



**LIAQUAT UNIVERSITY OF MEDICAL & HEALTHS  
SCIENCES JAMSHORO**

**BIDDING DOCUMENTS  
FOR**

**PURCHASE, SUPPLY & INSTALLATION OF LABORATORY  
EQUIPMENT / MODELS & LIBRARY BOOKS FOR NEWLY  
ESTABLISHED BILAWAL MEDICAL COLLEGE AT LIAQUAT  
UNIVERSITY OF MEDICAL & HEALTH SCIENCES, JAMSHORO.**

**PART ONE(FIXED)**

- Instructions to Bidders(ITB)
- General Conditions of Contract (GCC)

*Terms and conditions for (both categories)*

*Category A. Laboratory Equipment / Models*

*Category B. Library Books*

**For newly established Bilawal Medical College at Liaquat University of  
Medical & Health Sciences, Jamshoro.**

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**Part One - Section I.**  
**Instructions to Bidders**

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## **Instructions to Bidders**

- 1. Source of Funds**
- A. Introduction**
- 1.1 The Procuring agency has received /applied for loan/grant/federal/provincial/local government funds from the source(s) indicated in the bidding data in various currencies towards the cost of the project/schemes specified in the bidding data and it is intended that part of the proceeds of this loan/grant/funds/will be applied to eligible payments under the contract for which these bidding documents are issued.
- 1.2 Payment by the Fund will be made only at the request of the Procuring agency and upon approval by the Government of Sindh and incase of a project will be subject in all respect to the terms and conditions of the agreement. The Project Agreement prohibits a with drawl from the allocated fund account forth purpose of any payment to person so entities, or for any import of goods, if such payment or import, to the knowledge of the Federal Government Sindh Government, is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Procuring agency shall derive any rights from the Project Agreement or have any claim to the allocated fund proceeds.

**2. Eligible Bidders**

- 2.1 This Invitation for Bids is open to all suppliers from eligible source as defined in the SPP Rules, 2010 and its Bidding Documents except as provided hereinafter.
- 2.2 The bidder must possess valid authorization from foreign principal manufacturer and in case of manufacture they should have a documentary proof to the effect that they are the original manufacture of the required goods.
- 2.3 Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Procuring agency to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under this Invitation for Bids.
- 2.4 Government-owned enterprises in the Province of Sindh may participate only if they are legally and financially autonomous, if they operate under commercial law, and if they are not a dependent agency of the Government of Sindh.
- 2.5 Bidders shall not be eligible to bid if they are under a declaration of ineligibility for corrupt and fraudulent practices issued by any government organization in accordance with sub clause of 35 (1) of SPPRA Rules 2010.
- 2.6 Bidder should have minimum ten (10) years experience in supply in Pakistan.
- 2.7 Bidder must have trained person including application to perform including application to perform experiment at sites for minimum five (05) years.
- 2.8 Any offer not received as per terms and conditions of the bidding documents is liable to be ignored. No offer shall be considered if:-
  1. Received from earnest money from any firm.
  2. It is received after the time and date fixed for its receipt.
  3. The tender is unsigned.
  4. the offer is ambiguous
  5. the offer is conditional.
  6. the offer is from a firm blacklisted, suspended or removed from the approved list.
  7. The offer is received by telegram/Fax.
  8. Offer received with shorter validity than required in the tender enquiry.
  9. The offer is for store not conforming to specification indicated in the tender enquiry. No counter offer will be accepted.

**3. Eligible Goods and Services**

3.1 All goods and related services to be supplied under the contract shall have their origin in eligible source countries, defined in the SPP Rules, 2010 and its Bidding Documents, and all expenditures made under the contract will be limited to such goods and services.

3.2 For the purpose of this clause (a) the term "Good" includes any goods that are the subject of this limitation for bids and (b) the term services includes related services such as transportation insurance, after sale services spare parts availability etc.

3.3 In case of imported good, Manufacturer and product should be ISO Certified.

**4. Cost of Bidding**

4.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Procuring agency named in the Bid Data Sheet, here in after referred to as "the Procuring agency," will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

**B. The Bidding Documents**

The Bidder must quote all none basis for each package specification.

**5. Content of Bidding Documents**

5.1 The bidding documents include:

- (a) Instructions to Bidders (ITB)
- (b) Bid Data Sheet
- (c) General Conditions of Contract (GCC)
- (d) Special Conditions of Contract (SCC)
- (e) Schedule of Requirements
- (f) Technical Specifications
- (g) Bid Form and Price Schedules
- (h) Bid Security Form
- (i) Contract Form
- (j) Performance Security Form
- (k) Manufacturer's Authorization Form
- (l) Detail of Technical Staff.
- (m) Financial standings/obligation/GST/Income Tax

5.2 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in the



rejection of its bid.

- 6. Clarification of Bidding Documents**
- 6.1 A Prospective Bidder requiring any clarification of the bidding documents may notify the Procuring agency in writing. The Procuring agency will respond in writing to any request for clarification of the bidding documents which it receives no later than ten (10) working days prior to the dead line for the submission of bids prescribed in the Invitation to Bids. Written copies of the Procuring agency's response (including an explanation of the query but without identifying the source of inquiry) will be sent to all interested bidders that have received the bidding documents.
- 7. Amendment of Bidding Documents**
- 7.1 At any time prior to the dead line for submission of bids, the Procuring agency, for any reason, whether at its own initiative or in response to a clarification requested by a interested Bidder, may modify the bidding documents by amendment.
- 7.2 All Prospective bidders that have received the bidding documents shall be notified of the amendment in writing, and will be binding on them.
- 7.3 In order to allow Prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the Procuring agency, at its discretion, may extend the deadline for the submission of bids. Amendment notice to that effect shall be communicated in the same manner as the original invitation to bid.

### **C. Preparation of Bids**

- 8. Language of Bid**
- 8.1 The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Procuring agency shall be written in English. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in english, in which case, for purposes of interpretation of the Bid, the translation shall govern.
- 9. Documents Comprising the Bid**
- 9.1 The bid prepared by the Bidder shall comprise the following components:
- (a) A Bid Form and a Price Schedule completed in accordance with ITB Clauses 10, 11, and 12;
  - (b) Documentary evidence established in accordance with ITB

Clause 13 that the Bidder is eligible to bid and is qualified to perform the contract if its bid is accepted;

(c) documentary evidence established in accordance with ITB Clause 14 that the goods and ancillary services to be supplied by the Bidder are eligible goods and services and conform to the bidding documents; and

(d) bid security furnished in accordance with ITB Clause 15.

**10. Bid Form**

10.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule furnished in the bidding documents, indicating the goods to be supplied, a brief description of the goods, their country of origin, quantity, and prices.

**11. Bid Prices**

11.1 The Bidder shall indicate on the appropriate Price Schedule the unit prices (where applicable) and total bid price of the goods it proposes to supply under the contract.

11.2 Form for price schedule is to be filled in very carefully and should be typed. Any alteration / correction must be initiated. Every page is to be signed and stamped at the bottom. Serial number/bid number of the quoted item should be highlighted.

11.3 The bidder should quote the prices of goods according to the technical specification. The specification of goods different from the demand of enquiry, shall straightway be rejected.

11.4 The bidder is required to offer competitive price. All prices must include relevant taxes and duties where applicable. If there is no mention of taxes, the offered / quoted price shall be considered as inclusive of all prevailing taxes/duties. The benefit of exemption from or reduction in the GST or other taxes shall be passed on to the procuring agency.

11.5 Prices offered should be for the entire quantity demanded, partial quantity offers shall straight way be rejected. Conditional offer shall also be considered as non-responsive bidder

11.6 while tendering your quotation, the present trend / inflation in the rate of goods and services in the market should be kept in mind. No request in price due to market fluctuation in the cost of goods and services shall be entered after the bid has been submitted.

**12. Bid Currencies**

12.1 Prices shall be quoted in Pak Rupees in case of free delivery basis (DDP) delivered duty paid.

12.2 State bank of Pakistan foreign currency selling rate will be considered from the date of opening of financial bid (import cases)

**13. Documents  
Establishing  
Bidder's**

13.1 Pursue an to ITB Clause 9, the Bidder shall furnish, as par to fits bid, documents establishing the Bidder's eligibility to bid and its qualifications to perform the contract if its bid is accepted.

**Eligibility and  
Qualification**

- 13.2 The documentary evidence of the Bidder's eligibility to bid shall establish to the Procuring agency's satisfaction that the Bidder, at the time of submission of its bid, is from an eligible country as defined under ITB Clause 2.
- 13.3 The documentary evidence of the Bidder's qualifications to Perform the contract if its bid is accepted shall establish to the Procuring agency's satisfaction:
- (a) That, in the case of a Bidder offer into supply goods under the contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' Manufacturer or producer to supply the goods in the Procuring agency's country;
  - (b) That the Bidder has the financial, technical, and production capability necessary to perform the contract;
  - (c) That, in the case of a Bidder not doing business with in the Procuring agency's country, the Bidder is or will be (if awarded the contract) represented by an Agent in that country equipped, and able to carry out the Supplier's maintenance, repair, and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications; and
  - (d) That the Bidder meets the qualification criteria listed in the Bid Data Sheet.
  - (e) The procuring agency shall disqualify a bidder if it finds at any time that the bid submitted by, him concerning his qualification as supplier was false and materially inaccurate or incomplete.

**14. Documents  
Establishing  
Goods'  
Eligibility and  
Conformity to  
Bidding  
Documents**

- 14.1 Pursuant to ITB Clause 9, the Bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding documents of all goods and services which the Bidder proposes to supply under the contract.
- 14.2. The documentary evidence of the eligibility of the goods and services shall consist of a statement in the Price Schedule of the country of origin of the goods and services offered which shall be confirmed by a certificate of origin issued at the time of shipment.
- 14.3 The documentary evidence of conformity of the goods and services to the bidding documents may be in the form of literature, drawings, and data, and shall consist of:
- (a) A detailed description of the essential technical and

performance characteristics of the goods;

- (b) A list giving full particulars, including available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the goods for a period to be specified in the Bid Data Sheet, following commencement of the use of the goods by the Procuring agency; and
- (c) An item-by-item commentary on the Procuring agency's Technical Specifications demonstrating substantial responsiveness of the goods and services to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications.

14.4 For purposes of the commentary to be furnished pursuant to ITB Clause 14.3(c) above, the Bidder shall not that standards for workmanship, material, and equipment, as well as references to brand names or catalogue numbers designated by the Procuring agency in its Technical Specifications, are intended to be descriptive only and not restrictive. The Bidder may substitute alternative standards, brand names, and/or catalogue numbers in its bid, provided that it demonstrates to the Procuring agency's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications.

## 15. Bid Security

15.1 Pursuant to ITB Clause 9, the Bidder shall furnish, as part of its bid, a bid security in the amount specified in the Bid Data Sheet.

15.2 The bid security is required to protect the Procuring agency against the risk of Bidder's conduct which would warrant the security's forfeiture, pursuant to ITB Clause 15.7. The Bid security 5% of quoted rates in the shape of Pay order / demand draft (refundable to un-successful bidders) in the name of Vice Chancellor, LUMHS, Jamshoro.

15.3 The bid security shall be in Pak. Rupees and shall be in one of the following forms:

- (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the Procuring agency's country, in the form provided in the bidding document so far as other form acceptable to the Procuring agency and valid for thirty (30) days beyond the validity of the bid; or
- (b) irrevocable en-cashable on-demand Bank call-deposit.

15.4 Any bid not secure in accordance with ITB Clauses 15.1 and 15.3 will be rejected by the Procuring agency as non responsive, pursuant to ITB Clause 24.

15.5 Un successful bidders' bid security will be discharged or returned as promptly as possible but not later than thirty(30) days after the expiration of the period of bid validity prescribed by the Procuring agency pursuant to ITB Clause 16.

15.6 The successful Bidder's bid security will be discharged up on the Bidder signing the contract, pursuant to ITB Clause 32, and furnishing the performance security, pursuant to ITB Clause 33.

15.7 The bid security may be forfeited:

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Bid Form; or

(b) in the case of a successful Bidder, if the Bidder fails:

(i) to sign the contract in accordance with ITB Clause 32;

or

(ii) to furnish performance security in accordance with ITB Clause 33.

**16. Period of  
Validity of  
Bids**

16.1 Bid shall remain valid for the period specified in the Bid Data Sheet after the date of bid opening prescribed by the Procuring agency, pursuant to ITB Clause 19. A bid valid for a shorter period shall be rejected by the Procuring agency as non responsive.

16.2 In exceptional circumstances, the Procuring agency may so licit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The bid security provided under ITB Clause 15 shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be required nor permitted to modify its bid, except as provided in the bidding document.

**17. Format and  
Signing of  
Bid**

17.1 The Bidder shall prepare an original and the number of copies of the bid indicated in the Bid Data Sheet, clearly marking each "ORIGINAL BID" and "COPY OF BID," as appropriate. In the event of any discrepancy between them, the original shall govern.

17.2 The original and the copy or copies of the bid shall be typed or written in indelible ink and shall be signed by the Bidder or a

person or persons duly authorized to bind the Bidder to the contract. All pages of the bid, except form-amended printed literature, shall be initialed by the person or persons signing the bid.

17.3 Any interlineations, erasures, or over writing shall be valid only if they are initialed by the person or persons signing the bid.

17.4 The Bidder shall furnish information as described in the Form of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid, and to contract execution if the Bidder is awarded the contract.

#### **D. Submission of Bids**

### **18. Sealing and Marking of Bids**

18.1 The Bidder shall seal the original and each copy of the bidding separate envelopes, duly marking the envelopes as "ORIGINAL" and "COPY." The envelopes shall then be sealed in an outer envelope.

18.2 The inner and outer envelopes shall:

(a) be addressed to the Procuring agency at the address given in the Bid Data Sheet; and

(b) bear the Project name indicated in the Bid Data Sheet, the Invitation for Bids (IFB) title and number indicated in the Bid Data Sheet and a statement: "DONOTOPEN BEFORE," to be completed with the time and the date specified in the Bid Data Sheet, pursuant to ITB Clause 2.2.

18.3 The inner envelopes shall also indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared "late".

18.4 If the outer envelope is not sealed and marked as required by ITB Clause 18.2, the Procuring agency will assume no responsibility for the bid's misplacement or premature opening.

### **19. Deadline for Submission of Bids**

19.1 Bids must be received by the Procuring agency at the address specified under ITB Clause 18.2 no later than the time and date specified in the Bid Data Sheet.

19.2 The Procuring agency may, at its discretion, extend this deadline for the submission of bids by amending the bidding documents in accordance with ITB Clause 7, in which case all rights and

Obligations of the Procuring agency and bidders previously subject to the dead line will thereafter be subject to the deadline as extended.

**20. Late Bids**

20.1 Any bid received by the Procuring agency after the deadline for submission of bids prescribed by the Procuring agency pursuant to ITB Clause 19 will be rejected and returned unopened to the Bidder.

**21. Modification and Withdrawal of Bids**

21.1 The Bidder may modify or with draw its bid after the bid's submission, provided that written notice of the modification, including substitution or with drawl of the bids, is received by the Procuring agency prior to the dead line prescribed for submission of bids.

21.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and dispatched in accordance with the provisions of ITB Clause 18. by a signed confirmation copy, postmarked not later than the deadline for submission of bids.

21.3 No bid may be modified after the dead line for submission of bids.

21.4 No bid may be withdrawn in the interval between the dead line for submission o f bids and the expiration o f the period of bid validity specified by the Bidder on the Bid Form. Withdrawal of a bid during this interval may result in the Bidder's for feature of its bid security, pursuant to the ITB Clause 15.7.

**E. Opening and Evaluation of Bids**

**22. Opening of Bids by the Procuring agency**

22.1 The Procuring agency will open all bids in the presence of bidders' representatives who choose to attend, at the time, on the date, and at the place specified in the Bid Data Sheet. The bidders' representatives who are present shall sign a register evidencing their attendance.

22.2 The bidders' names, bid modifications or withdrawals, bid prices, discounts, and the presence or absence of requisite bid security and such other details as the Procuring agency, at its discretion, may consider appropriate, will be announced at the opening. No bid shall be rejected at bid opening, except for late bids, which shall be returned un opened to the Bidder pursuant to ITB Clause 20.

22.3 Bids (and modifications sent pursuant to ITB Clause 21.2) that are not opened and read out at bid opening shall not be considered further for evaluation, irrespective of the circumstances. Withdrawn bids will be returned unopened to the bidders.

22.4 The Procuring agency will prepare minutes of the bid opening.

**23. Clarification of Bids**

23.1 During evaluation of the bids, the Procuring agency may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the prices or substance of the bid shall be sought, offered, or permitted.

**24. Preliminary Examination**

24.1 The Procuring agency will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

24.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected. If the Supplier does not accept the correction of the errors, its bid will be rejected, and its bid security may be forfeited. If there is a discrepancy between words and figures, the amount in words will prevail.

24.3 The Procuring agency may waive any minor informality, non conformity, or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

24.4 Prior to the detailed evaluation, pursuant to ITB Clause 25 the Procuring agency will determine the substantial responsiveness of each bid to the bidding documents. For purposes of these Clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the bidding documents without material deviations. Deviations from, or objections or reservations to critical provisions, **such as** those concerning Bid Security (ITB Clause 15), Applicable Law (GCC Clause 30), and Taxes and Duties (GCC Clause 32), will be deemed to be a material deviation. The Procuring agency's determination of a bid's responsive assist to be based on the contents of the bid itself without recourse to extrinsic evidence.



## **25. Evaluation and Comparison of Bids**

- 24.5 If a bid is not substantially responsive, it will be rejected by the Procuring agency and may not subsequently be made responsive by the Bidder by correction of the nonconformity.
- 25.1 The Procuring agency will evaluate and compare the bids which have been determined to be substantially responsive, pursuant to ITB Clause 24.
- 25.2 The Procuring agency's evaluation of a bid will be on delivered duty paid (DDP) price inclusive of prevailing duties and will exclude any allowance for price adjustment during the period of execution of the contract, if provided in the bid.
- 25.3 The Procuring agency's evaluation of a bid will take into account, in addition to the bid price quoted in accordance with ITB Clause 11.2, one or more of the following factors as specified in the Bid Data Sheet, and quantified in ITB Clause 25.4:
- (a) Incidental costs
  - (b) Delivery schedule offered in the bid;
  - (c) Deviations in payment schedule from that specified in the Special Conditions of Contract;
  - (d) The cost of components, mandatory spare parts, and service; (e) the availability Procuring agency of spare parts and after- sales services for the equipment offered in the bid;
  - (f) The projected operation and maintenance costs during the life of the equipment;
  - (g) The performance and productivity of the equipment offered; and / or
  - (h) Other specific criteria indicated in the Bid Data Sheet and/or in the Technical Specifications.
- 25.4 For factors retained in the Bid Data Sheet pursuant to ITB 25.3, one or more of the following quantification methods will be applied, as detailed in the Bid Data Sheet:
- (a) Incidental costs provided by the bidder will be added by Procuring agency to the delivered duty paid (DDP) price at the final destination.
  - (b) Delivery Schedule.
    - (i) The Procuring agency enquires that the goods under the Invitation for Bids shall be delivered at the time specified in the Schedule of Requirements which will be treated as the base, a delivery "adjustment" will be calculated for bids by applying a percentage, specified in the Bid Data Sheet, of the DDP price for each week of delay beyond the base, and this will be added to the bid price for evaluation. No credit shall be given to early delivery.

**Or**

- (ii) The goods covered under this invitation are required to be delivered (shipped) within an acceptable range of weeks specified in the Schedule of Requirement. No credit will be given to earlier deliveries, and bids offering delivery beyond this range will be treated as non responsive. Within this acceptable range, an adjustment per week, as specified in the Bid Data Sheet, will be added for evaluation to the bid price of bids offering deliveries later than the earliest delivery period specified in the Schedule of Requirements.

**Or**

- (iii) The goods covered under this invitation are required to be delivered in partial shipments, as specified in the Schedule of Requirements. Bids offering deliveries earlier or later than the specified deliveries will be adjusted in the evaluation by adding to the bid price  
A factor equal to a percentage, specified in the Bid Data Sheet, of DDP price per week of variation from the specified delivery schedule.

(c) *Deviation in payment schedule.*

- (i) Bidders shall state their bid price for the payment schedule outlined in the SCC. Bids will be evaluated on the basis of this base price. Bidders are, however, permitted to state an alternative payment schedule and indicate the reduction in bid price they wish to offer for such alternative payment schedule. The Procuring agency may consider the alternative payment schedule offered by the selected Bidder.

**Or**

- (ii) The SCC stipulates the payment schedule offered by The Procuring agency. If a bid deviates from the schedule and if such deviation is considered acceptable to the Procuring agency, the bid will be evaluated by calculating interest earned for any earlier payments involved in the terms outlined in the bid as compared with those stipulated in this invitation, at the rate per annum specified in the Bid Data Sheet.

(d) *Cost of spare parts.*

- (i) The list of items and quantities of major assemblies, components, and selected spare parts, likely to be required during the initial period of operation specified in the Bid Data Sheet, is annexed to the

Technical Specifications. The total cost of these items, at the unit prices quoted in each bid, will be added to the bid price.

**Or**

- (ii) The Procuring agency will draw up a list of high-usage and high-value items of components and spare parts, along with estimated quantities of usage in the initial period of operation specified in the Bid Data Sheet. The total cost of these items and quantities will be computed from spare parts unit prices submitted by the Bidder and added to the bid price.

**Or**

- (iii) The Procuring agency will estimate the cost of spare parts usage in the initial period of operation specified in the Bid Data Sheet, based on information furnished by each Bidder, as well as on past experience of the Procuring agency or other procuring agencies in similar situations. Such costs shall be added to the bid price for evaluation.

- (e) *Spare parts and after sales service facilities in the Procuring agency's country:*

The cost to the Procuring agency of establishing the minimum service facilities and parts inventories, as outlined in the Bid Data Sheet or elsewhere in the bidding documents, if quoted separately, shall be added to the bid price.

- (f) *Operating and maintenance costs.*

Since the operating and maintenance costs of the goods under procurement form a major part of the lifecycle cost of the equipment, these costs will be evaluated in accordance with the criteria specified in the Bid Data Sheet or in the Technical Specifications.

- (g) *Performance and productivity of the equipment*

- (i) Bidders shall state the guaranteed performance or efficiency in response to the Technical Specification. For each drop in the performance or efficiency below then or m of 100, an adjustment for an amount specified in the Bid Data Sheet will be added to the bid price, representing the capitalized cost of additional operating costs over the life of the plant, using the methodology specified in the Bid Data Sheet or in the Technical Specifications.

**Or**

- (ii) Goods offered shall have a minimum productivity specified under the relevant provision in the Technical Specifications to be considered responsive. Evaluation shall be based on the cost per unit of the actual productivity of goods offered in the bid, and adjustment will be added to the bid price using the methodology specified in the Bid Data Sheet or in the Technical Specifications.
- (h) *Specific additional criteria indicated in the Bid Data Sheet and/or in the Technical Specifications.*

The relevant evaluation method shall be detailed in the Bid Data Sheet and/or in the Technical Specifications.

**Alternative**

**25.4 Merit Point System:**

The following merit point system for weighing evaluation

Factors Can be applied if none of the evaluation methods listed in 25.4 above has been retained in the Bid Data Sheet. The number of points allocated to each factor shall be specified in the Bid Data Sheet.

*[In the Bid Data Sheet, choose from the range of]*

Evaluated price of the goods	60 to 90
Cost of common list spare parts	0 to 20
Technical features, and maintenance and operating costs	0 to 20
Availability of service and spare parts	0 to 20
Standardization	0 to 20
Total	100

The bids coring the highest number of points will be deemed to be the lowest evaluated bid.

**26. Contacting the Procuring agency**

26.1 Subject to ITB Clause 23, no Bidder shall contact the Procuring agency on any matter relating to its bid, from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Procuring agency, it should do so in writing.

26.2 Any effort by a Bidder to influence the Procuring agency in its decisions on bid evaluation, bid comparison, or contract award may result in the rejection of the Bidder's bid.

**F. Award of Contract**

**27. Post-qualification**

27.1 In the absence of pre qualification, the Procuring agency will determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated responsive bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in ITB Clause 13.3.

27.2 The determination will take into account the Bidder's financial, technical, and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB Clause 13.3, as well as such other information as the Procuring agency deems necessary and appropriate.

27.3 An affirmative determination will be a prerequisite for a ward of the contract to the Bidder. A negative determination will result in rejection of the Bidder's bid, in which event the Procuring agency will proceed to the next lowest evaluated bid to make a similar determination of that Bidder's capabilities to perform satisfactorily.

**28. Award Criteria**

28.1 Subject to ITB Clause 30, the Procuring agency will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined to be the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

- 29. Procuring agency's Right to Vary Quantities at Time of Award**
- 29.1 The Procuring agency reserves the right at the time of contract award to increase or decrease, by the percentage indicated in the Bid Data Sheet, the quantity of goods and services originally specified in the Schedule of Requirements without any change in unit price or terms and conditions.
- 30. Procuring agency's Right to Accept any Bid and to Reject any or All Bids**
- 30.1 The Procuring agency reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without there by incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Procuring agency's action.
- 31. Notification of Award**
- 31.1 Prior to the expiration of the period of bid validity, the Procuring agency will notify the successful Bidder in writing by registered letter or by cable, to be confirmed in writing by registered letter, that its bid has been accepted.
- 31.2 The notification of award will constitute the formation of the Contract.
- 31.3 Upon the successful Bidder's furnishing of the performance security pursuant to ITB Clause 33, the Procuring agency will promptly notify each unsuccessful Bidder and will discharge its bid security, pursuant to ITB Clause 15.
- 32. Signing of Contract**
- 32.1 At the same time as the Procuring agency notifies the successful Bidder that its bid has been accepted, the Procuring agency will send the Bidder the Contract Form provided in the bidding documents, incorporating all agreements between the parties.
- 32.2 Within thirty(30) days of receipt of the Contract Form, the successful Bidder shall sign and date the contract and return it to the Procuring agency.
- 33 Performance Security**
- 33.1 With in Five (05) days of the receipt of notification of award from the Procuring agency, the succesful Bidder shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the bidding documents, or in another form acceptable to the Procuring agency.
- 33.2 Failure of the successful Bidder to comply with the requirement of ITB Clause 32 or ITB Clause 33.1 shall constitute sufficient grounds for the annul mentor of the award and for feature of the bid security, in which event the Procuring agency may make the award to the next lowest evaluated Bidder or call for new bids.

**34. Corrupt or Fraudulent Practices**

34.1 The Government of Sindh requires that Procuring agency's (including beneficiaries of donor agencies' loans), as well as Bidders/Suppliers/Contractors under Government-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the SPPRA, in accordance with the SPP Act, 2010 and Rules made there under:

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and

(ii) "fraudulent practice" means a misrepresentation of acts in order to influence a procurement process or the execution of a contract to the detriment of the Procuring agency, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Procuring agency of the benefits of free and open competition;

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

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a Government-financed contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Government-financed contract.

34.2 Furthermore, Bidders shall be aware of the provision stated in sub-clause 5.4 and sub-clause 24.1 of the General Conditions of Contract.

**Part One - Section II.**  
**General Conditions of Contract**



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## **General Conditions of Contract**

- 1. Definitions**
- 1.1 In this Contract, the following terms shall be interpreted as indicated:
- (a) "The Contract" means the agreement entered into between the Procuring agency and the Supplier, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents in corporate by reference therein.
  - (b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.
  - (c) "The Goods" means all of the equipment, machinery, and/or other materials which the Supplier is required to supply to the Procuring agency under the Contract.
  - (d) "The Services" means those services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training, and other such obligations of the Supplier covered under the Contract.
  - (e) "GCC" means the General Conditions of Contract contained in this section.
  - (f) "SCC" means the Special Conditions of Contract.
  - (g) "The Procuring agency" means the organization purchase the Goods, as named in SC SCC.
  - (h) "The Procuring agency's country" is the country named in SCC.
  - (i) "The Supplier" means the individual or firm supplying the Goods and Services under this Contract.
  - (j) "The Project Site," where applicable, means the place or places named in SCC.
  - (k) "Day" means calendar day.
- 2. Application**
- 2.1 These General Conditions shall apply to the extent that they are not superseded by provisions of other parts of the Contract.

**3. Country of Origin**

3.1 All Goods and Services supplied under the Contract shall have their origin in the countries and territories eligible under the rules and further elaborated in the SCC.

3.2 For purposes of this Clause, "origin" means the place where the Goods were mined, grown, or produced, or from which the Services are supplied. Goods are produced when, through manufacturing, processing, or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.

3.3 The origin of Goods and Services is distinct from the nationality of the Supplier.

4.1 The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standards appropriate to the Goods' country of origin. Such standards shall be the latest issued by the concerned institution.

**5. Use of Contract Documents and Information; Inspection and Audit by the Government**

5.1 The Supplier shall not, without the Procuring agency's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Procuring agency in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

5.2 The Supplier shall not, without the Procuring agency's prior written consent, make use of any document or information enumerated in GCC Clause 5.1 except for purposes of performing the Contract.

5.3 Any document, other than the Contract itself, enumerated in GCC Clause 5.1 shall remain the property of the Procuring agency and shall be returned (all copies) to the Procuring agency on completion of the Supplier's performance under the Contract if so required by the Procuring agency.

- 5.4 The Supplier shall permit the Procuring agency to inspect the Supplier's accounts and records relating to the performance of the Supplier and to have them audited by auditors appointed by the procuring agency, if so required.
- 6. Patent Rights**
- 6.1 The Supplier shall indemnify the Procuring agency against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof in the Procuring agency's country.
- 7. Performance Security**
- 7.1 Within five (05) days of receipt of the notification of Contract award, the successful Bidder shall furnish to the Procuring agency the performance security in the amount specified in SCC.
- 7.2 The proceeds of the performance security shall be payable to the Procuring agency as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 7.3 The performance security shall be denominated in the currency of the Contract acceptable to the Procuring agency and shall be in one of the following forms:
- (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the Procuring agency's country, in the form provided in the bidding documents or another form acceptable to the Procuring agency; or
- (b) a cashier's or certified check.
- 7.4 The performance security will be discharged by the Procuring agency and returned to the Supplier not later than sixty (60) days following the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless specified otherwise in SCC.
- 8. Inspections and Tests**
- 8.1 The Procuring agency or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Procuring agency. SCC and the Technical Specifications shall specify what inspections and tests the Procuring agency requires and where they are to be conducted. The Procuring agency shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.
- 8.2 The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery, and/or at

The Goods' final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Procuring agency.

8.3 Should any inspected or tested Goods fail to conform to the Specifications, the Procuring agency may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Procuring agency.

8.4 The Procuring agency's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival in the Procuring agency's country shall in no way be limited or waived by reason of the Goods having previously been inspected, tested, and passed by the Procuring agency or its representative prior to the Goods' shipment from the country of origin.

8.5 Nothing in GCC clause 8 shall in any way release the Supplier from any warranty or other obligations under this Contract.

## **9. Packing**

9.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing case size and weights shall take into consideration, where appropriate, the nature of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the Procuring agency.

## **10. Delivery and Documents**

10.1 Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in the Schedule of Requirements. The details of shipping and/or other documents to be furnished by the Supplier are specified in SCC.

**11. Insurance**

11.1 The Goods supplied under the Contract shall be delivered duty paid (DDP) under which risk is transferred to the buyer after having been delivered, hence insurance coverage is sellers responsibility.

**12. .**

12.1 The Supplier is required under the Contact to transport the Goods to a specified place of destination within the Procuring agency's country, transport to such place of destination in the Procuring agency's country, including insurance and storage, as shall be specified in the Contract, shall be arranged by the Supplier, and related costs shall be included in the Contract Price.

**13. Incidental Services**

13.1 The Supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:

- (a) performance or supervision of on-site assembly and/or start-up of the supplied Goods;
- (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
- (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (e) training of the Procuring agency's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.

13.2 The supplier shall be required to provide the incidental services has specified in SCC and the cost of which should be included in the total bid price.

**14. Spare Parts**

14.1 As specified in SCC, the Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

- (a) such spare parts as the Procuring agency may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- (b) in the event of termination of production of the spare parts:
  - (i) advance notification to the Procuring agency of the pending termination, in sufficient time to permit the Procuring agency to procure needed requirements; and
  - (ii) following such termination, furnishing at no cost to the Procuring agency, the blueprints, drawings, and specifications of the spare parts, if requested.

## **15. Warranty**

- 15.1 The Supplier warrants that the Goods supplied under the Contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the Procuring agency's specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.
- 15.2 A warranty of Two Years will be provided free of cost including parts repair and replacement however in case of high tech equipment if mentioned in the specification the warranty shall be five years free service and parts at the installation site.
- 15.3 The Procuring agency shall promptly notify the Supplier in writing of any claims arising under this warranty.
- 15.4 Up on receipt of such notice, the Supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Procuring agency.
- 15.5 If the Supplier, having been notified, fails to remedy the defect(s)

Within the period specified in SCC, within a reasonable period, the Procuring agency may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Procuring agency may have against the Supplier under the Contract.

## **16. Payment**

16.1 The method and conditions of payment to be made to the Supplier under this Contract shall be specified in SCC.

16.2 The Supplier's request(s) for payment shall be made to the Procuring agency in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Services performed, and by documents submitted pursuant to GCC Clause 10, and upon fulfillment of other obligations stipulated in the Contract.

16.3 Payments shall be made promptly by the Procuring agency, but in no case later than sixty (60) days after submission of an invoice or claim by the Supplier.

16.4 The currency of payment is Pak Rupees which will be paid after Installation and satisfactory report by inspection committee for duty delivered pay free delivery at the consignee end. In case of import cases pay will be made 100% via establishing L.C at sight and receiving shipping doc / bill of lading, inspection, certificate of the manufacturers country of origin, compliance of international standards of quality.

## **17. Prices**

17.1 Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid and shall remain the same till expiry of original bids validity period provided the procuring agencies bid validity extension.

## **18. Change Orders**

18.1 The Procuring agency may at any time, by a written order given to the Supplier pursuant to GCC Clause 31, make changes within the general scope of the Contract in any one or more of the following:

- (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Procuring agency;
- (b) the method of shipment or packing;
- (c) the place of delivery; and/or
- (d) the Services to be provided by the Supplier.

18.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be



Made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within thirty (30) days from the date of the Supplier's receipt of the Procuring agency's change order.

**19. Contract Amendments**

19.1 Subject to GCC Clause 18, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

**20. Assignment**

20.1 The Supplier shall not assign, in whole or in part, its obligations to perform under this Contract, except with the Procuring agency's prior written consent.

**21. Subcontracts**

21.1 The Supplier shall notify the Procuring agency in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

21.2 Sub contracts must comply with the provisions of GCC Clause 3.

**22. Delays in the Supplier's Performance**

22.1 Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by the Procuring agency in the Schedule of Requirements.

22.2 If at any time during performance of the Contract, the Supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Procuring agency in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Procuring agency shall evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the parties by amendment of Contract.

22.3 Except as provided under GCC Clause 25, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 23, unless an extension of time is agreed upon pursuant to GCC Clause 22.2 without the application of liquidated damages.

**23. Liquidated**

23.1 Subject to GCC Clause 25, if the Supplier fails to deliver any or

## **Damages**

all of the Goods or to perform the Services within the period(s) specified in the Contract, the Procuring agency shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages leveled at the rate of two percent (2% ) per month or a fraction thereof subject to a maximum of ten percent (10%) of the P.O / contract price / a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in SCC. Once the maximum is reached, the Procuring agency may consider termination of the Contract pursuant to GCC Clause 24.

## **24. Termination for Default**

24.1 The Procuring agency, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate this Contract in whole or in part:

- (a) if the Supplier fails to deliver any or all of the Goods within the period(s) specified in the Contract, or within any extension thereof granted by the Procuring agency pursuant to GCC Clause 22; or
- (b) if the Supplier fails to perform any other obligation(s) under the Contract.
- (c) if the Supplier, in the judgment of the Procuring agency has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this clause:

“Corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

“Fraudulent practice” means a misrepresentation of facts in order to influence a procurement processor the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

24.2 In the event the Procuring agency terminates the Contract in whole or in part, pursuant to GCC Clause 24.1, the Procuring agency may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those

undelivered, and the Supplier shall be liable to the Procuring agency for any excess costs for such similar Goods or Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

**25. Force Majeure**

25.1 Notwithstanding the provisions of GCC Clauses 22,23,and24, the Supplier shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

25.2 For purposes of this clause, " Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Procuring agency in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

25.3 If a ForceMajeuresituationarises, the Supplier shall promptly notify the Procuring agency in writing of such condition and the cause thereof. Unless otherwise directed by the Procuring agency in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

**26. Termination for Insolvency**

26.1 The Procuring agency may at any time terminate the Contract by giving written notice to the Supplier if the Supplier becomes bank corrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Procuring agency.

**27. Termination for Convenience**

27.1 The Procuring agency, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Procuring agency's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

27.2 The Goods that are complete and ready for shipment within thirty(30) days after the Supplier's receipt of notice of termination shall be accepted by the Procuring agency at the

Contract terms and prices. For the remaining Goods, the Procuring agency may elect:

- (a) to have any portion completed and delivered at the Contract terms and prices; and/or
- (b) To cancel their main demand pay to the Supplier an agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Supplier.

**28. Resolution of Disputes**

28.1 The Procuring agency and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

28.2 If, after thirty (30) days from the commencement of such informal negotiations, the Procuring agency and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms specified in SCC. These mechanism may include, but are not restricted to, conciliation mediated by a third party, adjudication in an agreed manner and/or arbitration.

**29. Governing Language**

29.1 The Contract shall be written in the language specified in SCC. Subject to GCC Clause 30, the version of the Contract written in the specified language shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchange by the parties shall be written in the same language.

**30. Applicable Law**

30.1 The Contract shall be interpreted in accordance with the laws of the Procuring agency's country, unless otherwise specified in SCC

**31. Notices**

31.1 Any notice given by one party to the other pursuant to this Contract shall be sent to the other party in writing or by cable, telex, or facsimile and confirmed in writing to the other party's address specified in SCC.

31.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

**32. Taxes and Duties**

32.1 Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Procuring agency.

All taxes are applicable as per government .

**33. Turnkey basis**

- The Purchaser will evaluate and compare bids on turnkey basis design/equipment, installation, commission and training and services. Equipment will purchase on the package basis.
- Equipment must be quoted with all the standard accessories.
- UPS/Power protection for the equipment shall be incorporate in the system or must be quoted separately.

(For complete accessories of equipment each section must complete quoted)

**CONTRACT PERFORMANCE BOND**

(Bank Guarantee on stamp paper at the rate prescribed by Government of Pakistan)

Guarantee No. \_\_\_\_\_

Executed on \_\_\_\_\_

Expiry Date \_\_\_\_\_

**Letter by the Guarantor (Bank) to the Employer (University)**

Name of Guarantor (Bank) with Address:

Name of Principal (Contractor) with address:

Penal Sum of Security (Bond), (in words and figures)

Letter of Acceptance No. \_\_\_\_\_ Dated \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the Tender Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal (Contractor) we, the Guarantor above named, are held and firmly bound unto the Chairman, CPC, LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES, Jamshoro, Sindh, acting through the Chairman, Central Purchase Committee LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES, Jamshoro (hereinafter called the Employer (University)) in the penal sum of amount stated above for the payment of which sum well and truly to be made to the said Employer (University) we bind ourselves, our heirs, executors, administrators and successors, jointly and severely, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal (Contractor) has accepted the Employer's (University's) above said Letter of Acceptance

for the supply, installation, putting into operation and demonstration of Equipment for for Category A. Laboratory Equipment Category B. Library Books.

SINDH.

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer (University), with or without notice to the Guarantor, which notice is hereby waived and shall also well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the Contract and of any and all modifications of the said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till the expiry of the guaranty period as per Clause of the Conditions of Contract.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We \_\_\_\_\_ (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer (University) without delay upon the Employer's (University's) first written demand without cavil or arguments and without requiring the Employer (University) to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's (University's) written declaration that the Principal (Contractor) has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to the Employer's (University's) designated Bank and Account Number.

PROVIDED ALSO THAT the Employer (University) shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling the said obligations, and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer (University) forthwith and without any reference to the Principal (Contractor) or any other person.

IN WITNESS WHEREOF, the above bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being here to affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body

\_\_\_\_\_

Guarantor (Bank)

**Witness:**

1. \_\_\_\_\_  
(Signature)

1. Signature \_\_\_\_\_

\_\_\_\_\_  
Corporate Seal)

2. Name \_\_\_\_\_

2. \_\_\_\_\_  
(Signature)

3. Title \_\_\_\_\_

\_\_\_\_\_  
(Name, Title, Address)

\_\_\_\_\_  
(Corporate Guarantor Seal)

## ARTICLES OF AGREEMENT

This Agreement made this \_\_\_\_\_ day of \_\_\_\_\_ 2015, by and between the Chairman, CPC, LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES, located at Jamshoro, Sindh, including his successors in office and Assignees / Agents, acting through the Chairman, Central Purchase Committee LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES, hereinafter called the "University", of the one part,

And

\_\_\_\_\_ of \_\_\_\_\_  
(name and designation of the authorized person)

\_\_\_\_\_, located at \_\_\_\_\_

hereinafter called the **Contractor** which expression shall include their successors, legal representatives of the second part.

Whereas the **University** Requires Books and Equipment for Institute of

s at Jamshoro. Whereas the **Contractor** has agreed to supply, install, put into operation and demonstrate the working of the said work valued at Rs.

\_\_\_\_\_ (amount in figures and words)  
in the period of \_\_\_\_\_ months, subject to the terms and conditions set forth, hereinafter, which have been accepted by the **Contractor**

### Now this Agreement witnesses 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 which, for the purpose of identification, have been signed by \_\_\_\_\_ on behalf of the **Contractor**, and by \_\_\_\_\_ (name and designation of the authorized person) \_\_\_\_\_ on behalf of the **University** all of \_\_\_\_\_ (name and designation of the authorized person) this shall be deemed to form and be read as a part of this Agreement viz.:
  - a) Articles of Agreement;
  - b) Instructions to Tenderer;
  - c) Conditions of Contract;
  - d) Contractor's Offer including the relevant correspondence prior to signing of this Agreement with all Annexure duly filled in;
  - e) The specifications of the equipment and other related items;
  - f) Bill of Quantity with prices.
3. In consideration of the payment to be made to the Contractor, the **Contractor** hereby **covenants** with the University **to supply, deliver, install, put into operation and demonstrate the working of the items in conformity in all respects of the Contract.**
4. The **University** hereby **covenants to pay** the Contractor in consideration of the supply, delivery, installation, putting into operation and demonstration of the working of the items, the contract price in the manner prescribed by the Contract and approved by the University.

In Witness Whereof the parties have hereunto set their respective hands and seals, the day, month and year first above written.

**Vice Chancellor LUMHS**

Signature \_\_\_\_\_

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

**WITNESSES:**

University Witness No.1: Signature: \_\_\_\_\_

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

Designation: \_\_\_\_\_

University Witness No.2: Signature: \_\_\_\_\_

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

Designation: \_\_\_\_\_

**Contractor**

Signature \_\_\_\_\_

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

Contractor's Witness No.1: Signature: \_\_\_\_\_

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

Designation: \_\_\_\_\_

Contractor's Witness No.2: Signature: \_\_\_\_\_

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

Designation: \_\_\_\_\_





- Form -- 1. - Application Letter
  
- Form-2. - General information of FIRM
  
- Form-3. - list of similar Projects/Procurements
  
- Form-4. - Details of Technical Staff
  
  
- Form-5. - Financial Standings/Obligations/GST/Income Tax.



**Form 1**

Letter of Application

Registered Business Name:

Registered Business Address:

Telephone & FAX:

To:            Chairman, Central Purchase Committee  
                  LUMHS, Jamshoro.

Sir,

I/We hereby apply for Procurement Services at LUMHS, Jamshoro as a registered Firm/Individual.

I/We authorize LUMHS or its authorized representatives to conduct any investigation to verify the statements, documents and information submitted and to clarify the financial and technical aspects of this application, from any person, bank, department, agency or firm.

The names and positions of the contact persons at our firm, who may be contacted for further information, if required are as follows:

Abc

Xyz



I/We hereby declare that

The statements made and the information provided in the application are complete, true and correct in every detail,

This firm has never been black listed by any Government / Autonomous bodies or private company or corporation and not involved in any litigation, arbitration with any client.

Faithfully

Authorized Representative of applicant

Official seal

Dated



## **Form – 2**

General information

Name of Company

Type of company

Status of company

Year of incorporation/establishment

Head office address

Telephone Nos

Fax Nos

E-mail address

Branch offices

Telephone No.

E-mail address

Attachments required

Attested copies of registration and ownership certificates of the FIRM

Detailed company profile must include main line of business, response time & after sale support statement, major client list, affiliation with international vendors and available resources for project execution.

**Name / designation/signature of**

**Authorized Person**



**Form – 3**

Details of Similar Nature Projects

S.N	Nature/Name of Project Procurement	Cost of Project	Name & Address of Company	Name & Designation of Contact person	Contact Details of the firm
<b>Projects</b>					

Note: List Down Projects most recently done on top

**Name/Designations/Signature of  
Authorized Person**





**Form – 5**

Financial Standing / Registration/Pre-qualification/Obligation/GST/bank statement/Audited accounts all documentary evidences.

Annual Turnover of the last 3 (years)

Applicants are required to submit the following along with their applications

**GST/INCOME TAX:**

Registration Nos. along with copy of registration certificates.

**Registration:**

Registration details with Govt/Semi-Gove/Private/Autonomous bodies.

**Obligations:**

List of litigation or arbitration cases, if any, with result thereof, if finalized.

**Workshop or Maintenance facilities:**

The Applicant has got proper workshop/Maintenance facilities along with human resource available, The location must be specified for inspection if necessary.

**Name/Designation/Signature of**

**Authorized Person**



**Technical Evaluation Criterion:**

- Company profile (year of in-corporation/registration): 10 marks
- Financial Standing 05 marks
- Similar nature projects experience 30 marks
- Key person qualification and experience 05 marks
- Availability of workshop 10 marks

Application with required documents shall be evaluated by Technical Evaluation Committee on the score obtained and firms obtaining above 70% & above shall be qualified for (Category A) Lab Equipment/Models and firms obtaining 50% for (Category B) Books.



## List of Equipments and Models for Anatomy Department

Sr#	Name Of Equipment	Qty	Unit Price	Total Amount
1.	<b>Set of Histology Slides , Neuro-anatomy Slides/CDs</b>	1		
2.	<b>Skele Torso</b> Skeleton disarticulates into seven pieces One side of skeleton hand-painted and lettered to show muscle origins and insertions Deluxe medical skull and vertebral column Deluxe brachial plexus, elbow and hand/wrist Deluxe male pelvis hinged and sagittally sectioned so that right hip swings 45° Deluxe hip, knee and foot ankle Left hip disarticulates with ball and socket joint Organs easily removed for individual study	1		
3.	<b>Pelvis Male or Female</b>  <u>Female Pelvis Model</u> Grade 7 to adult. One-half scale, mid-sagittal cross-section shows the anatomy of the female pelvis, including the ovary and fallopian tube. 6-1 4" x 2-3 4" x 5-1 2". Education card included.  <u>Male Pelvis Model</u> Grade 7 to adult. One-half scale, mid-sagittal cross-section showing the anatomy of a male pelvis and testis. Normal-size prostate is included with model. The education card shows three prostate stages including normal and benign hypertrophy. 7" x 1" x 4-3 4".	1		
4.	<b>Plastention</b> Upper Extremity - Musculature 1 Set	1 Set		
5.	<b>Plastention</b> Upper Extremity- Circulatory 1 Set	1 Set		
6.	<b>Plastention</b> Lower Extremity-Musculature 1 Set	1 Set		
7	<b>Plastention</b>	1 Set		

	Lower Extremity-Circulatory	1 Set		
8.	<b>Plastination</b> Knee Joint	1 Set	1 Set	
9.	<b>Plastination</b> Elbow Joint	1 Set	1 Set	
10.	<b>Plastination</b> Shoulder Joint	1 Set	1 Set	
11.	<b>Intrauterine Human Development Models and Fetal Ultrasounds CD-ROM</b> Features eight beautiful, hand-painted, anatomically accurate models from 4 weeks to 7 months (including 5-month twins). This series of models depicts the fetus inside coronally dissected pregnant uteri from the first through the seventh month of pregnancy. Second and third trimester fetuses are removable. The CD-ROM lets you view over 200 digital videos with accompanying text describing normal and abnormal fetal conditions during the first, second, and third trimesters. Fetal images on the CD-ROM range from 12 weeks to near term and were prepared in cooperation with experts at major teaching centers. Models are individually mounted on smoked Lucite® base. Models come with instruction manual and CD-ROM for Windows 98/ME operating systems.		1	
12.	<b>Human Reproduction and Development Kit with DVD</b> A thorough multimedia program, this kit presents an in-depth look at embryo and fetus development in humans. The accompanying text and teaching guide provide background information and study questions and include transparencies and blackline masters. The DVD titled <i>The Miracle of Life</i> , along with the transparencies, tells the fascinating story of embryonic and fetal growth. The blackline masters highlight important study points for students. The dramatic reproductions show the stages of human development in a unique, innovative way: plastic models and replicas each student can examine and study. The kit offers a direct and complete approach to an understanding of human reproduction from fertilization to birth.		1	

<p><b>13. Skeleton with hand-Painted and labeled Muscle Attachments.</b>  All the bones on the right half of the skeleton have been enhanced with hand-painted muscle origins (red) and insertions with their names hand-lettered in place. Where space limitations prevent spelling out muscle names, alphanumeric coding is used. Additional colors differentiate the components of the Erector spinae muscle complex from other muscle complex from other muscle origins and insertions of The neck and back regions -- iliocostalis: origins (orange), insertions (yellow) longissimus: origins (dark green) insertions (light green) On the left half of the skeleton, all bones and osteological features of anatomical and clinical significance have been Number coded for identification. Comprehensive Key to all coded structures is furnished.</p>	<p>1</p>
<p><b>14. Anatomage Table Virtual Dissection</b>  Both the accuracy of the real human anatomy and the quantity of pathological examples are unique aspects of the Anatomage Table. Combined with powerful hardware and software, the product offers unprecedented technology for medical education. Students are motivated and can easily digest complicated 3D shapes of human anatomy which makes the Table very effective for anatomy education. Pathological and Procedural Training Pre or Post Lab Review The Anatomage Table is sufficient to cover the full anatomy class. High accuracy and rich contents offer an excellent replacement to traditional cadaver based dissection. Since the data preserves the real life patient color and shape, the Table is more effective than embalmed cadavers.</p> <p><b><u>True Human Anatomy in a Life-Size Scale</u></b>  The data are from real patient scans or cadavers, and thus highly accurate. The Anatomage Table is the only system that can display true human gross anatomy in real life size. It makes for an excellent advanced education tool as well as a technical showpiece. With powerful radiology workstation features, it can be used for radiology, surgery case review, patient consultation, and research purposes as well as anatomy education.</p>	<p>1</p>

	<p>The Anatomage Table opens any medical imaging data and provides high quality interactive 3D renderings. Whether it is your own scan or one of the Digital Anatomy Library cases, the Table shows full 3D anatomy that can be intuitively controlled. Anatomy and radiology can now be seamlessly introduced and integrated in the same course.</p> <p><b>Clean, Safe, Reusable Technology</b></p> <p>The Anatomage Table is simple to operate and over time will save customers money. There are no recurring costs or disposal concerns like traditional cadaver labs. Likewise, costly chemicals or ventilation requirements are not required and the virtual cadavers can be used repeatedly for safe and consistent performance year after year.</p> <p>Module: Digital Anatomy Library Module Invivio5 Imaging Software Medical Design Studio Module</p>		
15.	<p><b>Special Edition Premier skull looks just like real bone.</b></p> <p>Special Edition premier skull has been hand-rubbed with A custom formulated stain, highlighting every suture, fissure, fossa and pore, and creating a convincing Natural bone appearance. A magnificent specimen For study and display. For study and display.</p>	1	
16.	<p><b>Lumbar Spine with Musculature, Nerves, Pelvis, and Femur Heads</b></p> <p>Natural cast from the bones of an adult male, this Flexibly articulated specimen has been fitted with Synthetic muscles of resilient plastic attached with Elastic bungee cord. Skeletal components included are: all five Lumbar vertebrae (L4 and L5 are colored blue and Exhibit facet syndrome and arthritic bone degeneration.</p> <ul style="list-style-type: none"> <li>* Complete pelvis with sacrum and coccyx</li> <li>* movable femur heads. The following muscles are included: quadrates Lumborum * Piriformis * Psoas major * Iliacus * lumbar and sacral sections</li> </ul>	3	

	of multifidus * gemellus superior and inferior * gluteus medius and minimus * and obturator internus. Other features included are: paired spinal Nerves * sciatic nerve complex * sacrospinal ligament * and a herniated disc between L4 and L5. Complete with suspension stand.			
17.	<b>Three part model fleshes out the Structural Anatomy of the hand and Wrist.</b> Complete with fingerprints. this exceptionally Detailed full-scale model of the left hand presents a Superficial dissection of its dorsal surface which Exposes the veins, nerves, tendons, and the extensor Retinaculum. while the palmar surface features three Dissections at progressively deeper levels; 1 <sup>st</sup> layer – palmar aponeurosis * 2 <sup>nd</sup> layer - exposes the flexor retinaculum, superficial palmar arch, and tendons of the flexor digitorum and lumbricales muscles * 3 <sup>rd</sup> layer - reveals the deep palmar arch, and deep layer of muscles, nerves, tendons and ligaments. 48 anatomical structures are coded for identification in the accompanying key.	3		
18.	<b>Auditory Ossicles.</b> Life size replicas of the three tiny bones of the Middle ear, the malleus (hammer), incus (anvil) and Stapes (stirrup) cast from actual human specimens. Ossicles are labeled and embedded in plastic for Protection.	1		
19.	<b>Lifting manikin distinguishes right from wrong.</b> Ingeniously engineered and executed, this functional Figure dramatically contrasts correct and incorrect Lifting techniques, and exhibits the stress and distortion Of the lumbar spine resulting from improper Lifting posture. The manikin will raise a weight from either of Two clearly marked positions on its base. Illustrations on the base detail the effects of right and wrong technique on lumbar vertebral alignment. No assembly required. Complete with booklet providing background information	2		
20.	<b>Nine Part muscular Anatomy of the leg and Hip.</b> Nine Part Muscular Anatomy of the leg and Hip.	1		

	<p>dissectible into a total of nine parts, this ¾ scale reproduction depicts the muscles, nerves, bones, tendons and blood vessels of the left leg, foot and hip. eight superficial muscles detach individually to expose the deeper muscle layer. Key features are numbered for identification in the accompanying Key card. Mounted vertically in an inverted position On a pedestal base the leg stands 30 inches (77 cm) tall</p>			
21.	<p><b>Functional Shoulder Joint</b> Model is articulated with flexible ligaments. this cast replica includes the proximal half of the Humerus, clavicle and scapula, fitted with flexible Synthetic ligaments, which demonstrate motions of the shoulder joint. The model is mounted on a Display stand. 6x5x8 inches overall (16x12x20cm)</p>	1		
22.	<p><b>Right Half of Head and Neck Musculature.</b> Sagittally sectioned, unbreakable vinyl replica Represents the human head and neck down to the Level of the clavicle. Surface muscles and blood Vessels are depicted on one side, while the other Shows the median section through the interior. 119 Features are numbered and identified in the corresponding Key. Overall dimensions: 13x8x7 inches.</p>	1		
23.	<p><b>Human Sinuses Model</b> 4 times life size, in hand painted vinyl, this model that exposes all the human sinuses. Perfect as a surgical trainer. key anatomical landmark Such as the internal carotid artery and optic nerve are Portrayed. The middle turbinate is detachable, Exposing the partially dissected unciate, infundibulum, and ethmoid bulla. The model pivots on a hardwood base and Measures; 14x12x4 inches.</p>	1		
24.	<p><b>Giant Regional Brain</b> Besides exhibiting some 120 numbered neurostructures, this giant brain replica incorporates nine vibrant Colors to differentiate the front, parietal, Occipital and temporal lobes, as well as the cerebellum,</p>	2		

	Brain stem and the motor, somato sensory and Limbic cortices. In addition, each of the lobes, the Limbic cortex, pre and post central gyri is identified With hand lettering. Complete with key to numbered Structures and reproducible copy masters, the model Measures 8x8x10 inches (2x20x25cm) overall.			
25.	<b>Sagittal Brain Section</b> Sectioned through the right side of the brain and Base of the skull, this enlarged section is also double sided. One surface conforms to the median plane and includes a section of the falx cerebri. The reverse surface depicts a sagittal cut which Exposes the lateral ventricle. 49 color coded features of the brain and meninges are identified in the accompanying key. The model rests on a detachable stand. Overall dimensions: 10x7x5 inches (25x18x12cm)	3		
26.	<b>Deluxe Spinal Cord.</b> 6 times life size, this vinyl plastic model replicates a segment of the upper thoracic spinal cord. Sectioned both longitudinally and in cross section, a portion of white matter of the right half has been cut away to expose the anterior and posterior nerve roots. 30 numbered features are identified in a corresponding key. Overall dimensions: 12x8x5 inches.	1		
27.	<b>Deluxe Human brain Stem model</b> Representing the human brain stem dissected Free of over-lying cerebral tissue, this free-standing plastic model is mounted vertically, permitting access from all aspects. furnished with an illustrated guide which Identifies the brain stem stands 9 inches. 23 cm high on a hardwood base.	1		
28.	<b>Giant Eye in Bony orbit.</b> 6 times life size (twice the size of competitors' models) and dissectible into eight parts, this unbreakable vinyl eyeball sits in its bony socket to provide a better understanding of its relationship with major blood vessels, muscles and nerves .77 and numbered features are identified in the accompanying key. Also included is a reproducible	1		

	black line copy master with numbered parts that correspond to the model, making it easy to print illustrated study sheets. Answer key is on reverse. overall dimensions: 12x10x9 inches.			
29.	<b>Deluxe Eight part Ear.</b> 5 times life size in unbreakable vinyl, our most detailed ear model provides a more complete perspective of the middle and inner ear structures within the temporal bone. all the skin has been peeled off the detachable Auricle to expose its cartilaginous structure, Muscles, auricular arteries and nerves, as well as the entrance to the auditory canal. The cochlea itself separates into Halves to reveal cochlear, vestibular and tympanic Ducts and the branching of the cochlear nerve. 95 hand numbered features are identified in the corresponding key. Overall dimension 17x11x8inch	1		
30.	<b>Nose and olfactory Organ Set.</b> Two unbreakable plastic models on one hardwood base depict the nose and nasal passages enlarged to 4 times their normal size. The model on the right shows the nasal septum, its arteries and veins, the inner group of olfactory nerve filaments, nasopalatine nerve, soft and hard palate, uvula and the cranial floor. The model on the left depicts the left nostril, olfactory nerve, bulb and filaments. 32 numbered features are identified in the accompanying key. Overall dimensions: 18x4x14 inches.	1		
31.	<b>Giant Functional Larynx.</b> 4 times life size and uniquely American made, this unbreakable vinyl replica is complete with hyoid bone and epiglottis. The right side depicts only the cartilaginous structure, while the left shows the musculature as well Movable vocal cords, arytenoids cartilages and Epiglottis all accurately demonstrate their functions. Perfect for speech correction and music, as well as anatomy and physiology, 55 hand-coded Features are identified in the accompanying	2		



	key.Overall dimensions: 15x7x6"			
32.	<p><b>Human lungs Reproduction</b></p> <p>Cast from actual human lungs in soft resilient plastic, this reproduction features five lobes that are color coded and held together elastically for easy viewing of septa, bronchioles, pulmonary arteries and veins.Key to coded structures and detachable Hardwood display base.</p>	1		
33.	<p><b>The Heart of America PLUS</b></p> <p>Possessing all the exclusive features of the original Heart of America PLUS. an accurately scaled branchiocephalic trunk, left Common carotid and left subclavian artery. Complete with right and left internal thoracic (internal mammary) arteries. PLUS attachable/detachable bypass vessels of flexible tubing in a variety of lengths.Simply attach tubing with build-in quick connects to model to configure single, double, triple, LIMA or bilateral IMA bypass grafts.Overall dimensions on base 7x7x17 inches.</p>	1		
34.	<p><b>Liver and Gallbladder.</b></p> <p>1&amp;half times life size, the ventral surface of this replica is dissected to expose major blood vessels and bile ducts in deep relief. Color coding clarifies the complex vascular network, with contrasting colors differentiating the portal vein and its branches, the gallbladder and bile ducts,the hepatic artery and the hepatic veins. 28 hand numbered structures are identified in the accompanying key. Overall dimensions: 13x11x6 inches</p>	2		
35.	<p><b>Female Neurovascular Skull with Cervical Spine, on Stand.</b></p> <p>Because it doesn't suffer from the visual Limitations of 2 dimensional diagrams Allowing study from all aspects our neurovascular skull eliminates much of the confusion associated with neurocranial studies. Our adult female medical skull and all seven Cervical vertebrae are situated on a stand.</p>	1		

36.	<p><b>Three part model fleshes out the Structural Anatomy of the hand and Wrist.</b></p> <p>Complete with fingerprints, this exceptionally Detailed full-scale model of the left hand presents a Superficial dissection of its dorsal surface which Exposes the veins, nerves, tendons, and the extensor Retinaculum, while the palmar surface features three Dissections at progressively deeper levels; 1<sup>st</sup> layer – palmar aponeurosis * 2<sup>nd</sup> layer – exposes the flexor retinaculum, superficial palmar arch, and tendons of the flexor digitorum and lumbricales muscles * 3<sup>rd</sup> layer – reveals the deep palmar arch, and deep layer of muscles, nerves, tendons and ligaments. 48 anatomical structures are coded for identification in the accompanying key.</p>	1	
37.	<p><b>Deluxe KnowBody Teaching Torso with Detachable Head and Hardwood Turntable Base.</b></p> <ul style="list-style-type: none"> <li>* 23 dissected or dissectible structures</li> <li>* 16 detachable parts</li> <li>* 300 hand numbered anatomical features</li> </ul> <p>much more internally detailed than the Basic and advanced knowBody torsos, with emphasis placed on the brain, cardiopulmonary and digestive Organs, the Deluxe KnowBody has a detachable Head which aids in studies of the brain head and neck. other detachable parts include:</p> <ul style="list-style-type: none"> <li>* Eyeball with extraocular muscles</li> <li>* 4 part brain half with arteries</li> <li>* Left lung with ribs (with blood vessels and bronchioles sectioned open)</li> <li>* Right lung with ribs (with blood vessels and bronchioles intact)</li> <li>* Heart (2 halves)</li> <li>* Liver and gallbladder with color coded blood vessels and ducts (includes diaphragm section)</li> <li>* Stomach (2 halves)</li> <li>* large intestine</li> <li>* Small intestine</li> <li>* Torso unit. Stands 38 inches (97 cm) tall on rotating hardwood turntable base.</li> </ul>	1	

38.	<b>Flexible Spine with Movable Femur Heads with Suspension Stand.</b> Full size replica ,life like accuracy in color ,texture and detail including completely flexible articulation to reproduce natural vertebral movements alignments, occipital bone of skull, spinal cord with medulla, vertebral arteries, paired spinal nerves, detachable sacral flap which expose the branching cauda equina, proximal femur segments articulated to duplicate movement at the ball and socket joint of the hip.	03		
39.	<b>Flexible Thoracic spine.</b> Encompassing the twelve thoracic vertebra, T1-T12 and their intervertebral disc ,complete with resilient spinal cord and paired spinal nerves,mounted on a wooden base.	1		
40.	<b>Cervical spine with Musculature and Nerves.</b> Muscle included are rectus capitis posterior major and minor obliquus capitis superior, interspinales, scalenus medius, scalenus posterior, longus capitis,longus colli and multi fidis (cut) with skeletal muscles flasheard set.	1		
41.	<b>Lumber Vertebrae with Pelvis Showing Lumber and sacral plexi.</b> 5 lumber vertebrae, together with the pelvis, the spine model illustrate a herniated disc, as well as lumber and sacral plexi	1		
42.	<b>Male and Female Bony Pelvis.</b> Each pelvis exhibits four pairs of sacral foramina	2		
43.	<b>Life Size axial torso.</b> Depicts human anatomy in cross section. Human internal anatomy as viewed in axial plane. 15 axial sections in full color. Mounted on stand size 51x16x14 inches.	1		
44.	<b>Dual Sex Torso with open back, 28 parts</b> Two part heart,two parts lung,two parts stomach,four parts intestinal tract,front half of kidney,liver with gall bladder,7 <sup>th</sup> thoracic vertebrae,female chest wall,three part female genital insert with embryo,four part male genital	1		

	insert.		
45.	<p><b>Binocular Microscope</b>  <b>Stand:</b> sturdy stand with antirust antibacterial materials. Heat isolating hand rests  <b>Viewing Bodies:</b> 45<sup>o</sup> inclined, 360<sup>o</sup> rotatable dovetail, interpupillary distance 54 – 74mm  <b>Eyepieces:</b> Wide Field focusable paired eyepieces 10x/18mm with foldable eye guard, lockable, antifungal.  <b>Nosepiece:</b> Quadruple nosepiece (ball bearing type) with rubber grip, click stop for exact position.  <b>Objectives:</b> LP Series DIN Semi-Plan Achromatic objective 4x, 10x, 40x (Spring loaded), 100x (Spring loaded, oil), antifungal  <b>Mechanical stage:</b> Rackless stage, size 135 x 124mm, X/Y travel range 76mm x 50mm, low drive movement controls, single specimen holder.  <b>Condenser:</b> Sub stage abbe condenser NA 1.25 with aspheric lens and Iris diaphragm. With snap-in blue filter. Rack and pinion movements on metal guides.  <b>Focusing:</b> Co-axial coarse and fine focusing on ball drive system for smooth operation, fine drive movement 0.2mm/division, tension adjustment for torque control.  <b>Illumination:</b> Halogen 6V-20W illumination with variable illumination control. Up to 200,000 hours of Halogen lamp life.  <b>Electrical:</b> Universal power supply (100V-240V, 50/60 Hz) Built-in voltage stabilizer</p>	10	
46.	<p><b>Human Histology Slides, Box of 100 ,Carolina</b>  Providing a microscopic look at the anatomy of animal cells and tissues, this comprehensive collection helps students learn to identify different organs and tissues. The high-quality set of 100 representative (human or comparable mammalian tissue) slides has been recommended by medical schools for instruction at the college, graduate, and medical school levels. All major organ systems and tissues are represented</p>	2Boxes	
47.	<p><b>Slide Boxes Large (24 Slides)</b>  Including General And Special Histology</p>	5	

<b>48. Multimedia Projector</b>	<b>3</b>		
<b>49. Wax bath</b>	<b>1</b>		
<b>50. Microscope 5 headed Multi Head Microscope</b> Stable stand with convenient location of focus controls with hand rests and heat resistant Nosepiece Reversed Quintuple revolving nosepiece with rubber grip for traction. Stage Double Layers Mechanical Stage 185x142mm. Moving Range 75x55mm Focussing System Co-axial coarse and fine focusing system with auto focus stop Objectives Infinity Corrected Full Plan Achromatic Objectives Anti Fungus Coated 4x, 10x, 20x & 40x (Spring Loaded), 100x (Spring Loaded, Oil Immersion) Eye Piece Widefield 10x. Inter-pupillary distance and diopter adjustment Illumination Built-in Koehler illumination 12V-100W, Power supply 220-240V 50/60Hz. Inbuilt transformer and Potentiometer and Power Cord. Condenser Abbe Condenser N.A. 1.25 having Aspheric lens, centrable Compensation Free Trinocular Head, inclined at 30°. 360° Rotatable. Interpupillary Distance 48-75mm Qty: 1 Nos. Observation Heads Compensation Free Binocular head, inclined at 30°. 360° Rotatable. Interpupillary Distance 48-75mm Qty: 4 Nos. Pointer Green LED Pointer. Brightness Adjustable	<b>1</b>		
<b>51. Microtome</b>	<b>1</b>		
<b>52. Slide Dryer</b>	<b>1</b>		
<b>53. High frequency Film X-ray Viewer double bank with CCFL Lamp 20,000 hour lamp life</b>	<b>2</b>		
<b>54. Fire Extinguisher</b>	<b>1</b>		

55.	<p><b>TEACH CAM WITH BUILT IN MICROPHONE &amp; ILLUMABASE</b></p> <p>Electronic Iris with Flicker less mode 65cm flexible gooseneck 1/4" color CCD image sensor Nordic box with complete Accessory package &amp; Microscope adapter kit. S. Video &amp; complete video output, integrated microphone &amp; preamplifier. Illumabase is a built-in LED light based used to view and present specimens. 35mm slides &amp; microscope slides without the use of Over Head / Slide Projectors. Compatible with most monitors TV.S VCRS capture cards. LCD 7 DPL projectors.</p> <p><b>Image sensor:</b> 1/4" color CCD  <b>Gooseneck:</b> 27"/65cm  <b>Optics:</b> Custom 8mm lens  <b>Focal Length:</b> C- mount  <b>Iris:</b> Electronic Iris with flicker less mode  <b>Video outputs:</b> S-video/composite  <b>Resolution:</b> NTSC &amp; PAL  (V)400 (H) 370  <b>Pixel count:</b> 291 K  <b>Sensitivity:</b> 1.5 Lux  <b>Illumination S/N (min):</b> 46 db  <b>Illumabase Light Source</b> White LED  <b>Audio:</b> Integrated microphone &amp; Preamplifier.  <b>Power supply:</b> 12 vdc</p>	2		
56.	<p><b>WATER BATH</b></p> <p>Tissue flotation bath with removable glass tray. Stainless steel platform for drying and stretching of the sections, black, plastic coated Electronic. temperature control from 30 °C to 55 °C Temperature of working plate approximately 50 °C Illumination by fluorescent lamp  Tray: 165 D x 270 W x 50 H mm  Platform: 75 D x 370 W mm</p>			
57.	<p><b>B.P. APPARATUS</b></p> <p>Measuring Range 0 – 300 mmHg  Mercury purity 99.99%</p>			

	Cuff Velcro size 14 cm x 54 cm			
58.	LCD T.V 40 inch	1		

## Revised list of lab equipments according to PMDC

### List of Equipments Physiology Department (Lab)

Sr#	Name Of Equipment	Qty	Unit Price	Total Amount
1	<p><b>Microscope Binocular</b>  <b>Stand:</b> sturdy stand with antirust antibacterial materials. Heat isolating hand rests  <b>Viewing Bodies:</b> 45° inclined, 360° rotatable dovetail, interpupillary distance 54 – 74mm  <b>Eyepieces:</b> Wide Field focusable paired eyepieces 10x/18mm with foldable eye guard, lockable, antifungal.  <b>Nosepiece:</b> Quadruple nosepiece (ball bearing type) with rubber grip, click stop for exact position.  <b>Objectives:</b> LP Series DIN Semi-Plan Achromatic objective 4x, 10x, 40x (Spring loaded), 100x (Spring loaded, oil), antifungal  <b>Mechanical stage:</b> Rackless stage, size 135 x 124mm, X/Y travel range 76mm x 50mm, low drive movement controls, single specimen holder.  <b>Condenser:</b> Sub stage abbe condenser NA 1.25 with aspheric lens and Iris diaphragm. With snap-in blue filter. Rack and pinion movements on metal guides.  <b>Focusing:</b> Co-axial coarse and fine focusing on ball drive system for smooth operation, fine drive movement 0.2mm/division, tension adjustment for torque control.  <b>Illumination:</b> Halogen 6V-20W illumination with variable illumination control. Up to 200,000 hours of Halogen lamp life.  <b>Electrical:</b> Universal power supply (100V-240V, 50/60 Hz) Built-in voltage stabilizer</p>	10		
2	<p><b>Spectro photometer</b>  Microprocessor control, 16x2 LCD display. Auto zero and auto 100%T adjustment provided. Calibration curve can be set up by either measuring or entering up to 10 standards or entering K and B factors directly via the keyboard. Parameters can be saved for later use.  Up to 10 calibration curves can be stored and edited for user's convenience. Data can be printed on an optional desktop printer and can be downloaded to a PC through RS-232. PC control provided for more accurate and flexible measurement requirements (optional).  Auto wavelength control (optional).  <b>Specifications:</b>  Wavelength: 320~1100nm</p>	1		



	<p>Wavelength Accuracy: <math>\leq 1 \pm 2.0\text{nm}</math>  Wavelength Reproducibility: <math>\leq 1\text{nm}</math>  Monochromator: Single-beam C-T type, grating 12001./mm  Photometric Accuracy: <math>\leq 10.5\%T</math>  Photometer Reproducibility: <math>\leq 0.3\%T</math>  Stray Light: <math>\leq 0.1\%T</math> (NaNO<sub>2</sub> at 340nm)  Spectral Bandwidth: 5nm (1, 2, 4nm optional)  0%T Stability: <math>\leq 0.2\%T</math> (30min)  100%T Stability: 0.001A/30min (at 500nm, after warning up)  Operation Mode: T, A, C, E  Photometric Range: -0.3~3A  Display: 16x2 LCD  Detector: Silicone Photodiode  Light Source: Tungsten halogen lamp.  Power Requirement: 220/110V <math>\pm 10\%</math>, 50/60Hz  Power Consumption: 100W  Dimension: 530x410x210mm  Net weight: 15kg  Complete with 16 glass cells, 4 quartz cells.</p>			
3	<b>Centrifuge Machine 6 Tubes</b>	1		
4	<b>Refrigerator 14 Cu ft</b>	1		
5	<b>ECG machine</b>	1		
6	<b>ESR Stands with tubes</b>	5+25		
7	<b>Haemo cytometer</b>	20		
8	<b>Thermometers (clinical)</b>	50		
9	<b>Heamoglobinometers</b>	15		
10	<b>Test tube Racks</b>	10		
11	<b>Student kymograph</b>	5		
12	<b>Microhaematocrit centrifuge</b>	1		
13	<b>Measuring Cylinders/Beakers</b>	10		
14	<b>Ishihara Charts</b>	5		
15	<b>Lancets</b>	5 packets		
16	<b>Tunning fork 100 Hz</b>	15		
17	<b>Stopwatches</b>	15		
18	<b>Staining trays</b>	10		
19	<b>Syringes 5cc (B.D)</b>	1000		

20	<b>Slide Boxes</b>	12		
21	<b>Filter Papers</b>	10		
		<b>Pack</b>		
22	<b>Percussion / Clinical / Reflex Hammers</b>	20		
23	<b>Oxygen cylinders</b>	2		
24	<b>Perimeter With Object, Perimeter model 14014 Lafayette, Stand perimeter with semicircular perimeter device with fixation point, five targets (blue, green, yellow, red, and white), a wand for presenting targets, five right eye charts, five left eye charts, stand.</b>  Subject fixes eyes at midpoint in the perimeter's semicircular while experimenter moves a pointer to identified by subject at his / her visual periphery. This device is used to map areas of the retina sensitive to different colored stimuli.  Stand perimeter with semicircular perimeter device with fixation point, five targets (blue, green, yellow, red, and white), a wand for presenting targets, five right eye charts, five left eye charts, and stand.	10		
25	<b>Sphygmomanometer</b>	15		
26	<b>Stethoscope</b>	25		
27	<b>Class room infrared Transmitter</b> The SimulScope allows physicians and students the ability to hear live physiological sounds with up to 20 other people at the same time. The SimulScope provides less intrusion on patients as only one stethoscope is placed on him or her. It is also effective in the simulation lab or classroom when used with simulators or manikins. This FDA approved product is popular in both universities and hospitals.	1		
28	<b>SAM student auscultation Manikin</b> SAM II, the Student Auscultation Manikin is a new innovation in teaching and learning heart, breath, & bowel sounds. Containing the largest sound library available, SAM II is a portable and easy to use manikin. While SAM II is used in many simulation centers, it is also easily moved into a classroom or auditorium for group instruction.	1		
29	<b>Vision E type (snellen's chart)</b>	5		
30	<b>Weighing machine</b>	2		
31	<b>Ear Specula (3,4,5,6-mm)</b>	5		
32	<b>Nasal Speculum 8mm</b>	5		
33	<b>pH meter clinical</b>	1		

34	<p><b>Audiometer Pure tone pulse type.</b>  Test Air Conduction, Bone Conduction, Controlateral Masking  Nbn, Wn. Transducer Air Conduction TDH49 / ER-3A / ER-5A  Transducer Bone Conduction Bone vibrator B.71  Pure Tone Frequency AC: 125 Hz - 8000 Hz  BC: 250 Hz - 6000 Hz  Intensity Range Pure Tone Air Conduction: -10 dB HL ... +110 dB HL (1000 Hz)  Bone Conduction: -10 dB HL ... +65 dB HL (1000 Hz)  Intensity Range Masking Nbn 0 dB EM ... +80 dB EM  Intensity Range Masking Wn 0 dB EM ... +80 dB EM Signal  Mode Normal ON, Normal OFF.  Pulsed (2,5 Hz, 50%, 200+200 mS).  Masking with Traking  External Input  Soket USB type A to connect Pendrive for saving the graphic Audiogram.  EN 60645-1, EN 60645-2  Must be CE Marked  Make: Europe</p>	1	
35	<b>Balance analytical</b>	1	
36	<b>Tongue Depressor Plastic</b>	10 packs	
37	<b>Torches</b>	10	
38	<b>Oven electric with thermostat</b>	1	
39	<p><b>Human and Physiology Recording Data Acquisition System with following accessories along with software Lab tutor V.3and upgradeable Lab Tutor software and Experiments software .</b>  Pulse Transducer , Respiratory Belt Transducer ,  Sphygmomanometer, Push button switch, Cardio Microphone,  Hand Dynamometer, Dry Earth Strap, Shielded Lead Wires(5Alligator Clips,25 cm), EEG Flat Electrodes, Reusable ECG Electrodes, Disposable ECG Electrodes, Abrasive Gel, Electrode Cream, Electrode Paste, Alcohol Swap.  Human Respiratory Kit,(Spiro meter Pod, Respiratory Flow Head, Clean bore tubing &amp; adaptor, Student Respiratory Kit),  Nerve &amp; Muscle Kit (Bridge Pod, Force Transducer, Animal Nerve Stimulating Electrode, Nerve Chamber with cables, differential pod Input cables .Stimulator cable).  Shielded Bio Amp Cable, Shielded lead wire and Stimulating Bar Electrode.</p>	2	

40	<b>VITALOGRAPH .</b> Autoclaveable Flow head. Parameters measured VC, IVC, FVC, FEV1, FEV1Ratio, FEV6, PEF (L/min), FEF25-75%, FEF25%, FEF50%, FEF75%, PIF, MVVInd, Lung Age over 50 test parameters, Choice of child incentives, Stand Alone Hand Held unit, Touch Screens operation, Including PC Software, Flow detection principle Fleisch Type Pneumotachograph, Back pressure Less than 0.1kPa-L-second @ 14L/s, complies with ATS ERS 2005	2	
41	<b>Student's spirometer</b>	5	
42	<b>Thermal Paper roll for vitalograph box of 5</b>	20	
43	<b>Tred mill</b>	1	
44	<b>Finger pulse oxymeter</b>	1	
45	<b>Frog's board &amp; dissection boxes</b>	5	
47	<b>Heart pumping model</b> Easy-to-use, multi-sensory model uses a simple hand pump to demonstrate basic heart and pulmonary blood flow. Create a memorable exploration of how the heart and lungs work together for oxygen exchange. No mess - liquid is sealed in! Includes clearly labeled heart chambers, main artery, veins and lungs, plus activity guide. 12" L x 11" W x 5" D. Grade 3 and up.	1	
48	<b>Physiological Charts Set of 9</b>	1 Set	
49	<b>Reflex Kit</b> Used for stimulating and measuring human reflexes	2	
50	<b>E.O.G Kit</b> Configured for human eye movement	2	
51	<b>Single channel Stimulator</b> Pulse: Frequency: 1 - 99999 p.p.s. (10 KHz) Duration: 1 $\mu$ s - 9999 ms Train: Interval: 0.1 - 999.9 s Duration: 1 - 9999 ms Output: Constant voltage: 0 - 150 V (LE 12106 150) (1 V resolution) Constant voltage/current: 0 - 100 V/mA (1 V/mA resolution) Accuracy: $\leq$ 1% for timings $\leq$ 1% for output Sync out: 5 V TTL signal synchronic w/pulse onset DC DC level with the set amplitude	2	

	External trigger: TTL signal allowing for the external control of the pulse onset Max. power output: 20 W Power supply: 220/110 V, 50-60 Hz			
<b>52</b>	<b>Vitalo Graph mouth piece</b> (one way Each Box comprise 200 Pieces)	<b>2</b> <b>Boxes</b>		
<b>53</b>	<b>Vitalo Graph Mouth Pieces</b> (Two way box of 200)	<b>2</b> <b>Boxes</b>		
<b>54</b>	<b>Human Physiology Charts</b>	<b>5 Sets</b>		

## List of Equipments for Biochemistry Department

Sr#	Name Of Equipment	Qty	Unit Price	Total Amount
1	<p><b>Spectrophotometer</b>  <b>Features:</b>                      Microprocessor control. 16x2 LCD display. Auto zero and auto 100%T adjustment provided.                      Calibration curve can be set up by either measuring or entering up to 10 standards or entering K and B factors directly via the keyboard. Parameters can be saved for later use.                      Up to 10 calibration curves can be stored and edited for user's convenience.                      Data can be printed on an optional desktop printer and can be downloaded to a PC through RS-232.                      PC control provided for more accurate and flexible measurement requirements (optional).                      Auto wavelength control (optional).</p> <p><b>Specifications:</b>                      Wavelength: 320~1100nm                      Wavelength Accuracy: <math>\leq 1 \pm 2.0</math>nm                      Wavelength Reproducibility: <math>\leq 1</math>nm                      Monochromator: Single-beam C-T type, grating 1200L/mm                      Photometric Accuracy: <math>\leq \pm 0.5\%</math>T                      Photometer Reproducibility: <math>\leq 0.3\%</math>T                      Stray Light: <math>\leq 0.1\%</math>T (NaNO<sub>2</sub> at 340nm)                      Spectral Bandwidth: 5nm (1, 2, 4nm optional)                      0%T Stability: <math>\leq 0.2\%</math>T (30min)                      100%T Stability: 0.001A/30min (at 500nm, after warning up)                      Operation Mode: T, A, C, E                      Photometric Range: -0.3~3A                      Display: 16x2 LCD                      Detector: Silicone Photodiode                      Light Source: Tungsten halogen lamp,                      Power Requirement: 220/110V<math>\pm 10\%</math>, 50/60Hz                      Power Consumption: 100W                      Dimension: 530x410x210mm                      Net weight: 15kg                      Complete with 16 glass cells, 4 quartz cells.</p>	2		
2	<b>Centrifuge Machine</b>	2		
3	<b>WATERBATH</b>	4		

**Digital Precise Water Bath with Digital Fuzzy Control System**

**Applications & Features:**

Ideal for biotechnology, clinical, environmental, medical petroleum, pharmaceutical or Industrial application

Digital fuzzy controller implementing maximum temp. accuracy

Simplest control by jog-shuttle switch and LCD display

User's self-compensation function to control difference between real temperature and

Indicated temperature ( $\pm 10.0$  °C)

Stainless steel bath for superior durability & high thermal efficiency

Stainless steel lid prevents evaporation and keeps constant temperature

Over temperature & over current protection, sensor error detection

Digital timer function (99 hr 59min): delay time and operation time can be controlled

Storage function for the set values of temperature and timer

Alarm function: error status and timer-end

Locking mode supported for experimental safety (input to jog-shuttle can be disabled)

**Technical Specifications:**

Dimension (w x d x h): bath (mm): 500 x 295 x 150

Heater: 2 kW

Capacity: 22 Lit

Temp. Range: Ambient + 5 °C ~ 100 °C

Temp. Accuracy:  $\pm 0.1$  °C

Temp. Uniformity:  $\pm 1.0$  °C

Temp. Sensor: PT100

Controller: Digital fuzzy controller with jog-shuttle switch (Turn + Push)

Display: Digital LCD display (Temp + Timer)

Timer: 99 hr 59 min (Delay & Continues function included)

Safety Devices: Over temp. and over current protection, sensor error detector

Material internal: Stainless steel (#304)

Material external: Powder coated steel

Lid: Including stainless steel flat lid

Drain valve: Available

Others: Storage function (Temp., Timer)

	<p>Locking for mode (Jog-Shuttle input disabled)  User self-compensation function  Alarm (Error Status and Timer-end)  Power Supply: 220VAC. 50/60Hz.</p>			
4	<p><b>OVEN Horizontal Flow Ovens, Forced-Air type  With Digital Fuzzy Control &amp; Digital Back Light  LCD</b></p> <p><b><u>Applications &amp; Features:</u></b>  PL (Product Liability) Insurance.  CE Certificate.  Suitable for drying, baking, conditioning, curing, pre-heating aging.  Digital fuzzy control system implementing superior temperature accuracy.  High quality LCD with back light function used.  Simplest control by Jog-shuttle switch.  RS232C interface for remote monitoring and controlling with PC.  Ambient to 250 °C range, accuracy of <math>\pm 0.3</math> °C.  Maximum temp. uniformity by forced convection: rear side fan/heater mechanism (<math>\pm 1\%</math> uniformity).  Stainless steel chamber and chrome coated shelves corrosion resistance.  Perfect heat insulation made by heat resistance rubber packing and air flow layer (AFL).  The strengthened double fold glass windows for observation without opening door and protect users from high temperature. (105-/155-/305-lit)  Over temp. and over current protector, sensor error detector.  2 chrome coated steel shelves included.</p> <p><b><u>Technical Specification:</u></b>  Dimension internal (mm): 485 x 405 x 535  Capacity: 105 lit</p> <p>Heater: 1.2 kW  Temp. Range: Ambient +5 °C to 250 °C  Temp. Accuracy: <math>\pm 0.3</math> °C  Temp. Uniformity: <math>\pm 1\%</math> of the reached Temp.  Temp. Sensor: PT100  Controller: Digital fuzzy controller with jog-shuttle switch (turn + push)  Display: Digital LCD display with back light function  Timer: 99hr 59min (delay &amp; continuous function included)</p>	2		



	<p>Material Internal: Stainless steel  Material External: Powder coated steel  Material Insulation: Glass wool  Shelves: 2 chrome coated steel shelves of adjustment position  Door Gasket: High temperature grade foamed silicone rubber  Ventilation: Stainless steel cap. Dia. 40mm x 2ea  Circulation: Forced convection blower FAN  Safety Device: Over temp. and over current protector, sensor error detector  Others: RS232C interface for monitoring and controlling with PC.  Storage function (Temp. Timer)  Locking mode (Jog-Shuttle input disabled)  Alarm (Error status and timer end)  2 polo plug  Power Supply: 220 volt, 50/60 Hz.</p>		
5	<p><b>Digital Incubators With Digital Fuzzy Control &amp; Digital LCD Back Light System</b>  <u>Applications &amp; Features:</u>  Variable application: microorganism culture, animal &amp; plant cell culture, constant temperature, germination, and so on.  Digital fuzzy control system implementing superior temperature accuracy.  Simplest control by jog-shuttle switch (Patent Pending).  High-quality LCD with Backlight function used.  RS232C interface for monitoring and controlling with PC.  Ambient to 70 °C range, accuracy of ±0.1 °C.  Compact design of body.  Optimized air circulation by natural convection preventing cross contamination of samples.  Stainless steel chamber and chrome-coated shelves - corrosion resistance.  Over temperature &amp; over current protection, sensor error detection.  Storage function, alarm, timer.  Locking mode supported for experimental safety. (Input to jog-shuttle can be disabled).  PL (Product Liability) Insurance  CE Certificate  <u>Technical Specifications:</u>  Dimension (w x d x h) Internal (mm): 485 x 410 x</p>	2	

	<p>535</p> <p>Capacity: 105 Lit.  Heater: 300 W  Temp. Range: Ambient + 5 °C ~ 70 °C  Temp. Accuracy: ± 0.1 °C  Temp. Uniformity: ± 1 °C  Controller: Digital fuzzy controller with jog-shuttle switch (Turn + Push)  Display: Digital LCD display with back-light function  Timer: 99hr 59min, (Delay &amp; Continuous Function Included)  Material Internal: Stainless steel (# 304)  Material External: Powder coated steel  Material Insulation: None  Shelves: 2 or 3 Teflon coated steel shelves of adjustable position  Door Gasket: High temperature grade foamed silicone rubber  Viewing Window: Inner Tempered Glass Door  Ventilation: Stainless steel cap, Dia. 40mm x 1ea  Sensor: PT100  Circulation: Natural convection  Safety Device: Over temp. and over current protector, sensor error detector.  Others: RS232C interface for monitoring and controlling with PC  Storage Function (Temp., Timer),  Locking Mode (Jog-Shuttle Input disabled)  Alarm (Error Status and Timer-end)  Power Supply: 220 volt, 50 / 60 Hz</p>				
6	<p><b>Binocular Microscope</b></p> <p><b>Stand:</b> sturdy stand with antirust antibacterial materials. Heat isolating hand rests  <b>Viewing Bodies:</b> 45° inclined, 360° rotatable dovetail, Interpupillary distance 54 - 74mm  <b>Eyepieces:</b> Wide Field focusable paired eyepieces 10x/18mm with foldable eye guard, lockable, antifungal.  <b>Nosepiece:</b> Quadruple nosepiece (ball bearing type) with rubber grip, click stop for exact position.  <b>Objectives:</b> LP Series DIN Semi-Plan Achromatic objective 4x, 10x, 40x (Spring loaded), 100x (Spring loaded, oil), antifungal  <b>Mechanical stage:</b> Rackless stage, size 135 x</p>	5			

	<p>124mm, X/Y travel range 76mm x 50mm. low drive movement controls, single specimen holder.</p> <p><b>Condenser:</b> Sub stage abbe condenser NA 1.25 with aspheric lens and Iris diaphragm. With snap-in blue filter. Rack and pinion movements on metal guides.</p> <p><b>Focusing:</b> Co-axial coarse and fine focusing on ball drive system for smooth operatin, fine drive movement 0.2mm/division, tension adjustment for torque control.</p> <p><b>Illumination:</b> Halogen 6V-20W illumination with variable illumination control. Up to 200,000 hours of Halogen lamp life.</p> <p><b>Electrical:</b> Universal power supply (100V-240V, 50/60 Hz) Built-in voltage stabilizer.</p>			
7	<p><b>Water Distillation Apparatus</b></p> <p><b>Features:</b> Horizontal thick wall heat resistant Duran glass boiled fitted with 3 KW chromium heater. High efficiency coil condenser ensures low temperature, high output quality distillate of conductivity 3 to 4µs/cm. Compact construction suitable for bench and wall mounting. Screw thread connectors enable easy fitting or removal of hose safety. Built in constant level device with Schott Vendura – Nova valve for drainage provides easy descaling without dismantling. Safety thermostat built into the heater protects the Favorit water still in the event of water supply failure and automatically resets when the water supply is restored.</p> <p><b>Specifications:</b> Capacity: 4litre/hour.</p>	2		
8	<p><b>Pharmaceutical Refrigerator Digital</b></p> <p><b>Features:</b> <b>Remarkable Cooling Efficiency</b> <b>Uniform Storage Unaffected by Ambient Temperature</b> complete solution to meet strict and exact temperature requirements for pharmaceutical, medicine and temperature sensitive biological storage. An electronic sensor accurately monitors chamber temperature for precise control. Fans ensure gentle air</p>	1		

circulation to provide top to bottom temperature control after frequent door openings.

#### **Effective Temperature Control**

**Electronic Temperature Control System:** A thermistor sensor monitors temperature inside the chamber, and microprocessor and electronic temperature controls ensure that the set temperature is maintained. Even with frequent door openings, the circulation fan provides rapid temperature adjustment for a highly reliable, stable preservation environment unaffected by ambient temperature.

**Cycle Defrost System:** Defrosting is performed automatically during compressor 'off' cycles and by sensing frost levels. This method of defrosting is performed only when required, further protecting the contents against unnecessary temperature rise.

#### **Equipped with Digital Temperature Display**

Easy to read digital display. Temperature readings are displayed in gradients of 1°C for settable temperatures ranging from 2° to 14°C.

#### **Cabinet Construction**

Space Saving Design - less installation space is required with the use of two easy to open, double paned sliding glass doors preventing ultraviolet and heat rays from affecting contents or temperature in the chamber.

- Rigid polyurethane foam insulation construction acts to keep cold air inside the unit and effectively protects against the intrusion of warm air.
- Chemical resistant stainless steel interior surfaces of the cabinet ensures long lasting service for many years of use.

#### **Door Open Alarm**

When the door opens the 'Door Open' lamp lights automatically. After 30 seconds, a buzzer alarm will sound if the door has not been closed. If door openings longer than 30 seconds are desired, the alarm can be deactivated.

#### **Abnormal Temperature Alarm and Safety Devices**

If the inside temperature of the MPR-311D(H) descends below 0°C or rises above 15°C the buzzer alarm will sound and the digital temperature display will flash. If the internal temperature reaches below -2°C or above 20°C, the low and high

	<p>temperature safety devices prevent the contents of the refrigerator from freezing or the temperature from rising abnormally while the visible and audible alarms are activated.</p> <p><b><u>Technical Specifications:</u></b>  External dimensions: 31.4"(W) x 70.8"(H) x 17.7"(D) (800 x 1,800 x 450mm)  Internal dimensions: 23.3"(W) x 56.4" (H) x 13.7"(D) (720 x 1,435 x 350mm)  Effective capacity: 12.01 cu.ft. (340L.)  Cabinet: Painted steel  Interior: Stainless steel  Insulation: Polyurethane foam  Doors: Sliding glass doors, double-paned glass with heat-reflective film  Shelves: Rigid wire with zinc-plated finish  Access Port: 30mm on back wall  Lighting/Casters: 20W fluorescent lamp (1)/ 2 casters  Amps/Breaker: 2.5 / 15 A Breaker  Compressor: Hermetic type, 160W  Refrigerant: HFC  Evaporator: Fin &amp; tube, forced air circulation  Condenser: Wire &amp; tube  Defrosting: Cyclical defrosting &amp; evaporator temp. detection system  Defrosting heaters: 114W  Temp. Control: Electronic temp. control [range: 2°-14°C (35.6-57.2°F)]  Temp. Display: Digital [display range: 0°-15°C (32-59°F)]  High temp. alarm system: Flashing digital indicator [above 15°C (59°F)], Buzzer [above 15°C (59°F)]  High-temp. indicator lamp [above approx. 20°C (68°F)]  Low temp. alarm system: Flashing digital indicator [below 0°C], Buzzer [below 0°C]  Defrost indicator lamp [below approx. -2°C (28°F)]  Door ajar alarm: Buzzer/door ajar lamp</p>			
9	<p><b>Analytical Balance Digital.</b>  Electronic analytical balance with built-in, motorized calibration weight, dynamic temperature compensation, backlit 8 segment display, two large tare keys, stability indicator, 4 user selectable filter levels, plus optimized display update rate.</p>	3		

	<p>Capacity 320 g  Readability 0.1 mg  Tare range (subtractiv) 320 g  Response time (avg.) 3 s  Repeatability <math>\leq \pm 0.2</math> mg  Linearity <math>\leq \pm 0.3</math> mg  Pan (inner diameter)* 80 mm  Weighing chamber (WxDxH) 174x181x240 mm  Balance housing (WxDxH) 213x342x340 mm  Net weight approx. 6.5 kg  Triangular weighing pan shape. = diameter of the inner circle  Standard features/Equipment supplied -  Motorized calibration weight - Bidirectional RS-232 data interface port - ISP/GLP-compliant printing/recording of weighing and calibration data when a printer or computer is connected to the balance - Hanger for below-balance weighing - Overload protection - Lug for anti-theft locking device - Leveling feet; level indicator - AC adapter - Integrated application programs (net total, weighing in percent, counting, animal weighing, mass unit conversion by toggling) - Dust cover</p>	
10	<p><b>Advanced Laboratory PH Meter Ph/mV/Temp (Custom LCD) Features</b>  Wide &amp; clear Backlit custom LCD display fast, accurate and easy to use. RS 232C communication simultaneous display of pH (mV, ISE) temp and current time auto (Manual) calibration eit5h choice of buffer (3 points) Automatic compensation for temperature available measuring by using latest calibration date self diagnostics. Auto-hold. data-log up to 100 points certificated CE mark, ISO 9001</p> <p><b>Specification</b></p> <p><b>pH</b>  Range: -2.00 to 19.99  Resolution: 0.01  Rel- Accuracy: <math>\pm 0.02</math>  Auto-buffer-Recognition: 4.00,7.00,10.00</p> <p><b>Millivolts</b>  Range: <math>\pm 1999.3</math>mV  Resolution: 0.1mV  Rel- Accuracy: <math>\pm 0.1</math>mV</p> <p><b>Temperature</b>  Range: <math>\pm 10</math> to 100 C  Resolution: 0.1C  Rel- Accuracy: <math>\pm 0.4</math>C</p>	2

Calibration points:	Auto/Manual (3point)		
Data-Log:	100 points		
Temperature:	Auto temperature		
Compensation			
Slope (%):	80% to 120%		
Display:	Custom LCD		
Channel:	one		
Input:	BNC,ATC. Power		
RS232C			
Output:	RS232C		
(Computer / Printer)			
Power:	AC/DC power Adaptor		
Dimension (mm):	200(L)X 260 (W).		
Weight:	0.95Kg.		
<b>Standard Accessories</b>			
Combination pH Electrode			
ATC probe			
Buffer Sol. (pH 4, 7, 10) each 125ml			
AC/DC power Adapter			
Instruction Manual			

<b>11</b>	<p><b>Digital Hotplate Stirrer Ceramic Coated Plate With Digital Feedback Control</b></p> <p><b><u>Applications &amp; Features:</u></b>  CE-Certified. Digital feedback control by high performance microprocessor. Superior temperature uniformity: 10% less on the plate at current temperature.  Accurate temp. Control of the sample in the vessel using optional PT100 sensor. User's self-compensation function: to control difference between real temp. and indicate temp. (<math>\pm 10.0</math> °C). Digital LCD with back light function. Aluminum die-casting . Ceramic coated plate chemical/acid resistance. Storage function, timer, alarm.  Locking mode supported for experimental safety (input to jog-shuttle can be disabled).</p> <p><b><u>Technical Specification:</u></b>  Plate Size (mm): 180 x 180  Stirring Capacity (H<sub>2</sub> O): Max. 20Lit  Motor Rating (W): 9/4  Speed Range (rpm): 80 ~ 1,500  Speed Control Resolution: (rpm): 5  Temp. Range (°C): Max. 380</p>	<b>2</b>		
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	<p>Temp. Accuracy: <math>\pm 0.3</math> °C at set temperature  Temp. Display Resolution (°C): 0.1  Temp. Control Resolution (°C): 0.5  Heating Power (W): 600  Heating Plate: Specially Designed Heating Module  (High Uniformity: Temp. Difference 10% Less)  Controller: Digital Feedback Controller with Jog-Shuttle Switch (Turn + Push)  Display: Digital LCD with back light function.  Timer: 99hr 59 min. (Continuous function included)  Material Plate: Ceramic Coated Aluminum  (Chemical/Acid Resistance)  Material Body: Powder Coated Aluminum  Dimension (w x h x d mm): 206 x 307 x 99  Weight (kg): 3.3  Others: Storage Function (Temp., RPM, Timer)  Locking Mode (Jog-Shuttle Input disabled)  User self compensation function  Alarm (Error Status and Timer end)  Power Consumption: 600 W  Power Supply: 220 volt, 50/60 Hz</p>			
12	<p><b>Autoclave-Steam Sterilizer Digital Fuzzy Controlled, With Electronic Door Lock Sensing System</b>  <u>Applications &amp; features:</u>  Top-loading sterilizer for easy loading of large working volume. With casters for excellent mobility. Innovative easy to use digital fuzzy controller. Simplest control by jog-shuttle switch and LCD display.  Digital timer function 'delay time' and 'operation time' can be controlled. Complete safety pressure mechanism.  Strong and safety screw handle door. Over-temperature/-pressure/-current protection capability. automatic over pressure release valve ensure user safety. Electronic door lock sensing system for user safety. CE (medical device directive) certified. Heat-protective lid cover for user safety.  <u>Technical Specification:</u>  Controller: Digital-fuzzy control system (fully automatic)  Dimension (w x d x h) inner (mm): <math>\Phi 350</math> x h650  Heater: 3 kW  Capacity: 60 Lit</p>	1		



	<p>Temp. Range: Ambient 5 °C to 132 °C  Temp. Accuracy: ±0.5 °C at 121 °C  Display: Digital LCD (PV&amp; SV and sterilizing procedure displayed)  Timer: 99 hr 59 min 59 sec  Pressure: 1.2 Kgf/cm<sup>2</sup> at 121 °C, 2.0 Kgf/cm<sup>2</sup> at 132 °C  Gauge: 0 ~ 3 kgf/cm<sup>2</sup>  Material pressure vessel: Stainless steel (#304)  Material external: Powder coated steel  Door packing: One touch pressure handle type  Safety device: Over temp., over pressure, over current protector and electronic door lock system, heat protective lid cover. Basket: 2ea of wire basket included  2 polo plug Power Supply: 220VAC, 50/60Hz.</p>			
13	<p><b>Micropipette Adjustable Individually Calibrate, Fully Autoclaveable</b>  <u>Features:</u>  Smart and reliable volume adjustment and very fine volume resolution  Single-handed volume setting  Precision digital display visible at all times  Click stops and rotating plunger cap prevent unwanted volume alteration  Justip adjustable tip ejector fitting most tips  Swift-set user calibration system  Colour coding  <u>Specifications:</u>  Volume Range: 0.1 - 2µl  Division: 0.002µl  Inaccuracy (E%), Min. Vol: &lt; ± 6.0%  Inaccuracy (E%), Mid. Vol: &lt; ± 4.0%  Inaccuracy (E%), Max. Vol: &lt; 2.0%  Imprecision (CV%), Min. Vol: &lt; 5.0%  Imprecision (CV%), Mid. Vol: &lt; 3.3%  Imprecision (CV%), Max. Vol: &lt; 1.5%  Volume Range: 0.5 - 10µl Division: 0.01µl  Volume Range: 2 - 20µl , Division: 0.02µl  Volume Range: 5 - 50µl, Division: 0.1µl  Volume Range: 10 - 100µl ,Division: 0.1µl</p>	1		
14	<p><b>Digital Orbital Shaker With Programmable Digital Feedback Control System</b>  <u>Applications &amp; Features:</u></p>	2		

	<p>PI (Product Liability) Insurance.  CE-Certified.  Ideal for culturing cells to hybridization, staining and distaining gels and combinatorial chemistry.  Optimal platform rotation for intensive mixing.  Brushless DC motor. (Low Noise &amp; Long Life Cycle) High precision digital rotation speed control.  Programmable operation modes supported. Digital LCD with back light function. Convenient setting of timer and speed using jog shuttle switch. Smooth start and change of the shaking speed. Universal platform for easy and fast fixation of any kind flasks and bottles (Option), overload protection. Storage function, Alarm and over-load protection.  Locking mode supported for experimental safety. (Input to Jog-Shuttle can be disabled)  Varieties of optional accessories are available.</p> <p><b><u>Technical Specifications:</u></b>  Motor: Brushless DC Motor  Dimension (w x d x h mm): 400 x 480 x 160  Base Platform Size (mm): 350 x 350  Max. Load (kg): 10  Amplitude of Rotation (mm): 20, 30, 40 Available. (30 as Factory default)  Speed Range (rpm): 10 ~ 300  Controller: Programmable Digital Feedback Controller with Jog-Shuttle Switch (Turn + Push)  Program Function: 10 Steps, 6 Programs  Display: Digital LCD with back light function.  Platform: Universal Platform for various Shapes &amp; Size of Flask  Capacity of Flask Holder FH100: 20 ea  Capacity of Flask Holder FH250: 16 ea  Capacity of Flask Holder FH500: 9 ea  Holder: Durable &amp; Flexible Plastic Flask holder  Safety Device: Over Load Protector for motor  Weight (kg): 20  Others: Smooth Start and Change of the Stirring Speed for stable running  Storage Function (Program, RPM, Timer)  Locking Mode (Jog-Shuttle Input disabled)  Alarm (Error Status and Timer-end)  Power Supply: 220Volt, 50/60 Hz</p>				
15	<b>Digital Ultrasonic Cleaner Set With Lid Heat &amp; Timer Digital Control</b>	1			

	<p><b>Applications &amp; Features: -</b>  PL (Product Liability) Insurance.  Useful for cleaning to remove dirt, grease, waxes and oil from all lab instruments by ultrasonic frequency.  Microprocessor controller: timer, temperature, output control. Multi-frequency sonication body.  Temperature range from ambient to 50<sup>0</sup>C.  Convenient preset function: Heating and Timer</p> <p><b>Technical Specifications: -</b>  Capacity: (Liters): 6L  Tank size inner (mm): 290 x 150 x h150  Heat temp. <sup>0</sup>C: Ambient to 90<sup>0</sup>C  Timer (min.): 0 ~ 99  Drain valve: None  IIF-peak out (W): 150W  Power: 370W  Weight net (kg): 4.8 kg</p>			
16	<p><b>Biochemistry kit.</b>  <b>PTK18 Biochemistry Kit</b>  Is compatible with data acquisition system to study buffering, ion dissociation as well as conduct titration and cellular respiration experiments. The Kit includes a pH Pod, pH Electrode, Galvanic Oxygen Electrode, T-type Pod, General Purpose T-type Thermocouple and Reflective Drop Counter.</p>	1		
17	Stopwatch	05		
18	Thermal Cycle	01		
19	Glucometer	02		
20	Electrophoresis	01		



### Demanded Lab Equipment for Department of PATHOLOGY

	Equipment	Qty	Unit Price	TOTAL Amount
1.	Spectrophotometer (visible spectrum)	1		
2.	Haemocytometer	0		
3.	Westergren ESR system(bottles+ tubes +stand)x6	2		
4.	Stain dropping bottles(250 ml)	4		
5.	Wash bottle(500ml)	4		
6.	Staining rack adjustable	4		
7.	Automated haematology analyser	1		
8.	Hot air oven(medium)	1		
9.	Refrigerator 14cf	2		
10.	Deep freezer -40 c	1		
11.	Deep freezer -20 c			
12.	Water Bath with stirrer.temperature control and display	2		
13.	Microscope binocular	15		
14.	Microscope multie head(5 place)	1		
15.	Microcope Fluoresent			
16.	Differential leucocyte counter manual(8-10 keys)			
17.	Differential leucocyte counter electronic			
18.	Automatic pipette 5ul fixed			
19.	Automatic pipette 10 ul fixed			
20.	Automatic pipette 100 fixed			
21.	Automatic pipette 200 ul fixed			
22.	Automatic pipette 50-500 ul adjustable			
23.	Automatic dispenser adjustable 5-50 ml	1		
24.	Table lamp with flexible/adjustable head	1		

25.	Apparatus electrophoresis complete with accessories, densitometry and UPS	1		
26.	Centrifuges microhaematocrit with reader.	1		
27.	Fixed high speed centrifuges with timer	1		
28.	Centrifuges with timer and speed control to hold 06 ordinary test tubes	1		
29.	Blood bank large with temperature control, alarm and record graph			
30.	Blood bank medium with temperature control, alarm and record graph	1		
31.	Blood bank small with temperature control, alarm and record graph			
32.	Blood grouping tiles	3		
33.	Pipette glass(Pyrex) graduated 1 ml	2		
34.	Pipette glass(Pyrex) graduated 2 ml	2		
35.	Pipette glass(Pyrex) graduated 5 ml	2		
36.	Pipette glass(Pyrex) graduated 10 ml	2		
37.	Stand test tube plastic/steel for sugar tubes	6		
38.	Plasma extractor	1		
39.	PH meter clinical	1		
40.	Precision electronic balance	1		
41.	Balance electronic top loader			
42.	Automated coagulation analyzer complete with accessories and UPS			
43.	Bone marrow aspiration needles adult(Islam)	2		
44.	Bone marrow aspiration needles Paediatric(Islam)	1		
45.	Bone marrow trephine biopsy needles adult(Islam)	1		
46.	Bone marrow trephine biopsy needles Paediatric(Islam)			

47.	Rota Mixer			
48.	Magnetic mixer/stirrer			
49.	Blood bag centrifuge refrigerated			
50.	Platelet incubator with mixer			
51.	Glass beaker (Pyrex) 100 ml graduated	4		
52.	Glass beaker (Pyrex) 500 ml graduated	4		
53.	Glass cylinder (Pyrex) 500 ml graduated	4		
54.	Flask conical glass(Pyrex) graduate	4		
55.	Water still	4		
56.	ELISA washer and reader automated with UPS	1		
57.	Spectrophotomer UV range	1		
58.	Semi automated chemistry analyzer	1		
59.	Electrolyte analyzer (ISE)	1		
60.	Hot plate			
61.	Automatic media			
62.	Shaker	1		
63.	Incubator 37 c large	1		
64.	Incubator 37 c small	1		
65.	Incubator Co2			
66.	Incubator cold 22-29 c	1		
67.	Safety cabinet	1		
68.	Laminar flow cabinet			
69.	Anaerobic system with gas generator k t			
70.	Ir spissator			
71.	Autoclave	1		
72.	Floating bath	1		
73.	Staining jars	20		
74.	Automatic tissue processor	1		

75.	Embedding station	1		
76.	Automatic stainer			
77.	Cytotech centrifuge			
78.	Freezing microtome			
79.	Personal computer	1 each staff Member		
80.	Computer printer as per load	2 (minimum)		
81.	Water Bath electric	1		
82.	Paraffin embedding bath	1		
83.	Oven sterilizer	1		
84.	Vacuum pump	1		
85.	Tissue processor	1		
86.	Oven-wax embedding ( 100 c)	1		
87.	Microtome	1		
88.	Knife sharpener	1		
89.	Incubator large	1		
90.	Photomicrography microscope	1		



## LIST OF EQUIPMENT FOR PHARMACOLOGY

### Specifications

S.no	Description	Qty	Unit Price	Total Amount
1	<p><b>Two channel data recording system</b> complete with accessories and Software. Must be capable of recording at speeds of up to 400,000 samples per second continuously to disk (aggregate), and are compatible with instruments, signal conditioners and transducers supplied in the tender.</p> <ul style="list-style-type: none"> <li>• High-throughput full-bandwidth sampling of any analog signal 2 mV - 10 V</li> <li>• Full 16-bit ADC resolution; resolve voltage differences as small as 61 nV (35 Series)</li> <li>• 200 kHz maximum sampling rate (35 Series)</li> <li>• Built to last, ISO certified, with a hardware warranty of up to 3 years</li> <li>• Flexible Connectivity</li> <li>• Analog outputs for external device control or stimulation protocols</li> <li>• DIN connectors for recalibrated transducers and low-cost amplifiers</li> <li>• Digital input and output connectors for signaling to/from TTL devices</li> <li>• 2 channel analogue inputs</li> <li>• 1 built in animal stimulator</li> <li>• High grade Isotonic transducer.</li> <li>• Bridge Amplifier</li> <li>• USB and Power Cable</li> <li>• Software CD, upgradable to five years</li> </ul>	8		
2	<p><b>Tissue Bath One Channel.</b></p> <ul style="list-style-type: none"> <li>• Complete with glassware and tubing.</li> <li>• 25 mL 1660 series tissue bath.</li> <li>• The steel base is coated to resist corrosive salt solutions. The perfusate flows from a water jacketed, temperature controlled 1-liter reservoir to the tissue bath through a pre-heating coil built within the water jacket of tissue bath. The bath is emptied via a bottom drain controlled with a stopcock. The bath may also be used in a constant flow mode with excess perfusate exiting an overflow outlet at the top of the bath. Both</li> </ul>	8		

	<p>overflow and drains may be routed to permit monitoring the release of endogenous substances, drug metabolites, or to design a cascade system configuration. Bath aeration is finely controlled via a removable Teflon needle valve Oxy-tube.</p> <ul style="list-style-type: none"> <li>• 6l. Thermo regulated water bath (220) Features include a temperature range of 5 to 100 degree Celsius with +/- 0.1 accuracy and 14L/min pump speed. Dimensions are 350 x 210 x 410mm and weight is 11kg. Other features include innovative Patented Easy-to-Use Digital Fuzzy Controller and is CE certified. It has a stainless steel bath and lid for superior durability, high thermal efficiency, prevents evaporation and keeps constant temperature. Nozzle 7mm ID 11mm OD.</li> </ul>			
3	<b>Force Transducer:</b> high performance (0-20g) force transducer. Should be supplied with an 8-pin DIN connector and is compatible Bridge Amps data acquisition supplied in the tender .	8		
4	<b>Distillation Plant:</b> Features: <ul style="list-style-type: none"> <li>• Horizontal thick wall heat resistant Duran glass boiled fitted with 3 KW chromium heater.</li> <li>• High efficiency coil condenser ensures low temperature, high output quality distillate of conductivity 3 to 4µs/cm.</li> <li>• Compact construction suitable for bench and wall mounting.</li> <li>• Screw thread connectors enable easy fitting or removal of hose safety.</li> <li>• Built in constant level device with Schott Vendura – Nova valve for drainage provides easy descaling without dismantling.</li> <li>• Safety thermostat built into the heater protects the Favorite water still in the event of water supply failure and automatically resets when the water supply is restored.</li> <li>• Specifications: Capacity: 4litre/hour.</li> </ul>	1		
5	<b>Oxygen Cylinder (Full size)</b>	2		
6	<b>Oxygen Cylinder Regulator</b>	2		
7	<b>Electronic Balance</b> Range 0-500 g Readability: 0.01g	1		
8	<b>B.P. Apparatus</b> Mercury manometer	10		
9	<b>Stethoscope</b>	10		

10	<b>Torches</b> For rabbit eye experiments	20		
11	<b>Scissors</b> (Surgical Instruments of assorted sizes for animal dissection)	20		
12	<b>Weighing Balance</b> Range: 0g-2000 g Readability: 0.1	10		

**LIST OF MODELS SPECIMEN POISONS & OTHER MATERIAL AT**  
**MUSEUM OF FORENSIC MEDICINE & TOXICOLOGY**

1. Abrasion on the Face
2. Wound by Pallet
3. Nose cut-off with a knife
4. Homicidal cut throat
5. Hanging Ligature
6. Suicidal Cut Throat
7. Punctured wound
8. Nose bitten teeth
9. Homicidal by Shooting with a gun
10. Cutting throat with Thread
11. Strangulation Homicidal
12. Lacerated wound of scalp
13. Bruises on shoulders
14. Wound of Scalp with cutting weapon
15. Lightening injuries
16. Sulphuric Acid Poisoning Staining
17. Suicidal shot with pistol
18. Stab wound of the chest
19. Contusion caused by Brows
20. counter coup injuries of brain
21. burns on the Back with a heat metallic object
22. Road accident
23. Foinged strangulation
24. Showing contact flattening
25. Nitric Acid stain
26. case of strangulation
27. homicidal multiple incised wound
28. Postmortem staining
29. electric burns on leg
30. Electric burns on Hand
31. Forearm converts into adipocere
32. Incised wound of fingers and hand
33. wound of revolver
34. incised wound
35. Defensive Wound
36. self protection wound
37. bruise on arm
38. type of finger prints
39. Type of hymen
40. Models of degree of burn's
41. Models of degree homicidal throttling.
42. Gagging
43. Suicidal cut throat
44. electric burins of leg
45. entry and exit wounds
46. defensive wound
47. wounds of a revolver bullet in skull bone
48. hanging
49. model of sodden condition of the skin on palmer aspect of finger and palm of hand in case of drowning
50. abrasion
51. Model of death from burning
- 52.
53. Entrance wound
54. stomach in poisoning by oxalic acid
55. stomach In poisoning by sulphuric acid
56. exit wound
57. finger prints
58. throttling
59. green putrefactive networks
- 60.
61. Mummification 85cm child
62. suicide by shooting
63. skull injury
64. cadaver spasm
65. decomposed body of A boy
66. Leg injury
67. Froth at the nostrils

**LIST OF MODELS SPECIMEN POISONS & OTHER MATERIAL AT  
MUSEUM OF FORENSIC MEDICINE & TOXICOLOGY**

<b>POISONS</b>	LIVERS: -	Case of burns
Acetic acid		Case of Cirrhosis
Dhatura Seeds		Case of Fatty liver
Turpentine oil		Case of Trauma
Turpentine oil		Case of Poison
Phenol		Case of Throttling
Oxalic acid	LUNG: -	Case of Scalds
Copper sulphate		Case of Burns
Copper sulphate		Case of Strangulations
Marking nut		Case of Smothering
Nux vomica seeds		Case of Suffocation
Sulphuric acid		Case of Hanging
Spirit		Case of Traumatic
Acetaldehyde	ASPHYXIA	
Ammonium chloride		Case of Chocking
Aspirin powder		Case of Mugging
Campher		
Mercury	HEART: -	HEART
Lead		Case of Suffocation
Aspirin Tablet's		Case of Cardiomyopathy
Bulletins (17)		Case of Strangulation
Cartirodge		Case of Trauma
Bhang		Case of Choking
Caster seeds		Case of Burns
Rati Seeds		Case of Cardiomyopathy
Dhatura Fruit		Case of Suffocation
Castes seeds		Case of Hanging
Chorcol		Case of Smothering
Capricar seeds		Case of Ischemic Heart
Dhatura fruit		
Knife (1)		
Caprices seeds		
Poppy fruit		
Aconite		
Gun (Blacks) Powder		
Axe (1)	DISEASE	Case of Cardiomegaly
Magnifying Glass (1)		Case of Burns
HCN 1		
	BONES	

LIST OF MODELS SPECIMEN POISONS & OTHER MATERIAL AT  
MUSEUM OF FORENSIC MEDICINE & TOXICOLOGY

Two Boards:

1/= Fetal Skeleton (20 weeks)

2/= Ostrology of Neck region

3/= Vertebrae

Hyoid Bone

Fractured Ribs

Mandible (5)

Small Bones (10-12)

Sacrum (2)

Skull (1)

Long Bone (8)

## Community Medicine Teaching Aid Model, Charts & Video Cassettes

SR#	Name Of Equipment	Qty	Unit Price	Total Amount
	<b>Charts , Videos</b>			
1	Giant Medical Chart "Danger of Smoking Size: 20" x 26"	1		
2	3-Dimensional Display Hazards of Smoking 22.5" x 26"	1		
3	Death of a Lung Model 3-dimensional Display 9" x 12"	1		
4	3-Dimensional Consequences of Smoking Display with handle for easy carrying 28"x 27"	1		
5	Folding Display 58" x 22" Tobacco causes more illness & death	1		
6	Medical Hazards of Smokeless Tobacco folding display 58" x 22"	1		
7	Mr. Gross Mouth makes, em gag 6"x8"x4"	1		
8	Substance abuse identifications Kit 52"x 19"	1		
9	Drug abuse Its Hazards & Effect. Folding Display 58"x22"	1		
10	Large Drum Identification Guide. Teach the average person to identify 63 of today's most common drugs 32"x24"	1		
11	"Substance Abuse Chart set (9)	1		
12	The consequences of Alcohol abuse, 3D display 28"x 27" with case	1		
13	Effect of hazards of inhalant RI: 79272	1		
14	The sobering consequences of Drugs abuse 28" x 27"	1		
15	Dramatic visuals show effects of inhalant abuse 58" x 22"	1		
16	Display uses 3-D Models to fight aids. consequences of Aids 28"x 27"	1		
17	Aids Virus (HIV) model L40 7"x 5"x 5"	1		
18	Explain contraception choices with this 3D display. A guide to contraceptives	1		
19	Quick Reference to contraceptive methods and effectiveness. Contraceptive awareness Guide 36"x 24"	1		
20	STD's folding display. STD's sexually transmitted diseases 58"x22"	1		
21	Teaches the consequences of STD's 28"x 27"	1		
22	Contraceptives awareness guide.	1		
23	HIV/AIDS Flip Chart and "HIV/AIDS 16page booklet & 7, transparencies	1		
24	HIV /Aids;Death of an immune system & Video	1		
25	Updated folding display teaches about Aids. 58"x 22"	1		
26	Sexually Transmitted disease Video	1		
27	AIDS Update – the latest facts about HIV & Aids video tapes	1		
28	Large colorful charts are great for teaching (Set of 9 charts on tripod stand) 36"x 44".	1		
29	Obesity folding display 58"x 22" Health facts about obesity with food guide pyramid chart .	1		
30	Pyramid Faux Food starter package	1		
31	Display model demonstrate consequences of obesity in a folding	1		

	briefcase 28"x 27"			
32	Folding display shows facts on nutrition 58" x 22"	1		
33	Disease of a mouth, folding display 58" x 22"	1		
34	Skin cancer folding display 58" 22" 79327	1		
35	Nutrition Education Package	1		
36	<b>Teach cam</b> with illum base to project as overhead projector, slide projector and as microscopic camera complete with I.V & VCR	1		
37	Caution signs for cancer folding display 58"x 22"	1		
38	See for yourself: Why colorectal exam can save your life."9x"12 display	1		
39	The deadly effects of TB display with tuberculosis charts 14" x 12"	1		
40	Death of an artery 9" x 12" model to derens trole the way arteries can be collaged by deposits fat. You can easily explain the disease process of one of the most insidious and potent killer in the western world.	1		
41	Diseased & Condition of the Heart("58x"22)Folding display.	1		
42	The leading causes of death folding display	1		
43	Loss of a bone 3D display. Easel Display	1		
44	Exercise facts folding display	1		
45	Arthritis Easel display	1		
46	Fact about childhood immunization folding display	1		
47	Food safety CD ROM	1		
48	What you should know about over weight & obesity folding display	1		
49	What you should know about depression folding display	1		
50	Stress and you folding display	1		
51	Caution signs of cancer folding display	1		
52	Diseases & condition of the mouth	1		
53	Mr. Clean Mouth	1		
54	The consequences of High blood pressure 3D display	1		
55	The consequences of diabetes 3D display	1		
56	Set of Video Cassettes. 50 nos. (See Below) 1 - Time life Medical Series (30 videos) 2 - Physical Effect of Alcohol 3 - Under the influence 4 - Drug education for teens (12) 5 - 7 steps to reduce the risk of AIDS 6 - Children's and Teens with type 2 diabetes. 7 - Cholesterol & Diet Video 8 - Child hood reversing the trend Video 9 - Stressed out stress management101 10- Dealing with depression	1		
57	The Consequences of Obesity.	1		
58	Asthma DVD	1		
59	Hepatitis DVD	1		
60	Setting Goals for Healthy Living DVD	1		
61	Dealing with depression video	1		
62	<b>Time life medical series.</b> 930-vol. series) This 30 volume series is endorsed by former US surgeon General C. Everett Koop and narrated by recognizable personalities. Perfect for patient education and health presentations, brown bag seminars, or anytime there is a need for concise, reliable health informatioun. Adult. 30 minutes	1		



	each.			
	Alcoholism			
	Alzheimer's Disease			
	Anorexia & bulimia			
	Arthritis			
	Asthma in Children			
	Back pain			
	Breast Cancer.			
	breast Lumps			
	Cataracts			
	Colon & Rectal Cancer			
	Coronary Artery Disease			
	Depression			
	Diabetes			
	Endometriosis			
	Gallstones			
	High Blood Pressure			
	Infertility			
	Insomnia			
	Menopause			
	Migraine & Other headaches			
	Osteoporosis			
	Overweight & Obesity			
	Pregnancy			
	Prostate Cancer			
	Prostate Disorders			
	Skin Cancer			
	Stress & Anxiety			
	Stroke			
	Thyroid Disorders			
	ulcers.			
<b>63</b>	<b>Risk Factor For Cardiac Diseases</b>	<b>1</b>		
<b>64</b>	<b>Exercise Facets</b>	<b>1</b>		
<b>65</b>	<b>Life Cycle of Mosquito</b>	<b>1</b>		
<b>66</b>	<b>Life Cycle of House</b>	<b>1</b>		
<b>67</b>	<b>Life Cycle of Lice</b>	<b>1</b>		
<b>68</b>	<b>Life Cycle of Flea</b>	<b>1</b>		
<b>69</b>	<b>Photograph of Edward Jenner</b>	<b>1</b>		
<b>70</b>	<b>Painting of First Vaccination</b>	<b>1</b>		
<b>71</b>	<b>Photograph of John Snow</b>	<b>1</b>		
<b>72</b>	<b>Reverse Osmosis Plant</b>	<b>1</b>		
<b>73</b>	<b>Weighting Machine</b>	<b>1</b>		
<b>74</b>	<b>Harrock Apparatus</b>	<b>1</b>		
<b>75</b>	<b>Incinerator</b>	<b>1</b>		
<b>76</b>	<b>Models of Winged &amp; Wingless insects of Public Health Importance</b>	<b>1</b>		
<b>77</b>	<b>Models of a Healthy House</b>	<b>1</b>		
<b>78</b>	<b>Models of a Sanitary Well</b>	<b>1</b>		
<b>79</b>	<b>Models of a Sanitary Latrine</b>	<b>1</b>		
<b>80</b>	<b>Food Guide Pyramid</b>	<b>1</b>		
<b>81</b>	<b>Vaccine used under expanded program on Immunization</b>	<b>1</b>		
<b>82</b>	<b>Counseling material and guidelines for a good counseling</b>			

## 1. Models:

S.No.	Name of Items	Qty	Unit Price	Total Amount
01.	<b>Models:</b> a. Safe motherhood. b. Healthy House. c. Sanitary well. d. Sanitary latrine. e. Balanced diet. f. Global warning g. Winged & wingless insects of public health importance. h. Levels of prevention of diseases. i. Marasmus & Kwashiorkor. j. Types of desks: zero, minus & plus desks. k. Models of methods of purification of water. l. Methods of family planning.			
02.	Wall charts showing health indicators & millennium development goals.			
03.	IMNCI wall charts.			
04.	Wall charts revealing various plans of rehydration.			
05.	Wall charts showing steps of planning cycle.			
06.	Wall charts-population pyramid & demographic transition			
07.	Wall charts showing steps of counseling.			
08.	Growth charts for tracking growth of children.			
09.	Food guide pyramid.			
10.	Chain of transmission of infection.			
11.	EPI cold chain.			
12.	Vaccines used under expanded			

	program on immunization.				
13.	Weighing machine with height measuring scale for measuring BMI.				

**LIST OF BOOKS FOR NEWLY ESTABLISHED BILAWAL MEDICAL COLLEGE AT LUMHIS  
JAMSHORO**

S.No.	Author	Title	Edition	Required Copies	Unit Price	Total Amount
01	Rechar d snell	Clinical anatomy	Latest	110		
02	B.D. Chaurasia	Human anatomy three volume set	Latest	110		
03	Sadler	Langman's medical embryology	Latest	110		
04	Keith L.Moore	The developing human clinically oriented embryology	Latest	110		
05	Barbara young	Wheater's functional histology	Latest	110		
06	Lipincott	Illustrated biochemistry	Latest	110		
07	Mustaque	Essentials of medical biochemistry 2 vol set	Latest	110		
08	Cunnigham's	Manual of practical anatomy 3 vol. set	Latest	110		
09	Rechar d snell	Neuro anatomy	Latest	110		
10	Guyton, hall	Text book medical physiology	Latest	110		
11	Murray, granner maury rodewll	Harper's illustrated biochemistry	Latest	110		
12	Chattetrjea	Textbook of medical biochemistry illustrated biochemistry	Latest	110		
13	Sinnatamby	Last's anatomy	Latest	110		
14	Ganong	Review of Medical Physiology	Latest	110		
15	West J.B	Best and tailors physiological Basis of Medical Practice	Latest	05		
16	Lehninger	Principles of Biochemistry	Latest	05		
17	S ngh V	Textbook of Clinical Neuroanatomy	Latest	05		
18		Oxford Dictionary English to English	Latest	05		
19	Rodney A. Rhoades	Medical Physiology Principal for clinical Medicine	Latest	05		

S.No.	Author	Title	Edition	Required Copies	Unit Price	Total Amount
20	Eric P. wid maier	Vanders Human Physiology The Mechanism of Body function	Latest	05		
21	Sherwood	Study guide for Human Physiology from cell system	Latest	05		
22	Burits & Ashwood	Tietz Fundamentals of Clinical Chemistry	Latest	05		
23	Mekee	Biochemistry the Molecular Basis of life	Latest	05		
24	Tank p w	Grants Dissector	Latest	10		
25	Palastanga N	Anatomy and Human Movement structure and function	Latest	05		
26	Saladin	Anatomy & Physiology	Latest	05		
27	Anne M.R Agur	Grant's Atlas of Anatomy	Latest	10		
28	Beckett G	Lecture notes on clinical Biochemistry	Latest	05		
29	Lieberman	Mark's Basic Medical 48.Biochemistry	Latest	05		
30	CL Ghai	A Textbook of Practical Physiology	Latest	05		
31	RL Bijlani	Understanding Medical Physiology	Latest	05		
32	Boyer	Modern Experimental Biochemistry	Latest	05		
33	Verlley	Practical Biochemistry	Latest	05		
34	Standring	Grays anatomy	Latest	10		
35	Ross	M H Histology A Text and Atlas with correlated cell & Molecular	Latest	10		
36	Junqueira LC	Basic Histology Text and Atlas	Latest	10		
37	Seely . stephens	Anatomy & Physiology	Latest	05		
38	Syleia S. Mader	Understanding Human anatomy & Physiology	Latest	05		
39	Banerjee s	Cell Biochemistry	Latest	05		
40	Luxton R	Clinical Biochemistry	Latest	05		
41	Wilcox B	High-yield Biochemistry	Latest	05		
42	Garge G P	Organic Biochemistry	Latest	05		
43	Moore K.L	Before we are born essential of Embryology and birth defects	Latest	05		

S.No.	Author	Title	Edition	Required Copies	Unit Price	Total Amount
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45	B Raghu	Practical Biochemistry for Medical Students	Latest	05		
46	Devlin , TM	Textbook of Biochemistry with clinical correlation	Latest	05		
47	Voet D	Fundamentals Biochemistry	Latest	05		
48	Moses kp	Atlas of clinical gross Anatomy	Latest	05		
49	Drake RL	Gray's Basic Anatomy	Latest	05		
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60	K.Park	Textbook of preventive & social medicine.	Latest	05		
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62	Parik's	Textbook of Medical Jurisprudence Forensic Medicine and Toxicology	Latest	05		
63	Kumar Abbas	Robbins Basic Pathology	Latest	05		
64	Kumar Abbas	Robbins and Cotran Pathologic Basis of Disease .	Latest	05		
65	Katzung	Basic and Clinical Pharmacology	Latest	05		
66	Traver Katzung	Pharmacology Examination and Review Pharmacology	Latest	05		

S.No.	Author	Title	Edition	Required Copies	Unit Price	Total Amount
67	Harvey Champe	Lippincott Illustrated Review Pharmacology	Latest	05		
68		Latest health policy of Pakistan-2009-10.	Latest			
69		Provincial health policy Sindh-2005	Latest			
70		Pakistan's environmental policy-2005	Latest			
71		Pakistan demographic & health survey report-2013-14	Latest			
72		Pakistan's nutrition policy, breast feeding policy.	Latest			
73		IMNCI tool kit.	Latest			
74		DHIS tool kit.	Latest			
75		Documents related to various infections disease control programs currently running in Pakistan.	Latest			
76		Prevention & control of chronic non-communicable diseases.	Latest			
77		Latest world health reports 2015,2014. 2013.	Latest			