Government of Pakistan

PAKISTAN SCIENCE FOUNDATION

Ministry of Science & Technology

*****

e-Tender Notice (Re-Tender)

1.Pakistan Science Foundation (PSF), the executing agency for STEM project invites to submit proposals/bids documents on EPADS portal of PPRA from well reputed firms, suppliers, companies, and manufacturers registered with the Security Exchange Commission of Pakistan (SECP)/other registration authorities, having NTN, registration in General Sales Tax (GST) and having name in Active Taxpayers List (ATL) for "Fabrication of STEM activity Kits" of international standards for STEM based education of students for 50 Higher Secondary Schools/Cadet Colleges, 5 Universities across the country, Pakistan Museum of Natural History, PSF Science Center Faisalabad, STEM academy under PSF and other institutions making a minimum of 22,500 (increase or decrease in quantity with respect to cost element & experimental requirements) STEM activity Kits consist of 75 sets of each 300 modules/activities/experiments (list file available in the form of Annex-I on PSF website) being developed by PSF (In hard as well as soft forms with all rights reserved for procuring agency, i.e. PSF).

2. RFP documents carefully prepared shall only be applied/submitted on EPADS portal of PPRA as per provided instructions on or before the closing date (i.e. after 15 days of this advertisement/ publication) by 10:00 am. The proposals will be opened on the same day at 10:00 am in PSF Committee Room, in the presence (online or physical) of the applied bidders.

3. Only EPADS-registered bidders can apply for the tender. Applications other than EPADS will not be considered and entertained.

4. This tender notice may be downloaded from the PPRA website www.ppra.org.pk and PSF website www.psf.gov.pk and EPADS.

(Dr. Saima Huma Tanveer)
Project Director (STEM)
Tel No.: (051) 9212078

Organization Name:	Pakistan Science Foundation
Address:	1-Constitution Avenue, G-5/2
City:	Islamabad
Tel No.:	(051) 9212078
Fax No.:	
Receipt No.:	
Tender No.:	PSF/STEM/FK/2023-24
Description	Pakistan Science Foundation (Ministry of Science & Technology) Islamabad Government of Pakistan **PAKISTAN SCIENCE FOUNDATION** Ministry of Science & Technology ***** ****e-Tender Notice (Re-Tender)**** **1.**Pakistan Science Foundation (PSF), the executing agency for STEM project invites to submit proposals/bids documents on EPADS portal of PPRA from well reputed firms, suppliers, companies, and manufacturers registered with the Security Exchange Commission of Pakistan (SECP)/other registration authorities, having NTN, registration in General Sales Tax (GST) and having name in Active Taxpayers List (ATL) for **"Fabrication of STEM activity Kits**" of international standards for STEM based education of students for 50 Higher Secondary Schools/Cadet Colleges, 5 Universities across the country, Pakistan Museum of Natural History, PSF Science Center Faisalabad, STEM academy under PSF and other institutions making a minimum of 22,500 (increase or decrease in quantity with respect to cost element & experimental requirements) STEM activity Kits consist of 75 sets of each 300 modules/activities/experiments (list file available in the form of Annex-I on PSF website) being developed by PSF (In hard as well as soft forms with all rights reserved for procuring agency, i.e. PSF). **2.** RFP documents carefully prepared shall only be applied/submitted on EPADS portal of PPRA as per provided instructions on or before the closing date (i.e. after 15 days of this advertisement/ publication) by 9:30 am. The proposals will be opened on the same day at 10:00 am in PSF Committee Room, in the presence (online or physical) of the applied bidders. **3.** Only EPADS-registered bidders can apply for the tender. Applications other than EPADS will not be considered and entertained. **4.** This tender notice may be downloaded from the PPRA website www.ppra.org.pk and PSF website www.psf.gov.pk and EPADS. **Project Director (STEM)** **Pakistan Science Foundation,** **1-Constitution Avenue, G-5/2, Islamabad** **Phone:- (051) 9212078**
Remarks	

Advertisement Date	29/01/2025
Closing Date	13/02/2025
Closing Time	09:30 AM
Opening Time	13/02/2025 10:00 AM
Tender Nature	National

Public Sector Development Program (PSDP)

"Launching of STEM in Pakistan, Phase-I (Revised)"

REQUEST FOR PROPOSAL (RFP) FOR FABRICATION OF STEM ACTIVITY KITS

January, 2025

Pakistan Science Foundation
(Ministry of Science & Technology)
Islamabad

Note: This document contains 88 pages, it is the responsibility of the bidder to check and confirm the complete RFP document at the time of procurement.

Pakistan Science Foundation
(Ministry of Science & Technology)
Islamabad
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REQUEST FOR PROPOSAL (RFP) FOR OF FIRMS FOR THE "FABRICATION OF STEM ACTIVITY KITS"

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i. Tender Notice

Pakistan Science Foundation
(Ministry of Science & Technology)
Islamabad

Request for Proposal (RFP) for of Firms for the "Fabrication of STEM Activity Kits"

Pakistan Science Foundation (PSF), the executing agency for STEM project invites to submit proposals/bids documents on EPADS portal of PPRA from well reputed firms, suppliers, companies, and manufacturers registered with the Security Exchange Commission of Pakistan (SECP)/other registration authorities, having NTN, registration in General Sales Tax (GST) and having name in Active Taxpayers List (ATL) for **"Fabrication of STEM activity Kits"** of international standards for STEM based education of students for 50 Higher Secondary Schools/Cadet Colleges, 5 Universities across the country, Pakistan Museum of Natural History, PSF Science Center Faisalabad, STEM academy under PSF and other institutions making a minimum of 22,500 (increase or decrease in quantity with respect to cost element & experimental requirements) STEM activity Kits consist of 75 sets of each 300 modules/activities/experiments (list file available in the form of Annex-I on PSF website) being developed by PSF (In hard as well as soft forms with all rights reserved for procuring agency, i.e. PSF).

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4. This tender notice may be downloaded from the PPRA website www.ppra.org.pk and PSF website www.psf.gov.pk and EPADS.

Project Director (STEM)
Pakistan Science Foundation,
1-Constitution Avenue, G-5/2, Islamabad
Phone: - (051) 9212078

ii. Introduction

Pakistan Science Foundation
(Ministry of Science & Technology)
Islamabad
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PSDP "Launching of STEM in Pakistan, Phase-I (Revised)
Request for Proposal (RFP) for of Firms for the "Fabrication of STEM Activity Kits"

1. Pakistan Science Foundation (PSF), is an autonomous body under the administrative control of federal Ministry of Science and Technology (MoST) and the executing agency for the Public Service Development Program "Launching of STEM in Pakistan, Phase-I, (Revised)", approved by the Departmental Working Party of MoST, Govt of Pakistan, Islamabad.

Main objective of the PSF are;

- Promotion and funding of scientific research and related activities having bearing on socio-economic needs of the country.
- Establishment of Science Centers, Museums, Herbaria & Planetaria.
- Promotion and Popularization of science through Mobile Science Exhibition, Science Fairs, Science Essay, Poster & Quiz competitions, Inquiry Based Science Education (IBSE), Popular Science Lectures and Establishment of Science Clubs in High Schools.

2. Launching of STEM in Pakistan, Phase-I (Revised): Primarily, the project is designed to achieve knowledge based economy by enhancing capacity of Government sector schools across the country. Major objectives of the STEM project are;

- To officially launch STEM, the modern tool for promotion of science and technology for Science, Technology, Engineering and Mathematics Education in Pakistan. In the 1st phase, the project shall be launched initially in 50 Higher Secondary Schools/Cadet Colleges, 5 Universities across the country, and 1 at Pakistan Museum of Natural History and PSF Science Center Faisalabad (each) making a total of 50 Mini STEM FABLABs and 7 Hi STEM FABLABs and 1 at PSF under STEM PSF Academy.
- To prepare a critical mass of science teachers as STEM-Mentors and Innovation Handlers, capable of harnessing the disruptive innovation coming out of FABLABS and transforming this phenomenon into socio-economic wellbeing.
- To introduce active learning methods that includes communication, collaboration, problem solving, leadership, creativity.
- To prepare the youth for meeting the incumbent technological needs and challenges facing the country by preparing 21st century workforce through STEM.

iii. Instructions

1. **Procedure for Proposal:** Interested and well reputed firms, suppliers, companies, and manufacturers, registered with Securities and Exchange Commission of Pakistan (SECP)/ other registration authorities, having NTN/IT, GST name in Active Taxpayers List (ATL) for **"Fabrication of STEM Activity Kits"** (In hard as well as soft forms with all copyrights reserved for procuring agency) of international standards for STEM based education of students for 50 Higher Secondary Schools/Cadet Colleges, 5 Universities across the country, Pakistan Museum of Natural History, PSF Science Center Faisalabad, and at STEM Academy under PSF making a minimum of 22,500 (increase or decrease in quantity with respect to cost element & experimental requirements). STEM activity Kits consist of 75 sets of each 300 modules/activities/experiments (list file available in the form of Annex-I on PSF website) being developed by PSF. The STEM activity kits include hands-on, sophisticated/one of its kind, software-based and collaborative STEM activity kits related to Biology, Physics, Chemistry, Computer Sciences, Mathematics, & other science subjects of 9^{th}, 10^{th}, 11^{th}, 12^{th} grades. PSF will hand over the modules/list to the bidder upon which STEM activity Kits will be developed. The Firm/bidder shall complete and carefully prepare the proposal documents and apply/submit online on the EPADS portal of PPRA in accordance with instructions in RFP documents in all respects along-with relevant documents as per PPRA rules.
2. **Selection Process:** Single Stage Two Envelope procedure will be adopted for selection of the firm/bidder for "Fabrication of STEM activity Kits" of international standards. Bidders shall submit the tender documents online on the EPADS portal of PPRA (**hard copies are also be sent till closing date, to the Project Director STEM at "Pakistan Science Foundation, 1-Constitution Avenue, G-5/2, Islamabad" along with an undertaking that the same copy has been uploaded to EPADS, as only the EPADS submission will be considered in the evaluation**). The proposal will be opened at the date and time mentioned in the tender notice. All the received proposals will be evaluated and no amendments or changes will be allowed in the proposals after opening.
3. **Mode of submission of documents:** The proposals should be submitted online on EPADS portal of PPRA within its stipulated closing date and time on or before the 15 days of the advertisement of this tender. It should be addressed to the "Project Director (STEM), Pakistan Science Foundation, 1-Constitution Avenue, G-5/2, Islamabad, Phone:- (051) 9212078".
4. **Opening of online submitted proposals:** Initially technical proposals received through EPADS will be opened by the authorized committee on the same day in the PSF Committee Room, in the presence (online or physical) of the bidders who have applied. Representatives present at the proposal opening meeting shall sign the online attendance sheet to evidence their presence. Financial proposals of technically qualified bidders will be opened later, and applicants will be informed in due course of time regarding the opening date of the financial proposals. If any holiday is announced by the Govt. of "Force Majure Situation", the proposals will be opened on the next working day or as intimated by

the PSF.

5. PSF may request to any one or all firms for clarification of the contents, prototype or sample of kits provided by the firms. Response of that clarification should be in writing and should be sent within 24 hours, any delay in providing clarification of such information will not be considered.
6. If a proposal is not substantially aligned to the terms & conditions/particulars of this document, it will be rejected by PSF and may not subsequently be made responsive by the firm by correction of the non-conformity. A proposal once opened in accordance with the prescribed procedure shall be subject to only those rules, regulation and polices that are in force at the time of issue of notice for invitation of proposals.
7. Applicants will be informed, in due course of the evaluation result.
8. **Bid Evaluation Criteria:** The tender will be awarded to technically qualified bidder quoting lowest rate (excluding GST) on aggregate basis.

iv. COVERING LETTER FOR SUBMISSION OF PROPOSALS

To:

Project Director (STEM)

Pakistan Science Foundation

Islamabad.

Dear Sir,

We, the undersigned, offer to provide the services of our company/firm to Pakistan Science Foundation for **"Fabrication of STEM Activity Kits"** as per details in the attached in accordance with your RFP documents.

Yours sincerely,

Authorized Signature [*In full and initials*]:
Name and Title of Signatory:
Name of Firm:
Address:
Date:

v. Mandatory documents
(To be attached with the Proposal)

(Please attach and submit copy of this page with the Proposal after duly completing the "Response" Column along-with all the required documents)

#	Particulars	Remarks	Response Yes/No
1.	Covering Letter	Mandatory	
2.	Having nationwide presence/offices (with office in Islamabad/Rwp, mandatory) with complete address & active landline and fax numbers	Mandatory	
3.	Complete Profile / Introduction of bidder's company/firm (including name of Chief Executive, Partners, Director, Professionals)	Mandatory	
4.	Copy of CNIC of CEO/Authorized person	Mandatory	
5.	Copy of Certificate of Incorporation from SECP, PEC or Registration from Registrar of Firms or undertaking of establishment in case of sole proprietor /partnership deed	Mandatory	
6.	Proof of the Age of the Firm (minimum 3 years)	Mandatory	
7.	Copy of valid NTN Certificate with proof of name in ATL	Mandatory	
8.	Copy of valid STRN Certificate with proof of name in ATL	Mandatory	
9.	Bank Account Statement (for last two years (i.e., 2023-24) with minimum annual transaction of PKR 10 million).	Mandatory	
10.	Affidavit declaring that the Bidder is not blacklisted by any Government department/agency and no inquiry is ongoing against the bidder in NAB (on Stamp paper worth Rs.50)	Mandatory	
11.	List of similar completed and ongoing projects. Copies of Work orders/Job Completion certificate.	Mandatory	
12.	Detail of all staff members	Mandatory	

I / we hereby confirm that required documents are provided with the Proposal and information contained in this proposal is correct and true.

Company's Stamp **Signature with date**

vi **Format for Brief Introduction of the Bidder**

#	Particulars	Response
1	Name of the Bidder/Firm	
2	Date of Establishment -	
4	Owner / CEO /Director Name	
5	NTN No.	
6	Mailing Address:	
7	Contact (Landline & Cell NO.)	
8	Fax No(s).	
9	Email Address	
10	GST No.	
11	Bank Name & Account No. along with title of Account.	
12	Corporate Status	
13	Attachments :	List of all documents attached with the proposals
14.	Any other relevant documents	Please attach

Company's Stamp **Signature with date**

vii. TECHNICAL EVALIATION CRITERIA:

The firm should submit copy of this page of RFP duly signed and stamped along with the Proposal, otherwise the proposal is liable to be rejected

#	**Particulars**		**Maximum Marks**	**Marks Obtained** *(for official use only)*
1.	Location of Offices with complete address & active landline and fax numbers	Islamabad/Rwp H/O= 5 marks 1st Sub-Office in ISB/RWP = 2 2nd or other Sub-offices = 3	10	
2.	Age of the firm (not less than 03 years)	Minimum three years of age 2 points for each year after minimum age of firm and maximum 10 points for 5 years or above	10	
3.	Bank Statement for last two year (i.e. 2023-24)	Transaction during last one year is Minimum Rs.10 million = 5 marks Between 10-20 Million = 7 marks Above 20 Million = 15 Marks (Max)	15	
4.	Proof/Receipts of Income Tax Returns for last two years (i.e. 2022-23, 2023-24)	One year = 5 Two years = 10 (Maximum) (5 marks for each year)	10	
5.	Audited Accounts Statement for last 2 years (i.e. 2022-23, 2023-24)	One year = 7 Two years = 8 (15 marks Maximum)	15	
6.	Detail of similar projects and services undertaken (Attach brief of the projects with proof of completion certificates)	Marks for each project; Up-to 2 million = 5 Up-to 4 million = 6 Up-to 6 million = 7 Up-to 8 million = 10 Above 10 million = 12	40	
Total			**100**	

Note: The firm fulfilling all mandatory requirements and obtaining minimum 65 marks in the above technical evaluation will be considered as qualified, provided that all other terms and conditions prescribed in this document are fulfilled. Only technically qualified firms would be asked to submit the Financial Proposal.

Company's Stamp **Signature with date**

viii. Scope of Work (Fabrication of STEM Activity Kits)

The firm should prepare a work plan for the following assignment and submit with the proposal, otherwise the proposal is liable to be rejected. (Keeping in view that all STEM activity Kits will be delivered all over Pakistan)

#	Particulars	Qty/Remarks
1.	Standard of STEM Activity Kits-	International
2.	Language (for Brochure Stickers)	English and Urdu
3.	Number of STEM activity Kits	Minimum 22,500 (increase or decrease in quantity with respect to cost element & experimental requirements) STEM activity kits consist of 75 sets of each 300 modules / activities / experiments being developed by PSF (For 9^{th}, 10^{th}, 11^{th}, $12^{th,}$ grades).
4.	Areas/disciplines to be covered by STEM activity kits	Physics, Chemistry, Biology, Computer Science, Mathematics and other science disciplines.
5.	Brochure/sticker and Instruction manual	Brochure/sticker MoST/PSF and STEM logos watermarks will be pasted/embossed/ engraved on STEM Kit Box and instruction manual will be placed inside the STEM kit box. (as per sample provided by PSF in Annex-I)),
6.	Packaging of STEM activity kits	Portable and durable packaging as per international standards embossed/engraved with MoST/PSF and STEM logos.
7.	Software based STEM activity kits	Software based STEM kits (with Most/PSF and STEM logos watermarks) will be provided in USB drive with brochure and instruction manual.
8.	Provision of STEM activity kits to the hiring agency	In soft form, in hard form and in combined form (where applicable). Copy rights will be reserved by the procuring agency i.e. PSF
9.	STEM activity Kits durability	Durable for long time, repeatable\multi-time useable.
10.	Approach for each kit	Integrated approach as universally acclaimed STEM activities/requirements
11.	Learning Outcomes	Specific Learning Outcomes General Learning Outcomes and Additional Learning Outcomes
12.	Provision of trainings	Provision of training at PSF, PMNH, provisional Headquarters and any other venue decided by PSF on STEM activity kits to ensure the working and performance results of STEM kits after the delivery of STEM activity Kits.
13.	At least five (05) Sample kits (hardware based) and five (05) Sample kits (software-based) of different subject should be attached with the proposal bid.	

(**Important Note:**
1. Specifications/working of the STEM activity kits should be according to the modules developed by PSF and keeping in view the PC-I allocation.
2. The quoted rate lump-sum and cost including all direct or indirect cost, technical support of other resources must be included.
3. All the applicable govt. taxes would be deducted at the time of making payment.

Company's Stamp **Signature with date**

ix. Financial Proposal: (Separate Envelop)

Bidders are invited to submit their financial proposal for the specified fabrication of STEM Kits ensuring compliance with all codal formalities and regulations of PPRA/EPADS rules.

List of STEM Activity Kits								
DIY/Working Model of Arduino/IoT/ELECTRONICS Based STEM KITS								
Sr #	**Title**	**Materials / Suggestions / Reference links**	**Any Remarks**	**Quantity**	**Rate per unit**	**Sales Tax Rate**	**Rate per unit**	**Value in Rs. Per**
1	**Up Down Counter**	· Acrylic sheet Base · Basic Electronics (IC Based) · PCB Layout with un assembled parts/ components		**1**				
2	**Code Lock**	· Acrylic sheet Base · Basic Electronics (IC Based) · PCB Layout with un assembled parts/ components		**1**				
3	**DIY Scissor Lift**	· Acrylic sheet · DIY KIT · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
4	**Wind Turbine DIY Kit**	· Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
5	**Melody Bell**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
6	**Water Level Indicator**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
7		· Acrylic sheet		**1**				

	DIY Electromagnet Kit	· Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components						
8	**Shake Kit Generator**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
9	**Series and parallel circuit**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
10	**Home Solar Energy**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
11	**Chair Swing Ride**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
12	**Infrared Switch**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
13	**Air Powered Car**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
14	**Hand Powered Generator**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
15		· Acrylic sheet Base · Basic Electronics		**1**				

	Electric Circuit 4 in 01	· If Applicable/ possible, then PCB layout with un assembled parts/ components						
16	**Water Boat Remote Control**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
17	**Remote Control Car**	· Acrylic sheet · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
18	Introduction to 4x4x4 LED Cube with Arduino Nano	· Acrylic sheet Base · Basic Electronics +(Arduino Nano Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
19	**Robotic Car Drive With Hand Sensor**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
20	**Hovercraft Project Kit**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
21	**Hydraulic Crane**	· Acrylic sheet · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
22	**Infrared Remote**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
23	**FM Transmitter**	· Acrylic sheet Base · Basic Electronics (IC Based)		**1**				

		· If Applicable/ possible, then PCB layout with un assembled parts/ components						
24	**Energy Conversion** Generator **Kit**	· Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
25	**Oilfield Pump Jack**	· Acrylic sheet · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
26	**Motor Water Pump Kit**	· Acrylic sheet Base · DIY Kit		**1**				
27	**Electricity Generation With Heat Energy**	· Acrylic sheet · Basic Electronics		**1**				
28	**Tesla Coil Manual**	· Acrylic sheet Base · Basic Electronics		**1**				
29	**Lucky Circle**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
30	**Motion Sensor**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
31	**Robotic Car Drive With Sensor**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
32	**Rain Alarm**	· Acrylic sheet Base · Basic Electronics (IC Based)		**1**				

		· If Applicable/ possible, then PCB layout with un assembled parts/ components						
33	**Audio Level Indicator**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
34	**Laser Alarm**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
35	**Automatic water spray**	· Acrylic sheet · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
36	**Hydro Turbine**	· Acrylic sheet DIY KIT · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
37	**Astronomical Telescope**	· Acrylic sheet DIY KIT		**1**				
38	**Walking Robot**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
39	ATM Machine Model Using Arduino	· Acrylic sheet · Basic Electronics +(Arduino Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
40	**Safe Stopping Boat**	· Acrylic sheet · Basic Electronics		**1**				
		· Acrylic sheet		**1**				

41	**Door Theft Alarm**	· Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components						
42	**Inter Com**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
43	**Sound Operated Switch**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
44	**Prayer Time Alarm System Using Arduino Uno**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
45	**Electronic Tas**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
46	**Electro Magnet**	· Acrylic sheet · Basic Electronics		**1**				
47	**Remote Control Toy Car DIY Kit**	· Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
48	**Anti-Gravity Structure Floating Table Model**	· Acrylic sheet · DIY KIT		**1**				
49	**Drawing Robot**	· Acrylic sheet · Basic Electronics (IC Based)		**1**				

		· If Applicable/ possible, then PCB layout with un assembled parts/ components						
50	**Introduction To Running LED Tower Using Arduino.**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
51	**Pneumatic Jack**	· Acrylic sheet · DIY KIT		**1**				
52	**DIY Solar Fan**	· Acrylic sheet · Basic Electronics DIY KIT		**1**				
53	**Water Dispenser**	· Acrylic sheet DIY KIT		**1**				
54	**Introduction to Quiz Monitor DIY Kit**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
55	**Variable Power Supply**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
56	**Smart Glasses For Blind Peoples Using Arduino.**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
57	**Electric Motor**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
58	**Touch Switch**	· Acrylic sheet Base · Basic Electronics (IC Based)		**1**				

		· If Applicable/ possible, then PCB layout with un assembled parts/ components						
59	**Auto Motor Controller**	· Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
60	**Metal Detector Robot Using Arduino**	· Acrylic sheet · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
61	**Auto Light Controller**	· Acrylic sheet Base · Basic Electronics (IC Based) · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
62	**Traffic Signal Lights Using NE 555 Timer**	· Acrylic sheet Base · IC NE 555 Timmer Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
63	**Arduino-Based Traffic Signal Lights**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
64	**Introduction USB Table Fan DIY Kit**	· Acrylic sheet · Basic Electronics DIY KIT		**1**				
65	**Arduino-Based Digital Voting Machine**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
66	**Hydraulic Robotic Arm**	· Acrylic sheet · Basic Electronics (IC Based)		**1**				

		· If Applicable/ possible, then PCB layout with un assembled parts/ components						
67	**Arduino Based LED Distance Indicator**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
68	**Periscope**	· Acrylic sheet DIY KIT		**1**				
69	**Electric Generator**	· Acrylic sheet Base · Basic Electronics DIY KIT		**1**				
70	**Arduino-Powered Jumping Jack Game**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
71	**Introduction Basic Air Craft DIY Kit**	· Acrylic sheet DIY KIT		**1**				
72	**Snake Game Using Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
73	**Introduction To Arduino Based Calculator**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
74	**Introduction to Smart Irrigation System using Arduino**	· Acrylic sheet · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
75	**Introduction To Automatic Staircase Light Using IR Sensor**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				

	And Arduino .							
76	**Introduction To IoT Based Weather Station Using Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
77	**Introduction To Wireless LED Control With Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
78	**Introduction to Logic Gates Learning Kit Using Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
79	**Introduction To Robotic Arm Using Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
80	**Introduction To Line Following Robot Using Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
81	**Line Follower Robot, Robotics Using Arduino Nano**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
82	**Biometric Attendance System Using Arduino**	· Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
83	Rubber Powered	· Acrylic sheet Base · DIY KIT		**1**				

	Propeller Car DIY Kit							
84	**Password Based Door Lock System Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
85	**Arduino Based Trash-Bot (Auto-Open/Close Trash Bin)**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
86	**Introduction to Weight Machine Using Arduino**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
87	**Arduino Speed Detector Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
88	**Introduction to Appliances Control Using IR TV Remote.**	· RFID / Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
89	**Introduction to School Bell Automation System using Arduino**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				

90	**Introduction to Tic Tac Game Using Arduino**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
91	**Scrolling Text Using 8x32 Led**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
92	**Introduction to SMS/Call-Based Anti-Theft System Using Arduino**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
93	**Introduction to Wireless Power transmission using Arduino**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
94	**Solar Tracking System Using Arduino**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
95	**Arduino-Based Digital Clock with 16x2 LCD Display Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				
96	**Introduction to Smart**	· Arduino UN/ NANO Based		**1**				

	Car Parking System Using Arduino	· Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components						
97	**Gesture Control Wheelchair For Disabled People :- robot not wheelchair**	· Arduino UN/ NANO Based · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components		**1**				

DIY/Working Model of BIO STEM KITS

Sr #	Title	Materials / Suggestions / Reference links	Any Remarks	Quantity	Rate per unit	Sales Tax	Rate per unit	Value in Rs.
98	Investigate the effect of concentration of sugar/salt solution on the mass of the plant tissue.	§ 1 L Distilled water § Measuring cylinder 1000ml § Several potatoes § Apple corer § Sucrose/Glucose § Scale with gram measurements, § 6 Boiling tubes/beakers 100ml § 3 Spoons, Ruler, § Erasable white board, Pen/Pencil, Timer § Paper towels, 6 Graph paper, 3 Wax pencil § Potato peelers § knife §	All the material should be durable. Instead of paper sheet for writing measure ments, please provide A4 size erasable white board in kit.	1				
99	Investigate how limiting factors affect the rate of	§ Aquatic plant § Light source (lamp) § $NaHCO_3$ 100g § Water bath	Made this project kit using the	1				

	photosynthesis and how they are controlled in a greenhouse to give a maximum yield?	§ Syringe § Meter ruler § Medical Thermometer § Beaker § Boiling tube § Stopper § Pipe, rubber tube § Stopwatch § Distilled water § Potometer	potometer					
100	Be a Scientist! Use the Scientific Method to Solve a Problem.	All the items given in the video links.	The kit shall contain items from all the 4 links in separate Ziplock bags.	1				
101	How can you as Botanists demonstrate that temperature, wind, humidity, and light intensity affect the rate of transpiration in plants?	§ Potometer § Lamp § Ruler, § Plant shoot § Scalpel, § Beaker 100 ml § Capillary tube § Stopwatch § Vaseline	The kit must contain a potometer along with all other items mentioned in materials.	1				
102	Distinguish between stages of mitosis and meiosis and illustrate and interpret with correct description.	§	The video links are for reference. Mitosis & meiosis models are not required but all the components which a student can assemble to describe different	1				

			stages of mitosis and meiosis.					
			Make a kit containing multiple shaped chromatids which can be joined to form a chromosome, different cells, attachable and detachable nuclear membranes, thread like structure for spindle formation etc. Make a kit which a student can use to describe and learn all the stages of mitosis and meiosis. The components of kit shall be attachable and					

			detachable. The material used for making kit shall be durable i.e plastic.					
103	Can plants generate electricity? How can this electricity be used?	Electricity generating microbial fuel cells based working kits.	Provide kits on both links given as reference based on Microbial fuel cells.	1				
104	Design a seeding machine to counteract deforestation.	Materials used: Acrylic sheet for making platform of robot. Arduino based project.	Make the simplest seed sowing Robot which incur the least cost.	1				
105	Tracking your diet: Find out if your diet is nutritious enough.	§ Acrylic sheet. § Metallic ruler for percentage representation. § Plastic made shapes of different food items	Instead of using cardboard, please use acrylic sheet for making wheel. The lines for making portion for different food compartments shall be adjustable by moving so that students can	1				

			adjust the percentage of different food components as per their choice and understanding. Provide pictures of food items in durable form to paste on the diet wheel.					
106	Explore how the parts of respiratory system move to allow ventilation of lungs.	§ 2-liter plastic bottle with cap § 2 plastic drinking straws § Two 9-inch balloons § 1 larger balloon/stretchable plastic sheet § 2 rubber bands	Also provide one working model in the kit in prepared form for reference.	1				
107	How to aid in recovery of strained bicep by engineering a biomedical device?	§ 6 rubber bands (a few different sizes) § thin rope, 2.5 m § string, .5 m § scissors § paper, 1 sheet § springs § one 20-Newton spring scale § ruler 12-inch	Provide durable and good quality material that can last for long time in the kit.	1				
108	Design and build a good looking and easily understandable wristwatch for people suffering from severe visual impairment.	Arduino based smart glasses working project. Provide one assembled kit along with unassembled kits.	Please make Arduino nano/sensor based smart glasses for blind.	1				

109	Identify the conditions needed for seed germination and demonstrate by planning an investigation on how they affect germination?	§ 12 Petri dishes § Viable Seeds (6 different types) § 1 roll of Cotton wool/ § 1L Sterile water § 0.5 L Oil § Arduino Clinostat based Microgravity project for plants.	Made a kit by which student can investigate conditions needed for seed germination as given in the video links 1 & 2 Also make a kit on video 3. Build an Arduino Clinostat to Simulate Microgravity for Plants	1				
110	Yeast cells respire too. But not like me and you.	§ 1 large test tubes, about 15 cm long and 20 mm in diameter § 1 small test tube, about 10 cm long and 8 mm in diameter § squares cut from plastic wrap, about 8 cm on a side § 12 rubber or cork stoppers, size 2 § 1 test tube racks to hold large test tubes § 12 dropping pipettes § five 300-ml beakers § 1-liter flask § 1-liter graduated cylinder § 1 lab thermometer § 1 kg (package) dry baking yeast § 12-ounce bottle molasses (unsulphured) § Graph paper	Make a kit which students can use to quantify the amount of respiration occurring in yeast-molasses cultures. Provide plastic made test tubes, beakers, flask cylinders instead of glass-made.	1				

111	Design and construct a lower leg protheses in response to a hypothetical zombie apocalypse scenario.	§ 1 package of cardboard interlocking packing pieces, such as the 1 cu ft package § 1 moving glass divider kit (cardboard interlocking divider pieces), § ~4 pieces of PVC pipe, 6-in and 4-in lengths § ~20 wooden dowel rods; ½ in diameter and ~16 in long § ~7 wooden flat sticks; ¼ in thick x 2 to 4 in wide and ~16 in long § ~10 ft vinyl tubing; ½ in x 3/8 in size	The videos contain different ideas from simple to advance for making prosthetic leg.	1				
112	Model how traits are passed from parents to offspring by creating baby aliens.	§ Printout of Physical Traits Images § Printout of Sibling Images § Printout of the Alien Genotype and Phenotype Table § Construction paper, different colors (orange and green must be included) § Scissors § Tape § Glue § Markers, crayons, and coloring pens § Pencils § Two coins	Provide all the material required to perform this experiment in this kit as shown in the video.	1				
113	Engineering an effective system that can deliver medication(s) to the human circulatory system in patients undergoing cancer treatment.	Strings, Cloth, Shelf liner Zip ties, Pipe cleaners party favors with tubes Bulbs, bottle, Caps, plastic Pencil sharpener, Paper clips	Provide all the items mentioned in the link in one kit.	1				

		adhesives (tape, glue, wire), Disposable pipettes, Clams 6 – 12 feet medical tubing, IV Clamps Disposable syringe, wooden sticks Gauze, fly swatter, plastic cups, bowls strainer, play dough, tape, styrofoam icing tube with tips						
114	Investigate the role of salivary amylase in the digestion of starch, and explore whether smoking has any effect on the production of salivary amylase.	§ Safety goggles § Starch solution in a beaker (can prepare your own with cornstarch) § Test tubes - 4 § Test tube rack § Benedict's solution § 400 ml beaker § Iodine solution § Bunsen burner § Tripod stand and guaze § Syringe/graduated dropper § Amylase solution		1				
115	Investigate effect of substrate concentration on enzyme-controlled reactions.	§ Test tubes, at least 1.5 cm ID and 10 cm long (6) § 1 Test tube rack § Graduated Pipettes, 3-ml (3) § Access to sink § Dishwashing liquid (detergent) (1/2 cup) § 3% hydrogen peroxide § Dried yeast (1 package) § Cups (5) § 6 Measuring spoons (teaspoon and tablespoon) § Spoons or spatula for mixing § Metric ruler § Timer § Calculator § Graph paper § Paper § Pen	Design this kit in a way that students can investigate effects of substrate concentration, enzyme concentration, temperature and Ph on enzyme activity.	1				

		§ Paper towels						
116	Design and create a protein model to replace defective protein in a child's body.	masking tape, 1 roll string, 2 feet (~61 cm) 2 paper plates, any size construction or brown wrapping paper 1 paper lunch bag saran/plastic wrap, 2 feet (~61 cm) 10 Popsicle/craft sticks or wooden cocktail sticks 10 wooden toothpicks, either flat or round style 4 mini marshmallows 3 scissors, 1 bag mini marshmallows a three-stage testing area composed of an oxygen (mini marshmallow) dispenser, dispensing station (lungs) and dumping station (cells), such as four cardboard boxes: a smaller one with holes (to hold the marshmallows and shake them out), a bigger "lungs" box underneath it (to catch stray marshmallows), a smaller box inside the big box to serve as an elevated stand, and a fourth "cells" box	Design a kit which students can use to demonstrate structural and functional proteins as well as 4 levels of protein structures. i.e Primary, secondary, tertiary and quaternary. These videos are for reference.	1				
117	Investigate plants growth responses to environmental stimuli like gravity.	§ 6 different types of plant seeds § A growing plant § Plastic zip-lock bags (3) § Permanent pen (1) or a pen and tape § 6 Paper towels § Radish seeds (15) § Strong tape § Large cardboard box (1)		1				
	Design and create devices	§ scissors § white glue	The last two	1				

118	to help astronauts eat.	§ tape (cellophane, masking, etc.) § pens and pencils § paper sheets 10 § rulers § assorted building materials such as: o balsa wood o construction paper o toothpicks o popsicle sticks o white paper o string o aluminum foil o paper clips o Styrofoam o foam core o film canisters, etc. § markers and crayons § hot glue gun	videos are for giving concept that what type of food is used in space.					
119	Design and create a super bacteriophage.	§ Styrofoam blocks § Styrofoam spheres, § Velcros different types § double sided tape § string, toothpicks § straws § pipe cleaners § paper § fuzzy pom-poms § Velcro squares § paper squares	Make different components of virus from durable material which can be attached to make a complete bacteriophage.	1				
120	Create sample blood clot polymer and test solutions that effectively breaks it down.	§ 4 paper cups § 4 wooden stirrers § clear, flexible tubing (3/4-inch diameter X 5/8-inch interior diameter X 4-inch length) § rubber stopper, a size that temporarily fits and blocks the tubing § white glue, 60 ml § 1 cup (~237 ml) of 4% borax solution (50 ml)	IF you have any better idea related to this topic, please incorporate it to make it better.	1				

		§ graduated cylinder (50 ml) § water § marker, for labeling § 1 cup (~237 ml) of 1 M HCl (hydrochloric acid) § 1 cup (~237 ml) of 1 M NaOH (sodium hydroxide) § 1 cup (~237 ml) of enzyme solution, § 1 cup (~237 ml) of NaCl solution § 1 cup (~237 ml) of glucose solution § 1 cup (~237 ml) liquid dish or laundry detergent § 6 test tubes § 6 droppers or pipettes § safety goggles, § lab apron § gloves						
121	Can genetic or environmental factors increase the chances of an autoimmune disease?	§ Bowls (8) § M&M's candies (24 of each color: red, green, yellow, blue) § Six-sided dice (6) § Pencil or pen § Clear tape	This is a link to the site where complete procedure for doing this activity along with materials is given.	1				
122	Dissection of sheep's heart to understand the structure of human heart.	▪ 1 sheep heart ▪ dissection kit (scalpel, pins, probe, scissors) ▪ dissection tray ▪ protective gear o aprons, o disposable gloves, o lab goggles, ▪ vinyl tablecloth ▪ small kitchen trash bag ▪ paper towels ▪ 1-2 50-gallon lawn and leaf/trash bags	▪	1				

1 2 3	RESPIRATORY DISORDERS	▪ two-liter plastic bottle with cap, ▪ 2 plastic drinking straws or 6 inches (15 cm) of tubing (clear flexible tubing works well, 0.5-1.0 cm in diameter ▪ 3 balloons (1 large enough to stretch over bottom of two-liter bottle; 2 smaller ones, representing lungs) ▪ 2 rubber bands ▪ 2-inch (5-cm) cube of soft modeling clay ▪ scissors ▪ drill ▪ 1 model lung ▪ A variety of materials from which students may select to make a face mask filter, such as white paper, cotton balls, coffee filters, cloth, felt, gauze, foam, cotton batting, string, rubber bands, tape ▪ Scissors ▪ spray bottle of water ▪ timing device	You may also add the designing of pollution filter in face mask.	1				
1 2 4	LATEST TECHNIQUE APPLIED TO ENHANCE CROP AND FRUIT YIELDS	▪ Hydroponic solution 5L ▪ clean and dried plastic food containers ▪ colanders ▪ duct tape, and masking tape ▪ pipe cleaners ▪ plastic containers of different shapes and sizes ▪ tubing ▪ wooden sticks ▪ zip ties	The link given at 2, 3 is an alternate activity kit. Our priority is to develop kit on the first link	1				

125	GENE THERAPY	§ electronic device to show videos o Styrofoam in various shapes such as balls, sticks, or cubes o cotton balls and polyester pom-pom balls, in assorted colors and sizes o pipe cleaners, in assorted colors o toothpicks o magnets o Velcro o scissors o adhesive tape markers		1				
126	HUMAN SKELETON	▪ ruler or tape measure ▪ scissors ▪ 1 roll duct tape ▪ plastic pipes, ▪ metal pipes, ▪ metal strips, ▪ cardboard tube ▪ wooden "2 x 4," thin metal duct material (to be rolled and taped into a tube shape), all generally 1.5 ft (or .46 m) long ▪ large sponges ▪ cardboard, etc. ▪ bath towels, pairs of pants, shoes ▪ string, rope, twine (about 30 ft [or 10 m])		1				
127	HUMAN IMPACTS ON ENVIRONMENT	▪ Foam core board or heavy cardboard (for creating two model buildings), ~15 x 20-inch [38 x 51-cm] sheet (which is half of the 30 x 40-in [~76 x 102-cm] size foam core board sheets		1				

		▪ 1-2 pieces of black tar paper, ~ 6 x 6-inch [15 x 15-cm] or use black sandpaper, or black construction paper to represent the black tar surface typically found on city building roofs ▪ 1-2 pieces of sod (turf) and/or other sod or moss-like plants, ~ 6 x 6-inch [15 x 15-cm] piece ▪ 1 piece of plastic sheeting (for roof deck insulation and waterproofing layer), 30 x 30-cm ▪ duct tape and hot glue gun ▪ X-ACTO knife, utility knife and scissors ▪ 2 thermometers (at least one long thermometer so you can access the interior of the model structures) ▪ 1 heat lamp ▪ 1 electric fan ▪ timer or stop watch ▪ 10 paper sheets ▪ pencils ▪ 4 sheets of graph paper soil ▪ Two foam core board (or heavy cardboard), ~ ▪ Two black tar paper ▪ Two pre-cut sod pieces (15 x 15cm), ~ ▪ plastic wrap for more waterproofing membrane material ▪ duct tape ▪ hot glue gun sticks						
128	SENSORY RECEPTORS	▪ Pencils, paper rulers	Please develop the kit on	1				

	AND THEIR WORKING	▪ 12 fasteners for fabricating the sensory toy devices, such as various woods, plastics, metals, cardboard, rope, fabric, glue, tape, etc. ▪ rulers ▪ tape measures, ▪ hand or power saws ▪ drills, scissors, hot glue, ▪ super glue	the link given at 1. Link 2 & 3 are alternate links if developing kit at link 1 is not come under your capacity.					
129	THERMORE GU-LATION	▪ Arduino™ Uno Development Board ▪ breadboard ▪ USB cable, for powering Arduino/uploading code	Please develop the kit on the link given at 1. Link 2 & 3 are alternate links for reference. You can also develop your own thermore gulation kit using sensors and Arduino.	1				

		▪ 10 wires to connect components, such as 6- or 7-inch jumper wires for Arduino boards ▪ 3 LEDs ▪ TMP36 temperature sensor ▪ 3 220 ohm (Ω) resistors; ▪ 1-megaohm (MΩ) resistor ▪ IRF510 n-channel MOSFET (metal-oxide-semiconductor field-effect transistor) ▪ 12V computer cooling fan ▪ 12V AC adapter, to power the fan ▪ Circuit Building Instructions Sheet, one per student						
130	DISORDERS OF THE SKELETON		· PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based	1				
131	Investigation of heat production in germinating seeds		· PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based	1				

132	How tobacco smoke can affect and change the cells		· Electronic based	1				
133	IOT Paralysis Patient Healthcare Project		· PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based	1				
134	IOT Smart Plant Monitoring System | Smart Irrigation		Link 1 & 2. IOT based smart plant monitoring system that can monitor irrigation, humidity and temperature. Link3. Simple Sensor based automatic irrigation system for agriculture. Link 4. Arduino based irrigation system	1				

135	SEE WHAT HAPPENS TO PLANTS WHEN YOU PLACE A MAGNET IN A POT?		Provide all the components in the kit to perform this experiment as shown in the video.	1				
136	Effect of Electricity on Plant Growth		Electronics based	1				
137	How to Make Working Model of Human Heart and Circulatory system		Electronics Based kit	1				

DIY/Working Model of MATH STEM KITs

Sr #	Title	Materials / Suggestions / Reference links	Any Remarks	Quantity	Rate per unit	Sales Tax	Rate per unit	Value in Rs.
138	**BASIC PROPORTIONALITY THEOREM**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=uLapPjh-m64		**1**				
139	**Linear Graph**	Convert it onto electronic board using LEDs etc along base on acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=kN6iDJS9Ldo · https://www.youtube.com/watch?v=stxAfjm2890		**1**				

140	**Congruency between triangles**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=kFHS7zdSXno · https://www.youtube.com/watch?v=wCc3cC0mZEo · **https://www.youtube.com/watch?v=zbBwvFeARDo**		**1**				
141	**PERDPENDICULAR AND ANGLE BISECTORS**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=vFsXdG33s3c · **https://www.youtube.com/shorts/Usst6vszpxo**		**1**				
142	**How to Make a Working Model of Pythagoras Theorem / Math working Model**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=OjXN9bnVyPU · https://www.youtube.com/watch?v=A7Kz3Sybzgw · **https://www.youtube.com/watch?v=878Ar_oglbQ**		**1**				
143	**CIRCLE THEOREMS**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=bbQxPp9EMs8 · https://www.youtube.com/watch?v=-E6PDaWvZnc		**1**				
144	**SETS AND FUNCTIONS**	· Convert it onto acrylic sheet with some modification to avoid copy right.		**1**				

		· https://www.youtube.com/watch?v=APVdBJ9o2_8 · https://www.youtube.com/watch?v=Jr3lJ41IwGU · https://www.youtube.com/watch?v=tCbdrtKdObw · **https://www.youtube.com/watch?v=vCFGbDoFaHc**						
145	**TRIGONO METRIC RATIOS**	· Convert it onto electronic board using LEDs etc with some modification to avoid copy right. · **https://www.youtube.com/watch?v=BZFw5AulJdw** · **https://www.youtube.com/shorts/MB9OQdY2SSw**		**1**				
146	**CONICS II**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/shorts/gO_bAgSaId0 · **https://www.youtube.com/watch?v=1gRg2km-j08**		**1**				
147	**Plane Analytical Geometry**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=XUbKkEcShhM · https://www.youtube.com/watch?v=lsIAOhDMR7U · https://www.youtube.com/watch?v=6Lk1cwhWjv0 · **https://www.youtube.com/shorts/tQqXDmfQa38**		**1**				

148	**Properties of circle working math model**	Convert it onto acrylic sheet with some modification to avoid copy right. · **https://www.youtube.com/watch?v=UdPyzaTSaW4**		**1**				
149	**Innovative Method of Learning the Concept of Circle and its Theorem**	Convert it onto acrylic sheet with some modification to avoid copy right. · **https://www.youtube.com/watch?v=4k6UOe6IhcI**		**1**				
150	**32 Soldiers Game**	Convert it onto acrylic sheet with some modification to avoid copy right. · **https://www.youtube.com/watch?v=Q184AaSkNyQ**		**1**				
151	**RATIO AND PROPORTION**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=4REH7UaCFxI https://www.youtube.com/watch?v=LB0ADuFqZ2o		**1**				
152	**Factorization**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=t2BLv5wInWE https://www.youtube.com/watch?v=0A14cAdVTT8 https://www.youtube.com/watch?v=U-EBmTBWk5k		**1**				
153	**Basic Statistics**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=3u_p_FnoIic		**1**				
154	**Direct AND INVERSE**	Convert it onto acrylic sheet with some modification to avoid copy right.		**1**				

	VARIATIONS	https://www.youtube.com/shorts/5SDIrPtVLF0 https://www.youtube.com/watch?v=MH2FmevGpQY						
155	**Quadratic Equation**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=BY5akV3rYfM		**1**				
156	**ANGLE IN A SEGMENT OF A CIRCLE**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=PHcbri1vMro		**1**				
157	**PROBABILITY**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=tyAwxrUadtw https://www.youtube.com/watch?v=e057rkWZcqc&t=206s		**1**				
158	**ARITHMETIC SEQUENCES AND SERIES**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=1uYlOqT46aM https://www.youtube.com/watch?v=t22WdzVYhZM		**1**				
159	**Complex Number**	Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=6823Y-Ucxqw		**1**				
160	**Mathematical induction and binomial theorem**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=eQJIFcYN9U0 https://www.youtube.com/shorts/lSap71U_JtQ		**1**				

161	**Differentiation-I**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=_w2evUytLI8		**1**				
162	**POLYNOMIALS**	· Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=Gw_EdAz94vQ&list=PLTnGIRXNGw0fMz7aFXlCUrshQhn42GwiL https://www.youtube.com/watch?v=vHZMFx8rlhY&list=PLTnGIRXNGw0fMz7aFXlCUrshQhn42GwiL&index=2		**1**				
163	**DIFFERENTIATION**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=2bFXR5Zx-5s		**1**				
164	**Matrices and Determinants**	Convert it onto electronic board using LEDs using acrylic sheet etc with some modification to avoid copy right. https://www.youtube.com/watch?v=o7W2O6UoQ4I		**1**				
165	**Algebraic Expressions**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=YlsPmFnh0Xc https://www.youtube.com/watch?v=f2o8EI0iOYg&list=PLDm_bXnksd4lKXyYY6cF5rVIqoC2wt_jL · https://www.youtube.com/watch?v=AN4MGUP4VXQ&list=PLo5zCPkGpmfq5nJPCN1YLLxFpiH9Tkh12		**1**				

166	**GEOMETRIC SEQUENCES AND SERIES**	Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/shorts/hUtAmgNu9dI https://www.youtube.com/shorts/a41V8L5nNIU · https://www.youtube.com/shorts/-1CqCz6hQ7I		**1**				
167	**Transformation of Graph**	Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right. https://www.youtube.com/shorts/6fvWMy6wCBI		**1**				
168	**Working model on algebraic identity**	· Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=SKfM83PrWH8		**1**				
169	**Sum Should be "26" Puzzle**	· Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=ZBslElG42vo		**1**				
170	**Distance Formula**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=xjzPmzyXkGU		**1**				
171	**Proof of Area of Circle**	· Convert it onto acrylic sheet with some modification to avoid copy right.		**1**				

		· https://www.youtube.com/watch?v=zvyVHYGWelo						
172	**Diagonal Move @ Math Game Puzzle**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=vB0_7ekvd1w		**1**				
173	**Cartesian co-ordinate math working model.**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=ofdtTqm9QcY		**1**				
174	**Exterior angle property - theorem working model**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=y0FQF9MMdW8		**1**				
175	**HCF and LCM**	· Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=fltotXaFaUc https://www.youtube.com/watch?v=VOEFVG8Ixyg		**1**				
176	**Complementary angles working model**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=EsYw_gxTows		**1**				
177	**Corresponding angle working model (traversal)**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=02zH7M9Mu2s		**1**				
178	**Parallel lines and a**	· Convert it onto acrylic sheet with some modification to avoid copy right.		**1**				

	transversal math	· https://www.youtube.com/watch?v=EjtowDIo1j0&list=PLTnGIRXNGw0d9OwSCnrhagDpm_w1-QQfZ						
179	**Types of triangle math's working model**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=TPi6yvgeZiM		**1**				
180	**Sum should be 34**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=CrlxrLLtBUQ		**1**				
181	**Venn Diagram Through Activity**	· Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=CFVUJrVUJa0		**1**				

DIY/Working Model of PHYSICS KITS

Sr #	**Title**	**Materials / Suggestions / Reference links**	**Any Remarks**	**Quantity**	**Rate per unit**	**Sales Tax**	**Rate per unit**	**Value in Rs.**
182	**PRESSURE IN LIQUIDS / Pascal Law/ HYDRAULIC BRIDGE**	Can be build up with light weight plywood, acrylic sheet and cardboard. · https://www.youtube.com/watch?v=Luqw0kBIx-s		**1**				
183	**Archimedes principle**	Share with us if you have any better idea · https://www.youtube.com/watch?v=iEVSqbGfx4k		**1**				
		Kit should be re-assemble able.		**1**				

184	**Speed/ Velocity/ Acceleration**	· https://www.youtube.com/watch?v=U7XYzPfutBs						
185	**Wind Power**	All components should be de-attachable. · https://www.youtube.com/watch?v=p-8Gw8rRI5M		**1**				
186	**Physical Quantities Measurements**	Also give comparison among different systems of units · https://www.youtube.com/watch?v=p-8Gw8rRI5M · https://www.youtube.com/watch?v=eoVq7cvYZbY		**1**				
187	**DIY Bi-Metallic Strip: Exploring Thermal Expansion**	Do it with multiple types of metallic strips Use Acrylic base · https://www.youtube.com/watch?v=LI0kBYZgtdY		**1**				
188	**Force and Motion**	Suggestion is welcome · https://www.youtube.com/watch?v=tLUCuL2Jv3Q		**1**				
189	**Thermometer**	Any advanced method is welcomed Use Acrylic base · https://www.youtube.com/watch?v=GDTndPB8tqw · https://www.youtube.com/watch?v=1ujyStrqIGI		**1**				
190	**Making a DIY telescope**	Any suggestion is welcomed · https://www.youtube.com/watch?v=BBDZYJhXM6g		**1**				
191	**DIY Wave Machine**	It can be made more attractive with help of transparent sticks		**1**				

		· https://www.youtube.com/watch?v=VE520z_ugcU						
192	**Electricity Generation**	Make it using Acrylic · https://www.youtube.com/watch?v=O1e7m0k2WE · https://www.youtube.com/watch?v=xdml35DkAFA		**1**				
193	**DIY capacitors**	Any suggestion to improve is welcomed · https://www.youtube.com/watch?v=npliU4Wny5U&t=2s		**1**				
194	**WAVES**	Any suggestion to improve is welcomed · https://www.youtube.com/watch?v=VE520z_ugcU&t=156s		**1**				
195	**PHYSICAL OPTICS**	Any suggestion to improve is welcomed · https://www.youtube.com/watch?v=NAsFtJ0s2XE		**1**				
196	**FLUID DYNAMICS**	Any suggestion to improve is welcomed · https://www.youtube.com/watch?v=q-RdRZVXd9c		**1**				
197	**Polarization**	Any suggestion to improve is welcomed · https://www.youtube.com/watch?v=oulJg0kiiWA		**1**				
198	**Projectile motion**	Any suggestion to improve is welcomed · https://www.youtube.com/watch?v=wMI5JaTy0Mg		**1**				

199	**Simulate Ohm's Law**	Suggest if you've better idea · https://www.youtube.com/watch?v=9o20jRLOP2E&t=336s · https://www.youtube.com/watch?v=9WB82CvGIa8		**1**				
200	**Changing Fields**	Any improved idea is welcomed · https://www.youtube.com/watch?v=GwKm_8CxY-M · https://www.youtube.com/watch?v=JwuO9XrH_aI		**1**				
201	**RLC**	Any improved idea is welcomed · https://www.youtube.com/watch?v=Mq-PF1vo9QA · https://www.youtube.com/watch?v=ZYgFuUl9_Vs		**1**				
202	**Current Loop**	Any improved idea is welcomed · https://www.youtube.com/watch?v=XNoN2xGo1F0 · https://www.youtube.com/watch?v=6QZMt4yyylU · https://www.youtube.com/watch?v=eyi04BrNHXE		**1**				
203	**Circuit Construction**	Any improved idea is welcomed · https://www.youtube.com/watch?v=jIrHkRJVK-U		**1**				

		· https://youtube.com/shorts/O3ELEhqol2E?si=MDVM3qzwDOqJdf3u						
204	**Electronic Torque**	Use DIY motor using neodymium to better elaboration of concept · https://www.youtube.com/watch?v=S2fthUfemp0		**1**				
205	**Newton's laws of motion**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=NGt1zaAXANc&t=174s · https://www.youtube.com/watch?v=lJXEQvlpmJY · https://www.youtube.com/watch?v=iV3NXFkdUyw		**1**				
206	**Sound Science**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=xCnxsoXtlmY		**1**				
207	**Momentum**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=MMu9rxW_Ztw		**1**				
208	**Forces and Motion**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=nzKpPZW7Aco		**1**				
209	**Electrostatic Charge**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=RuSXy32JagA · https://www.youtube.com/watch?v=QzprKH1bLJM		**1**				

210	**Ohm's Law**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=2G_3oeC2QGY · https://www.youtube.com/watch?v=OqqpTDd1by0		**1**				
211	**Gravity**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=pStqoFxtYu8		**1**				
212	**Steam Engine**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=L3XAFSMdVWU&list=PLaA36I4Y6aQWVUO-RIM0ojDItjnh9nfyT		**1**				
213	**Hologram**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=0Edx9WLwedc		**1**				
214	**Solar Eclipse**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=sfVcQ5kE4pE		**1**				
215	**Solar System**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=8As6zghN038		**1**				
216	**Ruby Laser**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=lZjH7oNV_9s		**1**				
	Mutual Induction	Any advanced suggestion is welcomed		**1**				

217		· https://www.youtube.com/watch?v=tcC0bS04i3s						
218	**Full Wave Rectifier**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=muEP8CXthP8		**1**				
219	**Thermal to Electric Energy**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=ukl1auag2uM		**1**				
220	**Vacuum Cleaner**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=47pg4gVkaIM		**1**				
221	**Pulley System**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=SCt4Mai1CIc&list=PL92qRR5E27jvxCagCCrZt2bhE7T30k00N		**1**				
222	**Laser Fencing**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=LeXdsz6Jm58		**1**				
223	**Emergency System**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=TVHO7d8CwRk		**1**				
224	**Electromagnet**	Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=TDNay0tvnLY		**1**				
	Neodymium Magic	Any advanced suggestion is welcomed		**1**				

225		· https://www.youtube.com/watch?v=ZPtcSXk2efU						

DIY/Working Model of Chemistry KITs

Sr #	Title	Materials / Suggestions / Reference links	Any Remarks	Quantity	Rate per unit	Sales Tax	Rate per unit	Value in Rs.
226	Electro etching	1. Safety Wear 2. Beaker 100 Ml 1 3. DC power (4 regular AA battery cells) 1 4. Electrode 1 5. Single Hole Electric Discharge Machine with Copper Tube Electrode Drill Bit 6. Sodium Chloride 500mg 7. Sand Paper 1 8. Steel plate for electro etching 1 9. Stickers pasting on the electrode 1 10. Cotton small roll 11. Crocodile Clamps for connection securing 4 12. Chemical Eelctroetching Machine		1				
227	Salt Power	1. Sodium Chloride 500mg 2. Glucose 500mg 3. Beakers 100mL 2 4. Battery 5. Bulb 6. Connecting Wires 7. Measuring Cylinder 25 ml 2 8. Beaker 1000ml 1 9. Volumetric flask Measuring flasks of different size (100, 250, 500) 2 each		1				
	Boyles Law	1. Syringe 60mL 2 2. Balloons		1				

228		3. Water bottle 4. Food Color					
229	Atomic Model	Atomic Model 3D Or a model with increasing the proton and neutron in the form of game	**1**				
230	Periodic Table	Periodic Table in the form of play cards Periodic table made up of acrylic boxes for elements Periodic Table with Velcaro	**1**				
231	Magnetic Separator	1. Hollow plastic barrels open at two ends (two) 2. Cardboard 4*4ft 3. Strong magnets (Four) 4. Chart Paper 10 5. Wooden Sticks 6. Glue gun 1 7. Kebab Sticks 1 packets 8. Scissors 1 pair Make in acrylic sheet as well	**1**				
232	HYDROCARBONS	1.Ball and stick model molecule with the molecular modeling Old Nobby, or HGS Polyhedron	**1**				
233	Gas Model	1. *Instructions for Experiment Circus Cards* 2. Beaker, 250 cm^3 3. Distilled water 4. Disprin 5. Plastic syringe 6. Air freshener or similar 7. Stopwatch or other timing device 8. Long tape measure to measure 10 m 9. Balloons 10. Freezer access 11. Conical flask, 250 cm^3	**1**				

		12. Tea lights (small, metal-encased candles)						
		13. Beaker, 1 L						
		14. Matches						
		15. Calcium carbonate chips, about 100 g						
		16. Hydrochloric acid, 2 mol dm^{-3} (IRRITANT), about 750 cm^3This is best set up in a draught-free area such as a fume cupboard.						
		17. Conical flask, 250 cm^3						
		18. 2 Measuring cylinders, 50 cm^3 each						
		19. Balloons to fit over the mouth of the conical flask						
		20. electronic balance weighing to 0.01 g						
		21. Sodium carbonate solution, 2 mol dm^{-3} (IRRITANT), about 500 cm^3						
234	HYDROCARBONS IN OUR DAILY LIVES	*1. Tooth pick*	**1**					
		2. Clay dough						
235	Magical liquid	1. Flask with cork	**1**					
		2. Dropper						
		3. Cork (bottle cap)						
		4. Water						
		5. Sodium hydroxide 500mg						
		6. Glucose 500mg						
		7. Methylene blue 500mL						
		8. Measuring Cylinder 25ml						
		9. Beakers 250ml						
		10. Volumetric flask 250ml						
236	Acid Rain	Each group needs:	**1**					
		1 cup vinegar						
		1 cup distilled water						
		2 medium-sized eggshell pieces (organic compound)						

		2 small green leaves (organic compound)						
		2 paperclips (inorganic compound)						
		2 small- or medium-sized glass jars						
		masking tape and pen (for labeling containers)						
		two 1.5-inch strips of wide-range (0-14 pH) litmus paper; since groups need to use the comparison chart included with the litmus container, obtain enough dispensers for each group to have one; litmus paper is available from chemistry supply companies (such as Fisher) and well-equipped hardware stores.						
		Acid Rain Effects Worksheet, 1 per student (can be found in Student Resources)						
237	Crystallization	1. Hot Water		**1**				
		2. Phenyl 2-hydroxybenzoate/phenyl salicylate						
		3. Copper Sulphate						
		4. Beakers						
		5. Crystal seed						
		6. Tweezer						
		7. Watch glass						
		8. Eye protection						
		9. Alum						
		10. Food Color						
		11. Sugar						
		Kaliumaluminium sulphate						
238	Electrochemical cell	1. safety goggles (one pair per student)		**1**				
		2. gloves (one pair per student)						
		3. 2 beakers (500 ml) 1						
		4. graduated cylinder (250 ml) 1						

		5. Voltmeter 1						
		6. copper sulfate (CuSO4) solution (1.0M, 250 mL)						
		7. zinc sulfate (ZnSO4) solution (1.0M, 250 mL)						
		8. 2-4 pieces of electrical wiring each with alligator clips						
		9. Copper electrode 2						
		10. Zinc electrode 2						
		11. sodium chloride (NaCl) solution (500 mg)						
		12. pipette (plastic or glass) 2						
		13. 20-cm filter paper strips OR filter paper folded to ~1 cm thick and long enough to touch the liquids in each 250 mL beaker						
		14. LED-emitting light 4						
239	Design a cell	1. dilute sulphuric acid+sodium chloride		**1**				
		2. Sodium sulphate 1L						
		3. small fan, 2						
		4. voltmeter, 1						
		5. ammeter, 1						
		6. several wires, 1						
		7. glass tube, 1						
		8. graphite electrode, 2						
		9. Power supply. 1						
240	Solar Cell	1. mini solar PV panel		**1**				
		2. piece of foam core board, on which to tape the solar panel						
		3. 2 small alligator clamps						
		4. a single light, such as a small Christmas tree light						
		5. a voltmeter						
		6. graph paper and pencils						
		7. measuring ruler						

		8. ¼-inch-thick foam core board, pre-cut into sets of wall and roof pieces that form variously-sized structures (different for each team),						
		9. cardboard, for plots of land; suggested size: ~24 x 24 in (~61 x 61 cm),						
		10. acrylic paint and paint brushes,						
		11. duct tape						
		12. scissors						
		13. light, small motor or buzzer						
		14. Xacto™ knife (and blades)						
		15. hot glue gun and glue sticks						
241	Batteries	1. 2 pieces' aluminum foil: 8 in x 12 in (20 cm x 30 cm)		**1**				
		2. 2 wide-mouth glass jars (must be able to hold at least 150 ml)						
		3. 2 small paper cups (such as Dixie cups), cut at ¾ in from the cup bottom, or 2 plastic caps from milk jugs						
		4. 3 pieces (one wire of 30 cm and two wires of 80 cm) of non-insulated copper wire (gauge AWG 20) totaling 200 cm per student group. Or, if you have insulated wire, it will work if you strip the insulation off the ends.						
		5. masking tape						
		6. wire cutters						
		7. marking pens						
		8. 3 glass jar with lids must be able to hold at least 150 ml);						
		9. vinegar,						
		10. citrus juice						

		11. sodium chloride						
		12. a few graduated cylinders (10–25 ml)						
		13. 3 pairs of safety glasses or goggles						
		14. 1 DC ammeter (to measure current in amperes)						
		15. paper towels						
		16. water and sink, or, if no drain is available, a large empty container to collect the used electrolyte solutions						
		17. 1 cup vinegar						
		18. 1 cup distilled water						
		19. 2 medium-sized eggshell pieces (organic compound)						
		20. 2 paperclips (inorganic compound)						
		21. 2 small- or medium-sized glass jars						
		22. masking tape and pen (for labeling containers)						
		23. 1.5-inch strips of wide-range (0-14 pH) litmus paper						
242	Green house	1. 6 acrylic squares, approximately 10 to 12 inches (25 to 30-cm) per side		**1**				
		2. hot glue gun and glue sticks 1						
		3. soil and plant						
		4. thermometer digital 2						
		5. clear, wide strapping tape 1						
		6. saws, to cut acrylic or Plexiglas 1						
243	pH Scale	1. 10 100mL beakers paper cups to hold test material		**1**				
		2. Masking tape and pen (for labeling cups)						
		3. Vinegar						
		4. Lemon juice						

		5. Tomato or apple juice (pure)						
		6. Distilled water 1L						
		7. Sodium Chloride						
		8. Household liquid bleach 1L						
		9. Magnesium hydroxide Milk of Magnesia						
		10. Sodium Carbonate						
		11. 2 Alka-Seltzer /Dispirit tables						
		12. litmus paper and comparison chart. 1box						
		13. 1 small red cabbage						
		14. Cold, distilled water						
		15. Blender (for teacher use only)						
		16. Fine mesh strainer						
		17. Large beaker 1000mL						
244	Water Filtration	1. activated charcoal		**1**				
		2. gravel,						
		3. sand (coarse and / or fine),						
		4. cotton balls						
		5. Filter papers pore size 190						
		6. Filter papers pore size 150						
		7. Disposable box with lid and 250Ml 4						
		8. Scissors						
		9. Measuring cup						
		10. Spoon						
		11. Stopwatch or clock with a second hand						
		12. Pencil and paper						
		13. Coffee Filter						
245	NOMENCLATURE FOR FUNCTIONAL GROUPS	1. Ball and Stick Mode		**1**				
		1. Goggles 1 pair		**1**				

246	Green Chemistry	2. Gloves 1 3. (10 mL) graduated cylinders 2 4. test tubes 3 5. Magnesium strip 1roll 6. Steel wool 1roll 7. hydrochloric acid3 M 500mL 8. Zinc strip 2 9. 5 mL 0.1 M copper (II) chloride solution 500mL 10. 5 mL 0.1 M copper (II) sulfate solution 500mL 11. 5 mL 0.1 M potassium carbonate solution 500mL 12. 5 mL 0.1 M sodium carbonate solution 500mL 13. 5 mL 0.1 M calcium chloride solution 500mL 14. 5 mL hydrogen peroxide (5-6%) 1…….500mL bottle 15. Potato piece/yeast/liver (sources of catalase). 16. Calcium oxide 500mg 17. Copper wire 1 18. Rubber stopper 1 19. Wooden splint 1 20. Match 1 21. Calcium carbonate chips 1packet 22. Wire gauze 1 23. Bunsen burner 1 24. Scoopula 1							
247	Pesticide	1. 6 pots or cups with drainage holes, such as seed-starting plastic pots 2. container or tray to catch draining water from the seed starting pots 3. 60 seeds, such as lettuce or other plant that sprouts within a week		**1**				

		4. 1 graduated container, to measure the volume of the seed starting pots						
		5. bucket for mixing soil and "organic waste," big enough to hold enough soil and organic waste to fill 3 of the seed-starting pots						
		6. thermometer						
		7. potting soil or compost,						
		8. "Organic waste," such as a solid food source that is easy to mix with soil, like oatmeal, flour or cornstarch.						
		9. Transparent plastic wrap						
248	Galvanization /Corrosion Resistance	1. . Safety Wear	**1**					
		2. Metal Object to Be Plated (Must be Steel)						
		3. A Power Supply (3v-6v)						
		4. Zinc Sulfate						
		5. Water						
		6. A Beaker (Glass or Plastic Object Can Be Used Instead)						
		7. Zinc Metal						
		8. Sand Paper (120)						
		9. A Tissue Paper						
		10. Wires						
249	Corrosion Prevention	1. Test Tubes	**1**					
		2. Test Tube Stands						
		3. Oil						
		4. CaCl2						
		5. Water						
		6. Nails (Galvanized)						
250	Turn Milk into Plastic	1. Measuring cup glass (500Ml) (1)	**1**					
		2. Milk powder 1000mg						
		3. Stovetop/ heating mentle 1						
		4. Thermos 1						
		5. White vinegar 1L						

		6. Work surface that is safe to get damp Aesbestos 1(2*2ft)						
		7. Styrofoam or other heat-resistant cup 6						
		8. White or distilled vinegar 1L						
		9. Paper towels 1roll						
		10. Spoon 2						
		11. food coloring, 1 packet						
		12. glitter, or markers 1 packet						
251	Paper Chromatography	1. Beaker 3 100mL		**1**				
		2. Ink red and blue						
		3. Filter paper strips/ Rectangular						
		4. Filter paper round						
		5. Plant						
		6. Ethanol 500Ml						
252	Simple Distillation Assembly	1. Flask Round bottom---- 250 ml		**1**				
		2. Condenser 1------- fits in the Round bottom flask						
		3. Iron stands with clamps 2						
		4. Hot plate 1						
		Or Burner or Spirit lamp with Spirit 1						
		5. Iron Bowl 1						
		6. Gas pipes 2 meter						
		7. Conical flask 1						
		8. Collecting duct 2						
		9. T- for distillation column 2						
		10. Thermometers 2						
253	Invisible Inks	1. Safety Wear		**1**				
		2. Beakers 6 small,						
		3. cotton swabs						
		4. pipette 2						
		5. spatula 1						
		6. Glass rods 2						
		7. index card, one packet						
		8. pencil, one packet						

		9. lemon juice 1L						
		10. ammonia-based glass/window cleaner 1L						
		11. vinegar 1L						
		12. baking soda 500mg						
		13. red cabbage juice 1L						
254	Design a fuel cell	dilute sulphuric acid, Sodium Sulphate		**1**				
		Sodium sulphate						
		small fan,						
		voltmeter,						
		ammeter,						
		plastic shell,						
		several wires,						
		copper sheet,						
		glass tube,						
		membrane electrode,						
		graphite electrode,						
		carbon paper,						
		8. power supply.						
		Proton exchange membrane fuel cell						
255	Lead Acid Battery	1. Lead Acid battery		**1**				
		2. Electric fan						
		3. Crocodile clamps						
256	Organic Ink	1. Powdered activated charcoal 500mg		**1**				
		2. Water						
		3. Glass bowl for mixing 1						
		4. Spatula 1						
		5. Droppers 5						
		6. Ink pens 1						
		7. Beakers 6 small						
		8. Red Cabbage						
		9. Beetroot						
		10. Spinach						
257	DIY Water Filtration	1. activated charcoal		**1**				
		2. gravel,						
		3. sand (coarse and / or fine),						
		4. cotton balls						

		5. Filter papers pore size 190						
		6. Filter papers pore size 150						
		7. Bottles 250mL						
		8. Scissors						
		1. Measuring cup						
		2. Spoon						
		3. Stopwatch or clock with a second hand						
		4. Pencil and paper						
		5. Coffee Filter						
258	Red Cabbage Chemistry	1. Eight small beakers 100ml		**1**				
		2. Acetic acid 1L						
		3. Lemon juice 1L						
		4. Milk,						
		5. 7-up or sprite,						
		6. Sodium carbonate 500mg						
		7. Sodium hydroxide						
		8. Glint glass cleaner, and						
		9. Red cabbage juice indicator (prepared by teacher, see below), respectively						
		10. 7 ph indicator strips						
		11. Red cabbage						
259	Glucose Concentration	1. Manual polarimeter		**1**				
		2. Color filter						
		3. Sample tank						
		4. Grid value dial						
		5. Polarizer						
		6. A group of glucose standard concentration solutions with equal gradient						
		7. Glucose solution to be tested						
		8. Sodium lamp						
		9. 9. Other parts						
260	Hydrogen Fuel Cell	1. one hydrogen fuel cell model car and controller per group		**1**				
		2. one water electrolyzer						
		3. 2 test tubes						

		4. 6 thin wood splints						
		5. tape measure						
		6. a plastic bottle filled with distilled water (200 mL)						
		7. balance						
		8. paper towels						
		9. waste container						
261	UV detection	1. Light source (tungsten lamp, deuterium lamp or other ultraviolet visible light source)		**1**				
		2. Monochromatic						
		3. Prism						
		4. Grating						
		5. Absorption tank						
		6. Detector						
		7. Display, etc.						
		8. A group of glucose standard concentration solution						
		9. Glucose solution to be tested						
262	Air Quality Control	1. Temperature sensor		**1**				
		2. Humidity sensor						
		3. Laser dust sensor						
		4. SO_2 sensor						
		5. NO_2 sensor						
		6. LCD Display						
		7. DuPont Line						
		8. SCM Development Boards						
		9. Breadboard						
263	Potato Battery	Battery Jacket		**1**				
		alligator clamps						
		Wires						
		bulb/LED						
264	Galvanic Cell	ZnSO4		**1**				
		CuSo4						
		Zn Electrode						
		Cu Electrode						
		WATER						
		Beakers						
		Salt Bridge						
		VOLTMETER						
		Bulb						

		Wires						
265	Rainbow Fire Kit	Sodium, potassium, barium, strontium salts		**1**				
		Plenty of spills soaked in water overnight.						
		Bunsen burners or adjustable commercial blow torch						
		Matches						
		Dry spills						
		2 heat resistant mats						
		1 spatula						
		Match stick						
266	Spherifiction kit / Worm kit	Sodium Alginate 50g		**1**				
		Calcium Chloride 50g						
		Sodium Citrate 50g						
267	Rate of Reaction KIT	FALCON TUBE		**1**				
		Funnel						
		dropper						
		alka seltzer tablets						
		falcon stand						
		cups or beaker plastic						
		yeast						
		hydrogen peroxide, starch, ascorbic acid, and iodine.						
268	Calorimetry Kit	tin with lid		**1**				
		Wooden box for cover						
		thermometer						
		Copper wires						
269	Food Preservation Kit	Includes 1 canister Natural Preserve, acidic and basic as well		**1**				
		2 Zip-N-Zap Bag						
		2 Snap-N-Zap Caps,						
		and 2 Snap-N-Grip Clips						

DIY/Working Model of COMPUTER SCIENCE KITS

Sr #	Title	Materials / Suggestions / Reference links	Any Remarks	Quantity	Rate per unit	Sales Tax	Rate per unit	Value in Rs.
270	Water Level Detector using Arduino	https://www.youtube.com/watch?v=-HCZY4UoFiA		1				
271	Structure of Computer Model	Acrylic Sheet Color Chart Color marker White chart Cutter		1				
272	Voice Controlled Led	1 x Arduino Uno Board 1 x USB cable 1 x Bread Board 1 x Bluetooth Module 3 x LED (Red, Green, Blue) 4 x Jumper wire (Male to Male) 4 x Jumper wire (Male to Female)		1				
273	Computer Network Topology	Italic sheet Color chart Glue gun Favi cole Color marker Scissor		1				
274	ATM Machine Working Model	Acrylic Sheet Gear System Ice-cream Stick Glue Gun DC motor syringe Cardboard Bottle Cane Resistor LEDs Jumper Wires		1				
275	Dancing Robot	DC Motor Ice-cream Sticks Battery Bottle cap		1				
	Abacus The First	Thermacol Color Charts		1				

276	Computer Model	Metal Sticks Color Beats						
277	Controlling Multiple Devices Using IoT	ESP8266 boards LED Motor Relay Module Breadboard Wires		**1**				
278	Car Wiper using Arduino	https://www.youtube.com/watch?v=jUFfkO0dAEA		**1**				
279	Clap switch using Arduino	Male/Female Jumper Wires Plastic Enclosure, Project Box Relay Module (Generic) 5volt smps Arduino UNO digital sound sensor		**1**				
280	Smart Gate Using Arduino	Arduino board (e.g., Arduino Uno) Ultrasonic Sensor (e.g., HCSR04) Servo Motor Breadboard Jumper wires USB cable for Arduino		**1**				
281	Smart Coop - Door	MG90 Servo Motor 5V Power Supply Module 40 colored male-female jumper wires Arduino® Nano ESP32 with headers Bread board		**1**				
282	Smoke Detector using Gas Sensor	Resistor 220 ohm Arduino UNO 5 mm LED: Green Buzzer, Piezo Jumper wires (generic) Gas Sensor Breadboard (generic) 5 mm LED: Red		**1**				
	Car game with Arduino	Tactile Switch, Top Actuated Male/Female Jumper Wires		**1**				

283	and I2C LCD Display	I2C 16x2 Arduino LCD Display Module USB-A to B Cable Arduino UNO Jumper wires (generic)						
284	Color Detection Using TCS3200/230	TCS3200/TCS230 Arduino UNO RGB Diffused Common Cathode Bread Board		**1**				
285	Make a Siren Using Arduino	Arduino UNO Some Jumper wires 10 LEDs with 220ohm resistors 1 Piezo buzzer/speaker with a resistor value 330-1Kohm 1 push button and 10K resistor		**1**				
286	Controlling Led using IoT	ESP32 ESP32 cable LEDs DC Motors L298N 18650 rechargeable cells 4 cell holders Connecting wires Breadboard Smartphone Active internet connection Email account Computer with an internet connection to design the webpage for the Blynk app and to upload the code to the ESP32		**1**				
287	IOT IV Bag Monitoring and Alert System	Atmega Microcontroller Weight Sensor Wifi Module IV Bag Stand Hooks LCD Display IC and IC Base Resistors Capacitors		**1**				

		Transistors Diodes Adapter						
288	AI-Based Anti-Theft Alarm	IOT based Node Mcu Bulb and Holders PIR Sensor Relay Transistor BC 547 Diode 1N4007 Videos Materials Node Mcu Bulb and Holders PIR Sneosr Relay Transistor BC 547 Diode 1N4007		**1**				
289	Object Detector using LED	Arduino Uno IR sensor LED Jumper wires USB cables		**1**				
290	Wireless Water-Tank Level Meter with Alarm	**Transmitter Circuit:** Arduino Nano Ultrasonic Sensor RF Transmitter 9 Volt Battery **Receiver Circuit:** Arduino Nano 16x2 LCD RF Receiver 9 Volt Battery		**1**				
291	AI Street Light Using Arduino	Arduino Uno LDR 10k Resistor LED		**1**				
292	Voice Control Car/Robot using Arduino	Arduino UNO Board HC-05 Bluetooth Module DC Motors 9V 9V Battery Motor Driver IC L293D Robot Chasis & Wheels Connecting Wires Breadboard		**1**				
		Arduino Uno		**1**				

293	Home Automation System using Bluetooth	Bluetooth Module Relay Module https://drive.google.com/file/d/1WBwgVSu3P_bCXRcet4jRck-j3rNE6FOv/view Wires Bulb						
294	Revolutionizing Home Illumination using an IoT-based control	Arduino Uno Arduino cable PIR sensor Connection wires 18650 rechargeable cells 2-cells holder Medium-Breadboard Double tape Acrylic sheet		**1**				
295	Control LED and motor using Arduino microcontroller	Arduino Uno LEDs Push Button PN2222 Transistor 1N4001 Diode Wires DC Motor Resistors 9V Battery with holder		**1**				
296	Indicating distance between two objects using LED's	Arduino Uno LEDs Ultrasonic Sensor (HC-SR04) Resistors 9V Battery with holder		**1**				
297	Automatic Car Parking Toll System with Arduino	https://www.youtube.com/watch?v=AEHtnwYDW7c		**1**				
298	Building a Digital Clock with Arduino and RTC Module	Arduino board (e.g., Arduino Uno) RTC module (e.g., DS1307) LCD 16x2 display I2C module (for interfacing RTC module and LCD display) Breadboard Jumper wires USB cable for Arduino		**1**				

299	Smart Cooling System for Desktop Computers using Arduino	12V adapter Male to male jumper wires Aligator Clips Relay module 5 Vdc 10A (assembled) Arduino Uno Rev3 CPU fan 12 volt 16x2 LCD display with I²C interface Jumper Male to Female 20 cm TMP36- Analog Temperature sensor 5mm Red LED		**1**				
300	Barcode Scanner & Display using Arduino	Arduino Uno Atmega 328 Controller Barcode Scanner USB Connector LCD Display Cables & Connectors Capacitors Transistors PCB Board Power Adapter LED Buzzer		**1**				

Summary

Sr #	**Title**	**Quantity**	**Rate (Excl. Sales Tax)**	**Sales Tax Rate**	**Rate (Incl. Sales Tax)**	**Value in Rs.**
1	DIY/Working Model of Arduino/IoT/ELECTRONICS Based STEM KITS	**97**				
2	DIY/Working Model of BIO STEM KITS	**40**				
3	DIY/Working Model of MATH STEM KITs	**44**				
4	DIY/Working Model of PHYSICS KITS	**44**				
5	DIY/Working Model of Chemistry KITs	**44**				
6	DIY/Working Model of COMPUTER SCIENCE KITS	**31**				

TOTAL	**300**					

Important Note: Quantity of DIY/KITs /Working Model may be increase, decrees, add or remove with the recommendation/approval of the prototype evaluation committee at any stage before mass scale production/fabrication.

Bid Evaluation Criteria: The tender will be awarded to technically qualified bidder quoting lowest rate (excluding GST) on aggregate basis.

x. List of Major Projects Completed

#	Clients / Organization	Description of Project	Place / City	Overall Approx. Cost of Project	Duration	Completion Year or Ongoing

Use extra sheet in the same format (if required).

Company's Stamp **Signature with date**

xi. List of Clients

I / We have provided supplies / services to following **Clients** (along with their details):

#	Category	Clients / Organization Served	Concerned Officer of Client / Organization (if available)	Contact No. / Email (if available)

Use extra sheet in the same format (if required).

Company's Stamp **Signature with date**

xii. Details of Staff

#	Name	Designation	Qualification	Years of Experience

Use extra sheet in the same format (if required).

Company's Stamp **Signature with date**

xiii. List of Offices with Contact Persons

#	Based at City	Partner / Concerned Officer	Contact Address	Contact No.

Use extra sheet in the same format (if required).

Company's Stamp **Signature with date**

xiv. TERMS & CONDITIONS

Terms & Conditions for Bidders

1. Only EPADS-registered bidders can apply for the tender. Applications other than EPADS will not be considered and entertained.
2. The firms, Suppliers, Contractors and Manufacturers with nationwide supplies and contracts with own fabrication facilities will be preferred (if applicable)
3. The bidders/firms shall be responsible for complete fabrication, provision of source code, circuit diagram, (where applicable), transportation and working demonstration of each STEM activity kit in Mini STEM FABLABs and Hi STEM FABLAB at designated locations across the country.
4. The bidder will design each prototype in accordance with the specified modules/activities being developed (an ongoing process) by PSF team, in consultation with PSF officials, and obtain approval for each prototype from PSF upon finalization before mass scale production/fabrication. Future/extended orders will also be processed at the same cost initially finalized.
5. The tender will be awarded to bidder based on items/STEM activity kits offering the lowest unit price for each activity kit on aggregate basis excluding GST.
6. The bidder must provide minimum one year performance warranty (where applicable) of the STEM activity kits in terms of replacement/repair of a part or whole kit and all other items and free replacement of the kit for one year from the supply date of the kit and one-time training on that STEM kit to PSF Officials/Master Trainers at PSF/PMNH/Provisional Headquarters.
7. The quantity of STEM activity kits, modules and number of sets can be adjusted by PSF as needed, either increased or decreased. The number of STEM Kits in each set may varies from one unit to multiple in numbers with respect to cost element & experimental repetition/requirement.
8. The bidder/firm will work to the satisfaction of PSF for designing, standardizing, optimizing the prototypes of STEM activity kits and bringing them to international standards.
9. The bidder/firm will work in assistance of the PSF STEM team and experts at PSF for finalizing the STEM activity kits.
10. The bidder/firm shall help in training the STEM teachers and master trainers on these STEM activity kits.

11. Procuring agency i.e. PSF reserves all the copyrights of the fabricated STEM activity kits (from prototype to the commercial scale) and the STEM activity kits will be the intellectual property of the PSF.
12. The developed STEM activity kits cannot be developed for any other organization/School/Education system without the prior written permission of PSF.
13. The Firm/Bidder shall provide services to the STEM Team after the provision of STEM activity kits. The services include any changes in the developed STEM activity kits as per the advice/suggestions of the PSF STEM team.
14. Firm/Bidder will complete the order within stipulated time initially decided or agreed.
15. The supplies will only be deemed as "delivered" and qualify for invoice if it has been delivered to the specified address/destination without any damage/loss.
16. STEM activity kits must be fabricated from nontoxic, ecofriendly, and child/user friendly materials without compromising on quality and international standards.
17. Only those prototypes will be developed on mass/commercial scales that will be approved/finalized by PSF in writing.
18. The firm shall design and develop the stickers, brushers and manuals (with logos & watermark of MoST, PSF & STEM) for students in accordance with the STEM activity kit.
19. Detail of any arbitration / litigation (If any) of similar proceeding against Government / Autonomous / Private body showing extent and results may be enclosed.
20. The participants must submit valid NTN certificate, valid GST certificate (if applicable), and list of clients with contact person (regular and occasional) on PSF specified format.
21. Payment to supplier/s will be made in the form of cross Cheque after deduction of applicable Government Taxes.
22. The bid documents should be submitted online through EPADS portal of PPRA, within 15 days of publication of this advertisement. These bids will be opened on the same day at 10:00 am. In this Single Stage Two Envelop procedure, **o**nly the technically qualified will be requested later to provide Financial Proposal.
23. PSF will not consider any proposal from the bidder who is blacklisted or declared defaulted by any forum/organization. The Firm/Bidder should provide affidavit that it is not blacklisted nor it will resort to any litigation regarding the tendering/procurement procedure.
24. Partial Delivery/Partial Payment will be allowed subject to undertaking by the firm to complete the whole consignment/STEM activity Kits within a specified time.

25. The bidder will start the task, on receipt of written Purchase/Work Order from PSF in accordance with the given terms, conditions and specifications.
26. Incomplete proposals or those received after due date and time will not be entertained.
27. PSF reserves the right to cancel the process or reject one or all bids on the basis of technical reasons mentioned in the Tender Documents.
28. Performance Guarantee in shape of bank guarantee of 5% of contract value would be applicable for the successful bidder, where it is applicable.
29. The qualified bidders/firms would submit 2% of the bid amount as earnest money in shape of DD/PO in favor of PSF, STEM at the time of submission of Financial Proposal.
30. **In case of any dispute, the case will be referred to the Chairman, PSF who will be sole arbitrator and his decision will be binding on both parties.**

Company's Stamp **Signature with date**

For further information and clarification, please contact:

To, Project Director (STEM)
Pakistan Science Foundation
1-Constitution Avenue, G-5/2
Islamabad.
051-9212078

xv. (LEGAL PART) ***only for successful bidder. No need to submit this part.***

SCHEDULE - F TO BID

1. (INTEGRITY PACT)

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC.

Payable by the suppliers of goods, services & works in contracts worth Rupees.10.00 Million or more

Contract No.: _____
Dated: _____
Contract Value: _____
Contract Title: _____

_____ [*Name of Supplier*] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GOP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GOP through any corrupt business practice.

Without limiting the generality of the foregoing, [*Name of Supplier*] ____ represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GOP, except that which has been expressly declared pursuant hereto.

____ [*Name of Supplier*] _____ certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GOP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

___ [*Name of Supplier*] _____ accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GOP under any law, contract or other instrument, be voidable at the option of GOP.

Not with standing any rights and remedies exercised by GOP in this regard,_____ [*Name of Supplier*] _____agrees to indemnify GOP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GOP in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GOP.

Name of Employer: Name of Contractor/Supplier:

Signature: _____ Signature: _____

[Seal] [Seal]

xvi. PERFORMANCE SECURITY BOND (Bank Guarantee)

Guarantee No. _____
Executed On _____
Expiry Date _____

(Letter by the Guarantor to Pakistan Science Foundation, PSF)

Name of Guarantor (Scheduled Bank in Pakistan) with address:

_____

_____
_____

Name of Principal (Contractor) with address:

_____

_____
_____

Penal Sum of Security (express in words and figures)

_____

_____
_____

Letter of Acceptance No._____. Dated_____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the (hereinafter called PSF) _____ in the penal sum of the amount stated above, for the payment of which sum well and truly to be made to the PSF, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has accepted the PSF's above said Letter of Acceptance for (Name of Contract)

_____

_____

_____for the_____

(Name of Project).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the PSF, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of the said Documents that may hereafter be made, notice of which

modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 9, Remedying Defects, of Conditions of Contract are fulfilled.
Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We _____, (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the PSF without delay upon the PSF's first written demand without cavil or arguments and without requiring the PSF to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the PSF's written declaration that the Principal has refused or failed to perform the obligations under the Contract, for which payment will be effected by the Guarantor to PSF's designated Bank & Account Number.
PROVIDED ALSO THAT the PSF shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the PSF forthwith and without any reference to the Principal or any other person.

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

_____
Guarantor (Bank)

Witness:

1. Name _____. Signature _____

_____ _____
(Tittle & Address) Corporate Guarantor (Seal)

2. Name _____ Signature _____

_____ _____
(Tittle & Address) Corporate Guarantor (Seal)