power supply cable.


6.11.2 Water:

Water supply for the BSL-3 Laboratory shall be arranged and provided by Autonomous State Medical College, Shahjahanpur /Competent Authority at the nearest available source. The required piping work for water connection to storage tanks and further distribution in the proposed facilities shall be done by the Contractor.

6.11.3 Drain & Sewer Line

Chief Medical Officer
Shahjahanpur


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वित्त नियंत्रक
ज्वासी राज्य चिकित्सा महाविद्यालय
शाहजहाँपुर

The drain from the BSL-3 and General laboratories shall be finally terminated to the nearest available drain and sewer line, by the Contractor.

7.0 TESTING, COMMISSIONING AND VALIDATION

- 7.1.1** After completion of the construction and installation works, all the equipment, systems and services shall be commissioned and tested to check the operation and performance of each of the equipment and system.
- 7.1.2** Once all the equipment and systems are found to be working satisfactory, the Validation of the BSL-3 Laboratory shall be carried out by the Contractor in the presence of authorized representatives/committee of Autonomous State Medical College, Shahjahanpur, Uttar Pradesh/Competent Authority. The Validation shall be carried out in accordance with the NIH Guidelines for commissioning and validation of BSL-3 Laboratories. During the validation process, operation and functioning of complete installations shall be checked to verify that the equipment and systems are delivering the desired and approved performance results. It will be checked to ensure that all the biosafety and biosecurity requirements are met, are in place and are functional.
- 7.1.3** Before start of the validation process, the Contractor shall submit a detailed validation document giving details of validation checks and tests to be performed, the acceptance criteria as per the approved designs and drawings and the formats for recording the check and test results.
- 7.1.4** After completion of the validation process, the Contractor shall compile the validation results and submit to Autonomous State Medical College, Shahjahanpur, Uttar Pradesh /Competent Authority.
- 7.1.5** The Contractor shall provide all the test and measuring instruments, tools, tackles, manpower etc. required for the Testing, Commissioning and Validation Process.

8.0 DOCUMENTS & DETAILS TO BE SUBMITTED ON COMPLETION

- 8.1.1** On Completion of the works, the Contractor shall submit the following documents to Autonomous State Medical College, Shahjahanpur, Uttar Pradesh /Competent Authority, in three sets:

8.1.1.1 Complete Set of 'AS BUILT DRAWINGS'

8.1.1.2 Operation and Maintenance Instructions & Manuals for individual Equipment and Systems

8.1.1.3 Recommended List of Spares and Consumables

8.1.1.4 Preventive Servicing and Maintenance Schedule

8.1.2 The Contractor shall submit the Technical Specifications and Data sheet for all the equipment/s and systems supplied and installed.

8.1.3 The Contractor shall submit a written undertaking that spares and after sales services for all the equipment (including the existing equipment's), systems and services installed in the facility shall be made available for a period of at least five years from the date of handing over the facility. The after sales services is to be availed by the Employer from the Contractor in accordance with at the quoted and pre-approved rates invited in the tender. The Contractor shall provide on-site warranty certificate for a period of 5 years from the date of operationalisation of BSL-3 laboratory without any additional cost to the Employer.

9.0 EXTERNAL VALIDATION

Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh may desire to get the BSL-3 Laboratory validation done by external experts and if it is so desired and directed, the contractor shall provide all the required assistance for carrying out the validation by external experts.

The Contractor shall extend full cooperation and provide the validation instruments, tool, tackles and manpower etc., as required and asked by the employer

10. COMPREHENSIVE ANNUAL OPERATION & MAINTENANCE SERVICES

After Completion of Works and Handing Over, Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh / Competent Authority may ask the Contractor to provide Comprehensive Operation and Maintenance services for a period of 3 years commencing after the end of 5-years warranty period at the quoted and pre-approved rates invited in the tender.

The Comprehensive Operation and Maintenance Services to be provided by the Contractor shall include:

- i. Providing qualified, experienced and trained manpower for handling operation of the Laboratory Facility on day-to-day basis on all working days
- ii. To carry out routine and preventive servicing and maintenance of the equipment, system and services like Condensing Unit, AHU, Exhaust Blowers, Autoclave, Biosafety Cabinet, Pass Box, Access Control System, BMS, Building Electrical System, Fire Alarm system etc., installed in the facility.
- iii. Attend to and carry out any breakdown maintenance works required from time to time, as and when it occurs and notified by the Employer.

- iv. Maintain daily Log Sheet of laboratory operating parameters
- v. Providing Spares and Consumables for various equipment, systems and services like BMS, Access Control System, Gaskets (for Doors and Pass Box), Filters, Valves, Light Fittings, spare switches and sockets etc. and maintain suitable inventory at site during the period.
- vi. Maintenance of electrical system, services and construction works executed by the Contractor
- vii. Annual Validation of the Laboratory Facility; and
- viii. Any other operation and maintenance service that may be reasonably required by the Employer for the purpose of this Contract.
- ix. The following works and consumables shall not be included and covered in the scope of Contractor in the Comprehensive Operation and Maintenance Services:
 - a. Supply of power, water and fuel
 - b. Internal and External Painting of the Building
 - c. Chemicals/reagents for use in laboratory for Fumigation/Decontamination
 - d. Water and Power including change of batteries for UPS and Inverter
 - e. General Housekeeping works including associated consumables
 - f. Day-to-day operation of equipment/item installed for the BSL-3 Lab.
 - g. Maintenance of any external works or roads
 - h. Maintenance of lab equipment supplied directly Principal, Autonomous State Medical College, Shahjahanpur, Uttar Pradesh

In case the performance of the Contractor during the Comprehensive Operation and Maintenance Services is found to be unsatisfactory, the Employer may terminate the Contract by giving one month notice to the Contractor and proceed to appoint a new agency

During the operation and maintenance period, the RESPONSE TIME by the Contractor should not exceed 24 hours from the time the breakdown intimation is given by the user.

During the operation and maintenance period, it is expected that the Contractor shall attend the breakdown and rectify the fault/s promptly with minimum possible downtime. The maximum permitted DOWNTIME shall be 48 Hours from the time the intimation is given by the user.

If the repair/rectification is not carried out by the Contractor within the maximum permitted DOWNTIME, the Employer shall charge penalty, for each breakdown instance, subject to a maximum of 10% of the applicable value of operation and maintenance services for the relevant year ("Annual Contract Value"), as follows:

Above 48 hours & Below 96 hours - Penalty of 1% of the Annual Contract Value

Above 96 hours & Below 192 hours- Penalty of 1.5% of the Annual Contract Value

Above 192 Hours- Penalty of 2% of the Annual Contract Value and get the work repair/rectification done from third party at the Contractor's Risk and Cost.

The contractor shall maintain sufficient Inventory of required spares and consumables at site to minimize the downtime and to ensure smooth operation and functioning of the Laboratory.

Before rendering the Comprehensive Operation and Maintenance services as detailed in this Contract, the Contractor shall submit details of manpower proposed to be deployed at site, detailed schedule of preventive servicing and maintenance works, the formats for maintaining daily log sheet and servicing and maintenance records and details of spares and consumables to the Employer.

CHAPTER – 3

List of Equipment Already Available with
Autonomous State Medical College, Shahjahanpur, Uttar Pradesh

S. No.	Name of the Equipment	Quantity
NA	NA	NA

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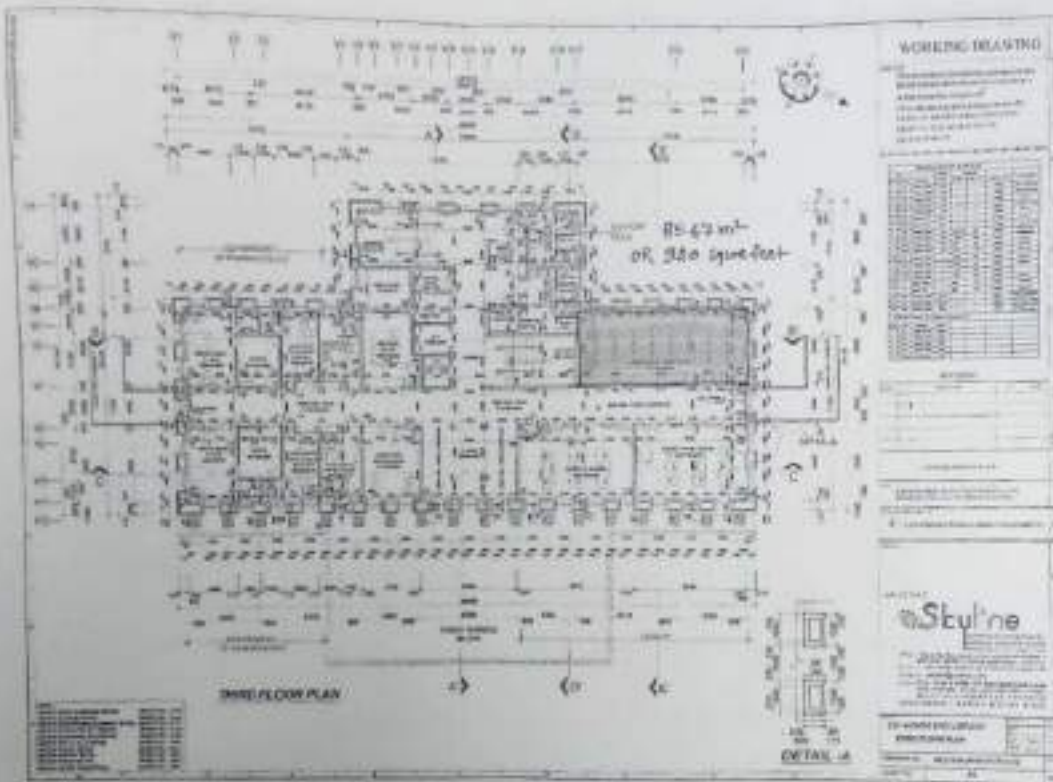
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Chief Medical Superintendent
District Hospital, Shahjahanpur

CHAPTER - 4

FLOOR PLAN

Area available for the laboratory: ~ 920sqft



ANNEXURE I

TECHNICAL COMPLIANCE SHEET

S.No	Name of Equipment	Specifications	Compliance (Yes/No) - if No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
1.	Access control system such as biometrics & door interlocks					
2.	Ensure single air directional air flow with a visual monitoring device, which confirms directional airflow, must be provided at the laboratory entry					
3.	Exhaust system independent from remainder building					
4.	Supply system independent from remainder building					
5.	Independent power backup from remaining building					
6.	Single HEPA Filtered exhaust					
7.	Containment HEPA filter housing with gas-tight isolation dampers, decontamination ports, and/or bag-in/bag-out (with appropriate decontamination procedures) capability					
8.	Supply, return and exhaust fans & ducting with insulation, diffusers/grilles, volume control					

Chief Medical Officer
Director General, Health Services

Signature
Date: 28/08/2024
Joint Director, Health Services

S.No	Name of Equipment	Specifications	Compliance (Yes/No) - If No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
	dampers and fire dampers					
9.	Exhaust blowers (1 working+ 1 standby) for BSL-3 laboratory					
10.	Centralised HVAC system including Air Conditioning outdoor Compressor & condensing unit, as required/ Air Handling units for air distribution in the facility, as required (minimum 6 air changes/hour) and isolation dampers					
11.	Refrigerant piping between Compressor unit and Air Handling Unit, as required					
12.	Utilities backflow prevention (Double vacuum seal)					
13.	Wiring for light, power, networking, communication/intercom, fire alarm system, CCTV system, access control system etc. in complete facility					
14.	Light fittings and fixtures, switches, sockets, power distribution boards for light and power including MCB's etc., and main power supply LT panel in complete facility					
15.	Fire alarm system,					

S.No	Name of Equipment	Specifications	Compliance (Yes/No) - If No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
	CCTV system, EPABX, telephone handsets in complete facility (intercom & LAN)					
16.	2 nos. Bio-Safety Cabinets (1 no. class II A2 type and 1 no. class II B2 type) should be located out of the mainstream of traffic					
17.	Inverter for providing power backup to internal lights of complete facility					
18.	A central UPS console (3kva online) should be provided to cater to the extreme essential power requirement of the laboratory					
19.	Building management system including pressure sensors, temperature & Rh sensors, VAV for BSL-3 Lab, VFD's for AHU and Exhaust blower motors, control wiring and BMS Control Panel with PLC with software, complete as required					
20.	AHU Control Panel					
21.	HVAC failure alarm					
22.	Pressure differential monitors					
23.	Deep-seal floor traps					
24.	Hand wash sinks and emergency eye wash					

S.No	Name of Equipment	Specifications	Compliance (Yes/No) - If No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
25.	Double Door Autoclave for BSL-3 Lab					
26.	Emergency Shower system for BSL-3 Lab Exit Change room					
27.	Pass Box and Dunk tank for BSL-3 Lab					
28.	Workstation in BSL-3 Lab with chairs					
29.	Garment Cabinet for BSL-3 Lab Entry and Exit change room (ventilated/non-ventilated)					
30.	Portable Fire Extinguishers (CO2 /Dry Powder type)					
31.	CO2 Cylinder Bank and associated piping for CO2 Incubators					
32.	Aerosol Chamber					
33.	Incubator Room					
34.	Laboratory Biological Effluent Decontamination system					
35.	Vacuum Pump and associated piping with outlet point					
36.	Refrigerated high speed centrifuge (>15000 rpm) backed by 2KVA online UPS with 3 rotors-24*2 ml, 6X50 ml (adaptor for 5ml & 15ml tubes) & PCR plate motor					
37.	Vertical Autoclave (Steam jacketed with all digital sensors)					

S.No	Name of Equipment	Specifications	Compliance (Yes/No) - If No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
38.	RT-PCR Machine (3KvA online UPS) (USFDA or European CE or NIV approved) for in-vitro diagnosis of Covid-19 emergency use					
39.	PCR workstation (with UV & white light)					
40.	Automated Nucleic acid extraction system (for 96 samples)					
41.	2online UPS, One for thermocycler, other for nucleic acid extraction system					
42.	Deep Freezer -80C (>500l, digital display, alarm) with accessories& UPS					
43.	Deep Freezer -20C (with digital display) with UPS					
44.	Fridge (4 degrees Celsius)					
45.	Pipettes fully autoclavable with high durability (0.2-2µl x1, 1x20 µl, 10-200µl x3, 50-1000µl x2)					
46.	Pipettes fully autoclavable with high durability (0.2-2µl x 1, 1- 20 µl, 20-200µl, 100-1000µl)					
47.	Computer desktop/laptop with UPS & printer (i3 with genuine Windows and 1TB HDD)					
48.	Water Bath (Single					

S.No	Name of Equipment	Specifications	Compliance (Yes/No) - If No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
	sheet inner chamber stillness steel and digital)					
49.	Water purification System to make molecular grade water					
50.	Vortex					
51.	Micro Spin for 1.5ml MCT (3000-6000rpm)					
52.	Mini spin for 8 well strip					
53.	DG set					
54.	Laboratory Fumigation Machine					
55.	Microwave oven (For agarose gels)					
56.	Laminar Air Flow Vertical 2 feet					
57.	Thermocycler					
58.	Gel Electrophoresis and documentation unit					
59.	Elisa plate reader					
60.	Elisa washer					
61.	All furniture to be provided as per requirement of BSL-3 laboratory					
62.	Refrigerated Micro-centrifuge machine 6000 RPM					
63.	Midi PCR Workstation (H*W*D=45*60*30) cm					
64.	Tabletop Centrifuge machine 14000 RPM					
65.	Vortex Mixer -2 nos.					
66.	Plate Centrifuge					
67.	Stirring water bath					
68.	Dry Bath					

S. No	Name of Equipment	Specifications	Compliance (Yes/No) - If No, specify reason	Brochures/Catalogues (Page Reference)	Drawings (Page Reference)	Reference to BSL-3 laboratory facilities where similar items have been installed (Page Reference)
69.	pH meter					
70.	Genel coolers					
71.	Pipette- 0.2-2µl					
72.	Pipette- Vol 2-20µl					
73.	Pipette- Vol 10-100µl					
74.	Pipette- Vol 20-200µl					
75.	Pipette- 100-1000µl					
76.	Electronic micropipette					
77.	Power back up wherever necessary (online UPS wherever necessary)					
78.	Magnetic Stirrer					
79.	Pan electronic weighing balance					

Dr. [Signature]
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Dr. [Signature]
[Text]

ANNEXURE II

PRICE BID FORMATS

[Only to be filled online in the BOQ provided]

Handwritten signatures and stamps at the bottom of the page.

PART I

PRICE BID FOR AUTONOMOUS STATE MEDICAL COLLEGE, SHAHJAHANPUR, U.P.

Refer to Chapter 1 - Clause 10 of the RFP for details.


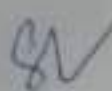
Item No.	Item / Work Description	Unit	Qty.	Rate (In Figures)	Rate (In words)	GST	Amount
A.	<p>"Setting up of BSL3 Laboratory Facility on Turnkey Basis for AUTONOMOUS STATE MEDICAL COLLEGE, SHAHJAHANPUR in the State of Uttar Pradesh" in accordance with the Fifth edition of BMBL Guidelines issued by the U.S. Department of Health, Human Services, CDC, USA and W.H.O." including Testing, Commissioning and Validation of the facility</p> <p>The scope of work shall mean, material, tools, equipment to complete the works in all respect including dismantling of existing installation and site preparatory works, internal construction and finishes, plumbing System, Electrical System and associated works, HVAC System and associated works, Building Management System, Door interlock & access control system, FGA system, CCTV System, UPS & inverter, Intercom and LAN (Data & Voice) system, Autoclave, Biosafety Cabinets, Pass Box & dunk tank, garment cabinets, hand & eye wash stations, work stations, Incubator room, and associated and miscellaneous works as per site requirements conforming to the Scope of Work and Technical Specifications as per annexed drawings</p>	Turn key Lump sum Job	01				
	TOTAL (A) - In Figures (Rs.)						
	TOTAL (A) - In Words (Rs.)						

Refer to Chapter 1 - Clause 10 of the RFP for details.

Item No.	Item Description / Work	Unit	Qty.	Rate (In Figures)	Rate (In Words)	GST	Amount
B.	Comprehensive Operation Providing Comprehensive Operation and Maintenance Services for Three Years after Handing Over including providing required manpower, tools and tackles, spares, consumables, taxes, duties & levies etc., Annual Validation of the Laboratory, complete as given in the Scope of Work, Specifications and Conditions of Contract.						
B.1	During 1st Year, after Handing Over	LS Job	1				
B.2	During 2nd Year, after Handing Over	LS Job	1				
B.3	During 3rd Year, after Handing Over	LS Job	1				
	TOTAL (B) - In Figures						
	TOTAL (B) - In Words						
	GRAND TOTAL: (A+B)						
	GRAND TOTAL (A+B) - In Words						

Annexure III

ICMR-VRDL Standards for Medical College Laboratory

 
Chief Medical Superintendent
District Hospital, Shahjahanpur

INDICATIVE LIST OF EQUIPMENTS FOR REGIONAL LEVEL VIRAL RESEARCH & DIAGNOSTIC LABS (VRDLs)

GENERAL AND CULTURE FACILITIES:

S.No.	Item	Companies for Reference
1.	Biosafety cabinet	ESCO Global, Haier BioMedical, Thermo Fisher Scientific
2.	Laminar air flow	ESCO GLOBAL, Haier BioMedical, Thermo Fisher Scientific
3.	CO2 incubator	NuAire Limited,
4.	Inverted Microscope	Nikon Corporation, Olympus Corporation, Fisher Scientific
5.	Centrifuge-Refrigerated high speed	Hettich India Pvt. Ltd, Eppendorf AG, Sartorius AG, REMI LAB WORLD
6.	Liquid Nitrogen Can - 47L capacity	Marshall Scientific, ThermoFarma, Cryocan
7.	Liquid Nitrogen Can - 33L capacity	
8.	Millipore Positive Pressure Filtration/ Water Purification System	Merck Merck Millipore, Thermo Fisher Scientific, Sartorius AG
9.	Autoclaves (Steam Jacketed & Vertical)	Modia Enterprise Pvt. Ltd., Enclave, Accumax India
10.	Incubator	Nuve, Thermo Fisher Scientific,
11.	Fluorescent Microscope	Nikon Corporation, Olympus Corporation, Fisher Scientific, Bio-Rad Laboratories, Inc.
12.	Miscellaneous equipments	Tarsons Products Pvt. Ltd., Axygen Scientific, Sartorius AG, Corning Technologies India Pvt. Ltd.,

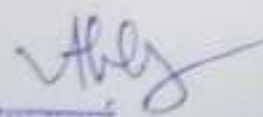
PCR:

1.	PCR workstation	Sigma Aldrich, Eriah, Fisher Scientific
2.	Thermo cycler	Applied Biosystems- Thermo Fisher Scientific, Eppendorf, Bio-Rad Laboratories, Inc.
3.	Gel electrophoresis & documentation unit	Applied Biosystems- Thermo Fisher Scientific, Bio-Rad Laboratories, Inc., Syngene, Axygen Scientific
4.	Refrigerated Microfuge	Hettich India Pvt. Ltd, Eppendorf AG, NoWind,
5.	Real- Time(Q) RT-PCR Machine	Applied Biosystems- Thermo Fisher Scientific, Eppendorf AG, Bio-Rad Laboratories, Inc.
6.	Sequencing Machine	
7.	Automated Nucleic Acid Extraction Centrifuge	Thermo Fisher Scientific
8.	Electronic pipettes	Eppendorf AG, Gilson, Thermo Fisher Scientific, Sartorius AG
9.	Miscellaneous equipments	Tarsons Products Pvt. Ltd., Axygen Scientific, Sartorius AG, Corning Technologies India Pvt. Ltd.,



Chief Medical Superintendent
 District Hospital, Sahyadrapur




प्रधानाचार्य
 सहायक राज्य चिकित्सा महाविद्यालय
 साह्याद्रीपुर-242 001 (उ.प्र.)

SEROLOGY:

S.No.	Item	Companies for Reference
1.	Freezer -20 X 1	Thermo Fisher Scientific, Crispcold, Blue Star
2.	Freezer -70 X 2	Thermo Fisher Scientific, Celfrost, Labcon Inc
3.	ELISA Plate Washer	Lisa Wash(Tulip Diagnostics Pvt. Ltd.), Biotek Instruments (I) Pvt Ltd., Titertek
4.	ELISA Plate Reader	Thermo Scientific, Biotek Instruments (I) Pvt Ltd., Bio-Rad Laboratories Inc., Tecan Inc
5.	Unichannel & Multichannel Pipettes	Eppendorf AG, Thermo Fisher Scientific, Sartorius AG
6.	Pan electronic weighing balance	Mettler Pvt. Ltd., Sartorius AG, Contech India
7.	Miscellaneous equipments	Tarsons Products Pvt. Ltd., Anxgen, Corning Technologies India Pvt. Ltd., Sartorius AG

ADDITIONAL EQUIPMENTS:

SLNo.	Item	Companies for Reference
1.	DNA Sequencer	Applied Biosystems-Thermo Fisher Scientific, Illumina, Inc.
2.	Peptide Synthesizer	Peptide Machines Inc., Biotage AB, Aapptec LLC.
3.	2 D Gel Electrophoresis	Thermo Fisher Scientific, Bio-Rad Laboratories, Inc., Hoefer Inc.
4.	Micro array	Agilent Technologies, Genepix, LabX
5.	Advanced flowcytometry	Thermofisher Scientific, Beckman Coulter, BD Biosciences
6.	Confocal Microscope	Zeiss India, Bruker, Leica
7.	LCMS	Agilent Technologies, Thermo Fisher Scientific, AB Sciex LLC

ADDITIONAL EQUIPMENT: (Would be given after complete assessment of Regional Level VRDL)

- 2D Gel Electrophoresis
- Advanced Flowcytometry
- Confocal Microscopy

General Comments: All above equipments are highly specialized machines and required for highly specialized research needs. Regional VRDLs may be asked to justify purchases of these equipments with precise purpose and proposed experiments, if at all any of the labs requires any of these machines. Operation of all these machines will require training and will also require very expensive consumables on regular basis.

Chief Medical Superintendent
District Hospital, Shahjahanpur

SPECIFICATION OF EQUIPMENTS:

1) Biological safety cabinet Specifications

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	NSF 49/EN1249 or Equivalent standard
Design	:	Approximately 4 Feet length X 2 feet Depth, Bio safety cabinets Class II, Type A2; 304 stainless steel interior Epoxy-coated steel exterior, Removable, seamless, dished work surface with lift out knobs Door- Fully closing, clear 1/4" tempered safety glass sash Counter balanced with base stand.
Circulation	:	Class 100, Supply and exhaust through HEPA filters. Inflow velocity of 105 fpm (0.5 m/sec), Down flow velocity of 55 fpm (0.3 m/sec), 70 % air recirculation
Light	:	UV and sufficient illumination for work space.
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Services Required	:	Installation & onsite validation, Calibration certificates
Manuals	:	Operation, maintenance & part list with detailed specifications, Operational & maintenance Training
Power Supply	:	Should include 210-240V/50 Hz
Recommendation	:	Bio safety cabinets of Class II, Type A2 is recommended for all Viral Research Diagnostic labs (VRDL). Type B2 biosafety cabinets are recommended only for Biosafety Level 3 work

2) Laminar Air Flow

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	EN12469 OR equivalent
Design	:	Vertical laminar flow cabinet, Approximately 4 Feet length X 2 feet depth, 304SS interior, epoxy/powder coated exterior Door fully closing with hinged sash. Support stand, solid one piece dished work surfaces
Circulation	:	Down flow velocity of 40-70 fpm, ISO Class 5 or higher air
Filters	:	HEPA filter, (99.99% efficient on particles 0.3 micron)/ULPA filter (efficiency of >99.999% at 0.1 to 0.3 micron sizes) provided with pre-filter)
Light	:	UV and sufficient illumination for work space
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Power Supply	:	Should include 210-240V/50-60 Hz



Joint Medical Superintendent
District Hospital, Mangalore

3) CO2 Incubator

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Design	:	Hot air Water jacketed unit with at least 3 adjustable stainless steel shelves with inner glass door.
Capacity	:	150-200 lit.
Temperature	:	Range- ambient to 50°C; Uniformity $\pm 0.2^{\circ}\text{C}$ at 37°C.
Co2 concentration	:	Adjustable from 0-20%
Sensor	:	Thermal conductivity sensor for CO2 regulation
Relative humidity	:	Up to 93-95% at 37°C.
Alarm	:	Audiovisual alarm for adjusted CO2, temperature and relative humidity levels.
Filters	:	Chamber HEPA filter and microbiological filters on all gas inlets and outlets and sample port.
Display	:	Digital; microprocessor controlled
Accessories	:	Humidity pan, 2 stage CO2 gas regulator with pressure gauges, tubing, roller based stand with CO2 gas cylinder.
Power Supply	:	210-240V/50-60 Hz
Optional	:	Separate quotes for all necessary filters

4) Inverted Microscope

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

*Basic Components:

1. Objectives	:	Phase Contrast objectives 4x, 10x, 20x & 40x
2. Eyepiece tube	:	Trinocular tube (light distribution, bino/photo: 100/0, 0/100); Interpupillary distance: 50-75 mm, Inclination: 45° from horizon. Eyepiece lens: 10X (F.O.V. 22mm)
3. Nosepiece	:	Quintuple nosepiece, backward-facing type
4. Stage size	:	160-170 x 220-225 mm, Acrylic window provided for better view of objective. External attachable mechanical stage: with universal holder.
5. Condenser	:	ELWD condenser: N.A. 0.3 (O.D. 75mm) Non

Additional Requirements:

1. Epi-fluorescence attachment	:	Epi-fluorescence attachment, with field diaphragm, Fluorescence filter block holder, (2 filter blocks mountable, 1 empty position), Heat absorbing filter, Lamphouse for 50W mercury lamp, optional mercury fiber optic illumination for better illumination along with green red filter.
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[Handwritten signatures and stamps]

- | | | |
|-----------------------------|---|--|
| 2. Photographic attachments | : | Digital Camera with not less than 7 Megapixel. Resolution, 2/3" High Density CCD, Firewire Interface, facility to work in Color as well as monochrome mode which can be controlled through Control Unit. Connected with the Computer fitted with image acquisition software. |
| 3. Power Supply | : | Should include 210-240V /50-60Hz |
| 4. Spares | : | Lamps 2 Nos |

*A single quote for basic model including of all requirement would be preferred. Additional items may be quoted separately.

Note: Photographic attachment may be allowed for State and Regional labs. (For Medical College Level it might not be required). For non-photographic microscope point no: 2 to be binocular tube.

5) Refrigerated high speed centrifuge

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	CE or UL certified or conformity
Temperature range	:	European -4 to +40°C
Speed	:	14000 RPM or more
Display	:	Digital for temperature for air and chamber, time and RPM/RCF, Microprocessor controlled
Drive system	:	Brushless drive
Programmable	:	Programs-90-99 and with program recall facility
Rotors	:	Fixed angle rotor: 24x1.5-2.0ml
Optional Rotors	:	Fixed angle rotor: 24X1.5 ml tubes, 250 ml, Swing out Rotor and adaptors for: 5-10 ml tubes, 15ml, 50ml and 250 ml tubes, micro plate.
Power Supply	:	210-240V/50-60 Hz or Suitable power supply
Warranty	:	5 years from till date of installation.
AMC	:	5 years from date of expiry of warranty.

6) Liquid Nitrogen storage container

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	ISI/European/CE or Conformity certification
Design	:	Compact light weight, double walled vacuum insulated aluminum vessel, polyurethane coated, with a narrow mouth neck that minimizes liquid nitrogen losses. Secure locking arrangements to be provided.
Capacity	:	35-40 liters
Static evaporation rate	:	0.3-1 litre/day
Static Holding Time	:	50-120 days

Racks & Boxes for Storage :	Suitable racks & boxes for storage of 1.8-2ml cryovials (for one cylinder)
Optional :	2Cryogloves and gum boots
Warranty :	5 years from till date of installation/supply.

7) Liquid Nitrogen transport container

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	ISI/European/CE or conformity
Design	:	Compact light weight, double walled aluminium vessel, polyurethane coated, provided with vacuum insulation and a narrow mouth neck that minimizes liquid nitrogen losses.
Capacity	:	50- 60 liter
Static evaporation rate	:	0.3-1 litre/day
Static Holding Time	:	50-120 days
Optional	:	Transport & tilting Trolley
Warranty	:	5 years from till date of installation/supply.

8) Water Purification System

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

A compact water purification system with ISO 9001 certified designed to be fed directly by potable tap water visual display for quality parameter, filter condition etc. Reservoir capacity of approx. 30 lit. Necessary pre-filters, cartridges and accessories to get ultra pure, laboratory grade water for molecular biology work.

Quality of ultra pure water provided by system should fulfill following criteria:-

Resistivity	:	18 or more meg-ohms-cm
Conductivity	:	90 - 100 micro-ohms
Pyrogen level	:	To the levels 0.001 eu/ml with disposable / add on ultra filtration cartridge
Microorganisms	:	<1 cfu/ml
TOC values	:	<5 ppb
Final filtration	:	Through 0.22 micron filter
Volume of pure and ultrapure water/day	:	~2lit/hr
Power Supply	:	210-240V/50-60 Hz
Warranty	:	5 years from till date of installation/supply
CMC	:	5 years from till date of installation Which includes cartridges

(Handwritten signatures and stamps)

9) Vertical Autoclave

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Fully automatic vertical autoclave, suitable for sterilization under working steam pressure up to 15 PSI or more and temperature of 121°C or more.

Design :	Unit made of SS 304 chamber, approx inner dimensions 16" to 25" (diameter x depth). Lid made of heavy gauge lid, die pressed S.S.304 with pressure gauge, steam release valve & necessary Safety valves, with foot lifting arrangement to open lid, programmable, with all functional accessories.
Capacity :	70 to 80 lit
Display :	Time and temperature LCD display
Alarm :	Low water level alarm and cut off / Sensor open alarm
Accessories :	Perforated carriers made up of SS 304 (3-4 Nos.)
Power Supply:	220/230 volts AC-50 Hz or Suitable power supply

10) Incubator

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Double walled body with inner chamber of Stainless Steel and outer galvanized steel with non-corrosive epoxy powder coated; full view glass door.

Capacity :	100-120L with an internal fan for uniform air circulation
Inner chamber :	3-4 shelves and with illumination
Temperature :	Control: microprocessor based with digital display, Range: 5°C to 50°C with an accuracy of $\pm 0.5^\circ\text{C}$ Uniformity: $\pm 1.0^\circ\text{C}$ throughout the chamber
Door alarm :	Low/high temperature alarm
Cooling :	CFC free refrigeration
Power Supply :	210-240V/50-60 Hz

11) Fluorescent Microscope

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Basic Components:

- 1. Objectives :** With a par-focal distance of 60 millimetres and an objective thread size of 25 millimetres. Phase Contrast objectives- 4x, 10x, 20x & 40x and 100x with NA value of minimum 1.45 (without phase) (optional) oil immersion

SW
J
Z

2. Condenser : ELWD (extra long working distance)
3. Nose Piece : Extra Large Working Distance, adjustable
4. Eye Piece : 10X (F.O.V. 20-22mm) with Rubber eye guard. The eyepiece tube interpupillary distance should be 50-75mm, with Inclination of 45° from horizon
5. Illuminator: High luminescent white LED illuminator. Lamphouse for 50 W mercury lamps, UV Light shielding plate, UV- cut filter (detachable)
6. Mechanical stage with holders : Attachable with different holders like, Terasaki holder (accepts 65mm petri dish); Slide glass holder (accepts 54mm petri dish); Hemacytometer holder etc.
7. Filters : Epi-fluorescence Attachment, with field diaphragm, Fluorescence filter block holder, (2 filter blocks mountable, 1 empty position), Barrier filter, Heat absorbing filter, Fluorescence Filters for DAPI, FITC & TRITC

Additional Requirements:

1. Photographic attachment : Trinocular model (with light distribution, bino/photo: 100/0, 0/100) to accommodate image documentation, a photo port that accepts various photo micrographic systems
2. Digital Camera : Not less than 7 Megapixel. High Resolution

Power Supply : Should include 210-240V /50-60Hz
Spares : Lamps 2 Nos

EQUIPMENTS LISTED UNDER PCR LAB FACILITIES:

1) PCR Workstation:

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Size	:	2" X 3"
Construction	:	Powder coated/ epoxy-coated SS. Work surface-Good quality Stainless steel
Lighting system	:	A built-in ultraviolet light for decontamination of consumables and equipment and fluorescent light for working.

Vertical laminar flow:-

Filters	:	Combines an ISO 5 (FS209E) Class 100 clean air environment. 99.99%-efficient HEPA filter and disposable prefilter
Alarms	:	Monitors the effectiveness of the workstation and alerts the operator if the HEPA filter or UV bulb needs replacement folding sash turns off the UV light and activates the blower and fluorescent light
Power supply	:	Should include 220 V/50 Hz
Optional	:	Utility ports

Note: Cost of PCR workstation and laminar airflow is almost same; hence, it is advisable that the laminar airflow can be procured instead of PCR work station.

2) Thermal Cycler

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Design	:	96 well, with 6 separate peltier blocks to provide independent temperature zones to run gradient PCR with hot bonnet.
Capability	:	0.2ml, 0.5ml PCR tubes or microplates; to accommodate PCR volumes ranging from 10- 100ul.
Run Mode	:	Standard and fast run
Temperature	:	Range +4-100°C, Accuracy +/-0.25 from 35-99°C, Uniformity <0.5°C (20 sec after reaching 95°C)
Ramp rate	:	Maximum should be 5°C / sec and adjustable between 3 -5°C /sec
Program	:	Around 800 typical programs; with USB flash drive expansion
Power Supply	:	Should include 210-240V/50-60 Hz


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3.a) Horizontal Gel Electrophoresis system

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Submerged gel electrophoresis apparatus with clear plastic construction for easy sample visualization
2. Tray should be UV transparent, length 12-15cm and width 12-15cm
3. Combs: 10-15 wells and 25-30 well. All combs of 1mm thickness.
4. The unit should bear minimum 3 years comprehensive and 2 years non-comprehensive warranty.

3.b) Gel Documentation System

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

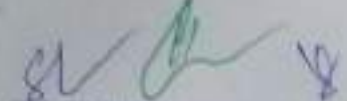
1. Gel imaging system to visualize:
 - i) Stained protein gels (coomassie, silver, UV light-excited fluorescent stains)
 - ii) Stained nucleic acid gels (ethidium bromide and other UV light- excited fluorescent stains).
2. Compact benchtop instrument
3. With UV and visible light transillumination, motorized zoom lens; Transillumination and epi-illumination.
4. Camera- high speed USB technology for faster image capture and download Auto focus configuration.
5. Auto exposure setting for optimum image exposure time.
6. CCD resolution- 5 megapixel or more
7. Excitation source- Trans-UV, 254, 365nm; Wide transillumination area;
8. Provided with PC, Software compatibility: Windows.

4) Refrigerated Microfuge

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Bench top, compact, Refrigerated Temperature setting: 0 to 40°C
2. Fast Pre cooling and should maintain +4°C at maximum speed
3. Up to 10 programs or more
4. Digital display showing rpm, RCF and time
5. Speed Up to 15000 rpm
6. Rotor for 24X1.5 to 2 ml tubes,
7. Adaptors for 0.5 ml and 0.2 ml tubes
8. Auto balancing in situation of minor imbalance
9. Electrical Requirements: 120V/60Hz and 230V/50 Hz or Suitable electrical supply
10. CE certified or equivalent.


Chief Medical Superintendent

5) Real time RT-PCR

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

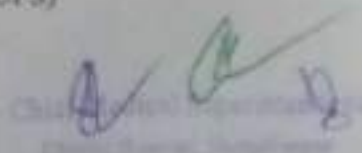
1. Table top model.
2. Complete system including basic system, essential accessories, the state-of-art computer workstation, acquisition and analysis software, startup kit inclusive of calibration standards etc.
3. Open system to accommodate Taqman, SYBR green and all other fluorescent dye based chemistries.
4. Peltier based 96 well block
5. Standard optical 96 well plates, 0.2 ml strips, 0.2ml tubes compatibility
6. Min sample value requirement - 5µl
7. CCD camera with halogen/LED and at least five excitation and five emission filters
8. Multiplexing ability up-to five dyes in a single run
9. Calibrated dyes at installation: FAM/SYBR Green, VIC/JOE, NED/TAMRA/Cy3, ROX/Texas Red®, and Cy5, Should offer flexibility in dye selection.
10. Facility to calibrate new dye within the wavelength range without addition of new filters
11. Passive reference dye ROX or any other calibrated dye and should be optional
12. Option for melt curve analysis
13. Temperature range 4°C to 100°C
14. Sensitivity: Detection of 1 copy of template
15. Software applications: Comparative Ct, Standard Curve, Relative Standard Curve, Allelic Discrimination / SNP Genotyping, Plus/Minus, dissociation / melt curve
16. 220 V /50Hz. All accessories
17. CE mark or equivalent

6) Automatic nucleic acid sequencing machine

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Analysis of fluorescent labeled fragments by capillary electrophoresis
2. Maximum capillaries sixteen and upgradable up to 96 capillaries.
3. The machine must read long sequence up to 800 bp with more than 98% accuracy.
4. The capillary length should be more than 70 cm.
5. The sample capability is 96 as well as 384 wells plate
6. The instrument must detect more than four fluorescent dyes.
7. The detector cooled CCD based.
8. It should have virtual filters for fluorescent detection and it should readily accommodate new dyes and applications as they become available without requiring changes in the optical hardware
9. The light source solid laser.
10. Suitable software for sequence analysis, sequence scanner.
11. Application: DNA sequencing, genotyping and mutation detections.
12. Supply of high capacity state-of-the art workstation operating in Windows based software (not below than Windows XP) supplied along with a sequencer with laser colour printer, 3KVA UPS with 30 min back up (online UPS)


Signature: _____
Name: _____
Design: _____

13. Consumables for at least 5000 run over the period of 5 years
14. Power supply 220-240 volts

7) Automated Nucleic Acid Extraction Centrifuge

Note: There is no equipment available by this name. Automated nucleic acid extraction system/workstation is available. The name of the equipment may therefore be changed accordingly.

8) Electronic Multichannel Pipette

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

3 pipettes with volumes: 0.5 to 10 μ L, 5 to 10 μ L & 50 to 1200 μ L

Short Description	Electronic multichannel pipette with Spring loaded nose cone and Secondary adjustment			
1.	Channel format	8-channel	8-channel	8-channel
2.	Adjustable Volume	0.5-10 μ L	5-100 μ L	50-1200 μ L
3.	Imprecision/Volume ($\leq\%$ / μ L)	$\pm 3.0\% \pm 0.03 \mu\text{L}/1 \mu\text{L};$	$\pm 3.0\% \pm 0.03 \mu\text{L}/1 \mu\text{L};$	$\pm 0.9\% \pm 1.08 \mu\text{L}/120 \mu\text{L};$
4.	Inaccuracy/Volume ($\pm\%$ / μ L)	$\pm 3.0\% \pm 0.03 \mu\text{L}/1 \mu\text{L};$	$\pm 2.0\% \pm 0.2 \mu\text{L}/10 \mu\text{L};$	$\pm 6.0\% \pm 7.2 \mu\text{L}/120 \mu\text{L};$
5.	Pipette type	Electronic air cushion	Electronic air cushion	Electronic air cushion
6.	Volume selection	Adjustable	Adjustable	Adjustable
7.	Volume display	4 digits	4 digits	4 digits

EQUIPMENTS LISTED UNDER SEROLOGY LAB FACILITIES:

1) -20°C Vertical Deep Freezer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capacity	:	600-700 litre
Inner shelf	:	6-9
Refrigerant	:	CFC free
Temperature control	:	Micro-processor controlled, Digital display with temperature resolution of 0.1°C
Alarms	:	Low/high temperature, power failure
Door closing and locking adjustment	:	self closing door with key door lock, adjustable leveling feet standard (optional casters)
Power supply	:	210-240V/50-60 Hz

-80°C Vertical Ultra low Freezer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Galvanized steel sheet body with epoxy paint and vacuumed polyurethane foam panels, outer double door with locking facility. Alarm for audible & visual fault acknowledgement, low & high temperature audio visual alarms, condenser fault alarm, remote contact alarm, open door alarm, clean filter Indicator and power failure alarm. Castor wheels & leveling adjustor should be provided for adjustment and installation.

Capacity	:	Approximately 650– 700L
Refrigerant	:	CFC & HCFC
Cooling system	:	Cascade cooling system
Doors	:	Triple silicon section seal, Fitted with decompression valve facility to lower air pressure inside the freezer for easy door opening.
Inner Compartment	:	Minimum 3 compartments with doors
Temperature	:	Range-55 to -80°C, Stability $\pm 1^{\circ}\text{C}$, uniformity $\pm 3^{\circ}\text{C}$
Additional Accessories	:	SS Racks and cardboard boxes
Power Supply	:	210-240V/50-60 Hz

3) Automated ELISA Microplate Washer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capability	:	96 well microplates and strips, with flat, round, or "V" bottom well
Manifold	:	12 Channels
Vacuum and fluid delivery	:	In built with Positive displacement syringe pump, drive Systems with adjustable flow rates
Program	:	Memory for around 50 programs including dispensing Volume (50 to 300ul/well) and multispeed microplate shaking program
Bottles	:	Wash, rinse and waste (volume 4-6 liter)
Safety devices	:	Aerosol cover, removable Plate carrier, spill over protection and overflow protection safety system
Display	:	LCD Display with Membrane Keypad
Power Supply	:	210-240V/50-60 Hz

4) ELISA Reader

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capability	:	24, 48 or 96 well micro plates
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Spectral Range	:	400-750nm, Accuracy ± 1 nm
Absorbance	:	0-4 O.D. Range
Accuracy	:	Up to 0.001 O.D.
Provision	:	Curve fittings formulas transformations & control assay validation, with compatible interface with PC & external printer,
Accessories	:	Spare Lamps 2 Nos.
Power Supply	:	210-240V/50-60 Hz

5.a) Adjustable Volume Single Channel Pipettes

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

ISO 8655 CERTIFIED, fully Autoclavable, single channel pipettes of variable volume compatible with universal tips.

Range	Increment	Accuracy	Precision
0.2 to 2 μ L	0.01 μ L	± 12.0 to 2.5%	10.0 to 2.0%
1 to 10 μ L	0.1 μ L	± 2.5 to 1.0%	2.0 to 0.5%
2 to 20 μ L	0.1 μ L	± 3.0 to 1.0%	2.5 to 0.4%
20 to 200 μ L	1 μ L	± 1.8 to 0.6%	0.7 to 0.2%
100 to 1000 μ L	5 μ L	± 1.0 to 0.6%	0.6 to 0.2%

5.b) Adjustable Volume Digital Multi Channel Pipettes

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Technical specifications: Must be of a reputed brand, from manufacturer/authorized dealers having calibration facility in Maharashtra. Necessary evidence to be provided.

ISO8655 certified digital multichannel pipettes of variable volume compatible with universal tips. Applications: provision for 6, 24, 96 well applications.

Range	Increment	Precision	Type
5 to 50 μ L	0.5 μ L	2.0 to 0.7%	8 channel 12 channel
30-300 μ L	5 μ L	1.5 to 0.3%	8 channel 12 channel

6) Fine Analytical Balance

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

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Technical:

Single pan Analytical Balance with highest accuracy for weighing processes; readouts to have at least four decimal places. Equipped with a draft shield chamber to eliminate interfering ambient effects.

Weighing Range	:	0.01 – 60 g
Readability	:	0.1 mg
Calibration	:	External
Display	:	LCD Display
Verification interval	:	0.001 g
Pan Size	:	80 - 100 mm
Power Supply	:	210-240V/50-60 Hz

7) 4 Laser Bench-top Flow Cytometer Analyzer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	CE or equivalent certification
Design	:	A Bench top Flow cytometer analyser
Laser excitation	:	488 nm, 640 nm, 405 nm and 355nm lasers
Optical alignment/ Plat form	:	Fixed optical assembly with spatially separated laser beams for less spillover
Fluorescence sensitivity and resolution	:	Less than or equal to FITC < 90 to 200, PE < 40 to 100, MESFs (CV < 5-6%)
Fluorescence detectors	:	High-performance solid state silicon detector a blue laser and a red laser, two scatter detectors, and four fluorescence detectors with interference filters optimized for the detection of FITC, PE, PerCP-Cy™5.5, and APC.

Description:

Plate/ tube compatibility	:	Inbuilt walk away automation for analysis from Standard 96-well (flat, round, and v-bottom) plate to 384 well plates/ Deep-well 96-well plates/12 x 75-mm tubes.
Minimal sample volume	:	20 to 25 µL
Minimum sample particle size	:	0.5 µm to 1 µm
Sample flow rate	:	25–100 µL/minute plus automated flow rate to acquire 35,000 to 70,000 events/second or more i.e. should have low, medium and high flow rates
Sample uptake	:	Uptake port with an automated washing station
System maintenance	:	Automated startup & calibration, cleaning cycles, and shutdown

Data Management:

1. PC workstation (LCD monitor) with Microsoft Windows and at least 3.0 ghz, 160 Gb hard drive, dvd/cd-rom read/write combo drive, two 22" LCD monitor. Optical drive and USB port.
2. With compatible work station and necessary software for data acquisition and analysis and color printer.

Measurement parameters:

1. Area, width, height for all parameters, with time and volume.
2. Capability of simultaneous 18 fluorescence (20 parameters) measurement.
3. It should be upgradable with 3 more lasers and the instrument should have seven beam spot for using all 7 lasers simultaneously.

Signal processing:

- Digital acquisition system for signal processing i.e. >18 bit dynamic range in area with 32 bit floating point signal processing.

Power requirements : 100-240 VAC, 50/60 Hz and UPS back-up of at least 30 minutes

Quality Control:

- Internal quality control for establishing baseline settings of system performance and able to adjust for instrument variability for consistent & reliable results. Or QC feature which would help to track system performance and be able to adjust for instrument variability.

Other Services Required:

1. Onsite training for scientists and application training to three scientists, free of charge, including travel.
2. The company should shift the complete instrumental set up and reinstall from one campus to another campus, free of cost as and when required.
3. Company should supply all the start up reagents free of cost.
4. Company should provide Flow advanced offline analysis software (Licensed version).
5. The company should provide regular software updates, whenever released, free of cost for the entire life of the instrument.
6. The company should have full-fledged flowcytometry training centre in India providing regular training courses on research applications with documented proof.
7. Company should have minimum of 100-150 installations in the country and should provide the list of installations, full address.

Accessories	:	Company should provide all Accessories for installation & initial training
Warranty Period	:	2 years" warranty from the date of installation and 3 years" CMC after the expiry of the warranty free of cost.
Optional	:	Other optional requirements should be quoted separately

INDICATIVE LIST OF EQUIPMENTS FOR STATE LEVEL VIRAL RESEARCH & DIAGNOSTIC LABORATORIES

S.No	Name of the Equipment	Company Name for Reference
General and Culture Facilities:		
1.	Biosafety cabinet	ESCO Global, Haier BioMedical, Thermo Fisher Scientific
2.	Laminar air flow	ESCO GLOBAL, Haier BioMedical, Thermo Fisher Scientific
3.	CO2 incubator	NuAire Limited,
4.	Inverted Microscope	Nikon Corporation, Olympus Corporation, Fisher Scientific
5.	Centrifuge-Refrigerated high speed	Hettich India Pvt. Ltd, Eppendorf AG, Sartorius AG, REMI LAB WORLD
6.	Liquid Nitrogen Can – 47L capacity	Marshal Scientific, ThermoForma, Cryocan
7.	Liquid Nitrogen Can – 33L capacity	
8.	Millipore Positive Pressure Filtration	Merck Merck Millipore, Thermo Fisher Scientific, Sartorius AG
9.	Autoclaves (Steam Jacketed & Vertical)	Modis Enterprise Pvt. Ltd., Enclave, Accumax India
10.	Incubator	Nuve, Thermo Fisher Scientific,
11.	Fluorescent Microscope (including with camera attachment)	Nikon Corporation, Olympus Corporation, Fisher Scientific, BioRad Laboratories, Inc.
12.	Miscellaneous equipments	Tarsons Products Pvt. Ltd., Axygen Scientific, Sartorius AG, Corning Technologies India Pvt. Ltd.,
PCR		
1.	Laminar flow vertical 2 feet (recommended instead of PCR Workstation)	ESCO GLOBAL, Haier BioMedical, Thermo Fisher Scientific
2.	Thermocycler	Applied Biosystems- Thermo Fisher Scientific, Eppendorf, Bio-Rad Laboratories, Inc.
3.	Gel electrophoresis & documentation unit	Applied Biosystems- Thermo Fisher Scientific, Bio-Rad Laboratories Inc., Syngene, Axygen Scientific
4.	Refrigerated Microfuge	Hettich India Pvt. Ltd, Eppendorf AG, NuWind,
5.	RT-PCR Machine	Applied Biosystems- Thermo Fisher Scientific, Eppendorf AG, Bio-Rad Laboratories, Inc.
6.	Sequencing Machine (16 Capillary)	
7.	Automated Nucleic Acid Extraction Centrifuge	Thermo Fisher Scientific
8.	Electronic pipettes + Micropipettes (2X0.5-10ul, 3X10200ul, 2X50-1000, 1X5-100ul)	Eppendorf AG, Gilson, Thermo Fisher Scientific, Sartorius AG
9.	Miscellaneous equipment	Tarsons Products Pvt. Ltd., Axygen Scientific, Sartorius AG, Corning Technologies India Pvt. Ltd.,
Serology:		
1.	Freezer -20 X 1	Thermo Fisher Scientific, Crispeold, Blue Star
2.	Freezer -70 X 2 (with accessories)	Thermo Fisher Scientific, Celfrost, Labcon Inc
3.	ELISA Plate Washer	Lisa Wash(Tulip Diagnostics Pvt. Ltd.), Biotek Instruments (I) Pvt Ltd., Titertek



4.	ELISA Plate Reader	Thermo Scientific, Biotek Instruments (I) Pvt Ltd., Bio-Rad Laboratories Inc., Tecan Inc
5.	Unichannel & Multichannel Pipettes (1-20ul X2, 10-200ul X2, 50-1000ul X1 and Multichannel 50-200ul X1)	Eppendorf AG, Thermo Fisher Scientific, Sartorius AG
6.	Pan electronic weighing balance	Mettler Pvt. Ltd., Sartorius AG, Contech India
7.	Miscellaneous equipments	Tarsons Products Pvt. Ltd., Axygen Scientific, Corning Technologies India Pvt. Ltd., Sartorius AG

Additional Equipments:

1.	Gel Electrophoresis set up+ gel drier + Semi dry blot for Western Blot <i>(Newly recommended)</i>	Thermo Fisher Scientific, Bio-Rad Laboratories, Inc., Hoefer Inc, Axygen Scientific
2.	Molecular biology set up: Shaker incubator + spectrophotometer + spectrofor nano drop DNA estimation + 20000rpm refrigerated centrifuge and accessories + Table top refrigerated centrifuge and accessories <i>(Newly recommended)</i>	Thermo Fisher Scientific, Bio-Rad Laboratories, Inc., Hoefer Inc, Axygen Scientific, Hettich India Pvt. Ltd, Eppendorf AG
3.	Liquid Chromatography set up: Fraction collector, recorder, columns, peristaltic pump, etc. <i>(Newly recommended)</i>	Agilent Technologies, Thermo Fisher Scientific, AB Sciex LLC

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EQUIPMENTS LISTED UNDER GENERAL & CULTURE FACILITIES:

1) Biological safety cabinet:

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	NSF 49/EN1249 or Equivalent standard
Design	:	Approximately 4 Feet length X 2 feet Depth; Bio safety cabinets Class II, Type A2; 304 stainless steel interior; Epoxy-coated steel exterior; Removable, seamless, dished work surface with lift out knobs Door- Fully closing, clear 1/4" tempered safety glass sash Counter balanced with base stand.
Circulation	:	Class 100, Supply and exhaust through HEPA filters. Inflow velocity of 105 fpm (0.5 m/sec), Down flow velocity of 55 fpm (0.3 m/sec), 70 % air recirculation
Light	:	UV and sufficient illumination for work space.
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Services Required	:	Installation & onsite validation; Calibration certificates; Manuals: Operation, maintenance & part list with detailed specifications; Operational & maintenance Training.
Power Supply	:	Should include 210-240V/50 Hz
Recommendation	:	Bio safety cabinets of Class II, Type A2 is recommended for all Viral Research Diagnostic labs (VRDL). Type B2 biosafety cabinets are recommended only for Biosafety Level 3 work

2) Laminar Air Flow

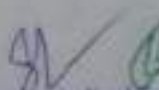
General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	EN12469 OR equivalent
Design	:	Vertical laminar flow cabinet; Approximately 4 Feet length X 2 feet depth, 304SS interior, epoxy/powder coated exterior Door fully closing with hinged sash; Support stand, solid one piece dished work surfaces
Circulation	:	Down flow velocity of 40-70 fpm, ISO Class 5 or higher air
Filters	:	HEPA filter, (99.99% efficient on particles 0.3 micron)/ULPA filter (efficiency of >99.999% at 0.1 to 0.3 micron sizes) provided with pre-filter)
Light	:	UV and sufficient illumination for work space
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Power Supply	:	Should include 210-240V/50-60 Hz

3) CO2 Incubator

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.


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Technical:

Design	:	Hot air Water jacketed unit with at least 3 adjustable stainless steel shelves with inner glass door.
Capacity	:	150-200 lit.
Temperature	:	Range: ambient to 50°C; Uniformity $\pm 0.2^\circ\text{C}$ at 37°C.
CO ₂ concentration	:	Adjustable from 0-20%
Sensor	:	Thermal conductivity sensor for CO ₂ regulation
Relative humidity	:	Up to 93-95% at 37°C.
Alarm	:	Audiovisual alarm for adjusted CO ₂ , temperature and relative humidity levels.
Filters	:	Chamber HEPA filter and microbiological filters on all gas inlets and outlets and sample port.
Display	:	Digital; microprocessor controlled
Accessories	:	Humidity pan, 2 stage CO ₂ gas regulator with pressure gauges, tubing, roller based stand with CO ₂ gas cylinder.
Power Supply	:	210-240V/50-60 Hz.
Optional	:	Separate quotes for all necessary filters

4) Inverted Microscope

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

*Basic Components:

1. Objectives	:	Phase Contrast objectives 4x, 10x, 20x & 40x
2. Eyepiece tube	:	Trinocular tube (light distribution, bino/photo: 100/0, 0/100); Interpupillary distance: 50-75 mm, Inclination: 45° from horizon. Eyepiece lens: 10X (F.O.V. 22mm)
3. Nosepiece	:	Quintuple nosepiece, backward-facing type
4. Stage size	:	160-170 x 220-225 mm, Acrylic window provided for better view of objective. External attachable mechanical stage: with universal holder.
5. Condenser	:	ELWD condenser: N.A. 0.3 (O.D. 75mm) Non

Additional Requirements:

1. Epi-fluorescence attachment	:	Epi-fluorescence attachment, with field diaphragm, Fluorescence filter block holder, (2 filter blocks mountable, 1 empty position), Heat absorbing filter, Lamphouse for 50W mercury lamp, optional mercury fiber optic illumination for better illumination along with green red filter.
2. Photographic attachments	:	Digital Camera with not less than 7 Megapixel. Resolution, 2/3" High Density CCD, Firewire Interface, facility to work in Color as well as monochrome mode which can be controlled through Control Unit. Connected with the Computer fitted with image acquisition software.
3. Power Supply	:	Should include 210-240V /50-60Hz
4. Spares	:	Lamps 2 Nos

A single quote for basic model including of all requirement would be preferred. Additional items may be quoted separately.

Note: Photographic attachment may be allowed for State and Regional labs. (For Medical College Level it might not be required). For non-photographic microscope point no: 2 to be binocular tube.

5) Refrigerated high speed centrifuge

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	CE or UL certified or conformity
Temperature range	:	European -4 to +40°C
Speed	:	14000 RPM or more
Display	:	Digital for temperature for air and chamber, time and RPM/RCF, Microprocessor controlled
Drive system	:	Brushless drive
Programmable	:	Programs-90-99 and with program recall facility
Rotors	:	Fixed angle rotor: 24x1.5-2.0ml
Optional Rotors	:	Fixed angle rotor: 24X1.5 ml tubes, 250 ml. Swing out Rotor and adapters for: 5-10 ml tubes, 15ml, 50ml and 250 ml tubes, micro plate.
Power Supply	:	210-240V/50-60 Hz or Suitable power supply
Warranty	:	5 years from till date of installation.
AMC	:	5 years from date of expiry of warranty.

6) Liquid Nitrogen storage container

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	ISI/European/CE or Conformity certification
Design	:	Compact light weight, double walled vacuum insulated aluminum vessel, polyurethane coated, with a narrow mouth neck that minimizes liquid nitrogen losses. Secure locking arrangements to be provided.
Capacity	:	35-40 liters
Static evaporation rate	:	0.3-1 litre/day
Static Holding Time	:	50-120 days
Racks & Boxes for Storage	:	Suitable racks & boxes for storage of 1.8-2ml cryovials (for one cylinder)
Optional	:	2Cryogloves and gum boots
Warranty	:	5 years from till date of installation/supply.

7) Liquid Nitrogen transport container

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	ISI/European/CE or conformity
Design	:	Compact light weight, double walled aluminium vessel, polyurethane coated, provided with vacuum insulation and a narrow mouth neck that minimizes liquid nitrogen losses.
Capacity	:	50- 60 liter
Static evaporation rate	:	0.3-1 litre/day
Static Holding Time	:	50-120 days
Optional	:	Transport & tilting Trolley
Warranty	:	5 years from till date of installation/supply.

8) Water Purification System

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

A compact water purification system with ISO 9001 certified designed to be fed directly by potable tap water: visual display for quality parameter, filter condition etc. Reservoir capacity of approx. 30 lr. Necessary pre-filters, cartridges and accessories to get ultra pure, laboratory grade water for molecular biology work.

Quality of ultra pure water provided by system should fulfill following criteria:-

Resistivity	:	18 or more meg-ohms-cm
Conductivity	:	90 – 100 micro-ohms
Pyrogen level	:	To the levels 0.001 eu/ml with disposable / add on ultra filtration cartridge
Microorganisms	:	<1 cfu/ml
TOC values	:	<5 ppb
Final filtration	:	Through 0.22 micron filter
Volume of pure and ultrapure water/day	:	~2lit/hr
Power Supply	:	210-240V/50-60 Hz
Warranty	:	5 years from till date of installation/supply
CMC	:	5 years from till date of installation Which includes cartridges

9) Vertical Autoclave

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Fully automatic vertical autoclave, suitable for sterilization under working steam pressure up to 15 PSI or more and temperature of 121°C or more.

- Design :** Unit made of SS 304 chamber, approx inner dimensions 16" to 25" (diameter x depth).
Lid made of heavy gauge lid, die pressed S.S.304 with pressure gauge, steam release valve & necessary Safety valves, with foot lifting arrangement to open lid, programmable, with all functional accessories.
- Capacity :** 70 to 80 lit
- Display :** Time and temperature LCD display
- Alarm :** Low water level alarm and cut off / Sensor open alarm
- Accessories :** Perforated carriers made up of SS 304 (3-4 Nos.)
- Power Supply:** 220/230 volts AC-50 Hz or Suitable power supply

10) BOD Microbiological Incubator (28°C)

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Double walled body with inner chamber of Stainless Steel and outer galvanized steel with non-corrosive epoxy powder coated; full view glass door.

- Capacity :** 100-120L with an internal fan for uniform air circulation
- Inner chamber :** 3-4 shelves and with illumination
- Temperature :** Control: microprocessor based with digital display, Range: 5°C to 50°C with an accuracy of $\pm 0.5^\circ\text{C}$ Uniformity: $\pm 1.0^\circ\text{C}$ throughout the chamber
- Door alarm :** Low/high temperature alarm
- Cooling :** CFC free refrigeration
- Power Supply :** 210-240V/50-60 Hz

11) Fluorescent Microscope

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Basic Components:

- 1. Objectives :** With a par-focal distance of 60 millimetres and an objective thread size of 25 millimetres. Phase Contrast objectives- 4x, 10x, 20x & 40x and 100x with NA value of minimum 1.45 (without phase) (optional) oil immersion
- 2. Condenser :** ELWD (extra long working distance)

3. Nose Piece : Extra Large Working Distance, adjustable
4. Eye Piece : 10X (F.O.V. 20-22mm) with Rubber eye guard. The eyepiece tube interpupillary distance should be 50-75mm, with inclination of 45° from horizon
5. Illuminator: High luminescent white LED illuminator. Lamphouse for 50 W mercury lamps, UV Light shielding plate, UV-cut filter (detachable)
6. Mechanical stage with holders : Attachable with different holders like, Terasaki holder (accepts 65mm petri dish); Slide glass holder (accepts 54mm petri dish); Hemacytometer holder etc.
7. Filters : Epi-fluorescence Attachment, with field diaphragm, Fluorescence filter block holder, (2 filter blocks mountable, 1 empty position), Barrier filter, Heat absorbing filter, Fluorescence Filters for DAPI, FITC & TRITC

Additional Requirements:

1. Photographic attachment : Trinocular model (with light distribution, bino/photo: 100/0, 0/100) to accommodate image documentation, a photo port that accepts various photo micrographic systems
2. Digital Camera : Not less than 7 Megapixel, High Resolution

Power Supply : Should include 210-240V /50-60Hz
 Spares : Lamps 2 Nos.

EQUIPMENTS LISTED UNDER PCR LAB FACILITIES:

1) Laminar Air Flow (2 feet)

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification : EN12469 OR equivalent.
 Design : Vertical laminar flow cabinet; Approximately 4 Feet length X 2 feet depth, 304SS interior, epoxy/powder coated exterior Door fully closing with hinged sash. Support stand, solid one piece dished work surfaces
 Circulation : Down flow velocity of 40-70 fpm, ISO Class 5 or higher air
 Filters : HEPA filter, (99.99% efficient on particles 0.3 micron)/ULPA filter (efficiency of >99.999% at 0.1 to 0.3 micron sizes) provided with pre-filter)
 Light : UV and sufficient illumination for work space
 Gauges : For monitoring the condition of all HEPA filters as well as work space.
 Power Supply : Should include 210-240V/50-60 Hz

2) Thermal Cycler

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Design : 96 well, with 6 separate peltier blocks to provide independent temperature zones to run gradient PCR with hot bonnet.

Capability	:	0.2ml, 0.5ml PCR tubes or microplates; to accommodate PCR volumes ranging from 10- 100ul.
Run Mode	:	Standard and fast run
Temperature	:	Range +4-100°C, Accuracy ± 0.25 from 35-99°C, Uniformity $< 0.5^\circ\text{C}$ (20 sec after reaching 95°C)
Ramp rate	:	Maximum should be $5^\circ\text{C} / \text{sec}$ and adjustable between $3 - 5^\circ\text{C} / \text{sec}$
Program	:	Around 800 typical programs; with USB flash drive expansion
Power Supply	:	Should include 210-240V/50-60 Hz

3.a) Horizontal Gel Electrophoresis system

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Submerged gel electrophoresis apparatus with clear plastic construction for easy sample visualization
2. Tray should be UV transparent, length 12-15cm and width 12-15cm
3. Combs: 10-15 wells and 25-30 well. All combs of 1mm thickness.
4. The unit should bear minimum 3 years comprehensive and 2 years non-comprehensive warranty.

3.b) Gel Documentation System

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Gel imaging system to visualize:
 - i) Stained protein gels (coomassie, silver, UV light-excited fluorescent stains)
 - ii) Stained nucleic acid gels (ethidium bromide and other UV light- excited fluorescent stains).
2. Compact benchtop instrument
3. With UV and visible light transillumination, motorized zoom lens; Transillumination and epi-illumination.
4. Camera- high speed USB technology for faster image capture and download Auto focus configuration.
5. Auto exposure setting for optimum image exposure time.
6. CCD resolution- 5 megapixel or more
7. Excitation source- Trans-UV, 254, 365nm; Wide transillumination area.
8. Provided with PC, Software compatibility: Windows

4) Refrigerated Microfuge

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Bench top, compact, Refrigerated α Temperature setting: 0 to 40°C

2. Fast Pre cooling and should maintain +4°C at maximum speed
3. Up to 10 programs or more
4. Digital display showing rpm, RCF and time
5. Speed Up to 15000 rpm
6. Rotor for 24X1.5 to 2 ml tubes,
7. Adaptors for 0.5 ml and 0.2 ml tubes
8. Auto balancing in situation of minor imbalance
9. Electrical Requirements: 120V/60Hz and 230V/50 Hz or Suitable electrical supply
10. CE certified or equivalent

5) Real time RT-PCR

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Table top model.
2. Complete system including basic system, essential accessories, the state-of-art computer workstation, acquisition and analysis software, startup kit inclusive of calibration standards etc.
3. Open system to accommodate Taqman, SYBR green and all other fluorescent dye based chemistries.
4. Peltier based 96 well block
5. Standard optical 96 well plates, 0.2 ml strips, 0.2ml tubes compatibility
6. Min sample volume requirement - 5µl
7. CCD camera with halogen/LED and at least five excitation and five emission filters
8. Multiplexing ability up-to five dyes in a single run
9. Calibrated dyes at installation: FAM/SYBR Green, VIC/JOE, NED/TAMRA/Cy3, ROX/Texas Red®, and Cy5, Should offer flexibility in dye selection.
10. Facility to calibrate new dye within the wavelength range without addition of new filters
11. Passive reference dye ROX or any other calibrated dye and should be optional
12. Option for melt curve analysis
13. Temperature range 4°C to 100°C
14. Sensitivity: Detection of 1 copy of template
15. Software applications: Comparative Ct, Standard Curve, Relative Standard Curve, Allelic Discrimination / SNP Genotyping, Plus/Minus, dissociation / melt curve
16. 220 V /50Hz. All accessories
17. CE mark or equivalent

6) Automatic nucleic acid sequencing machine

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Analysis of fluorescent labeled fragments by capillary electrophoresis
2. Maximum capillaries sixteen and upgradable up to 96 capillaries.
3. The machine must read long sequence up to 800 bp with more than 98% accuracy.
4. The capillary length should be more than 70 cm.
5. The sample capability is 96 as well as 384 wells plate

Chief Medical Superintendent

District Hospital, Bhatnagar

6. The instrument must detect more than four fluorescent dyes.
7. The detector cooled CCD based.
8. It should have virtual filters for fluorescent detection and it should readily accommodate new dyes and applications as they become available without requiring changes in the optical hardware
9. The light source solid laser.
10. Suitable software for sequence analysis, sequence scanner.
11. Application: DNA sequencing, genotyping and mutation detections.
12. Supply of high capacity state-of-the art workstation operating in Windows based software (not below than Windows XP) supplied along with a sequencer with laser colour printer, 3KVA UPS with 30 min back up (online UPS)
13. Consumables for at least 5000 run over the period of 5 years
14. Power supply 220-240 volts

7) Automated Nucleic Acid Extraction Centrifuge

Note: There is no equipment available by this name. Automated nucleic acid extraction system/workstation is available. The name of the equipment may therefore be changed accordingly.

8) Electronic Multichannel Pipette

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

3 pipettes with volumes: 0.5 to 10 µl, 5 to 10µl & 50 to 1200µl

Short Description	Electronic multichannel pipette with Spring loaded nose cone and Secondary adjustment			
1.	Channel format	8-channel	8-channel	8-channel
2.	Adjustable Volume	0.5-10 µL	5-100 µL	50-1200 µL
3.	Imprecision/Volume (≤%/µL)	±3.0%/±0.03µL/1µL;;	±3.0%/±0.03µL/1µL;	±0.9%/±1.08µL/120µL;;
4.	Inaccuracy/Volu me (±%/µL)	±3.0%/±0.03µL/1µL;;	±2.0%/±0.2µL/10µL;;	±6.0%/±7.2µL/120µL; ±;
5.	Pipette type	Electronic air cushion	Electronic air cushion	Electronic air cushion
6.	Volume selection	Adjustable	Adjustable	Adjustable
7.	Volume display	4 digits	4 digits	4 digits

EQUIPMENTS LISTED UNDER SEROLOGY LAB FACILITIES:

1) -20°C Vertical Deep Freezer


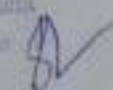
General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capacity : 600-700 litre

Chief Medical Superintendent

Deputy Medical Superintendent



Inner shelf	:	6-9
Refrigerant	:	CFC free
Temperature control	:	Micro-processor controlled, Digital display with temperature resolution of 0.1°C
Alarms	:	Low/high temperature, power failure
Door closing and locking adjustment	:	self closing door with key door lock, adjustable leveling feet standard (optional casters)
Power supply	:	210-240V/50-60 Hz

2) -80°C Vertical Ultra low Freezer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Galvanized steel sheet body with epoxy paint and vacuumed polyurethane foam panels, outer double door with locking facility. Alarm for audible & visual fault acknowledgement, low & high temperature audio visual alarms, condenser fault alarm, remote contact alarm, open door alarm, clean filter Indicator and power failure alarm. Castor wheels & leveling adjustor should be provided for adjustment and installation.

Capacity	:	Approximately 650- 700L
Refrigerant	:	CFC & HCFC
Cooling system	:	Cascade cooling system
Doors	:	Triple silicon section seal, Fitted with decompression valve facility to lower air pressure inside the freezer for easy door opening.
Inner Compartment	:	Minimum 3 compartments with doors
Temperature	:	Range-55 to-80°C, Stability+/-1°C, uniformity+/-3°C
Additional Accessories	:	SS Racks and cardboard boxes
Power Supply	:	210-240V/50-60 Hz

3) Automated ELISA Microplate Washer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capability	:	96 well microplates and strips, with flat, round, or "V" bottom well
Manifold	:	12 Channels
Vacuum and fluid delivery	:	In built with Positive displacement syringe pump, drive Systems with adjustable flow rates
Program	:	Memory for around 50 programs including dispensing Volume (50 to 300ul/well) and multispeed microplate shaking program
Bottles	:	Wash, rinse and waste (volume 4-6 liter)
Safety devices	:	Aerosol cover, removable Plate carrier, spill over protection and overflow protection safety system
Display	:	LCD Display with Membrane Keypad
Power Supply	:	210-240V/50-60 Hz

4) ELISA Reader

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capability	:	24, 48 or 96 well micro plates
Spectral Range	:	400-750nm, Accuracy ± 1 nm
Absorbance	:	0-4 O.D. Range
Accuracy	:	Up to 0.001 O.D.
Provision	:	Curve fittings formulas transformations & control assay validation, with compatible interface with PC & external printer.
Accessories	:	Spare Lamps 2 Nos.
Power Supply	:	210-240V/50-60 Hz

5.a) Adjustable Volume Single Channel Pipettes

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

ISO 8655 CERTIFIED, fully Autoclavable, single channel pipettes of variable volume compatible with universal tips.

Range	Increment	Accuracy	Precision
0.2 to 2 μ L	0.01 μ L	± 12.0 to 2.5%	10.0 to 2.0%
1 to 10 μ L	0.1 μ L	± 2.5 to 1.0%	2.0 to 0.5%
2 to 20 μ L	0.1 μ L	± 3.0 to 1.0%	2.5 to 0.4%
20 to 200 μ L	1 μ L	± 1.8 to 0.6%	0.7 to 0.2%
100 to 1000 μ L	5 μ L	± 1.0 to 0.6%	0.6 to 0.2%

5.b) Adjustable Volume Digital Multi Channel Pipettes

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Technical specifications: Must be of a reputed brand, from manufactures/authorized dealers having calibration facility in Maharashtra. Necessary evidence to be provided.

ISO8655 certified digital multichannel pipettes of variable volume compatible with universal tips. Applications: provision for 6, 24, 96 well applications.

Range	Increment	Precision	Type
5 to 50 μ L	0.5 μ L	2.0 to 0.7%	8 channel, 12 channel
30-300 μ L	5 μ L	1.5 to 0.3%	8 channel, 12 channel

6) Fine Analytical Balance

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Single pan Analytical Balance with highest accuracy for weighing processes; readouts to have at least four decimal places. Equipped with a draft shield chamber to eliminate interfering ambient effects.

Weighing Range	:	0.01 – 60 g
Readability	:	0.1 mg
Calibration	:	External
Display	:	LCD Display
Verification interval	:	0.001 g
Pan Size	:	80 - 100 mm
Power Supply	:	210-240V/50-60 Hz

INDICATIVE LIST OF EQUIPMENT FOR MEDICAL COLLEGE LEVEL VIRAL RESEARCH & DIAGNOSTIC LABORATORIES

S.No.	Name of the Equipment	Companies
General and Culture Facilities:		
1	Biosafety cabinet	ESCO Global, Haier BioMedical, Thermo Fisher Scientific
2	Centrifuge-Refrigerated high speed	Hettich India Pvt. Ltd, Eppendorf AG, Sartorius AG, REMI LAB WORLD
3	Autoclave	Modis Enterprise Pvt. Ltd., Enclave, Accumax India
4	Laboratory incubator	Nuve, Thermo Fisher Scientific
5	Label Printer	Brady Worldwide Inc., Epson India, Casio India
6	Miscellaneous equipments	Tarsons Products Pvt. Ltd., Axygen Scientific, Sartorius AG, Corning Technologies India Pvt. Ltd.,
7	Laminar air vertical flow 2 feet	ESCO GLOBAL, Haier BioMedical, Thermo Fisher Scientific
8	pH meter	Thermo Orion, Sartorius AG, Lab India Pvt. Ltd.
9	Desktop computer with printer (dedicated VRDL Data entry, inventory, e-mail, etc)	Dell India, HP India, LG India
10	Multifunctional copier/printer/scanner (for office work)	Cannon India, HP India, Epson India, Xerox Inc.
11	Refrigerator (sample receiving, temporary storage)	Samsung India, LG India, Whirlpool
12	Microwave Oven (For agarose gels)	Samsung India, LG India, IFB
PCR:		
1.	Laminar flow vertical 2 feet	ESCO, Thermo Scientific, Haier
2.	Thermocycler	Applied Biosystems- Thermo Fisher Scientific, Eppendorf, Bio-Rad Laboratories, Inc.
3.	Gel electrophoresis & documentation unit	Applied Biosystems- Thermo Fisher Scientific, Bio-Rad Laboratories, Inc., Syngene, Axygen Scientific
4.	Refrigerated Microfuge	Hettich India Pvt. Ltd, Eppendorf AG, NuWind,
5.	RT-PCR Machine	Applied Biosystems- Thermo Fisher Scientific, Eppendorf AG, Bio-Rad Laboratories, Inc.
6.	Micropipettes (2x0.5-10ul, 3x10-200ul, 2x50-1000, 1x5-100ul) Many micropipettes are required for PCR. These are strongly recommended instead of 4 electronic pipettes.	Eppendorf AG, Gilson, Thermo Fisher Scientific, Sartorius AG
7.	Miscellaneous equipment (eg: Vortex mixer, coolers & quickspin) Amount reduced by 2.0 lakh adjusted in serology section)	Tarsons Products Pvt. Ltd., Axygen Scientific, Sartorius AG, Corning Technologies India Pvt. Ltd.,
Serology:		
1.	Water Bath	Grant, Corning Technologies India Pvt. Ltd, REMI LAB WORLD
2.	Freezer -20	Thermo Fisher Scientific, Crispcold, Blue Star
3.	Freezer -70	Thermo Fisher Scientific, Celfrost, Labcon Inc
4.	ELISA Plate Washer	Lisa Wash(Tulip Diagnostics Pvt. Ltd.), Biotek Instruments (I)

		Pvt Ltd., Titertek
5.	ELISA Plate Reader	Thermo Fisher Scientific, Biotek Instruments (I) Pvt Ltd., Bio-Rad Laboratories Inc., Tecan Inc
6.	Unichannel & Multichannel Pipettes (1-20ul X2, 10-200ul X2, 50-1000ul X1 and Multichannel 50-200ul X1)	Eppendorf AG, Thermo Fisher Scientific, Sartorius AG
7.	Pan electronic weighing balance	Mettler Pvt. Ltd., Sartorius AG, Contech India
8.	Magnetic stirrer	Tarsons Products Pvt. Ltd., Axygen Scientific, Eppendorf AG

EQUIPMENTS LISTED UNDER GENERAL & CULTURE FACILITIES:

1) Biological safety cabinet:

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	NSF 49/EN1249 or Equivalent standard
Design	:	Approximately 4 Feet length X 2 feet Depth; Bio safety cabinets Class II, Type A2; 304 stainless steel interior; Epoxy-coated steel exterior; Removable, seamless, dished work surface with lift out knobs Door- Fully closing, clear 1/4" tempered safety glass sash Counter balanced with base stand.
Circulation	:	Class 100, Supply and exhaust through HEPA filters. Inflow velocity of 105 fpm (0.5 m/sec), Down flow velocity of 55 fpm (0.3 m/sec), 70 % air recirculation
Light	:	UV and sufficient illumination for work space.
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Services Required	:	Installation & onsite validation; Calibration certificates; Manuals: Operation, maintenance & part list with detailed specifications; Operational & maintenance Training.
Power Supply	:	Should include 210-240V/50 Hz
Recommendation	:	Bio safety cabinets of Class II, Type A2 is recommended for all Viral Research Diagnostic labs (VRDL). Type B2 biosafety cabinets are recommended only for Biosafety Level 3 work

2) Refrigerated high speed centrifuge

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	CE or UL certified or conformity
Temperature range	:	European -4 to +40°C
Speed	:	14000 RPM or more
Display	:	Digital for temperature for air and chamber, time and RPM/RCF, Microprocessor controlled
Drive system	:	Brushless drive
Programmable	:	Programs-90-99 and with program recall facility.
Rotors	:	Fixed angle rotor: 24x1.5-2.0ml
Optional Rotors	:	Fixed angle rotor: 24X1.5 ml tubes, 250 ml, Swing out Rotor and adapters for: 5-10 ml tubes, 15ml, 50ml and 250 ml tubes, micro plate.
Power Supply	:	210-240V/50-60 Hz or Suitable power supply
Warranty	:	5 years from till date of installation.
AMC	:	5 years from date of expiry of warranty.

3) Vertical Autoclave

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Fully automatic vertical autoclave, suitable for sterilization under working steam pressure up to 15 PSI or more and temperature of 121°C or more.

Design	:	Unit made of SS 304 chamber, approx inner dimensions 16" to 25" (diameter x depth). Lid made of heavy gauge lid, die pressed S.S.304 with pressure gauge, steam release valve & necessary Safety valves, with foot lifting arrangement to open lid, programmable, with all functional accessories.
Capacity	:	70 to 80 lit
Display	:	Time and temperature LCD display
Alarm	:	Low water level alarm and cut off/ Sensor open alarm
Accessories	:	Perforated carriers made up of SS 304 (3-4 Nos.)
Power Supply:	:	220/230 volts AC-50 Hz or Suitable power supply

4) BOD Microbiological Incubator (28°C)

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Double walled body with inner chamber of Stainless Steel and outer galvanized steel with non-corrosive epoxy powder coated; full view glass door.

Capacity	:	100-120L with an internal fan for uniform air circulation
Inner chamber	:	3-4 shelves and with illumination
Temperature	:	Control: microprocessor based with digital display, Range: 5°C to 50°C with an accuracy of $\pm 0.5^\circ\text{C}$ Uniformity: $\pm 1.0^\circ\text{C}$ throughout the chamber
Door alarm	:	Low/high temperature alarm
Cooling	:	CFC free refrigeration
Power Supply	:	210-240V/50-60 Hz

7) Laminar Air Flow (2 feet)

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	EN12469 OR equivalent
Design	:	Vertical laminar flow cabinet; Approximately 4 Feet length X 2 feet depth, 304SS interior, epoxy/powder coated exterior Door fully closing with hinged sash; Support stand, solid one piece dished work surfaces
Circulation	:	Down flow velocity of 40-70 fpm, ISO Class 5 or higher air

Filters	:	HEPA filter, (99.99% efficient on particles 0.3 micron)/ULPA filter (efficiency of >99.999% at 0.1 to 0.3 micron sizes) provided with pre-filter)
Light	:	UV and sufficient illumination for work space
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Power Supply	:	Should include 210-240V/50-60 Hz

8) Digital pH Meter

Technical Specifications: Must be of reputed brand, from manufacturer/Authorized dealer having installation in reputed institutes/firms.

Design	:	Compact, Table top
Electrodes	:	Dual
Capability	:	To measure pH, Temperature, mV & relative mV
pH	:	Range 0 to 16.00, pH, Accuracy, + 0.01 Resolution 0.002
Temperature	:	Approximately 0 to 120°C, Accuracy + 0.5°C
MV/Rel.mV	:	+ 1999, Resolution 0.1
Display	:	LCD for pH and temperature readings simultaneously
Buffer	:	Unit able to recognize auto buffer along with custom buffer options
Calibration	:	Automatic as well as manual
Temperature Compensation	:	Automatic
Power Supply	:	Should include 210-240V/50-60 Hz

9) All in one Desktop Computer with Printer

Technical specifications: Must be of a reputed brand, from manufacturer/authorized dealers having installation in reputed institutes/ firms, preferably in Maharashtra and service centers located in India. Necessary evidence to be provided.

Hardware:

1. Operating System : Windows 8 (64-bit)
2. Processor : 3rd Generation Intel Core i7 - (2.4 GHz / 6 MB L2 Cache) or better
3. Motherboard : Intel Chipset (or) ASUS
4. RAM : 6 GB DDR-3 or more
5. Hard-Drive : 500 GB SATA (or more), 7200 RPM (or) 500 GB SSD
6. Graphics Card : NVIDIA GeForce with Dedicated 2GB Video Memory with HDMI In & Out
7. Monitor : 21" Full HD 0.28 pitch Anti-Glare with optional 10 point touch
8. Optical Drive : Integrated DVD RW 52X drive
9. Accessories : USB 3.0 ports, USB 2.0 ports, Card Reader, Integrated Speakers, Web-Camera
10. Security : Integrated Finger Print Reader
11. Network : 10/100/1000M LAN, 802.11 b/g/n Wi-Fi with optional Bluetooth
12. I/O Devices : Wireless Keyboard and Mouse

Software:

1. System Recovery manager
2. System Security and Protection
3. DVD Burner/Label Creator
4. Microsoft Office 2008
5. Chrome Browser

6. Adobe PDF (or) PDF Exchange Viewer

Power Supply : Should include 210-240 V/50-60 Hz

10) Photocopier cum scanner machine

Technical specifications: Must be of a reputed brand, from manufacturer/authorized dealers having installation in reputed institutes/ firms, preferably in Maharashtra and service centers located in India. Necessary evidence to be provided. The machine should be of compact design, programmable and PC compatible

Copies per minute : 20-25 cpm
Resolution : scan copy and print should be 600X600 dpi, 1200 x 600 dpi & 1200 x 1200 dpi
Magnification : Range 25% to 400% - Platen, 25% to 200% - Feeder (in 1% increments)
Document Feeder : Automatic
User interface : Touch-screen panel
Connections : USB 2.0
Network printing :
Memory : RAM 1GB or more; HD 80 GB or more
Power Supply : Should include 210-240V/50-60 Hz

11) Laboratory Refrigerator

Technical specifications: Must be of a reputed brand, from manufacturer/authorized dealers having installation in reputed institutes/ firms, preferably in Maharashtra and service centers located in India. Necessary evidence to be provided.

Design : Double door refrigerator, Inner chamber stainless steel 304 grade, Door locking system, magnetic door gasket, adjustable shelves, auto defrost facility.
Capacity : 275-300 L
Refrigerant : CFC Free
Controls : moisture and humidity
Alarm & Indicator : audio-visual alarm for door open and temperature fluctuation compressor on/off indicator
Power Supply : Should include 210-240 V/50-60 Hz

12) Microwave Oven

Design : Chamber dimension – (WXHxD) app. 12 X 7 X 13 Inch. Stainless steel chamber with ceramic interior, see-through panel in door. Audible tone signals after finishing the programme operation.
Heating Mode : Non Convection, non grill
Timer : Electronic; Adjustable upto 30 mins
Display : LED/LCD with selectable power level
Power Supply : Should include 210-240 V/50-60 Hz

EQUIPMENTS LISTED UNDER PCR LAB FACILITIES:

1) Laminar Air Flow (2 feet)

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Certification	:	EN12469 OR equivalent.
Design	:	Vertical laminar flow cabinet; Approximately 4 Feet length X 2 feet depth, 304SS interior, epoxy/powder coated exterior Door fully closing with hinged sash. Support stand, solid one piece dished work surfaces
Circulation	:	Down flow velocity of 40-70 fpm, ISO Class 5 or higher air
Filters	:	HEPA filter, (99.99% efficient on particles 0.3 micron)/ULPA filter (efficiency of >99.999% at 0.1 to 0.3 micron sizes) provided with pre-filter)
Light	:	UV and sufficient illumination for work space
Gauges	:	For monitoring the condition of all HEPA filters as well as work space.
Power Supply	:	Should include 210-240V/50-60 Hz

2) Thermal Cycler

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Design	:	96 well, with 6 separate peltier blocks to provide independent temperature zones to run gradient PCR with hot bonnet.
Capability	:	0.2ml, 0.5ml PCR tubes or microplates; to accommodate PCR volumes ranging from 10- 100ul.
Run Mode	:	Standard and fast run
Temperature	:	Range +4-100°C, Accuracy +/-0.25 from 35-99°C, Uniformity <0.5°C (20 sec after reaching 95°C)
Ramp rate	:	Maximum should be 5°C / sec and adjustable between 3 -5°C /sec
Program	:	Around 800 typical programs; with USB flash drive expansion
Power Supply	:	Should include 210-240V/50-60 Hz

3.a) Horizontal Gel Electrophoresis system

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Submerged gel electrophoresis apparatus with clear plastic construction for easy sample visualization
2. Tray should be UV transparent, length 12-15cm and width 12-15cm
3. Combs: 10-15 wells and 25-30 well. All combs of 1mm thickness.
4. The unit should bear minimum 3 years comprehensive and 2 years non-comprehensive warranty.

3.b) Gel Documentation System

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Gel imaging system to visualize:
 - i) Stained protein gels (coomassie, silver, UV light-excited fluorescent stains)
 - ii) Stained nucleic acid gels (ethidium bromide and other UV light- excited fluorescent stains).
2. Compact benchtop instrument
3. With UV and visible light transillumination, motorized zoom lens; Transillumination and epi-illumination.
4. Camera- high speed USB technology for faster image capture and download Auto focus configuration.
5. Auto exposure setting for optimum image exposure time.
6. CCD resolution- 5 megapixel or more
7. Excitation source- Trans-UV, 254, 365nm; Wide transillumination area;
8. Provided with PC, Software compatibility: Windows

4) Refrigerated Microfuge

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Bench top, compact, Refrigerated o Temperature setting: 0 to 40°C
2. Fast Pre cooling and should maintain +4°C at maximum speed
3. Up to 10 programs or more
4. Digital display showing rpm, RCF and time
5. Speed Up to 15000 rpm
6. Rotor for 24X1.5 to 2 ml tubes,
7. Adaptors for 0.5 ml and 0.2 ml tubes
8. Auto balancing in situation of minor imbalance
9. Electrical Requirements: 120V/60Hz and 230V/50 Hz or Suitable electrical supply
10. CE certified or equivalent

5) Real time RT-PCR

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

1. Table top model.
2. Complete system including basic system, essential accessories, the state-of-art computer workstation, acquisition and analysis software, startup kit inclusive of calibration standards etc.
3. Open system to accommodate Taqman, SYBR green and all other fluorescent dye based chemistries.
4. Peltier based 96 well block
5. Standard optical 96 well plates, 0.2 ml strips, 0.2ml tubes compatibility
6. Min sample value requirement - 5µl
7. CCD camera with halogen/LED and at least five excitation and five emission filters
8. Multiplexing ability up-to five dyes in a single run
9. Calibrated dyes at installation: FAM/SYBR Green, VIC/JOE, NED/TAMRA/Cy3, ROX/Texas Red®, and Cy5, Should offer flexibility in dye selection.

Chief Medical Superintendent
District Hospital, Gulbarga

10. Facility to calibrate new dye within the wavelength range without addition of new filters
11. Passive reference dye ROX or any other calibrated dye and should be optional
12. Option for melt curve analysis
13. Temperature range 4°C to 100°C
14. Sensitivity: Detection of 1 copy of template
15. Software applications: Comparative Ct, Standard Curve, Relative Standard Curve, Allelic Discrimination / SNP Genotyping, Plus/Minus, dissociation / melt curve
16. 220 V /50Hz. All accessories
17. CE mark or equivalent

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

3 pipettes with volumes: 0.5 to 10 μ l, 5 to 10 μ l & 50 to 1200 μ l

Description				
1.	Channel format	8-channel	8-channel	8-channel
2.	Adjustable Volume	0.5-10 μL	5-100 μL	50-1200 μL
3.	Imprecision/Volume ($\leq\%/\mu\text{L}$)	$\pm 3.0\%/\pm 0.03\mu\text{L}/1\mu\text{L};$	$\pm 3.0\%/\pm 0.03\mu\text{L}/1\mu\text{L};$	$\pm 0.9\%/\pm 1.08\mu\text{L}/120\mu\text{L};$
4.	Inaccuracy/Volume ($\pm\%/\mu\text{L}$)	$\pm 3.0\%/\pm 0.03\mu\text{L}/1\mu\text{L};$	$\pm 2.0\%/\pm 0.2\mu\text{L}/10\mu\text{L};$	$\pm 6.0\%/\pm 7.2\mu\text{L}/120\mu\text{L}; \pm;$
5.	Pipette type	Electronic air cushion	Electronic air cushion	Electronic air cushion
6.	Volume selection	Adjustable	Adjustable	Adjustable
7.	Volume display	4 digits	4 digits	4 digits

EQUIPMENTS LISTED UNDER SEROLOGY LAB FACILITIES:

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

¹Water Bath made of stainless steel, from manufacturer/authorized dealers having installation in reputed institutes/ firms.

2) -20°C Vertical Deep Freezer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capacity	:	600-700 litre
Inner shelf	:	6-9
Refrigerant	:	CFC free
Temperature control	:	Micro-processor controlled, Digital display with temperature resolution of 0.1°C
Alarms	:	Low/high temperature, power failure
Door closing and locking adjustment	:	self closing door with key door lock, adjustable leveling feet standard (optional casters)
Power supply	:	210-240V/50-60 Hz

3) -80°C Vertical Ultra low Freezer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Galvanized steel sheet body with epoxy paint and vacuumed polyurethane foam panels, outer double door with locking facility. Alarm for audible & visual fault acknowledgement, low & high temperature audio visual alarms, condenser fault alarm, remote contact alarm, open door alarm, clean filter Indicator and power failure alarm. Castor wheels & leveling adjustor should be provided for adjustment and installation.

Capacity	:	Approximately 650- 700L
Refrigerant	:	CFC & HCFC
Cooling system	:	Cascade cooling system
Doors	:	Triple silicon section seal, Fitted with decompression valve facility to lower air pressure inside the freezer for easy door opening.
Inner Compartment	:	Minimum 3 compartments with doors
Temperature	:	Range-55 to-80°C, Stability+/-1°C, uniformity+/-3°C
Additional Accessories	:	SS Racks and cardboard boxes
Power Supply	:	210-240V/50-60 Hz

4) Automated ELISA Microplate Washer

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capability	:	96 well microplates and strips, with flat, round, or "V" bottom well
Manifold	:	12 Channels

Vacuum and fluid delivery :	In built with Positive displacement syringe pump, drive Systems with adjustable flow rates
Program :	Memory for around 50 programs including dispensing Volume (50 to 300ul/well) and multispeed microplate shaking program
Bottles :	Wash, rinse and waste (volume 4-6 liter)
Safety devices :	Aerosol cover, removable Plate carrier, spill over protection and overflow protection safety system
Display :	LCD Display with Membrane Keypad
Power Supply :	210-240V/50-60 Hz

5) ELISA Reader

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Capability :	24, 48 or 96 well micro plates
Spectral Range :	400-750nm, Accuracy ± 1 nm
Absorbance :	0-4 O.D. Range
Accuracy :	Up to 0.001 O.D.
Provision :	Curve fittings formulas transformations & control assay validation, with compatible interface with PC & external printer.
Accessories :	Spare Lamps 2 Nos.
Power Supply :	210-240V/50-60 Hz

6.a) Adjustable Volume Single Channel Pipettes

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

ISO 8655 CERTIFIED, fully Autoclavable, single channel pipettes of variable volume compatible with universal tips.

Range	Increment	Accuracy	Precision
0.2 to 2 μ L	0.01 μ L	± 12.0 to 2.5%	10.0 to 2.0%
1 to 10 μ L	0.1 μ L	± 2.5 to 1.0%	2.0 to 0.5%
2 to 20 μ L	0.1 μ L	± 3.0 to 1.0%	2.5 to 0.4%
20 to 200 μ L	1 μ L	± 1.8 to 0.6%	0.7 to 0.2%
100 to 1000 μ L	5 μ L	± 1.0 to 0.6%	0.6 to 0.2%

6.b) Adjustable Volume Digital Multi Channel Pipettes

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Technical specifications: Must be of a reputed brand, from manufacturer/authorized dealers having calibration facility in Maharashtra. Necessary evidence to be provided.

ISO8655 certified digital multichannel pipettes of variable volume compatible with universal tips. Applications: provision for 6, 24, 96 well applications.

Range	Increment	Precision	Type
5 to 50 μ L	0.5 μ L	2.0 to 0.7%	8 channel 12 channel
30-300 μ L	5 μ L	1.5 to 0.3%	8 channel 12 channel

7) Fine Analytical Balance

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Single pan Analytical Balance with highest accuracy for weighing processes; readouts to have at least four decimal places. Equipped with a draft shield chamber to eliminate interfering ambient effects.

Weighing Range	:	0.01 – 60 g
Readability	:	0.1 mg
Calibration	:	External
Display	:	LCD Display
Verification interval	:	0.001 g
Pan Size	:	80 - 100 mm
Power Supply	:	210-240V/50-60 Hz

8) Magnetic Stirrer(For Medical College Labs):

General: Tender is invited from reputed original manufacture or their authorized agents/dealers only. Information regarding installation in India and satisfactory service and maintenance may be forwarded with all the details for verification.

Technical:

Design	:	Compact, light weight, SS body, chemical and corrosion resistant construction ; Approximately 40LX 30WX 5H(cm)
Certification	:	CE/ISO 9001
Speed	:	Range 0-1200 rpm; Control-Analog;
Stirring Volume	:	Upto 1000 ml
Display	:	Digital, microprocessor controlled
Power Supply	:	Should include 210-240 V/50-60 Hz

प्रमाणित
स्वास्थ्य राज्य विकास महाविद्यालय
शाखमंडूर-242 001 (उपग्राम)