Pakistan Science Foundation

Ministry of Science & Technology, Islamabad

List of STEM Activity Kits

Annex-I

Sr #	Title	Suggestions/ Remarks	Any Remarks
1	**Up Down Counter**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
2	**Code Lock**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
3	**DIY Scissor Lift**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
4	**Wind Turbine DIY Kit**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
5	**Melody Bell**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
6	**Water Level Indicator**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
7	**DIY Electromagnet Kit**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
8	**Shake Kit Generator**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
9	**Series and parallel circuit**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
10	**Home Solar Energy**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components	
11	**Chair Swing Ride**	· Acrylic sheet	

		· Basic Electronics
		· PCB Layout with un assembled parts/ components
12	**Infrared Switch**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
13	**Air Powered Car**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
14	**Hand Powered Generator**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
15	**Electric Circuit 4 in 01**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
16	**Water Boat Remote Control**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
17	**Remote Control Car**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
18	**Home Solar Energy**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
19	**Robotic Car Drive With Hand Sensor**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
20	**Hovercraft Project Kit**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
21	**Simple Circuit Kit**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
22	**Hydraulic Crane**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components

23	**Infrared Remote**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
24	**FM Transmitter**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
25	**Energy Conversion Kit**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
26	**Oilfield Pump Jack**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
27	**Motor Water Pump Kit**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
28	**Electricity Generation With Heat Energy**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
29	**Tesla Coil Manual**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
30	**Lucky Circle**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
31	**Motion Sensor**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
32	**Robotic Car Drive With Sensor**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
33	**Rain Alarm**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
34	**Audio Level Indicator**	· Acrylic sheet · Basic Electronics

		· PCB Layout with un assembled parts/ components
35	**Laser Alarm**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
36	**Automatic water spray (in fire)**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
37	**Hydro Turbine**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
38	**Astronomical Telescope**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
39	**Walking Robot**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
40	**Motor Water Pump**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
41	**Safe Stopping Boat**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
42	**Door Theft Alarm**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
43	**Inter Com**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
44	**Sound Operated Switch**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
45	**Lucky Circle**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
46	**Electronic Taps**	· Acrylic sheet

		· Basic Electronics
		· PCB Layout with un assembled parts/ components
47	**Electro Magnet**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
48	**Remote Control Toy Car**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
49	**Anti-Gravity Pencil**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
50	**Drawing Robot**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
51	**Rubber Powered Propeller Car**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
52	**Pneumatic Jack**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
53	**DIY Solar Fan**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
54	**Water Dispenser**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
55	**Quiz Project**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
56	**Variable Power Supply**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
57	**FM Transmitter**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components

58	**Electric Motor**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
59	**Touch Switch**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
60	**Auto Motor Controller**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
61	**Metal Detector**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
62	**Auto Light Controller**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
63	**Water Level Indicator**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
64	**Traffic Signal Lights**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
65	**USB Table Fan**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
66	**Wind Turbine**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
67	**Hydraulic Robotic Arm**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
68	**Oilfield Pump Jack**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
69	**Periscope**	· Acrylic sheet · Basic Electronics

		· PCB Layout with un assembled parts/ components
70	**Electric Generator**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
71	**Fire Alarm**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
72	**Basic Aircraft**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
73	**Solar Powered House DIY Kit, Renewable Energy, Solar Energy**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
74	**Day & Night, Solar & Lunar Eclipse Model, Astronomy**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
75	**Automatic Water Sprinkler Firefighter System, Physics, Sensors, Electronics**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
76	**Handmade AC Generator, Conversion of mechanical energy (kinetic energy) into electrical energy by using magnetic induction**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
77	**DIY Astronomical Telescope Kit 2.0, Astronomy Light Optics**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
78	**Solar Car Science Project Kit 2,0, Renewable Energy, Solar Energy, Force and movement**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
79		· Acrylic sheet

	Solar Powered Fan Science Project Kit, Renewable Energy, Solar energy	· Basic Electronics · PCB Layout with un assembled parts/ components
80	**Science Project Wireless Electricity, Electronics, Wireless Electricity**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
81	**Automatic Street Light Kit, Electronics, Light sensor, switch bridge**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
82	**Mini DC Water Pump Science Project kit for Students, Water Pressure**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
83	**DIY Mini Drone Kit, Flight & Aerodynamics'**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
84	**Fruit Power Battery Kit, Chemical reaction. Voltaic Battery, Electricity Generation**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
85	**Mobile Bluetooth Controlled Robotic Car for Racing, Robotics**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
86	**PSC DIY Robotic Kit with 6 Lessons, Robotics**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
87	**Working Model of Heart and Circulatory System, Working of heart, Biology**	· Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
88		· Acrylic sheet

	Line Follower Robot, Robotics	· Basic Electronics
		· PCB Layout with un assembled parts/ components
89	**Maze solver robotics kit, Robotics**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
90	**DIY Slime Kit, Chemistry**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
91	**Solar Powered Car 3.0, Renewable Energy, Solar energy**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
92	**Electric Motor Tank Kit, Gear pulley system. Force and movement, torque, speed**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
93	**Water rocket, Air pressure. Newton's third law, Aerodynamics**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
94	**DIY Projector Kit, Optics**	· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
95	**Led Distance Indicator Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
96	**Password Based Door Lock System Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
97	**Arduino Trash-Bot (Auto-Open/Close Trash Bin)**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
98	**How to make music with an Arduino Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics

		· PCB Layout with un assembled parts/ components
99	**Arduino Speed Detector Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
100	**RFID Based Door Look system Circuit Kit**	· RFID / Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
101	**Ultrasonic Radar Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
102	**IOT Based Room Automation Circuit KIT**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
103	**IOT Based Street Light Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
104	**IOT Based anti-theft alarm Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
105	**IOT Based Smart Gate Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
106	**Controlling LEDs Wirelessly Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics
		· PCB Layout with un assembled parts/ components
107	**Digital Clock Using 16*2 LCD Circuit Kit**	· Arduino UN/ NANO Based
		· Acrylic sheet
		· Basic Electronics

		· PCB Layout with un assembled parts/ components
108	**Traffic Signal Lights Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
109	**Smart Gate With Counter Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
110	**Digital Voting Machine Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
111	**Jumping Jack Game Circuit Kit**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
112	**Obstacle Detector Robot**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
113	**Voice controlled Robot**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
114	**Gesture Control Wheelchair For Disabled People**	· Arduino UN/ NANO Based · Acrylic sheet · Basic Electronics · PCB Layout with un assembled parts/ components
Chemistry KIT LIST		
115	**Electro etching**	1. Safety Wear 2. Beaker 100 Ml 1 3. DC power (4 regular AA battery cells) 1 4. Electrode 1 5. Single Hole Electric Discharge Machine with Copper Tube Electrode Drill Bit

		6. Sodium Chloride 500mg
		7. Sand Paper 1
		8. Steel plate for electro etching 1
		9. Stickers pasting on the electrode 1
		10. Cotton small roll
		11. Crocodile Clamps for connection securing 4
		12. Chemical Eelctroetching Machine
116	**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
117	**Boyles Law**	1. Syringe 60mL 2
		2. Balloons
		3. Water bottle
		4. Food Color
118	**Solution making**	1. Distilled water
		2. Analytical balance
		3. Weigh boats
		4. Graduated cylinder
		5. Volumetric flask Measuring flasks of different size (100, 250, 500) 2 each
		6. Beakers 500ml 2
		7. Magnetic stir plate and stir bar
		8. pH meter
		9. Dilute sodium hydroxide
		10. Dilute hydrochloric acid
119	**Atomic Model**	Atomic Model 3D
120	**Periodic Table**	Periodic Table in the form of play cards
		Periodic table made up of acrylic boxes for elements
		Periodic Table with Velcaro
121	**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
122	**HYDROCARBONS**	1.Ball and stick model
		molecule with the molecular modeling
		Old Nobby, or HGS Polyhedron
123	**Gas Model**	1. *Instructions for Experiment Circus Cards*
		2. Beaker, 250 cm^3
		3. Distilled water
		4. Disprin
		5. Plastic syringe
		6. Air freshener or similar
		7. Stopwatch or other timing device
		8. Long tape measure to measure 10 m
		9. Balloons
		10. Freezer access
		11. Conical flask, 250 cm^3
		12. Tea lights (small, metal-encased candles)
		13. Beaker, 1 L
		14. Matches
		15. Calcium carbonate chips, about 100 g
		16. Hydrochloric acid, 2 mol dm^{-3} (IRRITANT), about 750 cm^3This is best set up in a draught-free area such as a fume cupboard.
		17. Conical flask, 250 cm^3
		18. 2 Measuring cylinders, 50 cm^3 each
		19. Balloons to fit over the mouth of the conical flask
		20. electronic balance weighing to 0.01 g
		21. Sodium carbonate solution, 2 mol dm^{-3} (IRRITANT), about 500 cm^3
124	**HYDROCARBONS IN OUR DAILY LIVES**	*1. Tooth pick*
		2. Clay dough
125	**Exo/endothermic reactions**	1. Vinegar
		2. Sodium bicarbonate
		3. Calcium chloride

		4. Water
		5. Thermometer digital with stick
		6. 4 beakers
		7. 1 cup measuring cup
		8. WEIGHING BALANCE
		9. Glass rod 2
		10. Spatula 2
		11. Measuring spoons (1 tablespoon, ½ teaspoon)
126	**Magical liquid**	1. Flask with cork
		2. Dropper
		3. Cork (bottle cap)
		4. Water
		5. Sodium hydroxide 500mg
		6. Glucose 500mg
		7. Methylene blue 500mL
		8. Measuring Cylinder 25ml
		9. Beakers 250ml
		10. Volumetric flask 250ml
127	**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.
		Acid Rain Effects Worksheet, 1 per student (can be found in Student Resources)
128	**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
129	**Electrochemical cell**	1. safety goggles (one pair per student)
		2. gloves (one pair per student)
		3. 2 beakers (500 ml) 1
		4. graduated cylinder (250 ml) 1
		5. Voltmeter 1
		6. copper sulfate (CuSO4) solution (1.0M, 250 mL)
		7. zinc sulfate (ZnSO4) solution (1.0M, 250 mL)
		8. 2-4 pieces of electrical wiring each with alligator clips
		9. Copper electrode 2
		10. Zinc electrode 2
		11. sodium chloride (NaCl) solution (500 mg)
		12. pipette (plastic or glass) 2
		13. 20-cm filter paper strips OR filter paper folded to ~1 cm thick and long enough to touch the liquids in each 250 mL beaker
		14. LED-emitting light 4
130	**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
131	**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
		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
132	**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
		4. 3 pieces (one wire of 30 cm and two wires of 80 cm) of non-insulated copper wire (gauge AWG 20) totaling 200 cm per student group. Or, if you have insulated wire, it will work if you strip the insulation off the ends.
		5. masking tape
		6. wire cutters
		7. marking pens
		8. 3 glass jar with lids must be able to hold at least 150 ml);
		9. vinegar,
		10. citrus juice
		11. sodium chloride
		12. a few graduated cylinders (10–25 ml)
		13. 3 pairs of safety glasses or goggles
		14. 1 DC ammeter (to measure current in amperes)
		15. paper towels
		16. water and sink, or, if no drain is available, a large empty container to collect the used electrolyte solutions
		17. 1 cup vinegar
		18. 1 cup distilled water

		19. 2 medium-sized eggshell pieces (organic compound)
		20. 2 paperclips (inorganic compound)
		21. 2 small- or medium-sized glass jars
		22. masking tape and pen (for labeling containers)
		23. 1.5-inch strips of wide-range (0-14 pH) litmus paper
133	**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
134	**Silver nanoparticles Kit**	1. whiteboards (one per pair of students in group of four)
		2. dry erase markers and erasers
		3. 15 m conical tube 2
		4. mortar and pestle 1
		5. 400 ml beaker with 200 ml of water 1
		6. Distilled water 1L
		7. Funnel 1
		8. filter papers 4
		9. hot plate 1
		10. pipette 1
		11. scale 1
		12. gloves 1 PAIR
		13. goggles 1
		14. razor blade 1
		15. 200 ml of 0.1 M of AgNO3 stock solution 1
		16. Measuring Flask 1
		17. silver nitrate, 25mg
		18. trisodium citrate 500mg
		19. Iron hydrogen sulfide
		20. sodium sulfite 500mg
		21. Nano silver sol
		22. Karbaum 940; 1mol · L-1
		23. sodium hydroxide solution; or 500Mg Solid
		24. distilled water
		25. beaker, 2 -------250ML
		26. measuring cylinder 25ML 1

		27. magnetic stirrer 1
		28. Hotplate 1
		29. agar culture medium, 1 box
		30. glucose coccus aureus suspension (concentration OD600=0.1) 1
		31. antibiotics, 2 antibiotics box
		32. alcohol 1L
		33. Petri dish, 4
		34. tweezers, 1
		35. filter paper, 1 box
		36. sterile operating platform, 1
		37. thermostatic incubator 1
135	**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)
		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
136	**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 4
		8. Scissors
		9. Measuring cup
		10. Spoon

		11. Stopwatch or clock with a second hand
		12. Pencil and paper
		13. Coffee Filter
137	**NOMENCLATURE FOR FUNCTIONAL GROUPS**	1. Ball and Stick Mode
138	**Potato Polymer**	1. Potatoe POWDER 500MG
		2. 250 mL beaker 1
		3. large watch glass, 1
		4. hot plate 1
		5. petri dish 4
		6. pH paper 1box
		7. disposable pipettes 10mL (approx. 4-5)
		8. stirring rod 1
		9. 25 mL graduated cylinder 1
		10. 10 mL graduated cylinder 1
		11. Goggles 1 pair
		12. vegetable grater 1
		13. food processor (at least one per class, but one for each group is preferred)
		14. Conical flask 1
		15. Funnel 1
		16. Filter Paper
		17. bottle of glycerol 100-150 mL
		18. bottle of 0.1 M hydrochloric acid 100-150 mL
		19. bottle of sodium hydroxide 100-150 mL
		20. distilled water 1L
		21. water bottles, 250mL
		22. plastics bags, medium Zip Lock 6
		23. containers, and PVC
		24. Test tubes, at least 1.5 cm ID and 10 cm long (6)
		25. Test tube rack, 1
		26. modeling clay 1 box
		27. Graduated Pipettes, 3-mL (3)
		28. Any local dishwashing liquid 1
		29. 3% hydrogen peroxide 500mL
		30. Dried yeast 1 box
		31. Beakers small (5)

		32. Measuring spoons
		33. spatula for mixing 2
		34. Metric ruler 1
		35. Digital Timer 1
		36. Calculator 1
		37. Graph paper 1
		38. Paper
		39. Pen
		40. Paper towels 1 box
139	**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 acid3 M 500mL
		8. Zinc strip 2
		9. 5 mL 0.1 M copper (II) chloride solution 500mL
		10. 5 mL 0.1 M copper (II) sulfate solution 500mL
		11. 5 mL 0.1 M potassium carbonate solution 500mL
		12. 5 mL 0.1 M sodium carbonate solution 500mL
		13. 5 mL 0.1 M calcium chloride solution 500mL
		14. 5 mL hydrogen peroxide (5-6%) 1…….500mL bottle
		15. Potato piece/yeast/liver (sources of catalase).
		16. Calcium oxide 500mg
		17. Copper wire 1
		18. Rubber stopper 1
		19. Wooden splint 1
		20. Match 1
		21. Calcium carbonate chips 1packet
		22. Wire gauze 1
		23. Bunsen burner 1
		24. Scoopula 1
140	**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,
		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
141	**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
142	**Water Filtration unit**	1. Filtration Assembly
		2. activated charcoal
		3. gravel,
		4. sand (coarse and / or fine),
		5. cotton balls
		6. Filter papers pore size 190
		7. Filter papers pore size 150
		8. F
		9. Measuring cup
		10. Spoon
		11. Stopwatch or clock with a second hand
		12. Pencil and paper
		13. Coffee Filter
143	**Corrosion Prevention**	1. Test Tubes
		2. Test Tube Stands
		3. Oil
		4. CaCl2
		5. Water
		6. Nails (Galvanized)
144	**Turn Milk into Plastic**	1. Measuring cup glass (500Ml) (1)

		2. Milk powder 1000mg
		3. Stovetop/ heating mentle 1
		4. Thermos 1
		5. White vinegar 1L
		6. Work surface that is safe to get damp Aesbestos 1(2*2ft)
		7. Styrofoam or other heat-resistant cup 6
		8. White or distilled vinegar 1L
		9. Paper towels 1roll
		10. Spoon 2
		11. food coloring, 1 packet
		12. glitter, or markers 1 packet
145	**Paper Chromatography**	1. Beaker 3 100mL
		2. Ink red and blue
		3. Filter paper strips/ Rectangular
		4. Filter paper round
		5. Plant
		6. Ethanol 500Ml
146	**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
		9. T- for distillation column 2
		10. Thermometers 2
147	**Fractional 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
		9. T- for distillation column 2
		10. Thermometers 2
148	**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
149	**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.
		Proton exchange membrane fuel cell
150	**Lead Acid Battery**	1. Lead Acid battery
		2. Electric fan
		3. Crocodile clamps
151	**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
152	**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
		4. Pencil and paper
		5. Coffee Filter
153	**Red Cabbage Chemistry**	1. Eight small beakers 100ml
		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
154	**Glucose Concentration**	1. Manual polarimeter
		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
Computer Science Kits		
155	**Home Automation System using Bluetooth**	· Arduino Uno
		· Bluetooth Module
		· Relay Module
156	**AI based street light**	· Node Mcu
		· IR Sensor
		· Led's
157	**Voice Controlled LED's**	· Arduino based
		· IR Sensor and Led's
158	**Controlling Multiples devices using IOT**	Esp 32 Based
159	**Water Level Indicator with Arduino**	Arduino Uno Based

160	**AI-based Anti-theft alarm**	· IOT based
		· Node Mcu
		· Bulb and Holders
		· PIR Sensor
		· Relay
		· Transistor BC 547
		· Diode 1N4007
161	**Line follower robot**	· Arduino Uno
		· Motor Driver Shield
		· Wheels (4x)
		· TT Gear Motor
		· Infrared Sensor
		· 18650 Li-on Battery and holders
		· Acrylic Sheet
		· DC Power Switch
		· Jumbers
162	**AI-based control of light**	Arduino UNO
		HC-05 Bluetooth Module
		4-CH Relay Module
		Jumpers
		Breadboard / PCB
163	**AI-based Smart Gate**	Arduino Board
		Ultrasonic Distance Sensor
		Motor Driver Module
		DC or Servo Motor
		Gate (or prototype gate)
		Power Supply
164	**Indicating distance between two objects using LED's**	· Arduino UNO
		· Ultrasonic sensor HC-SR04
		· Jumper wires
		· LEDs
165	**Tic Tac Toe Game**	· Acrylic Sheet
166	**Make Your own Digital stop watch**	Arduino nano
167	**Building a Digital Clock with Arduino and RTC Module**	Arduino Uno
168	**ATM Machine Working Model**	· Acrylic Sheet
169	**Arduino Trash-Bot**	Arduino Uno
		HC sr0
		Ultrasound sensor
		Servo motor

		Any box or Bin
170	**Car game with Arduino and I2C LCD Display**	Arduino UNO
		I2C 16x2 Arduino LCD Display Module
171	**Wireless Water-Tank Level Meter with Alarm**	ultrasonic sensor
		wireless transmitter
172	**Hand gesture control wheelchair for disabled people**	Specified in the video
173	**Smart Glasses for Blind Prototype**	Arduino nano
		Ultasonic sensor
174	**Arduino Speed Object Detector**	Arduino based
175	**Arduino Mega Chess**	Arduino based
176	**Smart Blind Stick**	Ultrasonic
		sensor ,
		arduino,
		vibration motor,
		9v battery.
177	**Make a Siren Using Arduino**	Arduino Uno
		Battery 9v
		Led’s
178	**Lamp Controller Using Arduino**	Arduino Based
179	**Train accident Prevention project**	Arduino Uno
		1. 7.4v Battery or Cable
		2. Ultrasonic sensor
		3. Sun board sheet
		4. 4x wheels
		5. 6x Led lights
		6. 6x Buzzer
180	**Temperature and Humidity Sensor**	Arduino Based
181	**Arduino Trash-Bot (Auto-Open/Close Trash Bin)**	1. Arduino (any board)
		2. HC sr04 ultrasound sensor
		3. Servo motor.
		4. Any box or Bin.
182	**Arduino Calculator**	Arduino Uno
183	**Smartphone Control Self Balancing Robot**	Arduino Nano
184	**Arduino Wheather Station**	Arduino Uno
185	**patient health monitoring system**	Arduino Uno

186	**Simple RC Airplane for Simple Radio Control**	Arduino Uno
187	**Arduino based Wire harness wrapping machine**	Arduino based
DIY/ Models / Electronics / ICT/Arduino/ IoT/ Engineering KITs		
188	**How to Generate Electricity by Trash , Plastic , Non-biodegradable Waste**	· **As per experiment requirement**
189	**Running LED Tower**	· **USING IC** · **PCB Layout with required components**
190	**Garbage to electricity**	· **As per experiment requirement**
191	**Free Energy from Road**	· **As per experiment requirement**
192	**DIY-How to make free energy water pump**	· **As per experiment requirement**
193	**Gas from a Fridge Compressor**	· **As per experiment requirement**
194	**Electric Power Free Energy Generator With DC Motor at Home**	· **As per experiment requirement**
195	**Solar, wind and hydro power working model for science project**	· **As per experiment requirement**
196	**Drip irrigation working model for school**	· **Arduino Base**
197	**Traffic Light Circuit Using | 555 Timer IC | Led Projects.**	· **USING Timer IC 555** · **PCB Layout** · **Required Components**
198	**Amazing RGB Led chaser Using Timer IC555 and Counter IC 4017**	**USING IC 555 + IC 4017** **PCB Layout** · **Required Components**
199	**Water Fountain with Plastic Bottle**	**USING Plastic Bottles** **Required Components**

		Acrylic Sheet Base
200	**How to make rocket with plastic bottle**	**USING Plastic Bottles** **Required Components** **Acrylic Sheet Base**
201	**V8 Engine Model - DIY at Home**	**Wooden Sheet** **Required Components** · **Acrylic Sheet Base**
202	**How To Make Drone With Hand-made Radio Control. DIY Drone**	**Wooden Sheet** **Required Components** **Acrylic Sheet Base**
203	**How to Make a Water Pump from Motor at Home**	**Use a DC Motor** **Required Components** **PVC Pipe**
204	**Made Steam Engine Free Energy At Home**	· **As per requirement**
205	**How to Make 6 Cylinder Steam Engine at home**	· **As per requirement**
206	**8x8x8 LED CUBE WITH ARDUINO UNO**	**USING Arduino** · **PCB Layout with required components**
207	**Amazing DIY Marble Machine made com Soda Cans**	· **As per requirement**
208	**Automatic Hand Sanitizer Dispenser**	· **As per requirement**
209	**A Mini Hydroelectric Pond At Home**	· **As per requirement**
210	**16x16x16 LED CUBE at home with Arduino platform**	· **As per requirement**
211	**How To Make Wall Hanging Lamp**	· **As per requirement**
212	**how to make robot hand moving using muscle at your home**	· **As per requirement**
213	**Arduino Humanoid Robot with Robotic Palms**	· **Arduino Based**

214	**How to Make a Spider Robot**	· **Arduino Based**
215	**Electronic Mosquito Repellent Circuit Using 555 timer IC (DIY)**	· **Arduino Based**
216	**Holographic Flex LED**	· **Arduino Based**
217	**How to Make Emergency light from Scrap LED**	· **As per requirement**
218	**How to make transparent folding display at your home**	· **As per requirement**
219	**How to make touch screen keypad display at your home**	· **As per requirement**
220	**DIY 7 Segment Digital Clock**	· **Arduino Based**
221	**Automatic Solar Tracker ✷ (Without Arduino)**	· **Arduino Based**
222	**How to make Rain drop light | Simple 74hc595 ic Projects.**	· **Arduino Based**
223	**How to make a 8x48 LED Scrolling Display at home**	· **Arduino Based**
224	**How to Make Scrolling Text Display With Arduino | 8x8 Matrix Display**	· **Arduino Based**
225	**How to make Wireless Control at Your Fingertips: DIY IR Remote Switch**	· **As per requirement**
226	**How to Make # IR 4 Channel Remote Control System for your Room Appliances**	· **Arduino Based**

227	**How to Make Homework Writing Machine at Home | Science Project**	· **As per requirement**
228	**Turn Plastic Bottles Into A Simple And Creative 220V Water Turbine Permanent Generator**	· **As per requirement**
229	**Automatic Staircase lights IR sensor Based using Ic 555**	· **Arduino Based**
230	**Digital Clock DIY Kit project**	· **Arduino Based**
231	**How to Make Digital Universal Object Counter for Conveyor Belt Systems**	· **Arduino Based**
232	**Electric Lift**	· **Arduino Based**
233	**Arduino Project - DIY IR BIDIRECTIONAL PERSON COUNTER**	· **Arduino Based**
234	**IoT Based Bidirectional Visitor Counter using ESP8266 & MQTT**	· **Arduino Based**
235	**Logic Gates Learning Kit # Transistor**	· **Arduino Based**
236	**Logic Car Parking Counter**	· **Arduino Based**
237	**Intelligent Traffic Light Control System**	· **Arduino Based**
238	**Smart Floor Cleaner Robot**	· **Arduino Based**
239	**Train & Platform Accident Prevention**	· **Arduino Based**
240	**Carbon Purification for industries**	· **Arduino Based**

241	**TEEN MAKES A DIY CO2 CAPTURE DEVICE**	· **Arduino Based**
242	**Laser Home Security System**	· **Arduino Based**
243	**How to Make Arduino based Smart Vacuum Cleaner Robot**	· **Arduino Based**
244	**LPG Gas Leakage Detector Project**	· **Arduino Based**
245	**As a '0' Gravity Hanging Water**	· **Arduino Based**
246	**Advance Solar Tracking and Automatic Sprinkler Irrigation**	· **Arduino Based**
247	**How To Make Mobile Charger At Home**	· **Arduino Based**
248	**How To Make Wireless Power Transfer System Like In Smart phones**	· **Arduino Based**
249	**How To Make Power Bank Using PVC Pipe**	· **Arduino Based**
250	**Grass Cutter**	· **Arduino Based**
251	**Logic Gates using Transistors**	· **Arduino Based**
252	**How To Make Emergency Power Bank within 2 minutes**	· **Arduino Based**
253	**DIY LED lamp/Acrylic sign light Acrylic Design/ How to make light name board/ homemade Acrylic design**	**As per experiment requirement**
254	**How To Make decorative Lamp | Antique Lamp | DIY Decor Lights**	**As per experiment requirement**
255	**How to Make Homework Writing Machine at Home | Science Project**	**As per experiment requirement**

256	**Making a Simple Hydrogen Generator from Screw |at home**	**As per experiment requirement**
257	**Made Steam Engine Free Energy At Home**	Using Low Cost Materials
258	**Best Hydraulic bridge model || Engineering Science Project || Bascule Bridge|| Award Winning Models**	**As per experiment requirement**
259	**solar power irrigation system project model | science project |**	**As per experiment requirement**
260	**photosynthesis model 3d making step by step | science project**	**Using Acrylic Sheet** **Other experimental requirements with minimum cost**
261	**water cycle project 3d model | DIY**	**Using Acrylic Sheet**
262	**Bio-gas plant working model making | science project | source of energy**	**As per experiment requirement**
263	**TYPES OF MOTION | PHYSICS WORKING MODEL | SCIENCE WORKING MODEL**	**As per experiment requirement**
264	**Convection Project | Convection Working Model | Convection of heat experiment**	**As per experiment requirement**
265	**solar system working model for science exhibition with lights and stars -**	**As per experiment requirement**
MATH PROPOSED KITs		
266		

	BASIC PROPORTIONALITY THEOREM	Convert it onto acrylic sheet with some modification to avoid copy right.
267	**Linear Graph**	Convert it onto electronic board using LEDs etc along base on acrylic sheet with some modification to avoid copy right.
268	**Congruency between triangles**	Convert it onto acrylic sheet with some modification to avoid copy right.
269	**PERDPENDICULAR AND ANGLE BISECTORS**	Convert it onto acrylic sheet with some modification to avoid copy right.
270	**How to Make a Working Model of Pythagoras Theorem / Math working Model**	Convert it onto acrylic sheet with some modification to avoid copy right. Convert it onto wooden sheet with some modification to avoid copy right.
271	**CIRCLE THEOREMS**	Convert it onto acrylic sheet with some modification to avoid copy right.
272	**SETS AND FUNCTIONS**	· Convert it onto acrylic sheet with some modification to avoid copy right.
273	**TRIGONOMETRIC RATIOS**	· Convert it onto electronic board using LEDs etc with some modification to avoid copy right.
274	**TRIGONOMETRIC FUNCTIONS AND THEIR GRAPHS**	Convert it onto electronic board using LEDs etc along base on acrylic sheet with some modification to avoid copy right.
275	**FUNDAMENTALS OF TRIGONOMETRY**	· Convert it onto acrylic sheet with some modification to avoid copy right.
276	**CONICS II**	Convert it onto acrylic sheet with some modification to avoid copy right.
277	**Plane Analytical Geometry**	Convert it onto acrylic sheet with some modification to avoid copy right.
278	**Properties of circle working math model**	Convert it onto acrylic sheet with some modification to avoid copy right.
279	**Innovative Method of Learning the Concept of Circle and its Theorem**	Convert it onto acrylic sheet with some modification to avoid copy right.
280	**32 Soldiers Game**	Convert it onto acrylic sheet with some modification to avoid copy right.
281	**PRACTICAL GEOMETRY-TRIANGLES**	Convert it onto acrylic sheet with some modification to avoid copy right.

282	**RATIO AND PROPORTION**	Convert it onto acrylic sheet with some modification to avoid copy right.
283	**Factorization**	Convert it onto acrylic sheet with some modification to avoid copy right.
284	**Basic Statistics**	Convert it onto acrylic sheet with some modification to avoid copy right.
285	**DIRECT AND INVERSE VARIATIONS**	Convert it onto acrylic sheet with some modification to avoid copy right.
286	**Quadratic Equation**	Convert it onto acrylic sheet with some modification to avoid copy right.
287	**INTRODUCTION TO TRIGONOMETRY**	Convert it onto acrylic sheet with some modification to avoid copy right.
288	**QUADRATIC EQUATIONS**	Convert it onto acrylic sheet with some modification to avoid copy right.
289	**ANGLE IN A SEGMENT OF A CIRCLE**	Convert it onto acrylic sheet with some modification to avoid copy right.
290	**PROBABILITY**	Convert it onto acrylic sheet with some modification to avoid copy right.
291	**ARITHMETIC SEQUENCES AND SERIES**	Convert it onto acrylic sheet with some modification to avoid copy right.
292	**Complex Number**	Convert it onto acrylic sheet with some modification to avoid copy right.
293	**Mathematical induction and binomial theorem**	Convert it onto acrylic sheet with some modification to avoid copy right.
294	**Differentiation-I**	· Convert it onto acrylic sheet with some modification to avoid copy right.
295	**POLYNOMIALS**	· Convert it onto acrylic sheet with some modification to avoid copy right.
296	**DIFFERENTIATION**	· Convert it onto acrylic sheet with some modification to avoid copy right.
297	**Matrices and Determinants**	Convert it onto electronic board using LEDs using acrylic sheet etc with some modification to avoid copy right.
298	**MEASUREMENTS AND CALCULATIONS**	Convert it onto acrylic sheet with some modification to avoid copy right.
299	**Algebraic Expressions**	

		Convert it onto acrylic sheet with some modification to avoid copy right.
300	**GEOMETRIC SEQUENCES AND SERIES**	Convert it onto acrylic sheet with some modification to avoid copy right.
301	**Transformation of Graph**	Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right.
302	**The Sum should be "15" – Math Puzzle**	Convert it onto acrylic sheet with some modification to avoid copy right.
303	**Geometrical Figures**	Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right.
304	**Working model on algebraic identity**	· Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right.
305	**Sum Should be "26" Puzzle**	· Convert it onto electronic board using LEDs etc using acrylic sheet with some modification to avoid copy right.
306	**Distance Formula**	· Convert it onto acrylic sheet with some modification to avoid copy right.
307	**Proof of Area of Circle**	· Convert it onto acrylic sheet with some modification to avoid copy right.
308	**Diagonal Move @ Math Game Puzzle**	· Convert it onto acrylic sheet with some modification to avoid copy right.
309	**Cartesian co-ordinate math working model.**	· Convert it onto acrylic sheet with some modification to avoid copy right.
310	**Exterior angle property - theorem working model**	· Convert it onto acrylic sheet with some modification to avoid copy right.
311	**HCF and LCM**	· Convert it onto acrylic sheet with some modification to avoid copy right.
312	**Complementary angles working model**	· Convert it onto acrylic sheet with some modification to avoid copy right.
313	**Corresponding angle working model (traversal)**	· Convert it onto acrylic sheet with some modification to avoid copy right.
314	**Puzzle**	· Convert it onto acrylic sheet with some modification to avoid copy right.
315	**Parallel lines and a transversal math**	· Convert it onto acrylic sheet with some modification to avoid copy right.
316	**3D shapes using thread**	· Convert it onto acrylic sheet with some modification to avoid copy right.

317	**How to make Easy Puzzle from Cardboard**	· Convert it onto acrylic sheet with some modification to avoid copy right.	
318	**Types of triangle math's working model**	· Convert it onto acrylic sheet with some modification to avoid copy right.	
319	**Sum should be 34**	· Convert it onto acrylic sheet with some modification to avoid copy right.	
320	**Counting of Figure(No. of Triangle)**	· Convert it onto acrylic sheet with some modification to avoid copy right.	
321	**Venn Diagram Through Activity**	· Convert it onto acrylic sheet with some modification to avoid copy right.	
PHYSICS KITS			
322	**PRESSURE IN LIQUIDS / Pascal Law/** **HYDRAULIC BRIDGE**	Can be build up with light weight plywood, acrylic sheet and cardboard.	
323	**Archimedes principle**	Share with us if you have any better idea	
324	**Speed/ Velocity/ Acceleration**	Kit should be re-assemble able.	
325	**Wind Power**	All components should be de-attachable.	
326	**Physical Quantities Measurements**	Also give comparison among different systems of units	
327	**DIY Bi-Metallic Strip: Exploring Thermal Expansion**	Do it with multiple types of metallic strips Use Acrylic base	
328	**Force and Motion**	Suggestion is welcome	
329	**Thermometer**	Any advanced method is welcomed Use Acrylic base	
330	**Making a DIY telescope**	Any suggestion is welcomed	
331	**TOUCH SENSOR**	Any suggestion is welcomed	
332	**DIY Wave Machine**	It can be made more attractive with help of transparent sticks	
333		Make it using Acrylic	

	Electricity Generation	
334	**DIY capacitors**	Any suggestion to improve is welcomed
335	**WAVES**	Any suggestion to improve is welcomed
336	**PHYSICAL OPTICS**	Any suggestion to improve is welcomed
337	**Periodic Waves**	Any suggestion to improve is welcomed
338	**FLUID DYNAMICS**	Any suggestion to improve is welcomed
339	**Polarization**	Any suggestion to improve is welcomed
340	**Projectile motion**	Any suggestion to improve is welcomed
341	**Projectile motion**	Any suggestion to improve is welcomed
342	**Homemade projector**	Make it with minimum cost
343	**Simulating Radioactivity**	Suggest if you've better idea
344	**Simulate Ohm's Law**	Suggest if you've better idea
345	**OPERATING LOGIC GATES**	Suggest if you've better idea
346	**Changing Fields**	Any improved idea is welcomed
347	**RLC**	Any improved idea is welcomed
348	**Current Loop**	Any improved idea is welcomed
349	**Force Pair**	Any improved idea is welcomed

350	**Circuit Construction**	Any improved idea is welcomed
351	**Electronic Torque**	Use DIY motor using neodymium to better elaboration of concept
352	**Newton's laws of motion**	Any advanced suggestion is welcomed
353	**Solar sails**	Any advanced suggestion is welcomed
354	**Sound Science**	Any advanced suggestion is welcomed
355	**Momentum**	Any advanced suggestion is welcomed
356	**Forces and Motion**	Any advanced suggestion is welcomed
357	**Electrostatic Charge**	Any advanced suggestion is welcomed
358	**Ohm's Law**	Any advanced suggestion is welcomed
359	**Seismograph**	Any advanced suggestion is welcomed
360	**Gravity**	Any advanced suggestion is welcomed
361	**Steam Engine**	Any advanced suggestion is welcomed
362	**Hologram**	Any advanced suggestion is welcomed
363	**Solar Eclipse**	Any advanced suggestion is welcomed
364	**Solar System**	Any advanced suggestion is welcomed
365	**LiFi**	Any advanced suggestion is welcomed
366	**Ruby Laser**	Any advanced suggestion is welcomed
367	**Mutual Induction**	Any advanced suggestion is welcomed
368	**Full Wave Rectifier**	Any advanced suggestion is welcomed
35	**Auto Hand Sanitizer**	Any advanced suggestion is welcomed
370	**LPG Detector**	Any advanced suggestion is welcomed

371	**Thermal to Electric Energy**	Any advanced suggestion is welcomed	
372	**Non Stop Water Fountain**	Any advanced suggestion is welcomed	
373	**Vacuum Cleaner**	Any advanced suggestion is welcomed	
374	**Pulley System**	Any advanced suggestion is welcomed	
375	**Servo Motor**	Any advanced suggestion is welcomed	
376	**Digital Microscope**	Any advanced suggestion is welcomed	
377	**Laser Fencing**	Any advanced suggestion is welcomed	
378	**DIY Auto Fire Gun**	Any advanced suggestion is welcomed	
36	**Remote Control**	Any advanced suggestion is welcomed	
380	**Fire Detector**	Any advanced suggestion is welcomed	
381	**Smart Agri Monitoring**	Any advanced suggestion is welcomed	
382	**Emergency System**	Any advanced suggestion is welcomed	
383	**Magnetic Slime**	Any advanced suggestion is welcomed	
384	**Electromagnet**	Any advanced suggestion is welcomed	
385	**Gauss Magnetic Accelerator**	Any advanced suggestion is welcomed	
386	**Smart Fertilizing**	Any advanced suggestion is welcomed	
387	**Smart Speed Breaker**	Any advanced suggestion is welcomed	
388	**Smart Glasses for blinds**	Any advanced suggestion is welcomed	
37	**Tornados using magnets**	Any advanced suggestion is welcomed	
390	**Lenz's Law**	Any advanced suggestion is welcomed	
391	**Neodymium Magic**	Any advanced suggestion is welcomed	
392	**Title**	PHARMACOLOGY	
	Material	o Potassium iodide (KI) 1.5 parts	
		o Iodine 2.5 parts	
		o Ethanol 100 parts	
		o Water 2.5 parts	
		o Postal mortar	
		o weighing scale	
		o Beaker	
		o Flask	
		o Graduate cylinder	
393	**Title**	RAIN RESPONSIVE UMBRELLA	
	Material	o Distilled water	
		o Acid Rain Solution: (adding 4 ml 1M H 2 SO 4 to 2 liters distilled water	
		o pH meter or pH paper	

		o pH probe material (Universal Indicator Solution, or extract of cabbage/beet*) o White powder paint o Paint brush o Beakers or clear plastic cups (200-ml size, two per student or group o 25-ml graduated cylinders (one per student or group of students) o 10-ml pipette (one per student or group of students) o Safety goggles o Gloves o Commercially available umbrella
394	**Title**	DETERMINING RATE OF A CHEMICAL REACTION
	Material	o 5 Alka-Seltzer tablets o Ice + water (250 mL combined total) o 1.5 L room temperature water o 1-2 x 500 mL beakers o Kettle to heat 250 mL of water o Thermometer o Timer o Safety goggles o Spoon / spatula o Mortar & pestle
395	**Title**	HOW DOES COLOR AFFECT HEATING BY ABSORPTION OF LIGHT?
	Material	o 6–8 identical glass jars with lids o 6–8 sheets of colored construction paper (different colors) o Scissors o Tape o Water o Thermometer o Modeling clay o Heat lamp, o Timer or clock o Drill and bit for making holes in jar lids
396	**Title**	GAS DETECTING SENSOR USING NODEMCU
	Material	o MQ-135 o NODEMCU

		o Connecting Wires
		o Buzzer, Breadboard
		o USB Cable
		o uPycraft (or) Arduino IDE.
397	**Title**	ATMOSPHERIC DISTILLATION UNIT
	Material	o Distillation flask
		o Condenser
		o Cooling bath
		o Metal shield
		o Heat source
		o Thermometer
		o Automated unit
398	**Title**	FLOURCENT INDICATOR
399	**Material**	o Silica Gel
		o Fluorescent Indicator Dyed Gel
		o Isoamyl Alcohol
		o (3- methyl-1-butanol) 99%.
		o Pressuring Gas
		o Acetone
		o Buffer Solution
		o Isopropyl Alcohol
		o Adsorption Column
		o Zone Measuring Device
		o Ultraviolet Light Source
		o Electric Vibrator
		o Hypodermic Syringe
		o Regulator
400	**Title**	ANILINE POINT AND MIXED ANILINE POINT OF PETROLEUM
	Material	o Aniline Point Apparatus
		o Aniline and Sample
		o Pipette or syringe
		o Balance (if sample cannot be pipetted)
		o Safety goggles
		o Safety gloves
401	**Title**	CAT ION EXCHANGE & AN ION EXCHANGE RE-GENERATION.
	Material	o LS-26131 water demineralization unit w/ data acquisition unit.
402	**Title**	

		STUDY THE PH NEUTRALIZATION FROM THE EARLIER DEMINERALIZATION PROCESS
	Material	o LS-26131 water demineralization unit w/ data acquisition unit.
403	**Title**	PRESSURE LOSS ΔP FOR A RANGE OF PIPE FITTINGS,
		INCLUDING BENDS AND CONTRACTION. (34MM DIA, 24 MM DIA, 16MM DIA PIPES)
	Material	o HM 230 Flow of compressible fluids
404	**Title**	THE BOILING RANGE PETROLEUM PRODUCT BY USING ASTM D-86.
	Material	o Distillation flask
		o Condenser
		o Cooling bath
		o Metal shield
		o Heat source
		o Thermometer
		o Automated unit
405	**Title**	THE TYPES OF HYDROCARBONS IN LIQUID PETROLEUM PRODUCTS BY FLUORESCENT INDICATOR ADSORPTION (FIA).
	Material	o Silica Gel
		o Fluorescent Indicator Dyed Gel
		o Isoamyl Alcohol
		o (3- methyl-1-butanol) 99%.
		o Pressuring Gas
		o Acetone
		o Buffer Solution
		o Isopropyl Alcohol
		o Adsorption Column
		o Zone Measuring Device
		o Ultraviolet Light Source
		o Electric Vibrator
		o Hypodermic Syringe
		o Regulator
406	**Title**	ANILINE POINT OF GIVEN SAMPLE AND CALCULATE DIESEL INDEX FROM IT.
	Material	o Aniline Point Apparatus
		o Aniline and Sample
		o Pipette or syringe

		o Balance (if sample cannot be pipetted)
		o Safety goggles
		o Safety gloves
407	**Title**	CREATE A VISUAL DOPPLER
	Material	o Two pieces of construction paper in different colors
		o Ruler
		o Scissors
		o Tape
		o Small toy car
		o Some blank paper and a pencil, or a camera
408	**Title**	CREATE A POTATO BATTERY
	Material	o Potato (Use a fresh potato as the experiment depends upon the juices inside the potato)
		o Galvanized nail (are standard nails that have a zinc coating. They can be purchased at any hardware or home improvement store)
		o copper coin
		o two alligator clips
		o Voltmeter
409	**Title**	DESIGN A SALTWATER CIRCUIT
	Material	o Cup or beaker
		o Masking tape
		o Water
		o Insulated copper wire
		o Salt
		o 9-volt battery
		o Aluminum foil
		o 3.7-volt light bulb in socket (or buzzer)
		o Tongue depressors (or popsicle sticks)
410	**Title**	DESIGN FORMAT FOR GRAVITATION
	Material	o Small Dowel or Stick
		o String
		o Paperclips
		o Scissors
		o Tape
		o Magnets

		o Blocks or Books
411	**Title**	THE STRENGTH OF AN ELECTROMAGNET
	Material	o 6 volt (V) lantern battery
		o Enamel-coated magnet wire, 30 AWG (75 feet)
		o Alligator clip leads (2)
		o Iron bolts; about 2 1/2 inches long and 1/2 inch in diameter (4)
		o 220 grit sandpaper (about 1 square inch)
		o Masking tape (1 roll)
		o Box of steel paper clips (about 100 count)
		o Scissors or wire cutters
		o Optional: Shallow plastic container, slightly longer and wider than the iron bolts
		o Recommended: A paper towel holder, or materials to make a simple spool holder for the magnet wire, like a pencil and a small cardboard box
412	**Title**	SCAVENGER HUNT TO FIND PI
	Material	o 10 circular objects
		o Measuring tape
		o Calculator
		o Notebook
413	**Title**	WATER BEADS │SUPERABSORBENT POLYMER │HYDROGELS
	Material	o Water beads
		o Two 1000 ml beakers
		o Water
		o Saltwater
		o Food color
		o Stainless steel spatula
		o Ruler
		o Cookie sheet with rim or plate
414	**Title**	DEALING WITH DIABETES: THE ROAD TO DEVELOPING AN ARTIFICIAL PANCREAS
	Material	o Solderless breadboard;
		o 330 kΩ resistor;
		o 100 kΩ resistor;
		o Jumper wire kit;

		o N-channel MOSFET;
		o 1 MΩ potentiometer;
		o 100 kΩ potentiometer;
		o 10 kΩ potentiometer;
		o Alligator clip test leads (4);
		o Battery holder for 8 AA batteries with wires;
		o AA batteries (8);
		o 24 AWG bare copper wire;
		o Bromothymol Blue Indicator solution 0.04% (w/v);
		o 12 V peristaltic liquid pump. The pump needs metal leads to connect alligator clips to it.
		o Although the pump comes with some tubing (inner diameter (ID) 2 mm and outer diameter (OD) 4 mm), extra tubing that works with the pump is also needed. You will need at least 40 cm of silicone tubing with an inner diameter (ID) of 4 mm so you can fit it over the pump tubing.
		o Digital scale with 0.1 g increments. A digital scale that would be suitable is the Fast Weigh MS-500-BLK Digital Pocket Scale;
		o Graduated cylinder, 100 mL or 250 mL;
		o Alternatively, a metric measuring cup could be used.
		o If you are using a graduated cylinder, you will also want to have a funnel that fits with the top of the graduated cylinder.
		o Optional: pH test strips;
		o Piece of Styrofoam® (at least 4 cm × 7 cm); this could be part of a Styrofoam take-out container, or a small Styrofoam block.
		o Bendable plastic drinking straw
		o Teaspoon
		o Scissors; in addition to cutting Styrofoam and a plastic straw, you will also need to cut some copper wire. Because of this, you will need a pair of scissors that you do not mind denting, or you could use a pair of wire cutters.

		o Ruler, metric
		o Baking soda (at least 90 g)
		o Measuring cup or other small container to use for weighing baking soda on the scale
		o Distilled white vinegar (at least 1 L)
		o Distilled water (at least 1.2 L); available at your local grocery store.
		o Mixing bowls (at least 3). Two will need to be able to hold at least 200 mL, or 0.25 quarts, each.
		o Masking tape and a permanent marker for labeling bowls. Alternatively, small sticky notes and a pen or pencil could be used.
		o Permanent marker
		o Optional: Tape
		o Lab notebook
415	**Title**	HEAT TRANSFER CONCEPTS
	Material	o Rods (Metallic and wood)
		o Arduino UNO x 1
		o 16 x 2 LCD Display x 2
		o LM35 temperature sensor
		o Connecting Wires
416	**Title**	GRAVITY
	Material	o Two blocks of known masses
		o Pulley with stand
		o Thread to place masses on pulley
		o Arduino UNO x 1
		o 16 x 2 LCD Display
		o Infrared (IR) sensor
		o Connecting Wires
417	**Title**	DYNAMICS
	Material	o Arduino UNO
		o IR Sensors x 2
		o 10k potentiometer x 2
		o 16X2 LCD Display Module
		o Connecting terminals
		o Power Supply
418	**Title**	WORK AND ENERGY
	Material	o Two blocks of known masses
		o Pulley with stand

		o Thread to place masses on pulley
		o Arduino UNO x 1
		o 16 x 2 LCD Display
		o Infrared (IR) sensor
		o Connecting Wires
419	**Title**	PROPERTIES OF MATTER
	Material	o Irregular shaped object
		o Arduino UNO x 1
		o 16 x 2 LCD Display
		o Load sensor
		o HX711 Amplifier Module
		o Connecting Wires
420	**Title**	PHOTOELECTRIC EFFECT
	Material	o Ne gas filled tube with two electrodes and quartz windows
		o Laser diode with low power of different colors
		o Digital voltmeter
		o Power supply
		o High-value resistors
421	**Title**	DESIGNING AN INTEGRATED SYSTEM FOR WATER QUALITY MONITORING (WQM)
	Material	o Target boards
		o Arduino Mega
		o data transmission module ESP8266 Wi-Fi module (NodeMCU)
		o pH sensor
		o Turbidity sensor
		o Ultrasonic sensor
		o DHT-11 sensor
		o ThingSpeak server
422	**Title**	ROBOTIC OPTIMIZATION OF AUTONOMOUS BATTERY ELECTROLYTES
	Material	o High-precision pumping units,
		o Custom-machined PTFE fixtures,
		o Standard electrochemical tooling in the Consort probe
423	**Title**	AUTOMATED TITRATION EXPERIMENT
	Material	o pH probe

		o Raspberry Pisingle, peristaltic pumps single, peristaltic pumps
		o peristaltic pumps
		o PH meter
424	**Title**	BOYLE'S LAW AND DETERMINATION OF
		UNIVERSAL GAS CONSTANT (R)
	Material	o Boyle's Law apparatus
		o four beakers (2 L)
		o warm-water bath
		o ice
		o barometer
		o digital thermometer
		o air compressor
		o tire gauge
		o 250 mL beaker
		o gas collection tube
		o 25 mL graduated cylinder
		o Mg ribbon
		o Cu wire
		o 3 M HCl
425	**Title**	CHEMICAL CAR: CONVERSION OF CHEMICAL REACTION INTO KINETIC ENERGY
	Material	o Water bottle (square one is best)
		o 1 straw
		o 1 bamboo skewer
		o Scissors
		o 4 plastic caps
		o 4 pony beads
		o Glue gun or other glue
		o Duct tape
		o Vinegar
		o Baking soda
		o Tissue paper
426	**Title**	MAKING HANDMADE PAPER ON LAB-SCALE
		FROM DISCARDED PAPER
	Material	o Waste Paper
		o Straw
		o Shredder
		o Local sieves
		o Waste buckets
		o 2- 1000 ml beakers (heat-resistant)
		o Stirrer
		o Hot plate

		o Sodium Hydroxide
		o Calcium Carbonate
		o Starch
		o Shallow large size rectangular containers
		o Sponge
		o Blotting paper (blotters: paper, cloth, etc.)
		o Mold and Deckles
		o Lab-oven
		o Hand-press
427	**Title**	DO PLANTS GROW IN GRAY WATER?
	Material	o tap water (about 1 gallon [g]) (3.8 liters [l]) per group
		o 2 gray water (about 1 g [3.8 l] per group)
		o 2 20 seeds (of any type)
		o 20 small pots
		o 2 potting soil
		o 2 ruler
		o 2 triple-beam balance or electronic scale
		o 2 science notebook
428	**Title**	IMPACT OF NITROGEN LEVELS ON GROWTH OF DUCKWEED
	Material	o 80 fronds of duckweed
		o Petri dishes (four)
		o A nitrogen solution B of 25 milliliters (ml)
		o Nitrogen solution C (25 mL)
		o Nitrogen solution D (25 mL)
		o 25 ml of tap water
		o Inoculating loop
		o Magnifying glass or stereomicroscope
		o Multicolored pencils
		o Permanent pen or marker
		o Graph paper
		o Scientific notebook
		o Grow light or accessibility to a sunlit window
429	**Title**	
	Material	o Metallic Impurity Detection by Making Use of Archimedes' Principle.

430	**Title**	Synthesis of Gold Nanoparticles for Diagnostics and Therapeutics
	Material	Tetrachloroaurate ($HAuCl_4.3H_2O$), trisodium citrate ($Na_3C_6H_5O_7.2H_2O$), Round, bottom flask, graduated cylinder, volumetric flask, centrifuge tubes, Micro pipette, Tips, Falcon tubes, Condenser, Thermometer, Magnetic stirrer, Magnetic bar, and Centrifuge machine.
431	**Title**	Synthesis of magnetic nanoparticles for biological and diagnostic applications
	Material's	iron chloride (FeCl3.6H2O), Iron sulphate (FeSO4), Ammonium hydroxide, beakers, Micro pipette, graduated cylinder, centrifuge tubes, Thermometer, Micro pipette, Tips, Magnetic stirrer, Magnetic bar, Centrifuge machine, and Vacuum oven.
432	**Title**	Demonstration of Natural Substances as Weak Acids
	Material's	Syringe
		Knife
		Test tubes
		Test tube racks
		Beaker
		Citrus and non- citrus fruits
		pH paper
433	**Title**	Identification of Plant Compounds by Thin Layer Chromatography
	Material's	One TLC plate
		2. Pencil
		10 μL capillary tubes (four tubes, in a Petri dish)
		Solutions like plant extract
		TLC chamber (jar) and lid, containing mobile phase
		Ruler
		Latex gloves
434	**Title**	Acid-Base Titration
	Material's	• Burette
		• Pipette
		• Conical flask

		• Burette stand
		• Funnel
		• White glazed tile
		• Measuring flask (100 mL)
		• Oxalic acid
		• Sodium hydroxide solution
		• Indicator (iv) Indicators like Phenolpthalein, Methyl orange etc. depending upon the acid/base reaction.
435	**Title**	Work and Energy: Heat Absorbing Capacity of Dark and Light-Colored Bodies
	Material's	Black colored pot, White colored pot, Water, Thermocouple, Data Logger, Computer
436	**Title**	Properties of Matter: 2.1 Young's Modulus
	Material's	Wires of different known materials, Micrometer, Extensometer, Weights of 0.5 kg, Stand, Hanger.
437	**Title**	How to access, visualize and explore the genomic and proteomic data
	Material's	o A Computer / Laptop or Tablet
		o An Internet Connection
		o Access to few freely Online Databases and Tools
438	**Title**	Measuring energy content of various types of food
	Material's	• Materials to construct calorimeter include:
		1. A small lid-less tin can (4 by 4.5 inches)
		2. A Large lid- and bottom-less tin can (6 by 7 inches)
		3. A Wooden dowel (12 by 1/4 inches)
		4. An Aluminum foil pan (8 inch diameter)
		5. A bottle cork
		6. Minimum four Sewing needles (sharps size 10)
		7. Two 14-gauge craft wire (6 inch long)
		8. Graduated cylinder (measuring 250 mL)

		9. An Immersion thermometer
		10. Safety glasses
		• A Lighter or long matches
		• Distilled water
		• Digital pocket scale (500g x 0.1 g increments)
		• Various food materials (dry food materials with high fat content are better) such as:
		1. Peanuts, cashew nuts or other nuts
		2. Popcorns
		• Paper or cloth towels
		• A calculator
439	**Title**	Panic Alarm System
	Material's	555 IC
		• Resistor – 1KΩ
		• Resistor – 22KΩ
		• Resistor – 100KΩ
		• Capacitor – 10μF
		• 9V Battery
		• Push Button
		• Mini Buzzer
		• Breadboard
		• Connecting Wires
440	**Title**	Climate crisis
	Material's	Experimental setup
	Duration	17–18 days
441	**Title**	Biodiversity - Endangered species
	Material's	Forceps, glass stir rod, micropipette, motor and pestle, rubber stopper, watch glass, wire gauze
442	**Title**	Prevent Hypothermia
	Material's	Foam, rubber bands, Styrofoam, cardboard, bubble wrap, wood, glue, duct tape, tin foil, cotton fabric, wool fabric, racing/emergency blankets, newspaper, perlite, clay, ice.
443	**Title**	Water Contamination

	Material's	Silt Density Index (SDI) Testers, Pocket TDS Testers, Pocket pH Meters, Digital Thermometers for Testing Water Temperature, Pocket Combo-Meters Multi-Measurement Water Quality Testers, Pocket ORP Meters, Myron L Digital Water Quality Test Instruments, Myron L Analog Test Meters.
444	**Title**	Automatic Staircase Lights using PIR Sensor and Relay
	Materials	o PIR Sensor
		o Relay Module (Relay Board)
		o LED
		o 1000Ω Resistor
		o BC547 IC
		o Connecting Wires
		o Breadboard
		o Power Supply
445	**Title**	Cell Phone Detector
	Materials	o CA3130 Op-Amp
		o Resistors – 2.2MΩ x 2, 100KΩ, 1KΩ
		o Capacitors – 22pF x 2, 0.22nF, 47pF, 100µF
		o BC548 NPN Transistor
		o LED
		o Antenna
		o Connecting Wires
		o Breadboard
		o 9V Battery
446	**Title**	Digital thermometer circuit.
	Materials	o The circuit can be assembled on a vero board or on a PCB.
		o Use 5V DC for powering the circuit.
		o POT R2 can be used for Zero adjustment.
		o IC2 and IC1 must be mounted on holders.
		o Capacitor C1 must be placed as close as possible to the power and ground pins of the CA3162.

		o Capacitor C2 could be a polyester type while C1 can be a ceramic capacitor.
		o The DC power supply used for powering this circuit must be well regulated and free from any sort of noise.
		o The type numbers of the driver transistor are not critical and you can make suitable substitutions.
		o Hold function can be enabled by providing the pin 6 with 1.2V using a voltage divider network.
447	**Title**	Effectiveness of wearing face mask to control the transmission of infectious diseases
	Materials	o Bacterial growth medium (Blood agar)
		o Petri plates
		o Autoclave
		o Incubator (temperature maintained at 37°C) for culture plates
		o Face masks
		o Bunsen burner and laminar flow hood
		o Two persons as participants of the study
448	**Title**	Urease based model colorimetric enzyme inhibition assay to solve an environmental and health problem
	Materials	**<u>Chemicals:</u>**(How to make these stocks is given in a separate sheet, instructions to the lab)
		1. Reagent A: Phosphate buffer (pH 7.4)
		2. Reagent B: Jack bean Urease
		3. Reagent C: Thiourea/inhibitors of choice
		4. Reagent D: Urea
		5. Reagent E: Phenol reagent
		6. Reagent F: Alkali reagent (pH greater than 7)
		<u>Instruments:</u>
		1. Weighing balance
		2. Centrifuge
		3. Incubator

		4. Micro centrifuge	
		5. Spectrophotometer	
		Glass/Plastic ware:	
		1. Falcons (15 mL) x 3	
		2. Glass Test tubes x 5 + racks	
		3. Eppendorf x 3 + rack (2 mL)	
		4. Micropipettes + tips (200 µL,1000 µL)	
		5. Spectrophotometer glass/plastic cuvettes	
		o	
449	**Title**	Identifying Potential Inhibitor for HIV Protease using Computational Drug Discovery Approach	
	Materials	o Computer/Laptop (for beginners, windows OS will work). Minimum requirement:	
		o core i5, 500 GB HDD, 6 GB RAM.	
450	**Title**	What happens with the e-waste we produce?	
	Materials	Computer, paper, and printer to create surveys, people to distribute the survey to (minimum of 10 households; see the Experimental Procedure for details) and lab notebook	
Experiments of Biology			
451	**Osmosis**	1 L Distilled water	Instead of paper sheet for writing measurements, please provide A4 size erasable white board in kit.
		1 Measuring cylinder 1000ml	Boiling tubes, measuring Cylinders, Beakers etc. shall make of plastic and no glassware shall use to ensure safety of students.
		Several potatoes	
		1 Apple corer	
		Sucrose/Glucose 500g	
		1 Scale with gram measurements,	
		6 Boiling tubes/beakers 100ml	
		3 Spoons, Ruler,	

		1 Erasable white board, 1 Pen/Pencil, 1 Timer	
		1 box Paper towels, 6 Graph paper, 3 Wax pencil	
		1 Potato peelers	
452	**Rate of photosynthesis**	1 Aquatic plant	Made this project kit using the photometer.
		1 Light source (lamp)	Boiling tubes, measuring Cylinders, Beakers etc. shall make of plastic and no glassware shall use to ensure safety of students
		NaHCO3 100g	
		1 Water bath	
		3 Syringes	
		1 Meter ruler	
		1 Medical Thermometer	
		1 Beaker	
		6 Boiling tube	
		6 Stopper	
		Pipe (as show in video), rubber tube	
		Stopwatch	
		1L Distilled water	
		1 Photometer	
453	**Scientific Method**	All the items mentioned in the given video links are required to perform these activities.	The kit shall contain items from all the 4 links in separate Ziploc bags.
			Boiling tubes, measuring Cylinders, Beakers etc. shall make of plastic and no glassware shall use to ensure safety of students.

454	**Transport in Plants**	Photometer	The kit must contain a photometer along with all other items mentioned in materials.
		Lamp	Boiling tubes, measuring Cylinders, Beakers etc. shall make of plastic and no glassware shall use to ensure safety of students.
		Ruler,	
		Plant shoot	
		Scalpel,	
		Beaker 100 ml	
		Capillary tube	
		Stopwatch	
		Vaseline	
455	**Mitosis and meiosis**	Make a kit containing multiple shaped chromatids which can be joined to form a chromosome, different cells, attachable and detachable nuclear membranes, thread like structure for spindle formation etc. Make a kit which a student can use to describe and learn all the stages of mitosis and meiosis. The components of kit shall be attachable and detachable. The material used for making kit shall be good quality plastic and acrylic plates for representing cell and different structures.	This video link is just for reference. Mitosis & meiosis models are not required but all the components which a student can assemble to describe all stages of mitosis and meiosis.
			Make a kit containing at least following items:

			Multiple shaped chromatids which can be joined to form a chromosome, different cells made of acrylic plates, attachable and detachable nuclear membranes made of plastic, thread like structure for spindle formation etc. Make a kit which a student can use to describe and learn all the stages of mitosis and meiosis. The components of kit shall be attachable and detachable. The material used for making components of kit shall be durable i.e. plastic
456	**Photosynthesis**	Electricity generating microbial fuel cells based working kits.	Provide kits on both links given as reference based on Microbial fuel cells.
457	**Deforestation**	Materials used: Acrylic sheet for making platform of robot. Arduino based project.	Make the simplest seed sowing Robot which incur the least cost.
458	**Nutrition in man**	Acrylic sheet. Metallic ruler for percentage representation.	Instead of using cardboard, please use acrylic sheet for

		Plastic made shapes of different food items	making wheel. The lines for making portion for different food compartments shall be adjustable by moving so that students can adjust the percentage of different food components as per their choice and understanding. Provide pictures/shapes of food items in durable form i.e. plastic to paste on the diet wheel.
459	**Microscopy and structure of plant and animal cell**	Forceps	Please provide microscope, slides, dyes and other related items for visualizing the plant and animal cell. The kit shall also contain well prepared specimens of plant and animal cells so that students can compare their own prepared slides with the specimens.
		Scalpel	
		Coverslip	
		Slides	
		Safety goggles	
		lab coat	
		microscope	
		toothpicks	
		iodine stain	
		onion	
		Marker pen	
		Sterile cotton swab	
		Methylene Blue	
		Paper towels	
		The kit shall also contain well prepared specimens of plant and animal cell so that students can compare their own prepared slides with the specimens.	
460	**Transportation of food and water**	Plant shoot with and without leaves	Use food color as dye.
		3 Beakers 100ml	Please provide well prepared slides of xylem vessel as reference for students in the kit.

		3 Graduated cylinder 100ml	Boiling tubes, measuring Cylinders, Beakers etc. shall make of plastic and no glassware shall use to ensure safety of students.
		2L Water	
		6 Teaspoons	
		Food coloring (red, blue, and green), Timer	
		Sharp knife, Microscope	
		50 Microscope slide,	
		50 Cover slips	
		Pipette or water dropper	
		Tweezers	
461	**BREATHING MOVEMENT**	2-liter plastic bottle with cap	Also provide one working model in the kit in prepared form for reference.
		2 plastic drinking straws	
		Two 9-inch balloons	
		1 larger balloon/stretchable plastic sheet	
		2 rubber bands	
462	**WORKING OF BICEPS AND TRICEPS TO MOVE THE ARM**	6 rubber bands (a few different sizes)	Provide durable and good quality material that can last for long time in the kit.
		thin rope, 2.5 m	
		string, .5 m	
		scissors	
		paper, 1 sheet	
		springs	
		one 20-Newton spring scale	
		ruler 12-inch	
463	**WRISTWATCH DESIGN FOR VISUALLY IMPAIRED**	Arduino based smart glasses working project. Provide one assembled kit along with unassembled kits.	Please make Arduino based smart glasses for blind.
464	**Germination**	12 Petri dishes	Made a kit by which student can investigate conditions needed for seed germination as given in the video links 1 & 2
		Viable Seeds (6 different types)	
		1 roll of Cotton wool/	
		1L Sterile water	

		0.5 L Oil	Also make a kit on video 3. Build an Arduino Clinostat to Simulate Microgravity for Plants
		Arduino Clinostat based Microgravity project for plants.	
465	**DNA extraction**	1-3 strawberries.	These videos are for reference.
		10 ml DNA Extraction Buffer	
		About 20 ml ice cold 91% or 100% isopropyl alcohol	
		Large Ziploc bags	
		1 test tube	
		1 beaker 100 ml	
		1 funnel lined with a moistened paper towel/filter paper	
		1 coffee stirrer or transfer pipet	
		DNA Extraction Buffer	
		100 ml shampoo	
		15 grams sodium chloride	
		Water up to 1 liter	
466	**YEAST RESPIRATION**	1 large test tubes, about 15 cm long and 20 mm in diameter	Make a kit which students can use to quantify the amount of respiration occurring in yeast-molasses cultures. Provide plastic made test tubes, beakers, flask cylinders instead of glass-made.
		1 small test tube, about 10 cm long and 8 mm in diameter	
		squares cut from plastic wrap, about 8 cm on a side	
		12 rubber or cork stoppers, size 2	
		1 test tube racks to hold large test tubes	
		12 dropping pipettes	
		five 300-ml beakers	
		1-liter flask	
		1-liter graduated cylinder	
		1 lab thermometer	
		1 kg (package) dry baking yeast	
		12-ounce bottle molasses (unsulphured)	
		Graph paper	
467	**GASEOUS EXCHANGE DURING VENTILATION OF LUNGS**	2 boiling tubes/conical flasks	Provide all the material required to perform this experiment in this kit as shown in the video. Provide
		2 glass and 2 plastic delivery tubes	
		rubber bungs each with two holes	
		1 stop watch	
		short lengths of rubber tubing	

		antiseptic solution 500 ml	plastic made test tubes, beakers, flask cylinders instead of glass-made.
		hydrogen carbonate indicator 500ml	
468	**ZOMBIE GOT MY LEG**	1 package of cardboard interlocking packing pieces, such as the 1 cu ft. package	The videos contain different ideas from simple to advance for making prosthetic leg.
		1 moving glass divider kit (cardboard interlocking divider pieces),	
		~4 pieces of PVC pipe, 6-in and 4-in lengths	
		~20 wooden dowel rods; ½ in diameter and ~16 in long	
		~7 wooden flat sticks; ¼ in thick x 2 to 4 in wide and ~16 in long	
		~10 ft. vinyl tubing; ½ in x 3/8 in size	
469	**INVESTIGATE ALIEN GENETICS**	Printout of Physical Traits Images	Provide all the material required to perform this experiment in this kit as shown in the video.
		Printout of Sibling Images	
		Printout of the Alien Genotype and Phenotype Table	
		Construction paper, different colors (orange and green must be included)	
		Scissors	
		Tape	
		Glue	
		Markers, crayons, and coloring pens	
		Pencils	
		Two coins	
470	**ENGINEERING AN IMPROVED MEDICAL DELIVERY SYSTEM**	Strings,	Provide all the items mentioned in the link in one kit.
		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	
471	**STARCH DIGESTION BY SALIVARY ENZYME**	Safety goggles	
		Starch solution in a beaker (can prepare your own with cornstarch)	
		Test tubes - 4	
		Test tube rack	
		Benedict's solution	
		400 ml beaker	
		Iodine solution	
		Bunsen burner	
		Tripod stand and gauze	
		Syringe/graduated dropper	
		Amylase solution	
472	**TECHNIQUES USED IN CELL BIOLOGY**	Microscope with light options: black light, base white light, or both	Provide different chemicals in the kit which students can use or mix them to form a stain for staining their slides.
		4 slides	
		4 slide cover slips	
		4 onion membrane samples	
		scalpel	
		tweezers	
		1 Onion Cell Lab Sheet	
		1 graph paper	
		2 sets of personal protection equipment	
		2 pairs of rubber gloves	
		6 - 50 mL beakers	
		6 pipettes	
		2 fl. oz. iodine solution (laboratory grade)	
		1 tbsp. turmeric	
		20 mL isopropyl alcohol	
		2 fl. oz. tonic water	
		2 fl. oz. energy drink	
		2 fl. oz. soft drink	
		box of food coloring samples (0.3 fl. oz.; box of 4 colors)	
		10 fluorescent markers (all same color)	
		2 pairs of rubber gloves for the teacher	
		pliers (for teacher to remove fluorescent marker ink pad)	
		kitchen cutting knife (optional; for teacher only)	
		tablespoon	
		box of tissues	
		3-5 black lights	

473	**FACTORS AFFECTING THE RATE OF ENZYMATIC REACTION**	Test tubes, at least 1.5 cm ID and 10 cm long (6)	Design this kit in a way that students can investigate effects of substrate concentration, enzyme concentration, temperature and Ph. on enzyme activity.
		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	
474	**PROTEINS: MAKING AND TESTING MODEL PROTEINS**	masking tape, 1 roll	Design a kit which students can use to demonstrate structural and functional proteins as well as 4 levels of protein structures. i.e. Primary, secondary, tertiary and quaternary. These videos are for reference.
		string, 2 feet (~61 cm)	
		2 paper plates, any size	
		construction or brown wrapping paper	
		1 paper lunch bag	
		saran/plastic wrap, 2 feet (~61 cm)	
		10 Popsicle/craft sticks or wooden cocktail sticks	
		10 wooden toothpicks, either flat or round style	
		4 mini marshmallows	
		3 scissors,	
		1 bag mini marshmallows	
		a three-stage testing area composed of an oxygen (mini marshmallow) dispenser, dispensing station (lungs) and dumping station (cells), such as four cardboard boxes: a smaller one with holes (to hold the marshmallows and shake them out), a bigger “lungs” box underneath it (to catch stray marshmallows), a smaller box inside the big box to serve as an elevated stand, and a fourth “cells” box	
475		6 different types of plant seeds	

	GROWTH RESPONCES IN PLANTS	A growing plant	
		Plastic zip-lock bags (3)	
		Permanent pen (1) or a pen and tape	
		6 Paper towels	
		Radish seeds (15)	
		Strong tape	
		Large cardboard box (1)	
476	**DIGESTIVE SYSTEM OF A MAN**	scissors	The last two videos are for giving concept that what type of food is used in space.
		white glue	
		tape (cellophane, masking, etc.)	
		pens and pencils	
		paper sheets 10	
		rulers	
		assorted building materials such as:	
		o balsa wood	
		o construction paper	
		o toothpicks	
		o popsicle sticks	
		o white paper	
		o string	
		o aluminum foil	
		o paper clips	
		o Styrofoam	
		o foam core	
		o film canisters, etc.	
		markers and crayons	
		hot glue gun	
477	**BACTERIOPHAGE**	Styrofoam blocks	Make different components of virus from durable material which can be attached to make a complete bacteriophage.
		Styrofoam spheres,	
		Velcros different types	
		double sided tape	
		string, toothpicks	
		straws	
		pipe cleaners	
		paper	
		fuzzy pom-poms	
		Velcro squares	
		paper squares	
478	**BLOOD CIRCULATORY SYSTEM OF MAN**	4 paper cups	IF you have any better idea related to this topic, please incorporate it to make it better.
		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	
		1 cup (237 ml) liquid dish or laundry detergent	
		6 test tubes	
		6 droppers or pipettes	
		safety goggles,	
		lab apron	
		gloves	
479	**DISORDERS OF THE IMMUNE SYSTEM**	Bowls (8)	This is a link to the site where complete procedure for doing this activity along with materials is given.
		M&M's candies (24 of each color: red, green, yellow, blue)	
		Six-sided dice (6)	
		Pencil or pen	
		Clear tape	
480	**STRUCTURE OF THE HUMAN HEART**	▪ 1 sheep heart	▪
		▪ dissection kit (scalpel, pins, probe, scissors)	
		▪ dissection tray	
		▪ protective gear	
		o aprons,	
		o disposable gloves,	
		o lab goggles,	
		▪ vinyl tablecloth	
		▪ small kitchen trash bag	
		▪ paper towels	
		▪ 1-2 50-gallon lawn and leaf/trash bags	
481	**Design and build prototype face mask pollution filter.**	▪ two-liter plastic bottle with cap,	You may also add the designing of pollution filter in face mask.
		▪ 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	
482	**Engineering a hydroponic system to feed a class.**	▪ Hydroponic solution 5L	The link given at 2, 3 is an alternate activity kit. Our priority is to develop kit on the first link
		▪ clean and dried plastic food containers	
		▪ colanders	
		▪ duct tape, and masking tape	
		▪ pipe cleaners	
		▪ plastic containers of different shapes and sizes	
		▪ tubing	
		▪ wooden sticks	
		▪ zip ties	
483	**Create and modify a model virus that can be used safely to deliver gene therapy.**	electronic device to show videos	
		o Styrofoam in various shapes such as balls, sticks, or cubes	
		o cotton balls and polyester pom-pom balls, in assorted colors and sizes	
		o pipe cleaners, in assorted colors	
		o toothpicks	
		o magnets	
		o Velcro	
		o scissors	
		o adhesive tape markers	
484	**Build and test replacement legs.**	▪ ruler or tape measure	▪
		▪ scissors	
		▪ 1 roll duct tape	
		▪ plastic pipes,	
		▪ metal pipes,	

		▪ metal strips,	
		▪ cardboard tube	
		▪ wooden "2 x 4," thin metal duct material (to be rolled and taped into a tube shape), all generally 1.5 ft. (or .46 m) long	
		▪ large sponges	
		▪ cardboard, etc.	
		▪ bath towels, pairs of pants, shoes	
		▪ string, rope, twine (about 30 ft. [or 10 m])	
485	**Explore if rooftop gardens are a viable option for combating the urban heat island effect.**	▪ 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 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	
486	**Design and create sensory integration toys for children with developmental disabilities.**	▪ Pencils, paper rulers	Please develop the kit on the link given at 1.
		▪ 12 fasteners for fabricating the sensory toy devices, such as various woods, plastics, metals, cardboard, rope, fabric, glue, tape, etc.	
		▪ rulers	Link 2 & 3 are alternate links if developing kit at link 1 is not come under your capacity.
		▪ tape measures,	
		▪ hand or power saws	
		▪ drills, scissors, hot glue,	
		▪ super glue	
487	**Using Microcontrollers to model homeostasis.**	▪ 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	
		▪ 3 LEDs	
		▪ TMP36 temperature sensor	
		▪ 3 220 ohm (Ω) resistors;	
		▪ 1-megaohm (MΩ) resistor	
		▪ IRF510 n-channel MOSFET (metal-oxide-semiconductor field-effect transistor)	
		▪ 12V computer cooling fan	
		▪ 12V AC adapter, to power the fan	
		▪ Circuit Building Instructions Sheet, one per student	
488	**Design and build an improved cast for a broken arm.**	· PCB cased circuit	.
		· acrylic based	
		· Arduino Nano/UNO based	
		· Electronic based	

		Provide kits on both links	
489	**How to make robot hand moving using muscle at your home**	Provide 1 assembled and remaining unassembled kits for each school.	· PCB based circuit
			· acrylic based
			· Arduino Nano/UNO based
			· Electronic based
490	**Investigation of heat production in germinating seeds**		· PCB cased circuit
			· acrylic based
			· Arduino Nano/UNO based
			· Electronic based
491	**DNA model Project Rotating Working DNA Model**		· Electronic based
492	**How tobacco smoke can affect and change the cells**		· Electronic based
493	**IOT Paralysis Patient Healthcare Project**		· PCB cased circuit
			· acrylic based
			· Arduino Nano/UNO based
			· Electronic based
494	**IoT Based Smart Pulse Oximeter with NodeMCU ESP8266 & MAX30100 Sensor**		· PCB cased circuit
			· acrylic based
			· Arduino Nano/UNO based
			· Electronic based

495	**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
496	**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.
497	**Effect of Electricity on Plant Growth**		· Electronics based
498	**IoT Based ECG Monitoring with AD8232 ECG Sensor & ESP32**		· PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based
499	**Pulse/ Heartbeat Rate (BPM) Measurement using Arduino & Pulse Sensor**		· PCB cased circuit · acrylic based · Arduino Nano/UNO based · Electronic based
500	**How to Make Working Model of**		Electronics Based kit

	Human Heart and Circulatory system		
501	**How to make human digestive system working model**		Electronics based kit
Chemistry Kits (Additional)			
502	**Hydrogen Fuel Cell**	1. one hydrogen fuel cell model car and controller per group	
		2. one water electrolyzer	
		3. 2 test tubes	
		4. 6 thin wood splints	
		5. tape measure	
		6. a plastic bottle filled with distilled water (200 mL)	
		7. balance	
		8. paper towels	
		9. waste container	
503	**UV detection**	1. Light source (tungsten lamp, deuterium lamp or other ultraviolet visible light source)	
		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	
504	**Air Quality Control**	1. Temperature sensor	
		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	
505	**Potato Battery**	Battery Jacket	
		alligator clamps	
		Wires	
		bulb/LED	
506	**Galvanic Cell**	ZnSO4	

		CuSo4	
		Zn Electrode	
		Cu Electrode	
		WATER	
		Beakers	
		Salt Bridge	
		VOLTMETER	
		Bulb	
		Wires	
507	**Rainbow Fire Kit**	Sodium, potassium, barium, strontium salts	
		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	
508	**Spherifiction kit / Worm kit**	Sodium Alginate 50g	
		Calcium Chloride 50g	
		Sodium Citrate 50g	
509	**Rate of Reaction KIT**	FALCON TUBE	
		Funnel	
		dropper	
		alka seltzer tablets	
		falcon stand	
		cups or beaker plastic	
		yeast	
		hydrogen peroxide, starch, ascorbic acid, and iodine.	
510	**Calorimetry Kit**	tin with lid	
		Wooden box for cover	
		thermometer	
		Copper wires	
511	**Food Preservation Kit**	Includes 1 canister Natural Preserve, acidic and basic as well	
		2 Zip-N-Zap Bag	
		2 Snap-N-Zap Caps,	
		and 2 Snap-N-Grip Clips	
512	**Distillation Assembly**	Water Distillation assembly in steel small	