



REPUBLIC OF THE PHILIPPINES
AGUSAN DEL SUR STATE COLLEGE OF AGRICULTURE AND TECHNOLOGY
BUNAWAN, AGUSAN DEL SUR

BIDDING DOCUMENTS

Procurement

of

Supply, Delivery and Installation of Laboratory Equipment and Facilities for Advanced Engineering and Industrial Technology e-Learning

**Sixth Edition
July 2020**

Preface

These Philippine Bidding Documents (PBDs) for the procurement of Goods through Competitive Bidding have been prepared by the Government of the Philippines for use by any branch, constitutional commission or office, agency, department, bureau, office, or instrumentality of the Government of the Philippines, National Government Agencies, including Government-Owned and/or Controlled Corporations, Government Financing Institutions, State Universities and Colleges, and Local Government Unit. The procedures and practices presented in this document have been developed through broad experience, and are for mandatory use in projects that are financed in whole or in part by the Government of the Philippines or any foreign government/foreign or international financing institution in accordance with the provisions of the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184.

The Bidding Documents shall clearly and adequately define, among others: (i) the objectives, scope, and expected outputs and/or results of the proposed contract or Framework Agreement, as the case may be; (ii) the eligibility requirements of Bidders; (iii) the expected contract or Framework Agreement duration, the estimated quantity in the case of procurement of goods, delivery schedule and/or time frame; and (iv) the obligations, duties, and/or functions of the winning bidder.

Care should be taken to check the relevance of the provisions of the PBDs against the requirements of the specific Goods to be procured. If duplication of a subject is inevitable in other sections of the document prepared by the Procuring Entity, care must be exercised to avoid contradictions between clauses dealing with the same matter.

Moreover, each section is prepared with notes intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They shall not be included in the final documents. The following general directions should be observed when using the documents:

- a. All the documents listed in the Table of Contents are normally required for the procurement of Goods. However, they should be adapted as necessary to the circumstances of the particular Procurement Project.
- b. Specific details, such as the “*name of the Procuring Entity*” and “*address for bid submission*,” should be furnished in the Instructions to Bidders, Bid Data Sheet, and Special Conditions of Contract. The final documents should contain neither blank spaces nor options.
- c. This Preface and the footnotes or notes in italics included in the Invitation to Bid, Bid Data Sheet, General Conditions of Contract, Special Conditions of Contract, Schedule of Requirements, and Specifications are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.

- d. The cover should be modified as required to identify the Bidding Documents as to the Procurement Project, Project Identification Number, and Procuring Entity, in addition to the date of issue.
- e. Modifications for specific Procurement Project details should be provided in the Special Conditions of Contract as amendments to the Conditions of Contract. For easy completion, whenever reference has to be made to specific clauses in the Bid Data Sheet or Special Conditions of Contract, these terms shall be printed in bold typeface on Sections I (Instructions to Bidders) and III (General Conditions of Contract), respectively.
- f. For guidelines on the use of Bidding Forms and the procurement of Foreign-Assisted Projects, these will be covered by a separate issuance of the Government Procurement Policy Board.

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Glossary of Acronyms, Terms, and Abbreviations

ABC – Approved Budget for the Contract.

BAC – Bids and Awards Committee.

Bid – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender*. (2016 revised IRR, Section 5[c])

Bidder – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

Bidding Documents – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

Consulting Services – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

CDA - Cooperative Development Authority.

Contract – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

CIF – Cost Insurance and Freight.

CIP – Carriage and Insurance Paid.

CPI – Consumer Price Index.

DDP – Refers to the quoted price of the Goods, which means “delivered duty paid.”

DTI – Department of Trade and Industry.

EXW – Ex works.

FCA – “Free Carrier” shipping point.

FOB – “Free on Board” shipping point.

Foreign-funded Procurement or Foreign-Assisted Project– Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

Framework Agreement – Refers to a written agreement between a procuring entity and a supplier or service provider that identifies the terms and conditions, under which specific purchases, otherwise known as “Call-Offs,” are made for the duration of the agreement. It is in the nature of an option contract between the procuring entity and the bidder(s) granting the procuring entity the option to either place an order for any of the goods or services identified in the Framework Agreement List or not buy at all, within a minimum period of one (1) year to a maximum period of three (3) years. (GPPB Resolution No. 27-2019)

GFI – Government Financial Institution.

GOCC – Government-owned and/or –controlled corporation.

Goods – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term “related” or “analogous services” shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

GOP – Government of the Philippines.

GPPB – Government Procurement Policy Board.

INCOTERMS – International Commercial Terms.

Infrastructure Projects – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national

buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PhilGEPS - Philippine Government Electronic Procurement System.

Procurement Project – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

Supplier – refers to a citizen, or any corporate body or commercial company duly organized and registered under the laws where it is established, habitually established in business and engaged in the manufacture or sale of the merchandise or performance of the general services covered by his bid. (Item 3.8 of GPPB Resolution No. 13-2019, dated 23 May 2019). Supplier as used in these Bidding Documents may likewise refer to a distributor, manufacturer, contractor, or consultant.

UN – United Nations.

Section I. Invitation to Bid

Notes on the Invitation to Bid

The Invitation to Bid (IB) provides information that enables potential Bidders to decide whether to participate in the procurement at hand. The IB shall be posted in accordance with Section 21.2 of the 2016 revised IRR of RA No. 9184.

Apart from the essential items listed in the Bidding Documents, the IB should also indicate the following:

- a. The date of availability of the Bidding Documents, which shall be from the time the IB is first advertised/posted until the deadline for the submission and receipt of bids;
- b. The place where the Bidding Documents may be acquired or the website where it may be downloaded;
- c. The deadline for the submission and receipt of bids; and
- d. Any important bid evaluation criteria (*e.g.*, the application of a margin of preference in bid evaluation).

The IB should be incorporated in the Bidding Documents. The information contained in the IB must conform to the Bidding Documents and in particular to the relevant information in the Bid Data Sheet.



REPUBLIC OF THE PHILIPPINES
AGUSAN DEL SUR STATE COLLEGE OF AGRICULTURE AND TECHNOLOGY
Bunawan, Agusan del Sur

INVITATION TO BID FOR

**PROCUREMENT OF SUPPLY, DELIVERY AND INSTALLATION
OF LABORATORY EQUIPMENT AND FACILITIES FOR
ADVANCED ENGINEERING AND INDUSTRIAL TECHNOLOGY
e-LEARNING**

1. The *Agusan del Sur State College of Agriculture and Technology (ASSCAT)*, through the *Custodial Fund (CF)* intends to apply the sum of *Fifteen Million Pesos (Php 15,000,000.00)* being the ABC to payments under the contract for *Procurement of Supply, Delivery and Installation of Laboratory Equipment and Facilities for Advanced Engineering and Industrial Technology e-Learning*. Bids received in excess of the ABC shall be automatically rejected at bid opening.

The *Agusan del Sur State College of Agriculture and Technology (ASSCAT)* now invites bids for the above Procurement Project. Delivery of the Goods is required One Hundred Twenty (120) Calendar Days. Bidders should have completed, within 2 years from the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).

2. Bidding will be conducted through open competitive bidding procedures using a non-discretionary “*pass/fail*” criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.
3. Prospective Bidders may obtain further information from *Agusan del Sur State College of Agriculture and Technology (ASSCAT)* and inspect the Bidding Documents at the address given below from *Monday to Friday 8:00am to 5:00pm*.
4. A complete set of Bidding Documents may be acquired by interested Bidders on *May 2, 2022* from the given address and website(s) below and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of *Php 25,000.00*

The Procuring Entity shall allow the bidder to present its proof of payment for the fees through in person or through ASSCAT LANDBANK ePayment Service. Please see instructions below:

**AGUSAN DEL SUR
STATE COLLEGE OF AGRICULTURE
AND TECHNOLOGY
BUNAWAN AGUSAN DEL SUR**

**LANDBANK
ePayment Service**

LANDBANK
We help you grow

Link BizPortal

**Payment Process for LANDBANK Accounts
and BancNet Online Participating Banks**

STEP 1	Go to www.landbank.com , click on LANDBANK Link.BizPortal and click "Pay Now" button
STEP 2	Select or Type Agusan del Sur State College of Agriculture and Technology
STEP 3	Choose your Transaction Type
STEP 4	Fill-out Transaction Details. Review provided information.
STEP 5	Select LANDBANK as payment method and key in you Account Number and if BancNet Online Participating Banks select Banc Net as payment method
STEP 6	Key in all the required account details including the One-time Password (OTP) and ATM PIN
STEP 7	View/Print Payment Confirmation and please email with Name at cashier@asscat.edu.ph

5. The Agusan del Sur State College of Agriculture and Technology (ASSCAT) will hold a Pre-Bid Conference¹ on May 10, 2022 at 10:00 o'clock in the morning at the Conference Room, Administration Building, ASSCAT, Bunawan, Agusan del Sur and/or through video conferencing via Zoom Video Conferencing, which shall be open to prospective bidders.
6. Bids must be duly received by the BAC Secretariat through manual submission at the office address indicated below or through online or electronic submission as indicated below, on or before May 23, 2022 at 9:00 am. Late bids shall not be accepted.
7. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in ITB Clause 14.
8. Bid opening shall be on May 23, 2022 at 10:00 am at the Conference Room, Administration Building, ASSCAT, Bunawan, Agusan del Sur and/or via Zoom Video Conferencing. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

¹ May be deleted in case the ABC is less than One Million Pesos (PhP1,000,000) where the Procuring Entity may not hold a Pre-Bid Conference.

9. Interested Bidders may submit their bidding documents via electronic means on or before *May 23, 2022 at 9:00 o'clock in the morning* provided that the submitted e-documents uses a two-factor security procedure consisting of an archive format compression and password protection to ensure the security, integrity and confidentiality of the bids submitted. The passwords for accessing the file will be disclosed by the Bidders only during the actual bid opening schedule on *May 23, 2022 at 10:00 o'clock in the morning (GPPB Resolution No. 09-2020, Item 4.2)*.

Further, bidders are still required to submit their bidding documents in three (3) hard copies (1 Original and 2 Certified True Copies) via hand-carry or via courier. Said documents must be sent to the following address:

Receiver's Name: **ASSCAT Bids and Awards Committee (BAC)**
Receiver's Address: **Administration Building, ASSCAT, San Teodoro, Bunawan, Agusan del Sur**
Contact Numbers: **Smart 0949-1282-221**
Globe 0906-3423-149

For more information, queries and clarifications, the BAC Secretariat can be reached through the following:

E-mail Address: **asscat_bac@yahoo.com**
Mobile Numbers: **Smart 0949-1282-221**
Globe 0906-3423-149

10. The *Agusan del Sur State College of Agriculture and Technology (ASSCAT)* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised IRR of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

LEOLYN MAE P. JUSAY
Chair, BAC Secretariat
Procurement Office
ASSCAT, Bunawan, Agusan del Sur
09491282221/09063423149

12. You may visit the following websites:

For downloading of Bidding Documents, please visit ***asscat.edu.ph***
For online bid submission, please email to ***asscat_bac@yahoo.com***

April 30, 2022

(sgd) SHIELA G. REYES, Ph.D.
BAC Chairperson

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

This Section on the Instruction to Bidders (ITB) provides the information necessary for bidders to prepare responsive bids, in accordance with the requirements of the Procuring Entity. It also provides information on bid submission, eligibility check, opening and evaluation of bids, post-qualification, and on the award of contract.

1. Scope of Bid

The Procuring Entity, *Agusan del Sur State College of Agriculture and Technology (ASSCAT)* invites Bids for the *Procurement of Supply, Delivery and Installation of Laboratory Equipment and Facilities for Advanced Engineering and Industrial Technology e-Learning*, with Project Identification Number PB-Goods 2022-002.

The Procurement Project (referred to herein as “Project”) is composed of One (1) Lot only, the details of which are described in Section VII (Technical Specifications).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for [2022] in the amount of *Fifteen Million Pesos (Php 15,000,000.00)*.

2.2. The source of funding is:

[If not an early procurement activity, select one and delete others:]

a. NGA, the General Appropriations Act or Special Appropriations.

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or **IB** by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have verified and accepted the general requirements of this Project, including other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex “I” of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

- 5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.
- 5.3. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which, adjusted to current prices using the PSA's CPI, must be at least equivalent to:

[Select one, delete the other/s]

- a. For the procurement of Non-expendable Supplies and Services: The Bidder must have completed a single contract that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC.
 - b. For the procurement of Expendable Supplies: The Bidder must have completed a single contract that is similar to this Project, equivalent to at least twenty-five percent (25%) of the ABC.
 - c. For procurement where the Procuring Entity has determined, after the conduct of market research, that imposition of either (a) or (b) will likely result to failure of bidding or monopoly that will defeat the purpose of public bidding: the Bidder should comply with the following requirements: *[Select either failure or monopoly of bidding based on market research conducted]*
 - i. Completed at least two (2) similar contracts, the aggregate amount of which should be equivalent to at least *fifty percent (50%) in the case of non-expendable supplies and services or twenty-five percent (25%) in the case of expendable supplies*] of the ABC for this Project; and
 - ii. The largest of these similar contracts must be equivalent to at least half of the percentage of the ABC as required above.
- 5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

6. Origin of Goods

There is no restriction on the origin of goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN, subject to Domestic Preference requirements under **ITB** Clause 18.

7. Subcontracts

The Procuring Entity has prescribed that:

- a. Subcontracting is not allowed.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address *{[insert if applicable]}* and/or through videoconferencing/webcasting} as indicated in paragraph 6 of the **IB**.

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents comprising the Bid: Eligibility and Technical Components

- 10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.
- 10.2. The Bidder's SLCC as indicated in **ITB** Clause 5.3 should have been completed within *[state relevant period as provided in paragraph 2 of the IB]* prior to the deadline for the submission and receipt of bids.
- 10.3. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. Similar to the required authentication above, for Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

11. Documents comprising the Bid: Financial Component

- 11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.
- 11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.
- 11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.
- 11.4. For Foreign-funded Procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

- 11.5. *[Include if Framework Agreement will be used:]* Financial proposals for single or multi-year Framework Agreement shall be submitted before the deadline of submission of bids as prescribed in the **IB**. For multi-year Framework Agreement, evaluation of the financial proposal during this stage is for purposes of determining eligibility and whether or not such financial proposal is within the ABC.

12. Bid Prices

- 12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:
- a. For Goods offered from within the Procuring Entity's country:
 - i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);
 - ii. The cost of all customs duties and sales and other taxes already paid or payable;
 - iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and
 - iv. The price of other (incidental) services, if any, listed in the **BDS**.
 - b. For Goods offered from abroad:
 - i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.
 - ii. The price of other (incidental) services, if any, as listed in the **BDS**.
- 12.2. *[Include if Framework Agreement will be used:]* For Framework Agreement, the following should also apply in addition to Clause 12.1:

- a. For a single year Framework Agreement, the prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation or escalation on any account. Price schedules required under Clause 12.1 shall be submitted with the bidding documents.
- b. For a multi-year Framework Agreement, the prices quoted by the Bidder during submission of eligibility documents shall be the ceiling and the price quoted during mini-competition must not exceed the initial price offer. The price quoted during call for mini-competition shall be fixed during the Bidder's performance of that Call-off and not subject to variation or escalation on any account. Price schedules required under Clause 12.1 shall be submitted with the bidding documents.

13. Bid and Payment Currencies

- 13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.
- 13.2. Payment of the contract price shall be made in:
 - a. Philippine Pesos.

14. Bid Security

- 14.1. The Bidder shall submit a Bid Securing Declaration² or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.
- 14.2. The Bid and bid security shall be valid until *[indicate date]*. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.
- 14.3. *[Include if Framework Agreement will be used:]* In the case of Framework Agreement, other than the grounds for forfeiture under the 2016 revised IRR, the bid security may also be forfeited if the successful bidder fails to sign the Framework Agreement, or fails to furnish the performance security or performance securing declaration. Without prejudice on its forfeiture, bid securities shall be returned only after the posting of performance security or performance securing declaration, as the case may be, by the winning Bidder or compliant Bidders and the signing of the Framework Agreement.

15. Sealing and Marking of Bids

² In the case of Framework Agreement, the undertaking shall refer to entering into contract with the Procuring Entity and furnishing of the performance security or the performance securing declaration within ten (10) calendar days from receipt of Notice to Execute Framework Agreement.

Each Bidder shall submit three (3) copies of the first and second components of its Bid.

If the Procuring Entity allows the submission of bids through online submission or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

16. Deadline for Submission of Bids

16.1. The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph 7 of the **IB**.

16.2. *[Include if Framework Agreement will be used:]* For multi-year Framework Agreement, the submission of bids shall be for the initial evaluation of their technical and financial eligibility. Thereafter, those declared eligible during the said initial eligibility evaluation and entered into a Framework Agreement with the Procuring Entity shall submit anew their best financial offer at the address and on or before the date and time indicated in the Call for each mini-competition.

17. Opening and Preliminary Examination of Bids

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

17.2. The preliminary examination of bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

18. Domestic Preference

18.1. The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

18.2. *[Include if Framework Agreement will be used:]* For multi-year Framework Agreement, determination of margin of preference shall be conducted every call for Mini-Competition.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "passed," using non-discretionary pass/fail criteria. The BAC

shall consider the conditions in the evaluation of Bids under Section 32.2 of the 2016 revised IRR of RA No. 9184.

[Include the following options if Framework Agreement will be used:]

- a. In the case of single-year Framework Agreement, the Lowest Calculated Bid shall be determined outright after the detailed evaluation;
 - b. For multi-year Framework Agreement, the determination of the eligibility and the compliance of bidders with the technical and financial aspects of the projects shall be initially made by the BAC, in accordance with Item 7.4.2 of the Guidelines on the Use of Framework Agreement.
- 19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 14 shall be submitted for each lot or item separately.
- 19.3. The descriptions of the lots or items shall be indicated in **Section VII (Technical Specifications)**, although the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder.
- 19.4. The Project shall be awarded as follows:
- Option 1 – One Project having several items that shall be awarded as one contract.
- 19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

20. Post-Qualification

- 20.1. *[Include if Framework Agreement will be used:]* For multi-year Framework Agreement, all bidders initially determined to be eligible and financially compliant shall be subject to initial post-qualification. The BAC shall then recommend the execution of a Framework Agreement among all eligible, technically and financially compliant bidders and the Procuring Entity and shall be issued by HoPE a Notice to Execute Framework Agreement. The determination of the Lowest Calculated Bid (LCB) shall not be performed by the BAC until a Mini-Competition is conducted among the bidders who executed a Framework Agreement. When a Call for Mini-Competition is made, the BAC shall allow the bidders to submit their best financial proposals on such pre-scheduled date, time and place to determine the bidder with the LCB.

- 20.2. Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, *{[Include if Framework Agreement will be used:]}* or in the case of multi-year Framework Agreement, that it is one of the eligible bidders who have submitted bids that are found to be technically and financially compliant, *}* the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**. *{[Include if Framework Agreement will be used:]}* For every mini-competition in Framework Agreement, the LCB shall likewise submit the required documents for final Post Qualification. *}*

21. Signing of the Contract

- 21.1. The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

[Include the following clauses if Framework Agreement will be used:]

- 21.2. At the same time as the Procuring Entity notifies the successful Bidder that its bid has been accepted, the Procuring Entity shall send the Framework Agreement Form to the Bidder, which contract has been provided in the Bidding Documents, incorporating therein all agreements between the parties.
- 21.3. Within ten (10) calendar days from receipt of the Notice to Execute Framework Agreement with the Procuring Entity, the successful Bidder or its duly authorized representative shall formally enter into a Framework Agreement with the procuring entity for an amount of One Peso to be paid to the procuring entity as a consideration for the option granted by the procuring entity to procure the items in the Framework Agreement List when the need arises.
- 21.4. The Procuring Entity shall enter into a Framework Agreement with the successful Bidder within the same ten (10) calendar day period provided that all the documentary requirements are complied with.
- 21.5. The following documents shall form part of the Framework Agreement:
- a. Framework Agreement Form;
 - b. Bidding Documents;
 - c. Call-offs;
 - d. Winning bidder's bid, including the Technical and Financial Proposals, and all other documents/statements submitted (*e.g.*, bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;
 - e. Performance Security or Performance Securing Declaration, as the case may be;
 - f. Notice to Execute Framework Agreement; and
 - g. Other contract documents that may be required by existing laws and/or specified in the **BDS**.

Section III. Bid Data Sheet

Notes on the Bid Data Sheet

The Bid Data Sheet (BDS) consists of provisions that supplement, amend, or specify in detail, information, or requirements included in the ITB found in Section II, which are specific to each procurement.

This Section is intended to assist the Procuring Entity in providing the specific information in relation to corresponding clauses in the ITB and has to be prepared for each specific procurement.

The Procuring Entity should specify in the BDS information and requirements specific to the circumstances of the Procuring Entity, the processing of the procurement, and the bid evaluation criteria that will apply to the Bids. In preparing the BDS, the following aspects should be checked:

- a. Information that specifies and complements provisions of the ITB must be incorporated.
- b. Amendments and/or supplements, if any, to provisions of the ITB as necessitated by the circumstances of the specific procurement, must also be incorporated.

Bid Data Sheet

ITB Clause	
5.3	<p>For this purpose, contracts similar to the Project shall be:</p> <ul style="list-style-type: none"> a. <i>[provide the definition or description of similar contracts].</i> b. completed within 2 years prior to the deadline for the submission and receipt of bids.
7.1	<i>[Specify the portions of Goods to be subcontracted, which shall not be a significant or material component of the Project as determined by the Procuring Entity.]</i>
12	The price of the Goods shall be quoted DDP <i>[state place of destination]</i> or the applicable International Commercial Terms (INCOTERMS) for this Project.
14.1	<p>The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts:</p> <ul style="list-style-type: none"> a. The amount of not less <i>two percent (2%) of ABC</i>, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b. The amount of not less <i>five percent (5%) of ABC</i> if bid security is in Surety Bond.
19.3	<p><i>[In case the Project will be awarded by lot, list the grouping of lots by specifying the group title, items, and the quantity for every identified lot, and the corresponding ABC for each lot.]</i></p> <p><i>[In case the project will be awarded by item, list each item indicating its quantity and ABC.]</i></p>
20.2	<i>[List here any licenses and permits relevant to the Project and the corresponding law requiring it.]</i>
21.2	<i>[List here any additional contract documents relevant to the Project that may be required by existing laws and/or the Procuring Entity.]</i>

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

The General Conditions of Contract (GCC) in this Section, read in conjunction with the Special Conditions of Contract in Section V and other documents listed therein, should be a complete document expressing all the rights and obligations of the parties.

Matters governing performance of the Supplier, payments under the contract, or matters affecting the risks, rights, and obligations of the parties under the contract are included in the GCC and Special Conditions of Contract.

Any complementary information, which may be needed, shall be introduced only through the Special Conditions of Contract.

1. **Scope of Contract**

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract (SCC)**.

2. **Advance Payment and Terms of Payment**

2.1. Advance payment of the contract amount is provided under Annex “D” of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

[Include the following clauses if Framework Agreement will be used:]

2.3. For a single-year Framework Agreement, prices charged by the Supplier for Goods delivered and/or services performed under a Call-Off shall not vary from the prices quoted by the Supplier in its bid.

2.4. For multi-year Framework Agreement, prices charged by the Supplier for Goods delivered and/or services performed under a Call-Off shall not vary from the prices quoted by the Supplier during conduct of Mini-Competition.

3. **Performance Security**

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than the signing of the Contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR of RA No. 9184. *{[Include if Framework Agreement will be used:] In the case of Framework Agreement, the Bidder may opt to furnish the performance security or a Performance Securing Declaration as defined under the Guidelines on the Use of Framework Agreement.}*

4. Inspection and Tests

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project *{[Include if Framework Agreement will be used:] or Framework Agreement}* specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC, Section VII (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

5. Warranty

5.1 In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.

5.2 The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

6. Liability of the Supplier

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Supplier is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

Similar to the BDS, the clauses in this Section are intended to assist the Procuring Entity in providing contract-specific information in relation to corresponding clauses in the GCC found in Section IV.

The Special Conditions of Contract (SCC) complement the GCC, specifying contractual requirements linked to the special circumstances of the Procuring Entity, the Procuring Entity's country, the sector, and the Goods purchased. In preparing this Section, the following aspects should be checked:

- a. Information that complements provisions of the GCC must be incorporated.
- b. Amendments and/or supplements to provisions of the GCC as necessitated by the circumstances of the specific purchase, must also be incorporated.

However, no special condition which defeats or negates the general intent and purpose of the provisions of the GCC should be incorporated herein.

Special Conditions of Contract

GCC Clause	
1	<p><i>[List here any additional requirements for the completion of this Contract. The following requirements and the corresponding provisions may be deleted, amended, or retained depending on its applicability to this Contract:]</i></p> <p>Delivery and Documents –</p> <p>For purposes of the Contract, “EXW,” “FOB,” “FCA,” “CIF,” “CIP,” “DDP” and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows:</p> <p><i>[For Goods supplied from abroad, state:]</i> “The delivery terms applicable to the Contract are DDP delivered <i>[indicate place of destination]</i>. In accordance with INCOTERMS.”</p> <p><i>[For Goods supplied from within the Philippines, state:]</i> “The delivery terms applicable to this Contract are delivered <i>[indicate place of destination]</i>. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination.”</p> <p>Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements).</p> <p>For purposes of this Clause the Procuring Entity’s Representative at the Project Site is <i>[indicate name(s)]</i>.</p> <p>Incidental Services –</p> <p>The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements:</p> <p><i>Select appropriate requirements and delete the rest.</i></p> <ol style="list-style-type: none"> 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 Entity’s personnel, at the Supplier’s plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.
- f. *[Specify additional incidental service requirements, as needed.]*

The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

Spare Parts –

The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

Select appropriate requirements and delete the rest.

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

The spare parts and other components required are listed in **Section VI (Schedule of Requirements)** and the costs thereof are included in the contract price.

The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for a period of *[indicate here the time period specified. If not used indicate a time period of three times the warranty period]*.

Spare parts or components shall be supplied as promptly as possible, but in any case, within *[insert appropriate time period]* months of placing the order.

	<p>Packaging –</p> <p>The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging case size and weights shall take into consideration, where appropriate, the remoteness of the Goods’ final destination and the absence of heavy handling facilities at all points in transit.</p> <p>The packaging, 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 below, and in any subsequent instructions ordered by the Procuring Entity.</p> <p>The outer packaging must be clearly marked on at least four (4) sides as follows:</p> <p>Name of the Procuring Entity Name of the Supplier Contract Description Final Destination Gross weight Any special lifting instructions Any special handling instructions Any relevant HAZCHEM classifications</p>
	<p>A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging.</p> <p>Transportation –</p> <p>Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.</p> <p>Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price.</p>

	<p>Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure.</p> <p>The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until their receipt and final acceptance at the final destination.</p> <p>Intellectual Property Rights –</p> <p>The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.</p>
2.2	<p><i>[If partial payment is allowed, state]</i> “The terms of payment shall be as follows: _____.”</p>
4	<p>The inspections and tests that will be conducted are: <i>[Indicate the applicable inspections and tests]</i></p>

Section VI. Schedule of Requirements

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery to the project site.

Lot Item Number	Description	Quantity	Unit	Total	Delivered, Weeks/Months
1	Procurement of Supply, Delivery and Installation of Laboratory Equipment and Facilities for Advance Engineering and Industrial Technology e-Learning	1	Lot	15,000,000.00	120 Calendar Days

[Use this form for Framework Agreement:]

Framework Agreement List

Limited to repeatedly required goods and services that are identified to be necessary and desirable, but, by its nature, use or characteristic, the quantity and/ or exact time of need cannot be accurately pre-determined and are not advisable to be carried in stock.

Prepared by the End-User, attached to the APP and submitted to the BAC for the approval of the HOPE.

<i>FRAMEWORK AGREEMENT LIST (AGENCY)</i>			
<i>Item / Service Type and nature of each item/service</i>	<i>Cost per item or service</i>	<i>Maximum Quantity</i>	<i>Total Cost per Item</i>
<i>TOTAL (Approved Budget for the Contract)</i>			
<i>Expected delivery timeframe after receipt of a Call-Off.</i>	<i>Within [no. of days] calendar days upon issuance of Call-off.</i>		
<i>Remarks</i>	<i>Indicate here any other appropriate information as may be necessary.</i>		
<i>SIGNATURE OVER PRINTED NAME</i>	<i>POSITION</i>	<i>DEPARTMENT/DIVISION</i>	

Section VII. Technical Specifications

Notes for Preparing the Technical Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Procuring Entity without qualifying their Bids. In the context of Competitive Bidding, the specifications (*e.g.* production/delivery schedule, manpower requirements, and after-sales service/parts, descriptions of the lots or items) must be prepared to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of transparency, equity, efficiency, fairness, and economy in procurement be realized, responsiveness of bids be ensured, and the subsequent task of bid evaluation and post-qualification facilitated. The specifications should require that all items, materials and accessories to be included or incorporated in the goods be new, unused, and of the most recent or current models, and that they include or incorporate all recent improvements in design and materials unless otherwise provided in the Contract.

Samples of specifications from previous similar procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the goods and the repetitiveness of the type of procurement, it may be advantageous to standardize the General Technical Specifications and incorporate them in a separate subsection. The General Technical Specifications should cover all classes of workmanship, materials, and equipment commonly involved in manufacturing similar goods. Deletions or addenda should then adapt the General Technical Specifications to the particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized Philippine and international standards should be used as much as possible. Where other particular standards are used, whether national standards or other standards, the specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Special Conditions of Contract or the Technical Specifications.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Technical Specifications to specific standards and codes to be met by the goods and materials to be furnished or tested, the provisions of the latest edition or revision of the relevant standards and codes shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national or relate to a particular country or region, other authoritative standards that ensure substantial equivalence to the standards and codes specified will be acceptable.

Reference to brand name and catalogue number should be avoided as far as possible; where unavoidable they should always be followed by the words “*or at least equivalent.*” References to brand names cannot be used when the funding source is the GOP.

Where appropriate, drawings, including site plans as required, may be furnished by the Procuring Entity with the Bidding Documents. Similarly, the Supplier may be requested to provide drawings or samples either with its Bid or for prior review by the Procuring Entity during contract execution.

Bidders are also required, as part of the technical specifications, to complete their statement of compliance demonstrating how the items comply with the specification.

Technical Specifications

Lot Item No.	Specification	Statement of Compliance
1	<p>Procurement of Supply, Delivery and Installation of Laboratory Equipment and Facilities for Advance Engineering and Industrial Technology e-Learning</p>	
	<p>1 (One) Set - Mixed Signal Digital Oscilloscope Features:</p> <ul style="list-style-type: none"> • Support logic analyzer and oscilloscope • 1GSa/s sampling rate and 50GSa/s equivalent sampling rate • 1024k recording length • 7"wide screen 64k color TFT display • USB-host for save and update <p>2 channels oscilloscope+ 16 channels logical analyser, 1GSa/s, 25GSa/s, 7"wide screen 64k color TFT LCD, Adjustable (16 gears) with the progress bar, 800 horizontal × 480 vertical pixels, 2mV/div~5V/div, USB(D), USB(H), LAN, Calibrator: 5V≥(1MΩ load), 1kHz.</p>	
	<p>1 (One) Set - AM/FM/ASK/FSK Transmitter and Receiver System Features:</p> <ol style="list-style-type: none"> a. AM transmitter and Receiver modules b. FM transmitter and Receiver modules c. ASK/AM Transmitter and Receiver modules d. FSK/FM Transmitter and Receiver modules e. Comprehensive and self-contained system carrying out AM/ASK and FM/FSK transmission f. The Modules equipped with 8-bit DIP switch for fault-finding experiments g. Provided with comprehensive experimental manual. h. An Actual mini broadcasting Station 	

	<p>AM/DSB Transmitter</p> <p>With perfect AM Transmitter for producing 1MHz, Equipped with 8-bit DIP switch for circuits fault simulations.</p> <p>AM Transistorize Radio</p> <p>AM Receiver frequency range: 535KHz – 1605KHz, Intermediate frequency: 455KHz, Equipped with 8-bit DIP switch for circuits fault simulations.</p> <p>FM Transmitter</p> <p>With perfect FM Transmitter for producing 10.7MHz intermediate frequency, Equipped with 8-bit DIP switch for circuits fault simulations, Digital probe: 1Hz~89999999Hz</p> <p>FM Stereo Radio</p> <p>FM Receiver frequency range : 88MHz-108MHz, Frequency shown by 7 segment LED display, Equipped with 8-bit DIP switch for circuits fault simulations</p> <p>ASK/AM Transmitter</p> <hr/> <p>Amplitude-shift keying (ASK) transmitter,</p> <p>Carrier frequency: 1.0 MHz & 1.6 MHz, Data transmission format: Start bit, 64-bit encoded data : 8-bit data encoded by 8-bit spread spectrum setting, Stop bit</p> <p>Data transmission:</p> <ol style="list-style-type: none"> 1. Direct modulation, 2. Manchester encoding, Data rate: <ol style="list-style-type: none"> a. 100 / 62.5 Hz, b. 160 / 100 Hz, c. 1.6K / 1K Hz/ AM audio modulation signal: Audio input: mono microphone input <p>ASK/AM Receiver</p> <ol style="list-style-type: none"> a. AM receiver frequency range: 535 KHz ~ 1605 KHz b. Intermediate frequency: 455Khz 	
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	<p>c. Data receive mode:</p> <ul style="list-style-type: none"> · Direct demodulation · Manchester decoding <p>d. Data rate:</p> <ul style="list-style-type: none"> · 100 / 62.5 Hz · 160 / 100 Hz · 1.6K / 1K Hz · AM audio demodulation signal · Audio output : 0.2W 8Ω speaker <p>FSK/FM Transmitter</p> <ul style="list-style-type: none"> · Frequency-shift keying (FSK) transmitter, which is able to produce 10.7 MHz intermediate frequency · Data transmission format: <ul style="list-style-type: none"> · Start bit · 64-bit encoded data: 8-bit data encoded by 8-bit spread spectrum setting · Stop bit · Data transmission: <ul style="list-style-type: none"> · 1)Direct modulation · 2)Manchester encoding · Data rate : <ul style="list-style-type: none"> · 1)100 / 62.5 Hz <hr style="width: 50%; margin-left: 0;"/> <ul style="list-style-type: none"> · 2)160 / 100 Hz · FM audio modulation signal: <ul style="list-style-type: none"> · 1)Audio input : Mono microphone input · Digital probe: 1Hz~89999999Hz <p>FSK/ AM Receiver</p>	
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	<p>a. FM receiver frequency: 10.7 MHz</p> <p>b. Data receive mode:</p> <ul style="list-style-type: none"> · 1)Direct demodulation · 2)Manchester decoding <p>c. Data rate:</p> <ul style="list-style-type: none"> · 1)100 / 62.5 Hz · 2)160 / 100 Hz · FM Audio demodulation signal: <p>d. Audio output: 0.2W 8Ω speaker</p> <p>CI -18001 Power Supply x 2: (1) Output : ±5V, 0.5A ; ±12V, 0.5A, (2) Input : AC 110/220V, Connection leads and plugs x 1 set, Telescope antenna x 3 pcs, Mini-microphone x 2 pcs, Experiment manual, Digital logic probe x 1 set, Storage Cabinet, Rack Frame, Digital Storage Oscilloscope with FFT.</p>	
	<p>1 (One) Set - Basic Communication System</p> <p>The Equipment shall have the following Features:</p> <ul style="list-style-type: none"> · Express Fundamental technical concepts ins telecommunication · Enable students to acquire a clear experimental view · Familiarization with the operative aspects of the work in telecommunication laboratory · It includes modules with experimental circuits · It offers the beginner complete courses of basic analog and digital communication. · Equipped with power supply and signal unit · System modularity maximizes flexibility and variety for experimentation, and allows possibility for expansion and customization. 	

	<ul style="list-style-type: none"> · It uses 2mm connecting lead throughout the system · The building block and components symbols of the circuits are printed on the surface of each module · All modules are secured in plastic housing (297 x 226 x 60mm) <hr/> <ul style="list-style-type: none"> · Cabinet for all modules storage facilities · Complete experimental manual and teacher's guide <p style="margin-left: 40px;">Experiment Modules</p> <ol style="list-style-type: none"> 1. 2mm connection leads are used throughout the system. 2. The building blocks and components symbols of the circuits are printed on the surface of each module. 3. All modules are secured in plastic housings (297(W) x 226(D) x 60(H))mm 4. Cabinet is available for all modules storage facilities 5. Complete experimental manual and teacher's guide <p style="margin-left: 20px;">List of Modules</p> <ol style="list-style-type: none"> 1. Analog Communication Modules <ul style="list-style-type: none"> · Oscillator/Second Order LPF & HPF · AM Modulator/Demodulator · DSB-SC & SSB Modulator/Demodulator · FM Modulator/Demodulator · PLL Frequency Synthesizer · TDM & PAM-TDM Multiplexer/Demultiplexer · FDM Multiplexer/Demultiplexer · Signal Converter/Recovery/Regeneration 2. Digital Communication Modules <ul style="list-style-type: none"> · A/D, D/A Converter Applications 	
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	<ul style="list-style-type: none"> · PWM Modulator/Demodulator · FSK Modulator/Demodulator · CVSD Modulator/Demodulator, Manchester Code Encode/Decode · ASK Modulator/Demodulator · PSK/QPSK Modulator · PSK/QPSK Demodulator <p>3. Power Supply & Signal Generator Unit</p> <p>Analog Communication Modules</p> <p>1. Oscillator/Second Order LPF & HPF (2) AM demodulator</p> <hr/> <p>a. RF oscillator a. Carrier signal : 100KHz ~ 2MHz</p> <ul style="list-style-type: none"> · Oscillator frequency : 500KHz, 10MHz <p>b. Power supply : +12V</p> <p>2. Second order LPF and HPF</p> <p>a. Low pass -3db frequency : 1KHz, 10KHz</p> <p>b. High pass -3db frequency : 800Hz, 8KHz</p> <p>c. Power supply : +12V, -12V</p> <p>3. AM Modulator/Demodulator</p> <p>a. AM modulator:</p> <ul style="list-style-type: none"> · Carrier signal : 100KHz ~ 2MHz · Audio signal : 1KHz ~ 3KHz · Power supply : +12V, -5V · Powersupply : +12V, -5V <p>b. AM demodulator</p> <ul style="list-style-type: none"> · Carrier signal : 100KHz ~ 2MHz · Audio signal : 1KHz ~ 3KHz 	
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	<ul style="list-style-type: none"> · Power supply : +12V, -12V · DSB-SC & SSB Modulator/Demodulator 1. DSB-SC and SSB modulator DSB-SC modulator <ul style="list-style-type: none"> a. Carrier signal : 500KHz ~ 1MHz b. Audio signal : 1KHz ~ 2KHz c. Power supply : +12V, -5VSSB modulator <ul style="list-style-type: none"> a. Carrier signal : 453KHz b. Audio signal : 1KHz ~ 2KHz 2. DSB-SC and SSB demodulator DSB-SC demodulator <ul style="list-style-type: none"> a. Carrier signal : 500KHz b. Audio signal : 1KHz ~ 3KHz b. Power supply : +12V c. SSB demodulator <ul style="list-style-type: none"> a. Carrier signal : 453KHz b. Audio signal : 2KHz c. Power supply : +12V 3. FM Modulator/Demodulator <hr style="width: 50%; margin-left: 0;"/> <ul style="list-style-type: none"> a. Frequency modulator MC 1648 modulator <ul style="list-style-type: none"> · Carrier signal : 2MHz ~ 3MHz · Audio signal : 3KHz ~ 8KHz Analog switch multiplexer · Power supply : +5V LM566 modulator · Carrier signal : 2KHz ~ 20KHz · Audio signal : 1KHz ~ 5KHz · Power supply : +5V, -5V 4. Frequency demodulator LM565 demodulator <ul style="list-style-type: none"> · Carrier signal : 2KHz ~ 20KHz 	
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	<ul style="list-style-type: none"> · Audio signal : 1KHz ~ 5KHz <hr/> <ul style="list-style-type: none"> · Power supply : +5V, -5V FM-to-AM demodulator Analog switch demultiplexer <ol style="list-style-type: none"> a. Carrier signal : 500KHz ~ 2MHz b. Audio signal : 1KHz ~ 5KHz c. Power supply : +5V, -5V <p>5. PLL Frequency Synthesizer</p> <ul style="list-style-type: none"> · Frequency selection range : 1KHz ~ 1.5MHz · Reference frequency : crystal OSC., 1KHz or 10KHz · Phase detector & VCO : IC 4046 · Adjustable capture range · Adjustable lock-in range · With 5 module blocks · Reference frequency block · Phase locked loop block · Divided by N counter block · Divided by 10 block · Offset oscillator block <p>6. Divide-by-N counter is programmable by a thumbwheel switch</p> <p>7. TDM & PAM-TDM Multiplexer/Demultiplexer</p> <ul style="list-style-type: none"> · TDM multiplexer Audio signal generator · Triangle generator : 100Hz ~ 15KHz, 6Vpp · Square generator : 100Hz ~ 15KHz, 6Vpp · Sine generator : 800Hz ~ 65KHz, 6Vpp · TDM channel : channel A, B, C 3 ports 	
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	<ul style="list-style-type: none"> · TDM switch frequency : 1MHz, 50KHz, 5KHz, 1KHz <p>8. High speed analog PAM-TDM multiplexer Audio signal PAM-TDM simultaneous multiplexer</p> <p>9. Multichannel TDM simultaneous demultiplexer</p> <ul style="list-style-type: none"> · TDM mix signal level 6Vpp · Switch voltage level 6Vpp <ul style="list-style-type: none"> · TDM switch frequency : 1MHz, 50KHz, 5KHz, 1KHz · FSYNI : TDM frame start input <ul style="list-style-type: none"> · Auto start frame detector TDM demultiplexer output : channel A, B, C 3 ports TDM frame receiver counter : F0 ~ F7 (8-bit LED) 	
	<hr/> <p>1. FDM Multiplexer/Demultiplexer</p> <ul style="list-style-type: none"> · FDM multiplexer <p>FDM multiplexer channel : channel A,B,C 3 ports Wien bridge audio signal generator</p> <p>a. Variable sine generator : 2KHz ~ 50KHz, 0 ~ 6Vpp</p> <p>b. Fixed sine generator : 3.3KHz, $\pm 10\%$, 0 ~ 6Vpp</p> <p>c. Fixed sine generator : 1KHz, $\pm 10\%$, 0 ~ 6Vpp</p> <p>2. Up/down frequency converter</p> <p>a. Adjustable carrier generator : 450KHz ~ 550KHz, 0 ~ 6Vpp</p> <p>b. Adjustable carrier generator : 270KHz ~ 330KHz, 0 ~ 6Vpp Frequency</p> <p>c. Fixed carrier generator : 100KHz, $\pm 5\%$, 0 ~ 6Vpp Frequency AM modulator</p> <p>d. Carrier signal : 100KHz ~ 500KHz</p> <p>e. Audio signal : 1KHz ~ 20KHz</p> <p>f. Modulation rate& level : 10% ~ 100%</p>	

	<p>g. FDM high bandwidth SUM : 1Hz ~ 1MHz</p> <p>15. FDM demultiplexer b. PLL & PLL/2FDM demultiplexer channel : channel A,B,C 3 ports Carrier bandpass filter BPF : 3 channel input : 3Vpp, Channel A : 500KHz Adj. $\pm 20\%$, Channel B : 300KHz Adj. $\pm 20\%$, Channel C : 100KHz Adj. $\pm 20\%$, AM demodulator b. Clock XOR and clock delay for clock periodic detector</p> <p>a. AM rectifier c. PLL for synchronal clock recovery output Adjust LPF A : Min. : 1KHz</p> <p>a. Adj. $\pm 20\%$, Max. : 30KHz Adj. $\pm 20\%$ LPF B : Min. : 1KHz Adj. $\pm 20\%$, Max. : 30KHz Adj. $\pm 20\%$ LPF C : Min. : 250Hz Adj. $\pm 20\%$, Max. : 2.5KHz Adj. $\pm 20\%$</p> <p>b. FDM demultiplexer audio signal output, Channel A : Sine : 3KHz ~ 20KHz, $\pm 10\%$, Channel B : Sine : 3KHz, $\pm 10\%$, Channel C : Sine : 1KHz, $\pm 10\%$</p> <p>15. Signal Converter/Recovery/Regeneration Quadrature audio generator</p> <p>a. Frequency range : 300Hz ~ 10KHz</p> <p>b. Analog output level : 7Vpp</p> <p>c. Analog output : SIN (ωt), COS (ωt)</p> <p>d. Analog distortion $< 0.1\%$</p> <p>e. Digital output : two signals with 90 degree phase different Hartley carrier signal generator Multiplier, A input : 10KHz ~ 1MHz, B input : 10KHz ~ 1MHz. Second order LPF down converter : 1KHz ~ 120KHz</p> <p>f. Second order HPF up converter : 330KHz ~ 1MHz</p> <p>g. External input LPF & HPF for other up/down converter</p> <p>16. Carrier signal recovery</p> <hr/> <p>a. Up converter for double carrier input : Vin (Min.) : 0.5Vpp</p> <p>a. Adjustable second order LPF : Remove harmonic for AM band tune carrier (sine) signal recovery</p>
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	<p>b. Adjust phase shift : 0 ~ 150 degrees phase shift</p> <p>c. BW : 100KHz, $\pm 10\%$ (as input frequency is 10KHz)</p> <p>d. BW : 100KHz, $\pm 10\%$ (4) Synchronal clock recovery</p> <p>e. BW : 100KHz, $\pm 10\%$ a. Manchester encoder enclosed synchronal signal</p> <p>Digital Communication Modules</p> <p>17. A/D, D/A Converter Applications</p> <ul style="list-style-type: none"> · Analog to digital converter <ul style="list-style-type: none"> a. Resolution : 8-bit or 256 steps b. Clock frequency : 100KHz ~ 800KHz c. Input voltage range : 0 ~ 5V d. Power supply : +5V · Digital to analog converter <ul style="list-style-type: none"> a. Digital input : 8-bit b. Output voltage type : single or bipolar c. Power supply : +12V, -12V · PWM Modulator/Demodulator <p>PWM modulator LM741 PWM</p> <p>Asynchronous envelope detector of ASK demodulator.</p> <ul style="list-style-type: none"> a. Carrier signal : 1.5KHz ~ 2KHz b. Audio signal : 500Hz c. Power supply : +12V, -12V d. Carrier signal : 5KHz ~ 10KHz e. Audio signal : 1KHz 	
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	<p>f. Power supply : +12V</p> <p>PWM demodulator</p> <ul style="list-style-type: none"> a. Audio signal : 500Hz ~ 700Hz b. Modulation signal : 5KHz ~ 6KHz c. Demodulation signal : 500Hz ~ 700Hz d. Power supply: +12V <p>FSK Modulator/Demodulator</p> <p>FSK modulator</p> <ul style="list-style-type: none"> a. "SPACE" signal : 1270Hz b. "MARK" signal : 1070Hz c. Output voltage : 0 ~ 5V d. Power supply : +12V, -12V <p>· FSK demodulator</p> <ul style="list-style-type: none"> a. "SPACE" signal : 1270Hz b. "MARK" signal : 1070Hz c. Output voltage : 0 ~ 5V d. Power supply : +5V, -5V <p>15. CVSD Modulator/Demodulator, Manchester Code Encode/Decode</p> <ul style="list-style-type: none"> · CVSD modulators & demodulators · Manchester code encode & decode a. Encode of manchester code b. Decode of manchester code c. Line code format : NRZ d. (4) Adjustable clock generator : 50KHz ~ 100KHz e. Adjustable low pass filter 	
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	<p>16. ASK Modulator/Demodulator</p> <ul style="list-style-type: none"> · ASK modulator <ul style="list-style-type: none"> a. Carrier signal : 20KHz ~ 200KHz b. Modulated signal : 1KHz ~ 10KHz · ASK demodulator <hr/> <ul style="list-style-type: none"> a. Carrier signal : 20KHz ~ 200KHz b. Modulated signal : 1KHz ~ 10KHz <ul style="list-style-type: none"> · Synchronous product detector of ASK demodulator LM555 PWM <ul style="list-style-type: none"> a. Carrier signal : 20KHz ~ 200KHz b. Modulated signal : 1KHz ~ 10KHz <p>17. PSK/QPSK Modulator</p> <ul style="list-style-type: none"> · PSK/QPSK modulator Production & measurement of data stream of QPSK Data speed :400bps ~ 1000bps QPSK modulator <ul style="list-style-type: none"> c. Carrier signal : 7KHz d. Data speed : 400bpsPSK/QPSK <p>Demodulator</p> <p>18. PSK/QPSK demodulator</p> <ul style="list-style-type: none"> e. Carrier signal : 7KHz f. Data speed : 400bps <p>Power Supply & Signal Generator</p> <p>1. Main Unit</p> <ul style="list-style-type: none"> · Dual function generators ,output waveform : sine, triangle, square and TTL level signal Output voltage <ul style="list-style-type: none"> a. 1Hz ~ 50KHz : 0 ~ 20Vpp, continuously adjustable b. 50KHz ~ 200KHz : 0 ~ 16Vpp, continuously adjustable 	
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	<p>c. 200KHz ~ 500KHz : 0 ~ 10Vpp, continuously adjustable 100.00000MHz Output frequency : 6 ranges, selectable</p> <p>d. 1Hz ~ 10Hz, continuously adjustable 1μs ~ 9999999μs</p> <p>e. 10Hz ~ 100Hz, continuously adjustable</p> <p>f. 100Hz ~ 1KHz, continuously adjustable</p> <p>g. 1KHz ~ 10KHz, continuously adjustable</p> <hr/> <p>h. 10KHz ~ 100KHz, continuously adjustable</p> <p>a. 100KHz ~ 500KHz, continuously adjustable</p> <p>All above ranges are adjusted by a 10-turn fine tuning knob AM modulation signal</p> <p>a. Input amplitude : 0 ~ 5Vpp</p> <p>b. Input frequency range : 1Hz ~ 100KHz</p> <p>c. Percentage modulation : 80%</p> <p>d. Output : AM amplitude continuously adjustable</p> <p>FM modulation signal</p> <p>a. Input amplitude : 0 ~ 5Vpp</p> <p>b. Input Impedance : 10K ohms</p> <p>c. Max. modulation ratio : 50 : 1</p> <p>d. FSK modulation signal</p> <p>e. Input impedance : 10K ohms</p> <hr/> <p>f. Input ≤ 0.7V for low level, adjustable output frequency, Input ≥ 3V for high level, fixed output frequency</p> <p>V/F converter, Input voltage : 0 ~ 20V, Output frequency : 0 ~ 20KHz, Conversion ratio : 1V = 1KHz</p> <p>1. Adjustable DC power supply</p>	
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	<p>2. Output voltage : 0 ~20V, continuously adjustable, Unit Max. output current : 100mA with overload protection</p> <p>3. Fixed DC power supply</p> <p>4. Output voltage : +5V, -5V (rated current 500mA), Output voltage : +12V, -12V (rated current 500mA)</p> <p>5. Universal frequency/period counter, Function : logic probe, frequency, period, pulse width, Input frequency range (F) : 1Hz ~ 99.99999MHz, 10Hz ~Input period range (TH & TL): 0.01μs ~ 999999.99μs, Input level : TTL, analog signal (Vin = 2.2Vpp), Sampling time : 1sec & 0.1sec, Display : 8-digit, 7-segment display</p> <p>6. Power input, 90V ~ 230V AC,50Hz/60Hz</p> <p>Accessories</p> <ol style="list-style-type: none"> 1. Connector Leads 2. Experiment Manual 3. Teacher's Guide 4. Storage Cabinet x 2 5. Rack Frame 6. Digital Storage Oscilloscope 7. Hand-held Digital Multimeter 	
	<p>1 (One) Set - Microcontroller</p>	

	<p>Application</p> <p>The equipment shall have the following features:</p> <ul style="list-style-type: none"> · Uses Microchip's PIC16F887, a 8-bit microcontroller, to implement various I/O control experiments. · Contains most of the powerful functions in modern MCUs. · Can be used for automation, motor control, device measurement, and mechanical controls...etc. · PIC16F is popular and well-known by its economic cost · Wide applicability · High accessibility and reliable stability. · Contains several peripheral devices, from basic LED to advanced capacitive sensing module · With self paced experiment manual <ul style="list-style-type: none"> · Learn the control of PIC MCU more conveniently and efficiently. · Ideal for beginners of learning programming language. · Each experimental block uses individual control switch to avoid interference if sharing pin. · Pins of the microcontroller have been connected to the peripherals inside the trainer. There is no need to connect it manually. · “Reset” button: to reset the chip if errors occur. <ul style="list-style-type: none"> · Development interface is reserved for advanced learners, which can connect the external modules to the chip pins. 	
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	<p>The equipment shall have the following technical specifications:</p> <ol style="list-style-type: none"> 1. PIC16F887 chip x 1 2. 40 pins(35 input/output pins) 3. 368 bytes RAM memory 4. Nano Watt Technology 5. (4) 10-Bit Analog-to-Digital (A/D) Converter 6. Operating Frequency (0~20MHz) 7. UART to USB Interface x 1 8. EEPROM 64Kbits x 1 9. 20 x 2 character LCD x 1 10. 4-digit 7-segment display x 1 11. Capacitive sensing button x 1 12. LED x 11 13. 8 x 8 multicolor dot matrix LED display x 14. Buzzer and status LED x 1 15. 5K variable resistor x 1 16. AD590 temperature sensor x 1 17. Stepping motor and status LED 7.5 degrees x 1 18. 10 x 2 extend socket x 2 19. Slide switch x 8 <ol style="list-style-type: none"> 20. 4 x 4 matrix keypad x 1 21. Built-in power supply <p>Input : 100~240VAC, 50/60Hz, 0.65A Output : 12V/1.2A, 5V/2.1A, 3.3V/1A</p> <hr/> <p>The equipment shall be able to perform the following experiments:</p> <ol style="list-style-type: none"> 1. Basic I/O Controls 2. External Interrupt I/O Experiment 3. Chip Clock 4. Watch dog Timer 5. Timer 6. UART 7. I2C 8. LCD module experiment 9. Temperature Measurement experiment 10. LED matrix display experiment 11. Stepping Motor experiment 12. Capacitive touch sensing experiment <p>The set shall include the following accessories:</p> <ol style="list-style-type: none"> 1. A.C. power cord 1pc 2. Fuse 1pc 3. Experiment manual 1pc 4. Experiment CD 1pc 5. USB A-B type cable, 150cm 1pc 	
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	<ul style="list-style-type: none"> 6. IDC cable 10x2 pin, 20cm 1pc 7. Dupont Line 1P-1P, 150mm 20pc 8. 6pin Programmer Cable 1pc 9. Microchip PICkit 3 debugger/programmer <p>The equipment shall be able to perform the following experiments:</p> <ul style="list-style-type: none"> 1. Basic I/O Controls 2. External Interrupt I/O Experiment 3. Chip Clock 4. Watch dog Timer 5. Timer 6. UART 7. I2C 8. LCD module experiment 9. Temperature Measurement experiment 10. LED matrix display experiment 11. Stepping Motor experiment 12. Capacitive touch sensing experiment 	
	<p>1 (One) Set - Raspberry Pi Trainer</p> <p>FEATURES</p> <ul style="list-style-type: none"> 1. The trainer includes various I/O peripherals suitable for learning Raspberry Pi projects. 2. There are step-by-step procedures in the experiment manual for the Python programming language. 3. An independent power supply is provided to maximize the number of peripheral modules. 4. Three sets of I/O ports are extended around the working area for easy signal connection. 5. Two sets of independent DAC/ADC are built in to expand more experimental circuits. 6. A touch screen is built-in for direct use and control 	

	<p>TECHNICAL SPECIFICATION</p> <ol style="list-style-type: none"> 1. Power <ol style="list-style-type: none"> a. Input : 110V/220V AC, 50Hz/60Hz b. Output : +5V/3A, +3.3V/1A 2. Control Board <ol style="list-style-type: none"> a. Raspberry Pi 3 B+ b. Power : built-in USB power 3. Display <ol style="list-style-type: none"> a. Size : 7-inch, touch screen b. Resolution : 800 x 480 at 60fps, 24-bit color c. Protection : metal frame with protective sticker 4. Prototyping Area Device: RGB LED, button, buzzer: <ol style="list-style-type: none"> a. ADC/DAC : 2 sets, address 0x48 and 0x49, b. NXP PCF8591, 8-bit resolution, analog input x 4, analog output Power jack : +5V/GND jump wire socket x4+5V/GND wafer socket x4 c. (4) I/O socket : 40-pin female connector x 3 d. Brick plate : 32x16 brick unit 5. aya-nugget Electronic BlocksAll blocks contain two wafer sockets for power connection, a DuPont pin-holder for signal connection, and four corner holes for perfect fixing on thebrick plate. <ul style="list-style-type: none"> • Digital input <ol style="list-style-type: none"> a. Output module b. BCD switch c. Piezoelectric buzzer d. 8-bit DIP switch e. Step motor f. Self-Lock switch g. DC motor h. 5-bit TACT switch i. 2-axis servo j. Toggle switch Accessories • Analog input <ol style="list-style-type: none"> a. peExriment manual b. Joystick switch c. Wire pack d. Slide potentiometer e. Brick pack 	
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	<ul style="list-style-type: none"> • Environment detection 16 x 32 brick plate x 2 a. AD-590 temperature sensor b. b. Brick post x 75 c. Hall sensor d. Brick cap x 75 e. Photo interrupter Power wire x 20 f. Proximity sensor g. Reed switch <p>Accessories</p> <ol style="list-style-type: none"> 1. Operational Manual 2. Power Cord 3. Experiment CD 	
	<p>1 (One) Unit - Intelligent building system integration and Internet of things technology training equipment</p> <ol style="list-style-type: none"> 1. The equipment shall have a platform, power monitoring and alarm module, safety plug terminal module, system master control device, system load simulation components and related programming development software. 2. The platform shall be equipped with aluminum frame, fireproof panel, high-strength electrical box. 3. The power monitoring and alarm module shall be equipped with override trip protection, short-circuit detection protection and alarm indication function 4. The safety plug terminal module shall be equipped with high insulation safety socket and high-strength safety plug, can distinguish various specification socket and plug from strong and weak current, to ensure the safety of operating personnel. 5. The system master control device shall be equipped with core master control real device of intelligent building and embedded ARM system bus network I.O.T system complete <p>The application in wiring, programming, configuration, integration, commissioning, operation, diagnosis and and secondary design.</p>	

	<p>6. The system load simulation components shall be equipped with the required analog input and output load.</p> <p>7. The programming development software shall be equipped with I.O.T network technology related development software, source code and communication protocol is completely open. The equipment shall have the following technical specification:</p> <ol style="list-style-type: none"> 1. Power input: single phase and three wires /AC220V/60Hz 2. Safety protection: Grounding/Leakage (action current) scam protection. <ol style="list-style-type: none"> 3. Overall power consumption: $\leq 100W$ (don't contain computer, computer $\leq 300W$) 4. AC power output: two route isolation 5. DC power output: DC5V/2.5A、DC12V/2A、DC24V/1.5A ; 6. Adjustable DC power output: DC0-30V/2A 7. Total weight: 200KG 8. Dimension (length * width* height) <hr/> <p>a. 1580mm×720mm×1760mm (Frame part)</p> <p>b. 2040mm×720mm×1760mm (fixed with both sides Spherical camera and warning lights)</p> <p>The equipment shall have the following training contents :</p> <ol style="list-style-type: none"> 1. System wiring plugging, programming, commissioning, operation, maintenance and repair. 2. High-definition coaxial video signal and hard disk recorder connection. 3. High-speed dome camera, infrared gun-type camera and monitor and hard disk recorder connection and monitoring. 4. Through hard disk recorder control high-speed dome camera PTZ movement and lens action. 5. Through hard disk recorder set and adjust the high-speed dome camera PTZ presetting and cruise. 6. Dynamic monitoring screen changes and automatic recording of peripheral alarm 7. Passive infrared intrusion detector, active infrared detectors , sound and light alarm and hard disk recorder <p>connection and setting</p>	
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	<p>8. Video monitoring system and the surrounding security system linkage</p> <p>9. LAN monitoring of network video surveillance management software</p> <p>10. LonMaker software installation and Plug-in registration</p> <p>11. Connection of light illumination switch , halogen lamp and the DDC control module and Event_Scheduler function module schedule programming</p> <p>12. Connection of light sensor , LED light and DDC control module and analog input and output programming of Universal_Input function module</p> <p>13. Connection of passive infrared detectors , fluorescent lamp and DDC control module and delay programming of Universal_Input function module</p> <p>14. Connection of triple scene button , fluorescent tube and DDC control module and digital logic programming of State_Machine function module</p> <hr/> <p>communication</p> <p>25. Security detection training based on CAN bus and GSM communication</p> <p>26. Electric curtain control training based on CAN bus and GSM communication</p> <p>27. Lighting control training based on CAN bus and GSM communication</p> <p>28. Air valve control training based on CAN bus and GSM communication</p> <p>29. Water valve control training based on CAN bus and GSM communication</p> <p>30. Plant watering control training based on CAN bus and GSM communication</p> <p>31. Fish feeding control training based on CAN bus and GSM communication</p> <p>32. Air purifier control training based on CAN bus and GSM communication</p> <p>33. Cold and warm fan control training based on CAN bus and GSM communication</p> <hr/> <p>34. LCD monitor control training based on CAN bus and GSM communication</p> <p>35. Electric lock control training based on CAN bus and GSM communication</p>	
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	<p>36. Infrared learning and control training based on WIFI communication</p> <p>37. PC monitoring training based on CAN bus</p> <p>38. Android monitoring training based on GSM communication</p> <p>39. Intelligent household monitoring training based on WiFi communication</p> <p>40. Integrated monitoring software through the video interface server connect hard disk recorder and monitor screen in real-time</p> <p>41. Integrated monitoring software through the DDE interface server connect DDC host module and monitor data in real-time</p> <p>42. Integrated monitoring software through the Internet of Things interface server connect the CAN bus and monitor data in real-time</p> <p>43. Comprehensive integrated monitoring and management training of SAS, BAS and IOT integrated system based on intelligent building integrated monitoring software.</p> <p>The training equipment shall have the following configuration :</p> <ol style="list-style-type: none"> 1. Aluminum bracket 1 set with brake universal wheel , handle 2. Fireproof board 1 set 3. Electrical box 1 pcs 4. Protective barrier 1 pc 5. LCD 1 pcs 19 inch 6. Detection actuator 1 pc Function control circuit board ,inductance coil , contactor and relay 7. 2P air switch 3 pcs 8. Leakage protection module 2 pcs 9. Alarm module 1 pc 10. Self-reset button 1 pc 11. Emergency switch 1pc 12. AC220V guide rail three-plug module 1pc 13. AC220V guide rail two-plug module 1 pc 14. DC0-30V adjustable switch power 1 pc 15. Adjustable potentiometer 1 pc 16. DC digital voltage ammeter 1 pc 17. Four-layer alarm light 1 pc 18. 10A safety plug terminal 1 pc 19. 5A safety plug terminal 1 pc <p>20. hard disk recorder 1pc</p>	
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	<p>21. SATA hard disk 1 pc 22. LCD monitor 1 pc 23. High speed dome camera 1 pc 24. Infrared camera 1 pc 25. Self-lock button with DC24V green indicator light 2pcs Simulate passive curtain detector and active detector 26. Relay switching circuit board 2 pcs 27. DC12V buzzer 1 pc 28. Video monitoring management software 1 pc 29. Video Monitoring Wireless client software 1 pc 30. Host monitor module 1 pc LonWorks bus DDC 31. LON network adapter 1 pc 32. Self-lock button with DC24V green indicator light 3 pcs simulate illuminous switch ,passive infared probe and emergency switch 33. Self-reset button with DC24V red indicator light 3pcs 34. DC24V yellow indicator light 4pcs 35. Relay switching circuit board 10 pcs</p>	
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	<p>36. Potentiometer 1 pc simulate illuminous sensor</p> <p>37. DC voltage adjustment conversion circuit board 1 pc</p> <p>38. DC voltage input transmission digital tube 1 pc simulate LED light</p> <p>39. DDC program software Plug-in program 1 pc LonMaker3.12</p> <p>40. Embed host board 8 pcs ARM</p> <p>41. AC electric,water valve and air valve module 1 pc</p> <p>42. Illuminous sensor and electric curtain module 1 pc</p> <p>43. PM2.5 air quality sensor module 1pc</p> <p>44. Air ,earth temperature and humidity sensor and plant irrigation module 1pc</p> <p>45. Pyroelectric sensor module 1pc</p> <p>46. Pet feed and weighing module 1 pc</p> <p>47. Fire and carbon dioxide sensor module 1 pc</p> <p>48. Security and access control module 1 pc</p> <p>49. CAN communication adapter 1 pc</p> <p>50. Wi-Fi directional infrared controller 1 pc</p> <p>51. Wireless router 1pc</p> <p>52. USB wireless network card 1 pc</p> <p>53. GSM module 1 pc</p> <p>54. WiFi touch screen terminal 1 pc Android system</p> <p>55. Self-lock button with DC6.3V green indicator light 1 pc simulate passive curtain probe</p> <p>56. Self-reset button with DC6.3V red indicator light 2 pcs</p> <p>57. DC6.3V yellow indicator light 7 pcs</p> <p>58. DC6.3V green indicator light 1 pcs</p> <p>59. DC6.3V red indicator light 1 pcs</p> <p>60. PM2.5 detector simulator 1 pc potentiometer A/D transmit , RS232 communication protocol output</p> <p>61. Carbon dioxide sensor simulator 1pc</p> <p>62. Pressure transmit simulator 1pc</p> <p>63. Air conditioner ,air purifier and TV simulator 1pc infared remote receive</p> <p>64. infared remoter 1 pc</p> <p>65. ARM emulator 1 pc</p>	
	<p>1 (One) Unit - 16pcs. Mini Plier/Screw Driver Set</p>	

	<p>Set containing 12 mini screwdrivers and 4 mini pliers. The set is supplied in a unique tray and can be used either on its own or as part of the control system. The tray features a removable hinged click lock lid and dove tail joints which enable different TC trays to be locked together and used as trays in tool boxes and roller cabinets. All of the tools in the set have their own individual place so lost tools can easily be identified.</p> <p>(265x142x50mm, 0.71 kilos).</p> <p>TX6, TX7, TX8, TX9, TX10, TX15</p> <p>4 1/2" side cutter, 4 1/2" end cutter, 5" long nose, 5" flat nose</p> <p>2.0, 2.4, 3.0PH00, PH0, PH1</p>	
	<p>1 (One) Unit - PCB Drafting and Fabrication Setup</p> <p>The training equipment shall have the following technical description:</p> <ul style="list-style-type: none"> • A PCB Equipment set up is introduced which is an assemblage of tools, chemicals, jigs, fixtures and small equipment which has a do-it-yourself approach. • This set up takes the students from the circuit schematic stage to final PCB. • Supplies enough samples and materials along with the set up to fabricate CPB's of 6"x4" size, corresponding to a class of 30 students with each student making 2 PCB's. • The training equipment shall have the following technical components: 	

	<p>1. PCB Design Kit</p> <ul style="list-style-type: none"> a. Set of Transistors, diodes, ICs for dimensional purposes 50 pcs b. Copper Clad Sheet cut to 6"x4" 60pcs c. PCB Drafting Stickers, Tapes 2mm, 3mm IC Pads 8 Pins, Doughnut Pads 5mm, d. Transistors pads to make 60 PCBs e. Plastic films cut to 7"x5" size 60 pcs <p>2. PCB Etching Machine and Etchants</p> <ul style="list-style-type: none"> a. Etching tank b. Etching Tray c. Chemicals required for etching, tinning d. Small tools required sponges, brushes, gloves <p>various size, tweezers, cutters, pliers</p> <p>3. Prototype Testing Board</p> <ul style="list-style-type: none"> a. Test Board 1 ea b. Regulator IC 20 ea c. Plastic Parts Container 1 ea d. Diodes 20 ea <hr/> <ul style="list-style-type: none"> e. Water bath for washing after etching <p>4. PCB Inspection Station</p> <ul style="list-style-type: none"> a. Illuminated Workstation b. Illuminated Magnifier PCB Checker (Magnifies the job kept under it to 2 times its size, two and half inch area is magnified)10x Magnifier Hole Dia checker, Checks the dia. of component leads from 0.5mm to 4mm. 	
	<p>1 (One) Unit - 8086 Microcomputer System</p>	

	<p>FEATURES:</p> <ul style="list-style-type: none"> • Helps to understand the architecture and programming of 8086 computer • The system contains five main parts: <ul style="list-style-type: none"> a. 8086 CPU b. system and user memory c. world standard chip sets d. input and output devices, and e. External interface. • Can edit and assemble program codes from PC and observe instant results after they download and execute programs from system memory. • Debug functions are also available via PC or system keypad interface. • Power supply and all experimental peripherals are built in a single trainer to <p>carry out 8086 experiments, no additional equipment is required.</p> <ul style="list-style-type: none"> • Demo programs are permanently stored in system ROM to offer quick system test and functional demonstration. • Programming codes are downloaded / debugged / executed via PC or Trainer keyboard • All chip sets are protected by an acrylic cover on the top of trainer panel. All chip names are clearly printed in corresponding position on acrylic panel <ul style="list-style-type: none"> • External Interface allows user to create user-defined circuits. <p>Specifications:</p> <ol style="list-style-type: none"> 1. CPU : 8086 2. Display Unit : LCD (16 x 2 line) 3. Main RAM : 62256 x2 (64KB) 4. Monitor ROM : 27256 x 2(64KB) <ol style="list-style-type: none"> 5. User Memory : 27256 x 2 or 62256 x 2 (64KB) (empty socket) 6. Clock Generator : 8284 7. I/O 	
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	<p>8. A/D Converter : ADC 0809 (8 bit x 1 channel) 9. D/A Converter : DAC 0808 (8 bit x 1 channel) 10. I/O port : 8255 x 3 11. Interrupt controller : 8259 12. Timer/Counter controller : 8253 13. Keyboard / Display controller :8279 14. Serial Port :8251 (RS-232C, 25pins, 2 sets) 15. Keyboard : 24 Key 16. Experimental Device 17. A/D Experiments contain VR, photo TR, Thermistor, MIC</p> <hr/> <p>18. D/A experiments contain (2W AMP, speaker) 19. Speaker, MIC 20. Thermistor sensor control function 21. Photo sensor control function 22. AMP, recorder 23. I/O simulation LED x 8, button switch 24. FND control function 25. Switching power supply : AC in : 90~260V , DC out : ±12V, +5V 26. Battery back-up function</p> <p>Accessories: 1. Experiment manual 1 pc 2. I/O board and cable 1 set</p> <p>3. RS-232 to USB adapter 1 pc 4. AC cord 1 pc 1. 5. Handheld Multi-meter</p>	
	<p>1 (One) Set - Multi-technology Interactive e-Learning solution for engineering, technology and STEM with the use of different teaching tools such as text, 3D animation, video, audio and virtual simulation</p>	

- Compatible Devices:
1. Windows 8 Tablets
 2. iPad 2nd Gen
 3. iPad 3rd Gen
 4. iPad 4th Gen
 5. ASUS Nexus 7
 6. Google Nexus 5
 7. Google Nexus 6
 8. iPhone 5c
 9. iPod Touch
 10. DigiLand - 7" - 8GB Browser supported platform:
 - a. Internet Explorer
 - b. Google Chrome
 - c. Mozilla Firefox
 - d. Safari
 - e. Microsoft Edge
 - f. Puffin Android Browser

**HIGHER & TECHNICAL EDUCATION
LEARNING SYSTEMS**

Learning Management System (LMS) Included:

- User-friendly Navigation with Skills on/Off Control
- SCORM to Other LMS Systems
- Custom LMS Branding Available
- Put your school logo or organization's logo and colors on the LMS homescreen
- Pre-/Post-Course Quizzes
- Create a valuable metric to track progress
- Easy-to-Use Reporting Tools
- Customizable reporting tools will help evaluate progress

eLearning Categories

- I. AUTOMATION
- II. ELECTRONICS
- III. ELECTRICAL
- IV. FLUID POWER
- V. GREEN ENERGY
- VI. LEAN MANUFACTURING
- VII. MACHINING
- VIII. MANUFACTURING PROCESS
- IX. MATERIALS

X. MECHANICAL
XI. PROCESS CONTROL
XII. QUALITY ASSURANCE
XIII. SAFETY
XIV. THERMAL
XV. WORKPLACE EFFECTIVENESS

Assessments Available in:

- Automation
- Electrical
- Fluid Power
- Green Energy
- Industry Fundamentals
- Lean Manufacturing
- Machining
- Manufacturing Processes
- Materials

- Measurement & Gauging
 - Mechanical
 - Prints & Drawings
 - Process Control
 - Quality
 - Safety
 - Structural Engineering
 - Surveying
 - Thermal
- Workplace Effectiveness

	<p>1 (One) Set - CARPENTER TRAINER</p> <p>Specification: Stand-up workstation w/ see thru locking tool cabinet, padlock and key, supply drawer, power strip, and cd player with headphones.</p> <p>CURRICULUM Curriculum manual is provided in a three-ring binder, with pages contained in page protectors. Easy to follow step by step activities are highlighted using full color photographs. Once introduced to career related information (job description, education and training requirements, job prospects, and income ranges) the student begins a “hands on” work experience, using professional tools of the trade to complete projects or tasks. A cd follows the manual word-forword. Pre-and post tests, worksheets, answer sheets, and instructors guide.</p> <p>EQUIPMENT/CONSUMABLE MATERIALS Set of saw horses, aprons, carpenters nail apron, (2) 5# box double head nails, (3) 5# box 16D sinkers, lumber pack, carpenters pencil.</p> <p>TOOL CABINET Safety glasses, hand saw, 16 oz. Hammer, crow bar, 2' level, framing square, tape measure, carpenter pencil.</p>	
	<p>1 (One) Unit - Pressure Gauge Calibration Bench</p> <p>a. Vacuum/Pressure Pump Free air capacity : 15.6 LPM Max. vacuum : 22“ Hg Max. pressure : 20 psi</p> <p>b. Pressure Gauge Material/Type : Fully stainless steel (oil filled) Range : 0 to 35 psi</p> <p>c. Vacuum Gauge Material/Type : Fully stainless steel (oil filled) Range : -760 to 0 mmHg</p> <p>Differential Pressure Gauge Material : Aluminum case/acrylic cover Max diff. pressure : 30 psi</p>	
	<p>1 (One) Unit - Set Pipe Friction Apparatus</p> <p>Specifications</p> <p>Manometer</p> <p>Water Manometer</p> <p>Range : 0 to 1,000 mm</p>	

	<p>1 (One) Unit - Energy Losses in Bends and Fittings</p> <p>SPECIFICATIONS Pipework diameter : 17.0 mm Diff. pressure gauge : 0 to 1.4 bar Enlargement diameter: 32.0 mm Contraction diameter : 17.0 mm Fittings : 45° mitre, 90° elbow, short and large bends, contraction and enlargement Manometer : 12 tubes (0 to 440 mm)</p>	
	<p>1 (One) Unit - Free and Forced Vortex</p> <p>Storage Diameter Tank diameter : 245 mm Overflow height : 180 mm Orifice diameters : 8, 16 and 24 mm Distance of Forced Vortex Measuring Gauge from Reservoir center : 0, 30, 50, 70, 90 and 110 mm from center Pitot Tube Length : 150 mm Pitot tubes nose at : 15, 25 and 30 mm radius Inlet tubes : 9 and 12.5 mm diameter</p>	
	<p>FUNDAMENTAL OF SURVEYING:</p> <p>1 (One) Set - Reflectorless Smart Total Station</p> <p>Specifications:</p> <ul style="list-style-type: none"> •1”/2” Accuracy •1000m reflectorless EDM •Guide light 150m •Bluetooth 4.0 •Data transfer and storage •T-P sensor, automatic correction •Concentrated ball bearing •EDM Trigger Key •Control panel with high resolution touch screen 	

	<p>HIGHWAY ENGINEERING:</p> <p>1 (One) Set - Marshall Stability Tester</p> <p>Specifications: Maximum load: 50kN Measuring range: $\leq 40\text{kN}$ Measuring bias: $\leq \pm 0.1\text{kN}$ Overload protection: Automatically protect when load is over 39kN vertical deformation (flow value): Range 0~20mm, bias $\leq \pm 0.05\text{mm}$ Lifting rate for pressure machine: (50\pm5)mm/min Communication port: RS232 Power supply: AC220V\pm10%, 50Hz Ambient temperature: 0$^{\circ}$C~60$^{\circ}$C Dimension: 600mm\times380mm\times900mm Motor power: 550W Net weight: 98kg</p>	
	<p>FLUID MECHANICS/ HYDRAULICS:</p> <p>1 (One) Set - Hydrostatic Pressure Apparatus</p> <p>Technical Specifications: Tank capacity : 5 liters. Approx. distance between suspended mass and fulcrum : 275 mm Cross-sectional area of quadrant (torroid) : 100 X 100 mm² Total depth of completely immersed quadrant : 160 mm Height of fulcrum above quadrant : 100mm. A set of weight is supplied with the apparatus. The whole set-up is ingeniously designed and schematically arranged on a powder-coated rigid structure</p>	

	<p>SOIL MECHANICS:</p> <p>1 (One) Set - Constant Head Permeability Test Sets</p> <p>Constant Head Permeability Cell, ASTM 76 mm (3.0”) dia. with metal body standards ASTM D 2434 Constant Head Permeability Cells are used to study the behaviour of soil, relatively coarse-grained soil such as sands and gravel, in its natural conditions with respect to water flow. The cells have an transparent plexy or metal body with 2 pressure points at different level and aluminium base and head. Dimensions : 250x250x350 mm, weight (approx.) : 7 kg, Constant-Head Filter Tank, 4 L. (Supplied without sand) -made of transparent plexy, has separate valves for inlet, outlet and overflow. Supplied with metal carrying case for wall mounting.</p> <p>Dimensions : 200x300x200 mm Weight (approx.) : 5 kg Sliding Tamper, ASTM, for Constant Head Permeability Test Dimensions : 50x50x400 mm Weight (approx.) : 2 kg Wall Type Metal Manometer Panel with Two Tubes -fitted with 2 manometer tubes each being 1000 mm long. Each tube has its own valve. Dimensions : 250x250x200 mm Weight (approx.) : 2 kg Plastic Hose, Ø8 mm OD, 3 m</p>	
	<p>1 (One) Set - Falling Head Permeability Test Sets</p> <p>The set is used to study the behaviour of soil, particularly finegrained soils such as clay-like or silty soils, with respect to water flow. Falling head permeability cell, ASTM, 76 mm (3.0”) dia. with metal body.</p> <p>Dimensions : 140x220x330 mm Weight (approx.) : 3.2 kg Wooden Stand with 4 Manometer Tubes -fitted with 4 glass Manometer Tubes of each 1500 mm long with inside diameters of about 21 mm, 12 mm, 5</p>	

	<p>mm and 3.5 mm. All tubes have connection valves. Dimensions : 230x100x1700 mm Weight (approx.) : 6.6 kg Soaking Reservoir Tank -manufactured from plated steel with an overflow tube and is used for containing the permeability cell during the test. Dimensions : 320x320x250 mm Weight (approx.) : 3.6 kg Falling Head Permeability Cell -manufactured from plated steel with an inside diameter of 100 mm. Dimensions : 150x150x260 mm Weight (approx.) : 3 kg Graduated Glass Cylinder 250 ml Plastic Hose, Ø8 mm OD, 3 m</p>	
	<p>1 (One) Set - Standard Penetration Test</p> <p>Description: The Standard Penetration Test Set shall be used for measuring. The penetration resistance of the ground and for relating it to the degree of compactness of cohesionless soil and consistency of cohesive soil. The equipment consist of the following replaceable parts :</p> <ul style="list-style-type: none"> • Split Spoon Sampler 50.8 mm OD and 38 mm ID. 1 No. • This Sample consists of: <ul style="list-style-type: none"> • Body split lengthwise 1 No. • Shoe hardened with an inside cutting edge. 1 No. • Head fitted with a ball check valve and adapter 1 No. • to connect 'A' type drill rod. • Drive Weight Cast Iron, 63.5 kg, 78 mm bore ID approx. 1 No. • Guide Pipe Assembly Bore 73 mm OD approx. 1 No. • Tripod with Pulley and built-in Ladder. 1 No. • 'A' Type Drill Rods 0.5 mtrs. 2 Nos. • Manila Rope 19mm dia 10 m 1 No.17/17 	
	<p>TERMS AND CONDITIONS</p> <p><u>Warranty:</u></p> <p>One (1) Year on Parts and Labor</p>	

Bidder may opt to offer for additional warranty on parts

Delivery

120 Calendar Days

Other Terms and Conditions:

- Bidder must submit brochure/catalogue indicating the brand and model of the item/s to be supplied as additional technical requirements. Failure to supply can be grounds for disqualification.

- Bidder must conduct an after sales training after completion of delivery and installation at Agusan del Sur State College for Agriculture and Technology

- If bidder is authorized distributor/reseller pls attach document as additional requirement

- Bidder must have technical Trainors who are duly authorized by the manufactuer/developer to give technical support. Copy of the Certification must be attached to the bic docs as additional documents.

[Use this form for Framework Agreement:]

Technical Specifications

TECHNICAL SPECIFICATIONS			
<i>Item / Service</i>	<i>Maximum Quantity</i>	<i>Technical Specifications / Scope of Work</i>	<i>Statement of Compliance</i>
			<p><i>[Bidders must state here either “Comply” or “Not Comply” against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of “Comply” or “Not Comply” must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer’s un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution.]</i></p>

Section VIII. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

The prescribed documents in the checklist are mandatory to be submitted in the Bid, but shall be subject to the following:

- a. GPPB Resolution No. 09-2020 on the efficient procurement measures during a State of Calamity or other similar issuances that shall allow the use of alternate documents in lieu of the mandated requirements; or
- b. Any subsequent GPPB issuances adjusting the documentary requirements after the effectivity of the adoption of the PBDs.

The BAC shall be checking the submitted documents of each Bidder against this checklist to ascertain if they are all present, using a non-discretionary “pass/fail” criterion pursuant to Section 30 of the 2016 revised IRR of RA No. 9184.

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class “A” Documents

Legal Documents

- (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages); **and**
- (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document, **and**
- (c) Mayor’s or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; **and**
- (d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Technical Documents

- (e) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**
- (f) Statement of the bidder’s Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents; **and**
- (g) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; **or**
Original copy of Notarized Bid Securing Declaration; **and**
- (h) Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable; **and**
- (i) Copy of Supplemental Bid published in the PhilGEPS (if any); **and**
- (j) Original duly signed Omnibus Sworn Statement (OSS); **and** if applicable, Original Notarized Secretary’s Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

Financial Documents

- (k) The Supplier’s audited financial statements, showing, among others, the Supplier’s total and current assets and liabilities, stamped “received” by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**

- (l) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC);
OR
A committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.

Class "B" Documents

- (m) If applicable, a duly signed joint venture agreement (JVA) in case the joint venture is already in existence;
OR
duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

Other documentary requirements under RA No. 9184 (as applicable)

- (n) *[For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos]* Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product.
- (o) Certification from the DTI if the Bidder claims preference as a Domestic Bidder or Domestic Entity.
- (p) Authority of the Signatory (if applicable)

II. FINANCIAL COMPONENT ENVELOPE

- (q) Original of duly signed and accomplished Financial Bid Form; **and**
- (r) Original of duly signed and accomplished Price Schedule(s).

