

Public Sector Development Program (PSDP)
“Launching of STEM in Pakistan, Phase-I (Revised)”

FINANCIAL PROPOSAL FOR FABRICATION OF STEM ACTIVITY KITS

December, 2024

Pakistan Science Foundation
(Ministry of Science & Technology)
Islamabad

Note: This document contains 92 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

FINANCIAL PROPOSAL FOR OF FIRMS FOR THE “FABRICATION OF STEM ACTIVITY KITS”

Table of Contents

| S. No. | Particulars | Page No. |
|---------------|--|-----------------|
| i. | Instructions <ul style="list-style-type: none">• Procedure of Proposal• Procurement Process• Submission of RFP documents• Opening of Proposal | 3 |
| ii. | Financial Proposal | 4-90 |
| iii. | Terms & Conditions | 91-92 |

Instructions:

- 1. Tender Process:** Continuity of Two Stage Two Envelope procedure as 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 requested 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.
- 2. 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) 0912078”.
- 3. Opening of online submitted proposals:** The received proposals 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 applied bidders. Representatives, present in the proposal opening meeting shall mark online attendance sheet evidencing of their presence. 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.
- 4. Evaluation Criterial:** Least cost based evaluation procedure on aggregate basis will be adopted for submitted financial proposals.
- 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.

Financial Proposal:

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 (Excl. Sales Tax) | Sales Tax Rate | Rate per unit (Incl. Sales Tax) | Value in Rs. Per unit | Total Value |
| 1 | Up Down Counter | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · PCB Layout with un assembled parts/ components | | | | | | | |
| 2 | Code Lock | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · PCB Layout with un assembled parts/ components | | | | | | | |
| 3 | DIY Scissor Lift | · Acrylic sheet | | 1 | | | | | |
| | | · DIY KIT | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 4 | Wind Turbine DIY Kit | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 5 | Melody Bell | · Acrylic sheet Base | | 1 | | | | | |

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| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 6 | Water Level Indicator | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 7 | DIY Electromagnet Kit | <ul style="list-style-type: none"> · Acrylic sheet | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 8 | Shake Kit Generator | <ul style="list-style-type: none"> · Acrylic sheet | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 9 | Series and parallel circuit | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 10 | Home Solar Energy | <ul style="list-style-type: none"> · Acrylic sheet | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |

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| 11 | Chair Swing Ride | · Acrylic sheet Base | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 12 | Infrared Switch | · Acrylic sheet Base | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 13 | Air Powered Car | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 14 | Hand Powered Generator | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 15 | Electric Circuit 4 in 01 | · Acrylic sheet Base | 1 | | | | | |
| | | · Basic Electronics | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 16 | Water Boat Remote Control | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |

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

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|----|---|--|--|---|--|--|--|--|--|
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 23 | FM Transmitter | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 24 | Energy Conversion Generator Kit | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 25 | Oilfield Pump Jack | · Acrylic sheet | | 1 | | | | | |
| | | | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 26 | Motor Water Pump Kit | · Acrylic sheet Base | | 1 | | | | | |
| | | · DIY Kit | | | | | | | |
| | | | | | | | | | |
| 27 | Electricity Generation With Heat Energy | · Acrylic sheet | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | | | | | | | | |
| 28 | Tesla Coil Manual | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | | | | | | | | |
| 29 | Lucky Circle | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |

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| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 30 | Motion Sensor | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 31 | Robotic Car Drive With Sensor | <ul style="list-style-type: none"> · Acrylic sheet | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 32 | Rain Alarm | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 33 | Audio Level Indicator | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 34 | Laser Alarm | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |

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| 35 | Automatic water spray | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 36 | Hydro Turbine | · Acrylic sheet | 1 | | | | | |
| | | DIY KIT | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 37 | Astronomical Telescope | · Acrylic sheet | 1 | | | | | |
| | | DIY KIT | | | | | | |
| | | | | | | | | |
| 38 | Walking Robot | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 39 | ATM Machine Model Using Arduino | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics +(Arduino Based) | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | |
| 40 | Safe Stopping Boat | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics | | | | | | |
| | | | | | | | | |
| 41 | Door Theft Alarm | · Acrylic sheet | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | |

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|----|--|--|--|---|--|--|--|--|--|
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 42 | Inter Com | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 43 | Sound Operated Switch | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 44 | Prayer Time Alarm System Using Arduino Uno | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 45 | Electronic Tas | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 46 | Electro Magnet | · Acrylic sheet | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | | | | | | | | |
| 47 | Remote Control Toy Car DIY Kit | · Acrylic sheet | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |

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| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 48 | Anti-Gravity Structure Floating Table Model | · Acrylic sheet | | 1 | | | | | |
| | | · DIY KIT | | | | | | | |
| 49 | Drawing Robot | · Acrylic sheet | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 50 | Introduction To Running LED Tower Using Arduino. | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 51 | Pneumatic Jack | · Acrylic sheet | | 1 | | | | | |
| | | · DIY KIT | | | | | | | |
| 52 | DIY Solar Fan | · Acrylic sheet | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | DIY KIT | | | | | | | |
| 53 | Water Dispenser | · Acrylic sheet | | 1 | | | | | |
| | | | | | | | | | |
| | | DIY KIT | | | | | | | |
| 54 | Introduction to Quiz Monitor DIY Kit | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics (IC Based) | | | | | | | |

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| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 55 | Variable Power Supply | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 56 | Smart Glasses For Blind Peoples Using Arduino. | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Arduino Based | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 57 | Electric Motor | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 58 | Touch Switch | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics (IC Based) | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 59 | Auto Motor Controller | <ul style="list-style-type: none"> · Acrylic sheet Base | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 60 | | <ul style="list-style-type: none"> · Acrylic sheet | | 1 | | | | | |

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| | Metal Detector Robot Using Arduino | <ul style="list-style-type: none"> · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 61 | Auto Light Controller | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components | | 1 | | | | | |
| 64 | Introduction USB Table Fan DIY Kit | <ul style="list-style-type: none"> · Acrylic sheet · Basic Electronics DIY KIT | | 1 | | | | | |
| 65 | Arduino-Based Digital Voting Machine | <ul style="list-style-type: none"> · Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components | | 1 | | | | | |
| 66 | Hydraulic Robotic Arm | <ul style="list-style-type: none"> · Acrylic sheet · Basic Electronics (IC Based) | | 1 | | | | | |

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| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 67 | Arduino Based LED Distance Indicator | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 68 | Periscope | · Acrylic sheet | | 1 | | | | | |
| | | DIY KIT | | | | | | | |
| | | | | | | | | | |
| 69 | Electric Generator | · Acrylic sheet Base | | 1 | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | DIY KIT | | | | | | | |
| 70 | Arduino-Powered Jumping Jack Game | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 71 | Introduction Basic Air Craft DIY Kit | · Acrylic sheet | | 1 | | | | | |
| | | DIY KIT | | | | | | | |
| 72 | Snake Game Using Arduino | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 73 | Introduction To Arduino Based Calculator | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |

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| 74 | Introduction to Smart Irrigation System using Arduino | · Acrylic sheet | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 75 | Introduction To Automatic Staircase Light Using IR Sensor And Arduino . | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 76 | Introduction To IoT Based Weather Station Using Arduino | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 77 | Introduction To Wireless LED Control With Arduino | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 78 | Introduction to Logic Gates Learning Kit Using Arduino | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 79 | Introduction To Robotic Arm Using Arduino | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 80 | Introduction To Line | · Acrylic sheet Base | | 1 | | | | | |
| | | · Arduino Based | | | | | | | |

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| | Following Robot Using Arduino | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 81 | Line Follower Robot, Robotics Using Arduino Nano | <ul style="list-style-type: none"> · Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components | | 1 | | | | | |
| 82 | Biometric Attendance System Using Arduino | <ul style="list-style-type: none"> · Acrylic sheet Base · Arduino Based · If Applicable/ possible, then PCB layout with un assembled parts/ components | | 1 | | | | | |
| 83 | Rubber Powered Propeller Car DIY Kit | <ul style="list-style-type: none"> · Acrylic sheet Base · DIY KIT | | 1 | | | | | |
| 84 | Password Based Door Lock System Circuit Kit | <ul style="list-style-type: none"> · 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) | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · Arduino UN/ NANO Based | | 1 | | | | | |

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| | Machine Using Arduino | <ul style="list-style-type: none"> · Acrylic sheet Base · Basic Electronics · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 87 | Arduino Speed Detector Circuit Kit | <ul style="list-style-type: none"> · 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. | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics | | 1 | | | | | |

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| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 91 | Scrolling Text Using 8x32 Led | <ul style="list-style-type: none"> · Arduino UN/ NANO Based | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Acrylic sheet Base | | | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 92 | Introduction to SMS/Call-Based Anti-Theft System Using Arduino | <ul style="list-style-type: none"> · Arduino UN/ NANO Based | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Acrylic sheet Base | | | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 93 | Introduction to Wireless Power transmission using Arduino | <ul style="list-style-type: none"> · Arduino UN/ NANO Based | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Acrylic sheet Base | | | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 94 | Solar Tracking System Using Arduino | <ul style="list-style-type: none"> · Arduino UN/ NANO Based | | 1 | | | | | |
| | | <ul style="list-style-type: none"> · Acrylic sheet Base | | | | | | | |
| | | <ul style="list-style-type: none"> · Basic Electronics | | | | | | | |
| | | <ul style="list-style-type: none"> · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |

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| 95 | Arduino-Based Digital Clock with 16x2 LCD Display Circuit Kit | · Arduino UN/ NANO Based | | 1 | | | | | |
| | | · Acrylic sheet Base | | | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |
| 96 | Introduction to Smart Car Parking System Using Arduino | · Arduino UN/ NANO Based | | 1 | | | | | |
| | | · 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 | | 1 | | | | | |
| | | · Acrylic sheet Base | | | | | | | |
| | | · Basic Electronics | | | | | | | |
| | | · If Applicable/ possible, then PCB layout with un assembled parts/ components | | | | | | | |

DIY/Working Model of BIO STEM KITS

| Sr # | Title | Materials / Suggestions / Reference links | Any Remarks | Quantity | Rate per unit (Excl. Sales Tax) | Sales Tax Rate | Rate per unit (Incl. Sales Tax) | Value in Rs. Per unit | Total Value |
|------|--|--|-------------------------------------|----------|---------------------------------|----------------|---------------------------------|-----------------------|-------------|
| 98 | Investigate the effect of concentration of | § 1 L Distilled water § Measuring cylinder 1000ml | All the material should be durable. | 1 | | | | | |

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| | sugar/salt solution on the mass of the plant tissue. | <ul style="list-style-type: none"> § 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 § | Instead of paper sheet for writing measurements, please provide A4 size erasable white board in kit. | | | | | | |
| 99 | Investigate how limiting factors affect the rate of photosynthesis and how they are controlled in a greenhouse to give a maximum yield? | <ul style="list-style-type: none"> § Aquatic plant § Light source (lamp) § NaHCO₃ 100g § Water bath § Syringe § Meter ruler § Medical Thermometer § Beaker § Boiling tube § Stopper § Pipe, rubber tube § Stopwatch § Distilled water § Potometer | Made this project kit using the potometer | 1 | | | | | |
| 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 | | | | | |

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| 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. | § | <p>The video links are for reference. Mitosis & meiosis models are not required but all the components which a student can assemble to describe different stages of mitosis and meiosis.</p> <p>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</p> | 1 | | | | | |

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| | | | 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 adjust the | 1 | | | | | |

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| | | | 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 | | | | | |

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| <p>109</p> | <p>Identify the conditions needed for seed germination and demonstrate by planning an investigation on how they affect germination?</p> | <ul style="list-style-type: none"> § 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. | <p>Made a kit by which student can investigate conditions needed for seed germination as given in the video links 1 & 2</p> <p>Also make a kit on video 3. Build an Arduino Clinostat to Simulate Microgravity for Plants</p> | <p>1</p> | | | | | |
| <p>110</p> | <p>Yeast cells respire too. But not like me and you.</p> | <ul style="list-style-type: none"> § 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 | <p>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.</p> | <p>1</p> | | | | | |

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| | | <p>§ 12-ounce bottle molasses (unsulphured)</p> <p>§ Graph paper</p> | | | | | | |
| 111 | Design and construct a lower leg protheses in response to a hypothetical zombie apocalypse scenario. | <p>§ 1 package of cardboard interlocking packing pieces, such as the 1 cu ft package</p> <p>§ 1 moving glass divider kit (cardboard interlocking divider pieces),</p> <p>§ ~4 pieces of PVC pipe, 6-in and 4-in lengths</p> <p>§ ~20 wooden dowel rods; ½ in diameter and ~16 in long</p> <p>§ ~7 wooden flat sticks; ¼ in thick x 2 to 4 in wide and ~16 in long</p> <p>§ ~10 ft vinyl tubing; ½ in x 3/8 in size</p> | 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. | <p>§ Printout of Physical Traits Images</p> <p>§ Printout of Sibling Images</p> <p>§ Printout of the Alien Genotype and Phenotype Table</p> <p>§ Construction paper, different colors (orange and green must be included)</p> <p>§ Scissors</p> <p>§ Tape</p> <p>§ Glue</p> <p>§ Markers, crayons, and coloring pens</p> | Provide all the material required to perform this experiment in this kit as shown in the video. | 1 | | | | |

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| | | § Pencils § Two coins | | | | | | |
| 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 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 | Provide all the items mentioned in the link in one kit. | 1 | | | | |
| 114 | Investigate the role of salivary amylase in the digestion of starch, and explore whether smoking has any effect on the | § 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 | | 1 | | | | |

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| | production of salivary amylase. | <ul style="list-style-type: none"> § Iodine solution § Bunsen burner § Tripod stand and gauze § Syringe/graduated dropper § Amylase solution | | | | | | |
| 115 | Investigate effect of substrate concentration on enzyme-controlled reactions. | <ul style="list-style-type: none"> § 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 § Paper towels | Design this kit in a way that students can investigate effects of substrate concentration, enzyme concentration, temperature and Ph on enzyme activity. | 1 | | | | |
| 116 | Design and create a protein model to replace defective | <ul style="list-style-type: none"> masking tape, 1 roll string, 2 feet (~61 cm) 2 paper plates, any size | Design a kit which students can use to demonstrate structural and | 1 | | | | |

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| | <p>protein in a child's body.</p> | <p>construction or brown wrapping paper</p> <p>1 paper lunch bag</p> <p>saran/plastic wrap, 2 feet (~61 cm)</p> <p>10 Popsicle/craft sticks or wooden cocktail sticks</p> <p>10 wooden toothpicks, either flat or round style</p> <p>4 mini marshmallows</p> <p>3 scissors,</p> <p>1 bag mini marshmallows</p> <p>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</p> | <p>functional proteins as well as 4 levels of protein structures. i.e Primary, secondary, tertiary and quaternary. These videos are for reference.</p> | | | | | | |
| <p>117</p> | <p>Investigate plants growth responses to environmental stimuli like gravity.</p> | <p>§ 6 different types of plant seeds</p> <p>§ A growing plant</p> <p>§ Plastic zip-lock bags (3)</p> | | <p>1</p> | | | | | |

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| | | <ul style="list-style-type: none"> § Permanent pen (1) or a pen and tape § 6 Paper towels § Radish seeds (15) § Strong tape § Large cardboard box (1) | | | | | | |
| 118 | Design and create devices to help astronauts eat. | <ul style="list-style-type: none"> § scissors § white glue § tape (cellophane, masking, etc.) § pens and pencils § paper sheets 10 § rulers § assorted building materials such as: <ul style="list-style-type: none"> 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 | The last two videos are for giving concept that what type of food is used in space. | 1 | | | | |
| 119 | Design and create a super bacteriophage. | <ul style="list-style-type: none"> § Styrofoam blocks § Styrofoam spheres, § Velcros different types § double sided tape | Make different components of virus from durable material which can | 1 | | | | |

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| | | <ul style="list-style-type: none"> § string, toothpicks § straws § pipe cleaners § paper § fuzzy pom-poms § Velcro squares § paper squares | be attached to make a complete bacteriophage. | | | | | | |
| 120 | Create sample blood clot polymer and test solutions that effectively breaks it down. | <ul style="list-style-type: none"> § 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) § 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 | IF you have any better idea related to this topic, please incorporate it to make it better. | 1 | | | | | |

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| | | <ul style="list-style-type: none"> § 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? | <ul style="list-style-type: none"> § 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. | <ul style="list-style-type: none"> ▪ 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 | | | | | |
| 123 | RESPIRATORY DISORDERS | <ul style="list-style-type: none"> ▪ two-liter plastic bottle with cap, | | 1 | | | | | |

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| | | <ul style="list-style-type: none"> ▪ 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 | <p>You may also add the designing of pollution filter in face mask.</p> | | | | | | |
| 124 | LATEST TECHNIQUE APPLIED TO ENHANCE CROP AND FRUIT YIELDS | <ul style="list-style-type: none"> ▪ Hydroponic solution 5L ▪ clean and dried plastic food containers ▪ colanders | <p>The link given at 2, 3 is an alternate activity kit. Our priority is to develop kit on the first link</p> | 1 | | | | | |

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| | | <ul style="list-style-type: none"> ▪ duct tape, and masking tape ▪ pipe cleaners ▪ plastic containers of different shapes and sizes ▪ tubing ▪ wooden sticks ▪ zip ties | | | | | | |
| 125 | GENE THERAPY | <ul style="list-style-type: none"> § 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 | <ul style="list-style-type: none"> ▪ ruler or tape measure ▪ scissors ▪ 1 roll duct tape ▪ plastic pipes, ▪ metal pipes, ▪ metal strips, ▪ cardboard tube | | 1 | | | | |

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| | | <ul style="list-style-type: none"> ▪ 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]) | | | | | | | |
| 127 | HUMAN IMPACTS ON ENVIRONMENT | <ul style="list-style-type: none"> ▪ 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 ▪ 1-2 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 | | | | | |

- 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

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| 128 | SENSORY RECEPTORS AND THEIR WORKING | <ul style="list-style-type: none"> ▪ Pencils, paper rulers ▪ 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 | <p>Please develop the kit on the link given at 1.</p> <p>Link 2 & 3 are alternate links if developing kit at link 1 is not come under your capacity.</p> | 1 | | | | | |
| 129 | THERMOREGULATION | <ul style="list-style-type: none"> ▪ Arduino™ Uno Development Board ▪ breadboard ▪ USB cable, for powering Arduino/uploading code ▪ 10 wires to connect components, such as 6- or 7-inch jumper wires for Arduino boards | <p>Please develop the kit on the link given at 1.</p> <p>Link 2 & 3 are alternate links for reference. You can also develop your own thermoregulation kit using sensors and Arduino.</p> | 1 | | | | | |

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| | | <ul style="list-style-type: none"> ▪ 3 LEDs ▪ TMP36 temperature sensor ▪ 3 220 ohm (Ω) resistors; ▪ 1-megaohm ($M\Omega$) 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 | | <ul style="list-style-type: none"> · PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based | 1 | | | | | |
| 131 | Investigation of heat production in germinating seeds | | <ul style="list-style-type: none"> · PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based | 1 | | | | | |

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| 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 | | | | | |

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| 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 (Excl. Sales Tax) | Sales Tax Rate | Rate per unit (Incl. Sales Tax) | Value in Rs. Per unit | Total Value |
|------|--------------------------------------|--|-------------|----------|---------------------------------|----------------|---------------------------------|-----------------------|-------------|
| 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. | | 1 | | | | | |

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| | | <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=kN6iDJS9Ldo · https://www.youtube.com/watch?v=stxAfjm2890 | | | | | | | |
| 140 | Congruency between triangles | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · 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 | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · 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 | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=OjXN9bnVyPU | | 1 | | | | | |

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| | | <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=A7Kz3Sybzgw · https://www.youtube.com/watch?v=878Ar_oglbQ | | | | | | | |
| 143 | CIRCLE THEOREMS | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=bbQxPp9EMs8 · https://www.youtube.com/watch?v=-E6PDaWvZnc | | 1 | | | | | |
| 144 | SETS AND FUNCTIONS | <ul style="list-style-type: none"> · Convert it onto acrylic sheet with some modification to avoid copy right. · https://www.youtube.com/watch?v=APVdBJ9o2_8 · https://www.youtube.com/watch?v=Jr3IJ41IwGU · https://www.youtube.com/watch?v=tCbdrKdObw · https://www.youtube.com/watch?v=vCFGbDoFaHc | | 1 | | | | | |

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| 145 | TRIGONOMETRIC RATIOS | <ul style="list-style-type: none"> · 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 | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/shorts/gObAgSaId0 · https://www.youtube.com/watch?v=1gRg2km-j08 | | 1 | | | | | |
| 147 | Plane Analytical Geometry | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=XUbKkEcShhM · https://www.youtube.com/watch?v=IsIAOhDMR7U · https://www.youtube.com/watch?v=6LkIcwhWjv0 | | 1 | | | | | |

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| | | <ul style="list-style-type: none"> · https://www.youtube.com/shorts/tQqXDmfQa38 | | | | | | | |
| 148 | Properties of circle working math model | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=UdPyzaTSaW4 | | 1 | | | | | |
| 149 | Innovative Method of Learning the Concept of Circle and its Theorem | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=4k6UOe6lhcI | | 1 | | | | | |
| 150 | 32 Soldiers Game | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <ul style="list-style-type: none"> · https://www.youtube.com/watch?v=Q184AaSkNyQ | | 1 | | | | | |
| 151 | RATIO AND PROPORTION | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=4REH7UaCFxI</p> <p>https://www.youtube.com/watch?v=LB0ADuFqZ2o</p> | | 1 | | | | | |
| 152 | Factorization | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> | | 1 | | | | | |

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| | | https://www.youtube.com/watch?v=t2BLv5wInWE https://www.youtube.com/watch?v=0A14cAdVTT8 https://www.youtube.com/watch?v=U-EBmTBWk5k | | | | | | | |
| 153 | Basic Statistics | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=3u_p_Fnolic</p> | | 1 | | | | | |
| 154 | Direct AND INVERSE VARIATIONS | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/shorts/5SDIrPtVLF0 https://www.youtube.com/watch?v=MH2FmevGpQY</p> | | 1 | | | | | |
| 155 | Quadratic Equation | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=BY5akV3rYfM</p> | | 1 | | | | | |
| 156 | ANGLE IN A SEGMENT OF A CIRCLE | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=PHcbrilvMro</p> | | 1 | | | | | |

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| 157 | PROBABILITY | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=tyAwxrUadtw</p> <p>https://www.youtube.com/watch?v=e057rkWZcqc&t=206s</p> | | 1 | | | | | |
| 158 | ARITHMETIC SEQUENCES AND SERIES | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=1uYlOqT46aM</p> <p>https://www.youtube.com/watch?v=t22WdzVYhZM</p> | | 1 | | | | | |
| 159 | Complex Number | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>· https://www.youtube.com/watch?v=6823Y-Ucxqw</p> | | 1 | | | | | |
| 160 | Mathematical induction and binomial theorem | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=eQJIFcYN9U0</p> <p>https://www.youtube.com/shorts/ISap71U_JtQ</p> | | 1 | | | | | |
| 161 | Differentiation-I | <p>· Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>· https://www.youtube.com/watch?v=_w2evUytLI8</p> | | 1 | | | | | |

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| 162 | POLYNOMIALS | <p>· Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=GwEdAz94vQ&list=PLTnGIRXNGw0fMz7aFXICUrshQhn42GwiL</p> <p>https://www.youtube.com/watch?v=vHZMFx8rlhY&list=PLTnGIRXNGw0fMz7aFXICUrshQhn42GwiL&index=2</p> | | 1 | | | | | |
| 163 | DIFFERENTIATION | <p>· Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=2bFXR5Zx-5s</p> | | 1 | | | | | |
| 164 | Matrices and Determinants | <p>Convert it onto electronic board using LEDs using acrylic sheet etc with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=o7W2O6UoQ4I</p> | | 1 | | | | | |
| 165 | Algebraic Expressions | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/watch?v=YIsPmFnh0Xc</p> <p>https://www.youtube.com/watch?v=f2o8EI0iOYg&list=PLDm_bXnksd4IKXyYY6cF5rVIqoC2wt_jL</p> | | 1 | | | | | |

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| | | <p>· https://www.youtube.com/watch?v=AN4MGUP4VXQ&list=PLo5zCPkGpmfq5nJPCN1YLLxFpiH9Tkh12</p> | | | | | | | |
| 166 | GEOMETRIC SEQUENCES AND SERIES | <p>Convert it onto acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/shorts/hUtAmgNu9dI</p> <p>https://www.youtube.com/shorts/a41V8L5nNIU</p> <p>· https://www.youtube.com/shorts/-1CqCz6hQ7I</p> | | 1 | | | | | |
| 167 | Transformation of Graph | <p>Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right.</p> <p>https://www.youtube.com/shorts/6fvWMY6wCBI</p> | | 1 | | | | | |
| 168 | Working model on algebraic identity | <p>· Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right.</p> <p>· https://www.youtube.com/watch?v=SKfM83PrWH8</p> | | 1 | | | | | |

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| 169 | Sum Should be "26" Puzzle | <ul style="list-style-type: none"> Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=ZBsIEIG42vo | | 1 | | | | | |
| 170 | Distance Formula | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=zvyVHYGWelo | | 1 | | | | | |
| 172 | Diagonal Move @ Math Game Puzzle | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=ofdtTqm9QcY | | 1 | | | | | |

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| 174 | Exterior angle property - theorem working model | <ul style="list-style-type: none"> Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=y0FQF9MMdW8 | | 1 | | | | | |
| 175 | HCF and LCM | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> 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 transversal math | <ul style="list-style-type: none"> Convert it onto acrylic sheet with some modification to avoid copy right. https://www.youtube.com/watch?v=EjtowDIo1j0&list=PLTnGIRXNGw0d90wSCnrhagDpm_w1-QQfZ | | 1 | | | | | |

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| 179 | Types of triangle math's working model | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 (Excl. Sales Tax) | Sales Tax Rate | Rate per unit (Incl. Sales Tax) | Value in Rs. Per unit | Total Value |
|------|---|--|-------------|----------|---------------------------------|----------------|---------------------------------|-----------------------|-------------|
| 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 | | | | | |

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| 183 | Archimedes principle | Share with us if you have any better idea · https://www.youtube.com/watch?v=iEVSqbGfx4k | | 1 | | | | | |
| 184 | Speed/ Velocity/ Acceleration | Kit should be re-assemble able. · https://www.youtube.com/watch?v=U7XYzPfutBs | | 1 | | | | | |
| 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 | | | | | |

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| 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 https://www.youtube.com/watch?v=VE520z_ugcU | | 1 | | | | | |
| 192 | Electricity Generation | Make it using Acrylic https://www.youtube.com/watch?v=O1e7m0k2WE https://www.youtube.com/watch?v=xdbl35DkAFA | | 1 | | | | | |
| 193 | DIY capacitors | Any suggestion to improve is welcomed | | 1 | | | | | |

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| | | https://www.youtube.com/watch?v=npliU4Wny5U&t=2s | | | | | | | |
| 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 | | 1 | | | | | |

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| | | <p>· https://www.youtube.com/watch?v=9o20jRLOP2E&t=336s</p> <p>· https://www.youtube.com/watch?v=9WB82CvGIa8</p> | | | | | | |
| 200 | Changing Fields | <p>Any improved idea is welcomed</p> <p>· https://www.youtube.com/watch?v=GwKm_8CxY-M</p> <p>· https://www.youtube.com/watch?v=JwuO9XrH_al</p> | | 1 | | | | |
| 201 | RLC | <p>Any improved idea is welcomed</p> <p>· https://www.youtube.com/watch?v=Mq-PF1vo9QA</p> <p>· https://www.youtube.com/watch?v=ZYgFuUI9_Vs</p> | | 1 | | | | |
| 202 | Current Loop | <p>Any improved idea is welcomed</p> <p>· https://www.youtube.com/watch?v=XNoN2xGo1F0</p> <p>· https://www.youtube.com/watch?v=6QZMt4yyyIU</p> | | 1 | | | | |

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| | | <p>https://www.youtube.com/watch?v=eyi04BrNHXE</p> | | | | | | |
| 203 | Circuit Construction | <p>Any improved idea is welcomed</p> <p>https://www.youtube.com/watch?v=jIrHkRJVk-U</p> <p>https://youtube.com/shorts/O3ELEhqol2E?si=MDVM3qzwDOqJdf3u</p> | | 1 | | | | |
| 204 | Electronic Torque | <p>Use DIY motor using neodymium to better elaboration of concept</p> <p>https://www.youtube.com/watch?v=S2fthUfemp0</p> | | 1 | | | | |
| 205 | Newton's laws of motion | <p>Any advanced suggestion is welcomed</p> <p>https://www.youtube.com/watch?v=NGt1zaAXANc&t=174s</p> <p>https://www.youtube.com/watch?v=lJXEQvlpMJY</p> <p>https://www.youtube.com/watch?v=iV3NXFkdUyw</p> | | 1 | | | | |
| 206 | Sound Science | <p>Any advanced suggestion is welcomed</p> | | 1 | | | | |

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| | | <p>https://www.youtube.com/watch?v=xCnxsoXtlmY</p> | | | | | | | |
| 207 | Momentum | <p>Any advanced suggestion is welcomed</p> <p>https://www.youtube.com/watch?v=MMu9rxW_Ztw</p> | | 1 | | | | | |
| 208 | Forces and Motion | <p>Any advanced suggestion is welcomed</p> <p>https://www.youtube.com/watch?v=nzKpPZW7Aco</p> | | 1 | | | | | |
| 209 | Electrostatic Charge | <p>Any advanced suggestion is welcomed</p> <p>https://www.youtube.com/watch?v=RuSxy32JagA</p> <p>https://www.youtube.com/watch?v=QzprKH1bLJM</p> | | 1 | | | | | |
| 210 | Ohm's Law | <p>Any advanced suggestion is welcomed</p> <p>https://www.youtube.com/watch?v=2G_3oeC2QGY</p> <p>https://www.youtube.com/watch?v=OqqpTDd1by0</p> | | 1 | | | | | |
| 211 | Gravity | <p>Any advanced suggestion is welcomed</p> | | 1 | | | | | |

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| | | https://www.youtube.com/watch?v=pStqoFxtYu8 | | | | | | | |
| 212 | Steam Engine | Any advanced suggestion is welcomed https://www.youtube.com/watch?v=L3XAFSMdVWU&list=PLaA36I4Y6aQWVUO-RIM0ojDIitjh9nfyT | | 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 | | | | | |
| 217 | Mutual Induction | Any advanced suggestion is welcomed | | 1 | | | | | |

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| | | · 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 | | | | | |

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| 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 | | | | | |
| 225 | Neodymium Magic | Any advanced suggestion is welcomed · https://www.youtube.com/watch?v=ZPtcSXk2efU | | 1 | | | | | |

DIY/Working Model of Chemistry KITS

| Sr # | Title | Materials / Suggestions / Reference links | Any Remarks | Quantity | Rate per unit (Excl. Sales Tax) | Sales Tax Rate | Rate per unit (Incl. Sales Tax) | Value in Rs. Per unit | Total Value |
|------|-----------------|--|-------------|----------|---------------------------------|----------------|---------------------------------|-----------------------|-------------|
| 226 | Electro etching | 1. Safety Wear | | 1 | | | | | |
| | | 2. Beaker 100 MI 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 | | | | | | | |

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| | | 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 Electroetching Machine |
| 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 |
| 228 | Boyles Law | 1. Syringe 60mL 2 |
| | | 2. Balloons |
| | | 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 |
| 230 | Periodic Table | Periodic Table in the form of play cards |

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| | | Periodic table made up of acrylic boxes for elements |
| | | Periodic Table with Velcro |
| 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 |
| 232 | HYDROCARBONS | 1. Ball and stick model |
| | | molecule with the molecular modeling |
| | | Old Nobby, or HGS Polyhedron |
| 233 | Gas Model | 1. <i>Instructions for Experiment Circus Cards</i> |
| | | 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 |

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| | | 11. Conical flask, 250 cm ³ |
| | | 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 ³ This 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. <i>Tooth pick</i> |
| | | 2. <i>Clay dough</i> |
| 235 | Magical liquid | 1. Flask with cork |
| | | 2. Dropper |
| | | 3. Cork (bottle cap) |
| | | 4. Water |

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| | | 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 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. |

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| | | Acid Rain Effects Worksheet, 1 per student (can be found in Student Resources) |
| 237 | Crystallization | 1. Hot Water |
| | | 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 |
| 2. gloves (one pair per student) | | |
| 3. 2 beakers (500 ml) 1 | | |
| 4. graduated cylinder (250 ml) 1 | | |
| 5. Voltmeter 1 | | |
| 6. copper sulfate (CuSO ₄) solution (1.0M, 250 mL) | | |
| 7. zinc sulfate (ZnSO ₄) solution (1.0M, 250 mL) | | |

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| | | 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 |
| | | 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 |
| | | 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 |

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| | | 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) |
| | | 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 |

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| | 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 |

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| | | 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 |
| | | 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 |
| | | 2. Masking tape and pen (for labeling cups) |
| | | 3. Vinegar |
| | | 4. Lemon juice |
| | | 5. Tomato or apple juice (pure) |

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| | | 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 |
| | | 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 |
| | | 8. Scissors |
| | | 9. Measuring cup |
| | | 10. Spoon |

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| | | 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 |
| 246 | Green Chemistry | 1. Goggles 1 pair |
| | | 2. Gloves 1 |
| | | 3. (10 mL) graduated cylinders 2 |
| | | 4. test tubes 3 |
| | | 5. Magnesium strip 1roll |
| | | 6. Steel wool 1roll |
| | | 7. hydrochloric acid 3 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). |

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| | | 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 |
| | | 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, |

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| | | 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 |
| | | 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 |
| | | 2. Test Tube Stands |
| | | 3. Oil |
| | | 4. CaCl ₂ |
| | | 5. Water |
| | | 6. Nails (Galvanized) |
| 250 | Turn Milk into Plastic | 1. Measuring cup glass (500ml) (1) |
| | | 2. Milk powder 1000mg |
| | | 3. Stovetop/ heating mantle 1 |
| | | 4. Thermos 1 |
| | | 5. White vinegar 1L |

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| | | 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 |
| | | 2. Ink red and blue |
| | | 3. Filter paper strips/ Rectangular |
| | | 4. Filter paper round |
| | | 5. Plant |
| | | 6. Ethanol 500MI |
| 252 | Simple Distillation Assembly | 1. Flask Round bottom---- 250 ml |
| | | 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 | | |

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| | | 9. T- for distillation column 2 |
| | | 10. Thermometers 2 |
| 253 | Invisible Inks | 1. Safety Wear |
| | | 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 |
| | | Sodium sulphate |
| | | small fan, |
| | | voltmeter, |
| | | ammeter, |
| | | plastic shell, |
| | | several wires, |
| | | copper sheet, |
| | | glass tube, |
| | | membrane electrode, |
| | | graphite electrode, |
| | | carbon paper, |
| | | 8. power supply. |

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| | | Proton exchange membrane fuel cell |
| 255 | Lead Acid Battery | 1. Lead Acid battery |
| | | 2. Electric fan |
| | | 3. Crocodile clamps |
| 256 | Organic Ink | 1. Powdered activated charcoal 500mg |
| | | 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 |
| | | 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 |

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| | | 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 | | | | | | | |

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| | | 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 | | | | | | | |

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| 263 | Potato Battery | Battery Jacket | 1 | | | | | |
| | | alligator clamps | | | | | | |
| | | Wires | | | | | | |
| | | bulb/LED | | | | | | |
| 264 | Galvanic Cell | ZnSO ₄ | 1 | | | | | |
| | | CuSO ₄ | | | | | | |
| | | 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 | Spherification kit / Worm kit | Sodium Alginate 50g | 1 | | | | | |
| | | Calcium Chloride 50g | | | | | | |
| | | Sodium Citrate 50g | | | | | | |
| 267 | Rate of Reaction KIT | FALCON TUBE | 1 | | | | | |
| | | Funnel | | | | | | |
| | | dropper | | | | | | |

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| | | 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 (Excl. Sales Tax) | Sales Tax Rate | Rate per unit (Incl. Sales Tax) | Value in Rs. Per unit | Total Value |
|------|------------------------------------|---|-------------|----------|---------------------------------|----------------|---------------------------------|-----------------------|-------------|
| 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 | | 1 | | | | | |

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| | | White chart Cutter | | | | | | | |
| 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 | | | | | |

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| 276 | Abacus The First Computer Model | Thermacol Color Charts Metal Sticks Color Beats | | 1 | | | | | |
| 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=jUffkOOdAEA | | 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 | | 1 | | | | | |

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| | | Arduino® Nano ESP32 with headers Bread board | | | | | | | |
| 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 | | | | | |
| 283 | Car game with Arduino and I2C LCD Display | Tactile Switch, Top Actuated Male/Female Jumper Wires I2C 16x2 Arduino LCD Display Module USB-A to B Cable Arduino UNO Jumper wires (generic) | | 1 | | | | | |
| 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 | | ESP32 | | 1 | | | | | |

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| | Controlling Led using IoT | 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 | | | | | | | |
| 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 Transistors Diodes Adapter | | 1 | | | | | |
| 288 | AI-Based Anti-Theft Alarm | IOT based Node Mcu Bulb and Holders PIR Sensor Relay | | 1 | | | | | |

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| | | Transistor BC 547 Diode 1N4007 Videos Materials Node Mcu Bulb and Holders PIR Sneosr Relay Transistor BC 547 Diode 1N4007 | | | | | | | |
| 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 | | 1 | | | | | |

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| | | Motor Driver IC L293D Robot Chasis & Wheels Connecting Wires Breadboard | | | | | | | |
| 293 | Home Automation System using Bluetooth | Arduino Uno Bluetooth Module Relay Module https://drive.google.com/file/d/1WBwgV Su3P_bCXRcet4jRck-j3rNE6FOv/view Wires Bulb | | 1 | | | | | |
| 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 | Arduino Uno LEDs | | 1 | | | | | |

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|-----|--|--|--|---|--|--|--|--|--|
| | two objects using LED's | Ultrasonic Sensor (HC-SR04) Resistors 9V Battery with holder | | | | | | | |
| 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 Alligator Clips Relay module 5 Vdc 10A (assembled) Arduino Uno Rev3 CPU fan 12 volt 16x2 LCD display with PC interface Jumper Male to Female 20 cm TMP36- Analog Temperature sensor 5mm Red LED | | 1 | | | | | |
| 300 | | Arduino Uno | | 1 | | | | | |

| | | | | | | | | | |
|--|---|---|--|--|--|--|--|--|--|
| | Barcode Scanner & Display using Arduino | Atmega 328 Controller Barcode Scanner USB Connector LCD Display Cables & Connectors Capacitors Transistors PCB Board Power Adapter LED Buzzer | | | | | | | |
|--|---|---|--|--|--|--|--|--|--|

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.

Evaluation Criteria: Least Cost basis evaluation procedure on aggregate basis will be adopted for submitted financial proposals.

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Signature with date

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 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.
3. 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.
4. Each fabricated STEM activity kit will be finalized based on the approved model of the each prototype by respective Committee before scaling up for mass production and future/extended orders will also be processed at the same cost quoted.
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.
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. Payment to supplier/s will be made in the form of cross Cheque after deduction of applicable Government Taxes.
21. 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 11:30 am. In this Two Stage Two Envelop procedure, only the technically qualified will be requested later to provide Financial Proposal.
22. 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.
23. 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.
24. The bidder will start the task, on receipt of written Purchase/Work Order from PSF in accordance with the given terms, conditions and specifications.

25. Incomplete proposals or those received after due date and time will not be entertained.
26. 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.
27. 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.
28. Performance Guarantee in shape of bank guarantee of 5% of contract value would be submitted by the successful bidder, where it is applicable.
29. **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