eÁ¯Á ªÄÄT

zÁÃAiÄ: CqÄU ¸ÆÃqÁ ªÄvÄ «£UgïU¼ £qÄ«£ gÁ¸ÁAiÄ¤P QAiÄAiÄ£Ä¤gÆ¦¸ÄªÄzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: «£Ugï, CqÄU ¸ÆÃqÁ, CqÄUU §¼¸Äª §t, ¥Á¸gï D¥ï ¥Á¸j¸ï ªÄvÄ ¥Á¹Pï ¨ÁI°

«zÁ£: ¥Á¹Pï ¨ÁI°AiÄ ¸Äv ¥Á¹Pï D¥ï ¥Á¸j¸ï ªÄw CzP¦ ¨Iz DPÁg PÆr. CqÄU ¸ÆÃqÁ, CqÄU §t ªÄvÄ «£UgïU¼£Ä¤ MAzÁz ªÄÄ¯ MAzgAv ¨ÁI°AiÆ¼U ¸Äj¬Äj. zÁªt ª¦ eÁ¯ÁªÄÄTAiÄAv ºÆgaªÄÄvz.

PÁgt: CqÄU ¸ÆÃqÁ (NaHCo3) ªÄvÄ «£Ugï(CH3COOH)U¼ £qÄ«£ gÁ¸ÁAiÄ¤P QAiÄ¬ÄAzÁV ¸ÆÃrAiÄA C¹mÃmï ªÄvÄ PÁ§ð¤Pï DªÄ GAmÁUÄvz. PÁ¨Áð¤Pï Dªª¦ ¤ÃgÄ ªÄvÄ PÁ§ð£ï qÉ DPöÉqïU¼ÁV ¥jªvð£UÆ¼Ävz. EzjAzÁV aªÄÄ«P GAmÁUÄvz.

Volcano

Objective: To demonstrate the reaction between baking soda and vinegar

Materials Required: Vinegar, baking soda, food colour, plaster of paris and plastic bottle.

Experiment: Cover the plastic bottle with plaster of paris and shape it like a mountain. Pour baking soda, food colour and vinegar into the bottle one after the other. The solution erupts like lava.

Reason: Baking soda($NaHCO_3$) and Vinegar(CH_3COOH) react to form sodium acetate and carbonic acid. Carbonic acid further decomposes into water and carbon dioxide. Hence the eruption.

D¸Á¹¸Ï

zÁÃAiÄ: JAqÁ¸Á¹¸Ï ªÄvÄ JPÁ¸Á¹¸ïU¼£Ä¤gÆ¦¸ÄªÁzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ¸PgAiÄ zÁªt, ¤ÃgÄ, JgqÄ UÁf£ ¯ÆÃlU¼Ä, º¹ªÄvÄ Mt §mÁt/zÁQ

«zÁ£: ¤ÃgÄ ªÄvÄ ¸PgAiÄ zÁªtU¼£Ä¤ ¥vÁÃP ¯ÆÃlU¼° vUzÄPÆ½. Mt zÁQ/§mÁtAiÄ£Ä¤ ¤Ãj£°, º¤ §mÁt/zÁQAiÄ£Ä¤ ¸PgAiÄ zÁªtz° ºÁQ. MAzÄ ¢£z £Avg Mt §mÁt/zÁQ »VgÄvz. º¹ §mÁt/zÁQAiÄ UÁv PÄVgÄvz.

PÁgt: ¸«Ä ¥«ÄðAiÄ§¯ï ªÄA¨Ã£ï£ M¼U ªÄvÄ ºÆgU ¤Ãj£ ¥ªiÁtz° ªÁvÁ¸«zÁU ¤ÃgÄ ºa£ ¥§®vAiÄ ¥zÃ±¢Az Prªª ¥§®vAiÄ ¥zÃ±P ¸ÁUÄvz. EzÃ D¸Á¹¸ï. ¤ÃgÄ ¥zgz ºÆgV¤Az M¼U ¸ÁVzg JPÁ¸Á¹¸ï ºÁUÆ EzP ªÁwgÄPªÁzÁU JAqÁ¸Á¹¸ï JAzÄ PgAiÄ¯ÁUÄvz.

Endosmosis and Exosmosis

Objective : Demonstration of Endosmosis and Exosmosis

Materials Required: Sugar solution, Water, two glasses, Peas/Grapes.

Procedure :Take water and sugar solution in two separate glasses. Put fresh grapes/ peas in sugar solution and dry grapes / peas in water. After one day Peas/Fresh grapes decrease in size due to exosmosis. Dry grapes increase in size due to Endosmosis.

Reason : Whenever there is a difference of water concentration inside and out of a semi-permeable membrane, water always moves from higher concentration to lower concentration. If the water moves out, it is termed as Exosmosis and it is Endosmosis if the water molecules move in through the membrane.

PÆªiÁ¼n£ï eÁ® £ÆÃq¨ÃPÃ?

zÁÃAiÄ: ¥¥ÁAiÄ º t£ g¸¢Az PÆªiÁ¼n£ï eÁ®ª£Ä§ ºÆgvUAiÄªÁ¼zÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ¥¥ÁAiÄ g¸, ¹jmï, G¥Ä, ¤ÃgÄ, JgqÄ UÁf£ ¯ÆÃlU¼Ä, zª ¸ÆÃ¥Ä ªÄvÄ UÁf£ ¸¯ÁP.

«zÁ£: ¥¥ÁAiÄ g¸ª£Ä§ UÁf£ ¯ÆÃlz° vUzÄPÆAqÄ ¸® G¥Ä ªÄvÄ ¤ÃgÄ ¨g¹, ¯ÆÃlz CAa¤Az zª ¸ÆÃ¥£Ä§ ºÁQ ¤zÁ£ªÁV £Æg§gzAv Pzr (UÁf£ ¸¯ÁP¬ÄAz). FU JgqÄ ¥zg GAmÁUÄª v£P ¹jmï C£Ä§ ¸Ãj¹. ªÄÃ®zgz° PÁtÄª zÁgzAvº gZ£AiÄÃ PÆªiÁ¼n£ eÁ®. ªA±ªÁ» UÄtU¼£Ä§ ºÆA¢gÄª ª¸Ä.

PÁgt: E° ¸ÆÃ¥Ä fÃªPÆÃ±z ºÆg ¥zgª£Ä§ ¨Ã¢¸®Ä ¸ºPÁj. G¥Ä r.J£ï.J.C£Ä§ Evg ª¸ÄU½Az ¨Ãgr¸®Ä ¸ºPÁj. r.J£ï.J. ¹jmï£° PgUÄª¼¢®. DzÁjAz EzÄ r.J£ï.J. C£Ä§ zÁgzAvº gZ£AiÄ ¸ªÄÆºzAv Ej¸Äª° ¸ºPÁjAiiÁVz.

Separation of Genetic Material

Objective**:** Demonstration of separation of genetic material from papaya juice.

Materials Required**:** Papaya juice, Spirit, Common salt, water, 2
Transparent Glass, Liquid Soap Water, Glass Rod.

Procedure**:** Take papaya in a transparent glass. Add little amount of common salt with water. Put liquid soap in the edge of the container to prevent foaming. And slowly stir. Add Spirit until two layers are formed. Thread like structure that appears in the upper layer is the genetic material (Chromatin network).

Reason**:** The soap helps to break down the cell's outer membrane, and the salt helps to separate the DNA from other materials in the cell. Since DNA doesn't dissolve in alcohol, this substance helps the DNA clump together in a separate layer.

AiiÁAwP ±Q¬ÄAz «zÄvï ±Q

zÁAiÄ: ¸ÄgÄ½ ªÄvÄ CAiÄ¸ÁAvU¼ £qÄª ¸Á¥ÃP Z®£ Ezº ¥Ãjv «zÄvï GAmÁUÄvz JA§Äz£Äß ¤gÆ¦¸ÄªÄzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ªÆÃlgï, UAiÄgï ªÄvÄ ¹Ã¯ï vmï

«zÁ£: ªÆÃlgï C£Äß ¹Ã¯ï vmAiÄ ªÄÃºj¹ UAiÄgïU¼ ¸ªÄÆºzÆA¢U ¸A¥Qð¸¯ÁVz. Ujµ ¸¼ÁAvg §gÄªAv ªÄª¸ï ªiÁq¯ÁVz. zÆq UAiÄgï C£Äß wgÄV¹zg ªÆÃlgï£ºgÄª PÁAvz ªÄzÄ EgÄª ¸ÄgÄ½AiÄÄ wgÄUÄvz. EzjAzÁV ¥Ãjv «zÄvï GAmÁUÄvz.

F ¥AiÆÃUªÄ ªÆÃlgï C£Äß q£ªÆ DV ºÁUÆ q£ªÆª£Äß ªÆÃlgï DV §¼¸§ºÄzÄ JA§Äz£Äß ¸µï ¥r¸Ävz.

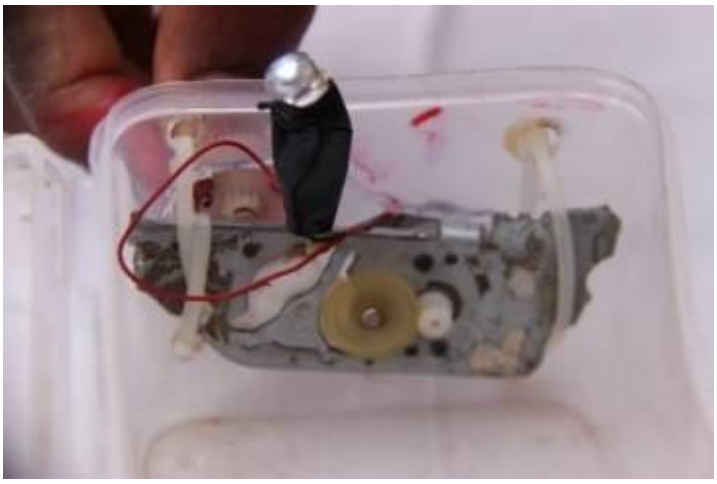
Conversion of Mechanical Energy into Electrical Energy

Objective : To demonstrate Electromagnetic Induction.

Materials Required: The spare parts of DVD player like motor, gears and steel plate.

Experiment : A motor will be mounted on a steel plate and connected to a set of gears ensuring maximum displacement. When the larger gear is rotated, the coil inside the magnetic ring of the motor is spun with a certain amount of speed and an EMF is induced.

Conclusion: This experiment justifies that a motor can be used as a dynamo and dynamo can also be used as a motor.



¤Ãj£ ¸AAiÆÃd£

zÁÃAiÄ: ¤Ãj£ CtÄ«£° JgqÄ ºÉqÆd£ï ªÄvÄ MAzÄ DQd£ï ¥gªiÁtÄU¼Ä Eª JA§Äz£Ä¸ ¤gÆ¦¸ÄªÁzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: UÁf£ vÆn, JgqÄ J¯PÆÃqïU¼Ä, ¥uÁ¼U¼Ä, ¤ÃgÄ, ¨Á¸Ij, QrUÆ½

«zÁ£: ¨Á¸IjAiÆA¢U ¸A¥Qð¸¯ÁVgÄª J¯PÆÃqïU¼£Ä¸ ¤ÃgÄ wA©z vÆnAiÄ° Ej¸¯ÁVz. EªÁU¼ ªÄÃ¯ ¥uÁ¼U¼£Ä¸ ¨ÆÃg¯ÁV Ej¸¯ÁVz. ¤Ãj£ ªÄÆ®P «zÄ¸vï ¥ª»¹zÁU CzÄ ºÉqÆÃd£ï ªÄvÄ DQd£ïU¼ÁV «¨d£ ºÆAzÄvz.

«ÃQ¹: z£ J¯PÆÃqï£ §½ JgqÄ ¥ªiÁt ºÉqÆÃd£ï ªÄvÄ IÄt J¯PÆÃqï£ §½ MAzÄ ¥ªiÁt DQd£ï ±ÃRgUÆ¼Ävz. QrUÆ½ §¼¹ C¤®U¼£Ä¸ ¥jÃQ¸§ºÄzÄ. MAzÄ Gjª ±§¸ GAIÄªiÁqÄvz. CzÄªÃ ºÉqÆÃd£ï (GjAiÄ §® C¤®). E£Æ¸Azg° QrUÆ½ ºZÄ ¥RgUÆ¼Ävz. EzÄ DQd£ï (zº£z° ¸ºPÁj).

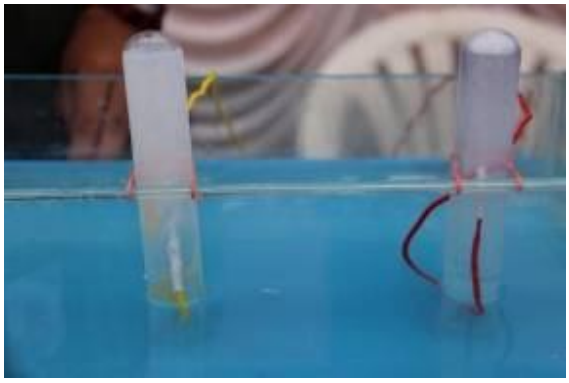
Volumetric Composition of Water

Objective **:** To demonstrate that water is composed of two volumes of Hydrogen and one volume of Oxygen.

Materials Required**:** Glass tank, two electrodes, water, test tubes, power supply, burning splinter.

Experiment **:** Insert the electrodes connected to a power supply into the glass tank filled with water and place two test tubes inverted on these electrodes. When the current is passed through water, it decomposes into hydrogen and oxygen.

Observation**:** Two volumes of Hydrogen is collected at cathode and one volume of Oxygen at anode. The gases collected can be tested by using a burning splinter(or match stick) .One gas produces a pop sound indicating that it is hydrogen(combustible gas) and the splinter burns more brightly in the other gas as it is oxygen (supporter of combustion).



ªÄÆgÄ DAiiÁªÄz ºÆÃ¯ÆUÁªïï ¥ÆePgï

zÁÃAiÄ: UÁf£ vmU½Az ªiÁrz DPÈw¬ÄAz ªÄÆgÄ DAiiÁªÄz ©A§ª£Ä¸ ¸Ázè±UÆ½¸ÄªÀzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: £Á®Ä UÁf£ vmU¼Ä, ¸Ámïð ¥ÆÃ£ï (ªÄvÄ P¥Ä »£¯)

«zÁ£: UÁf£ vmU¼£Ä¸ l¦ÃfAiÄªïï DPÁgzº Pvj¹PÆ½. CªÀU¼£Ä¸ CAn¹ ZËPz v¼«gÄª ¦g«Äqï£ ¨ÁUª£Ä¸ ºÆÃ®Äª DPÈw ªiÁrPÆ½. Ez£Ä¸ ¸Ámïð ¥ÆÃ¤£ ªÄÃ¯ ¨ÆÃg¯ÁVlÄ, «rAiÆÃ ZÁ®£ ªiÁr. ¦g«Äqï DPÈwAiÄ M¼U ªÄÆgÄ DAiiÁªÄz ©A§ ªÄÆqÄvz.

PÁgt: ªÆ¨È¯ï£ ¥gzAiÄ ªÄÃº£ £Á®Ä ©A§U¼Æ ¦g«Äqï£ ªÄÃ¯ÈU¼º ¥w¥®£ ªÄvÄ ªQÃ¨ª£ ºÆAzÄvª. F J¯Á gÃSU¼Ä MAzg ªÄÃ¯ÆAzÄ ¥v£UÆAqÄ ªÄÆgÄ DAiiÁªÄz ©A§ ªÄÆqÄvz.

3D – Hologram Projector

Objective: To project a 3D image using a structure made of glass plates.

Materials Required: Four glass plates a smart phone or tablet and a black background

Procedure: Cut four glass plates of identical size in the shape of trapezium. Glue them together such that the shape resembles a truncated square based pyramid. Place this upside down on the screen of the phone and run the 3D hologram video that has four symmetrically placed identical video clips. A single video appears to float inside the inverted pyramid-like structure.

Reason: The four images on the screen undergo reflection and refraction at the surfaces of pyramid. These rays superpose inside the structure to form a 3D video.

wgÄUÄª vÁªÄz vAw

zÁÃAiÄ: ªÆÃmÁgï£ vvª£Ä¤gÆ¦¸ÄªÄzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: CAiÄ¸ÁAvU¼Ä, vÁªÄz vAw, ¨Á¼Ij

«zÁ£: CAiÄ¸ÁAvU¼£Ä¤ MAzg ªÄÃ¯ÆAzgAv Ej¹. ¨Á¼IjAiÆA¢U ¸A¥Qð¸¯ÁVgÄª ¸ÄgÄ½AiÄ£Ä¤ F PÁAv ¸ªÄÆºz ªÄÃ¯ PÆAZ CAvg«gÄªAv Ej¸¯ÁVz. ¸ÄgÄ½AiÄ ªÄÆ®P «zÄ¼vï ºÁ¬Ä¹zÁU CzÄ wgÄUÄvz.

PÁgt: ¸ÄgÄ½AiÄº «zÄ¼vï ¥ªÁº¢Az GAmÁUÄª PÁAvPÃv ªÄvÄ PÁAv¢Az GAmÁUÄª PÃvU¼ ¥juÁªÄªÁV ¨ÁªÄPª¼ ªÄÆqÄvz. EzjAzÁV ¸ÄgÄ½ wgÄUÄvz.

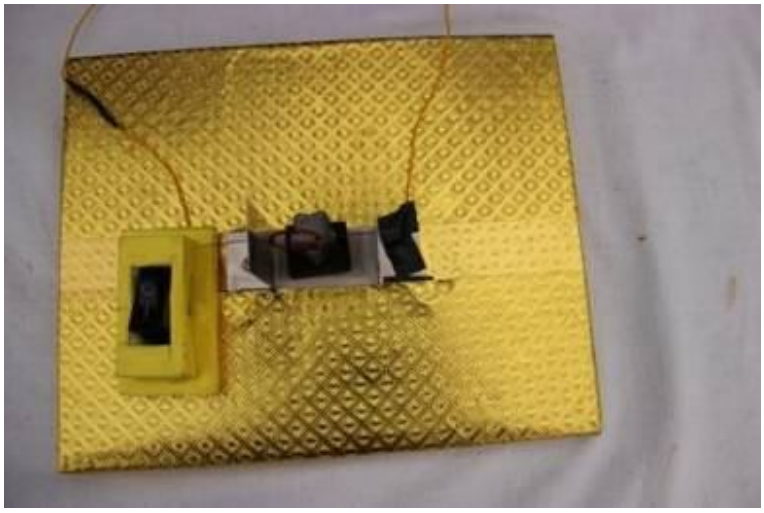
Dancing Copper Coil

Objective : To demonstrate the working of a motor.

Materials Required: Dry cell, Neodymium magnet, copper wire.

Procedure: Shape the copper wire and position it above a pile of magnets as shown in the picture. A current through the coil makes it to rotate.

Reason: The magnetic field, produced by the current in the copper wire, and the magnet interact resulting in a torque and hence the wire rotates.



§t§z°¸Äª zÁªt

zÁÃAiÄ: ªtðªÄAiÄ Gvµðt – C¥Pµðt QAiÄAiÄ ¤gÆ¥u

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: $KMnO_4$, NaOH, ¸Pg, ¤ÃgÄ

«zÁ£: ¸ÆÃrAiÄA ºÉqÆÃPÉqï ªÄvÄ ¸PgAiÄ£Ä¤ ¤Ãj£° ¨g¹z zÁªt ªiÁrPÆ½. ¨ÃgÆAzÄ ¥ÁvAiÄ° $KMnO_4$C£Ä¤ ¤Ãj£° ¨g¹z zÁªt ªiÁrPÆ½. JgqÆ zÁªtU¼£Ä¤ MAzÄ UÁf£ ¥ÁvAiÄ° ¨g¹.

«ÃQ¹: UÄ¯Á© §t«z zÁªtª ¤Ã°AiiÁV, º¹gÁV, º¼¢AiiÁV, Qv¯ §tP wgÄUÄvz.

PÁgt: ªiÁAU¤Ã¸ï£ ««z Gvµðt ¹wU¼ ¥juÁªÄªÁV zÁªtz §t §z¯ÁUÄvz.

Chemical Chameleon

Objective: To demonstrate a colourful redox reaction.

Materials required: KMno4, NaOH, Sugar, Water

Procedure: Make a solution of sodium hydroxide and sugar in water. Mix a small amount of potassium permanganate in water. Add the two solutions together in a flask.

Observation : Colour changes from pink to blue to green to yellow to orange.
Reason: The colour changes that we see are due to the various oxidation states of manganese.

Mvq ªÄvÄ ¤Ãj£ ªÃU

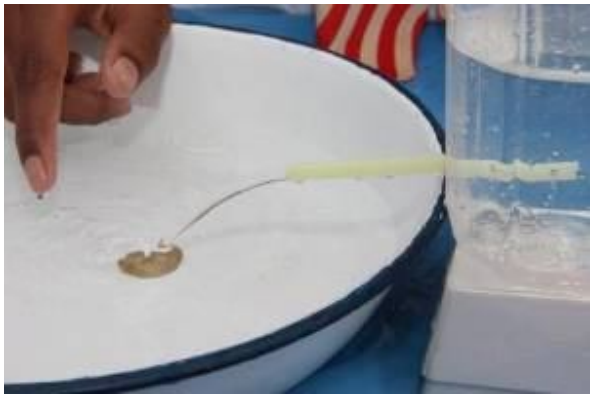
zÁÃAiÄ: Mvqª¦ zª¸A¨z Jvgª£Ä Cª®A©¹z JA§Äzg ¤gÆ¥u.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ¥Á¹Pï ¨Á l °, mÃ, £Á t¦ ªÄvÄ »ÃgÄPr U¼Ä

«zÁ£: ¨Á l °AiÄ ªÄÄZ¼z° ªÄvÄ MAzÄ §¢AiÄ° MAzÄ gAzª£Ä PÆg¬Äj. ªÄÃ°£ gAzz ªÄÆ®P Gz¦£ »ÃgÄPr ªÄvÄ §¢AiÄ°£ gAzz ªÄÆ®P QjzÁz »ÃgÄPrU¼£Ä vÆj¹. ¨Á l °AiÆ¼U ¤ÃgÄ vÄA©¹, ªÄÄZ¼ª£Ä ºÁQ »ÃgÄPrAiÄ ºÆgvÁV ¨Ãg°Az®Æ UÁ½AiiÁqzAv ªiÁr. QjzÁz »ÃgÄPr¬ÄAz ¤ÃgÄ ºÆgaªÄÄvz.

«ÃQ¹: Gz¦£AiÄ »ÃgÄPrAiÄ£Ä ªÄÃ¯ P¼U Dr¹zg, ¤ÃgÄ aªÄÄª Uw §z¯ÁUÄvz. mÃAiÄ° Ej¹gÄª £Á t¦z ªÄÃ¯ ©Ã¼Äwz¦ ¤ÃgÄ ¨Ãgq ©Ã¼Ävz. »ÃgÄPrAiÄ ¸Á¦£ ¹¦gªÁVz¦g, ¤ÃgÄ aªÄÄª UwAiÄÆ ¹¦gªÁVAiÄÃ EgÄvz.

PÁgt: »ÃgÄPrAiÄ P¼vÄ¢ ªÄvÄ gAzz £qÄ«£ CAvgª¦ Mvqª£Ä ¤zðj¸Ävz. Mvq ºaz¦µÆ ¤Ãj£ ªÃU ºagÄvz.



Pressure and Water Flow

Objective: To demonstrate that pressure depends on height of the liquid column.

Materials required: Plastic bottle, tray, coin and straws.

Procedure: Make two holes in the bottle one in the cap and other along the side wall towards the bottom. Insert a long straw through the top hole and a small straw through the side hole. Fill the bottle with water and make it air-tight. A jet of water comes out of the outlet.

Observation: The rate of flow of water is higher when the bottom of the straw in water is more distant from the outlet. Until the water level goes below the straw, the rate of flow is constant.

Reason: Pressure depends on the height of the liquid column. When the inlet straw is moved downward, the effective length of the column is reduced and hence the flow rate.

¨Á l °AiÆ¼U ¨Æv

zÁÃAiÄ: ºÉqÆd£ï ¥gÁPöÉqï£ «¨d£AiÄ ¤gÆ¥u

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: 30% ºÉqÆd£ï ¥gÁPöÉqï, ªiÁ¼AU¤Ã¸ï qÉ DPöÉqï, ¨Á l °

«zÁ£: Qj zÁz ªÄÃ¯ÁUª¼ ¨Á l °AiÄ° ¸® ºÉqÆÃd£ï ¥gÁPöÉqï vUzÄPÆ½. CzP anP ªiÁ¼AU¤Ã¸ï qÉDPöÉqï ¨g¹. ¨¼£AiÄ ºÆUAiÄÄ ¨Á l °¬ÄAz ºÆg§gÄvz.

PÁg t: ºÉqÆd£ï ¥gÁPöÉqï ¤ÃgÄ ªÄvÄ DQd£ï DV ªiÁ¥ðqÄvz. E° ªiÁ¼AU¤Ã¸ï qÉ DPöÉqï P l °¸ï£Av P®¸ ªiÁqÄvz.

Genie in the Bottle

Objective**:** To demonstrate the decomposition of hydrogen peroxide.

Materials required**:** Hydrogen peroxide 30 percent, Manganese dioxide.

Procedure**:** Take a few ml of Hydrogen peroxide in a small mouthed bottle and add a pinch of Manganese dioxide. White fumes come out of the bottle.

Reason: H_2O_2 decomposes into water and oxygen. Manganese dioxide acts as a catalyst.

¸A¨U¼ £qÄ«£ CAvgªµÄ?

zÁÃAiÄ: wPÀÃt «ÄwAiÄ£Ä§¼¹, ¸A¨U¼ £qÄ«£ CAvgª£Ä C¼AiÄªÄzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: JgqÄ ¸A¨U¼Ä, Q£ÆÃ«ÄÃlgï

«zÁ£: ¸A¨U¼£Ä MA¢µÄ CAvgz°j¹. EªÄU¼ £qÄª Q£ÆÃ«ÄÃlgï Ej¹. J®ªÇ MAzÃ £Ãgz°g°. Q£ÆÃ«ÄÃlgï£ z±ðP PÆ¼ªAiÄ ªÄÆ®P ¸A¨z vÄ¢ ªÄÆr¸Äª PÆÃ£ª£Ä PAqÄPÆ½. Tan θ = ¸A¨z Jvg/Q£ÆÃ«ÄÃlgï¤Az ¸A¨QgÄª zÆg. »ÃU Q£ÆÃ«ÄÃlgï¤Az JgqÆ ¸A¨U½VgÄª zÆgª£Ä PAqÄPÆAqÄ CªÄU¼ £qÄ«£ CAvgª£Ä w½zÄPÆ¼§ºÄzÄ.

How Far Are The Towers?

Objective: To measure the distance between two towers using trigonometry.

Materials required: Two towers, Clinometer.

Procedure: Place the towers at a certain separation. Introduce the Clinometer in between the two and in line with them. Look at the tip of the towers through the sighting tube of the Clinometer and note down the angle of elevation(θ). Tan (θ)= Height of tower/ Distance to the tower. Thus the distance to each tower can be calculated and hence their separation too.

wgÄUÄª ¥¤¯ï

zÁÃAiÄ: PÁAvPÃvU¼ CAvg QAiÄ¬ÄAz ¥¤¯ï C£Ä wgÄUÄªAv ªiÁqÄªÁzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: L¸ïQÃªiï PrU¼Ä, ¥¤¯ï 4 CAiÄ¸ÁÁAvU¼Ä, UÆÃAzÄ, z¥£AiÄ PÁUz/PÁqïð¨ÆÃqïð.

«zÁ£: L¸ï QÃªiï PrU¼Ä ªÄvÄ PÁqïð¨ÆÃqïðU¼£Ä avz° vÆÃj¹gÄªAv CAn¹PÆ½. ªÄÃ¯ÁÁUz PÁqïð ¨ÆÃqïð£° MAzÄ gAz«z. ¸Äv°gÄª ªÄÆgÄ PÁAvU¼Ä ªÄzÁz°gÄª PÁAvzÆA¢U «PµðuAiÄ°g¨ÃPÄ. ªÄzÁ PÁAvz° vÆj¸¯ÁVgÄª ¥¤¯ï£ vÄ¢ v¼¨ÁUz PÁqïð¨ÆÃqïð£ ªÄÃ¯ CAn¹gÄª £Át¹ª£Ä ¸²ð¸Äwg¨ÃPÄ. FU ªÄzÁz°gÄª PÁAvz ¸Á£ª£Ä °ÆA¢¸ÄªÁzgÆA¢U ¥¤¯ï wgÄUÄªAv ªiÁq§ºÄzÄ.

PÁgt: ¸Äv°£ PÁAvU¼Ä ªÄvÄ ªÄzÁz°gÄª PÁAvz £qÄ«£ «PµðU¬ÄAzÁV ªÄzÁz°gÄª PÁAv ªÄvÄ D ªÄÆ®P ¥¤¯ï wgÄUÄvz.

Rotating Pencil

Objective: To make the pencil rotate due to the interaction of magnetic fields.

Materials Required: Ice cream sticks, pencil, 4 magnets glue, cardboard.

Procedure: Make a stand using ice cream sticks and card boards. Make a hole in the top cardboard and fix three magnets such that all of them repel the central magnet. The pencil has to be inserted through the central magnet such that its tip touches the coin stuck to the bottom card board.

Adjust the position of the central magnet such that the pencil rotates.

Reason: The central magnet rotates because of the repulsion from the other three magnets and thereby makes the pencil to rotate together.

ZzÄgÄª ªÄt¸Ä

zÁÃAiÄ: ¤Ãj£ ªÄÃ¯ïÉ Mvqz ¤gÆ¥u

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: §l®Ä, ¤ÃgÄ, zª ¸ÆÃ¥Ä, Pjªät¸Ä ¥Ãr

«zÁ£: §l°£° ¤ÃgÄ vUzÄPÆAqÄ ªÄt¸Ä ¥Ãr GzÄj¹. ¨g¼ vÄ¢U ¸® zª ¸ÆÃ¥Ä ¸ªj ¤Ãg ªÄÃ°£ ªÄt¹£ ¥ÄrAiÄ£Ä ªÄÄn. CzÄ J® ¢Q£®Æ ZzÄj ¨g½¤Az zÆg ºÆÃUÄvz.

PÁgt: ¤Ãj£ ªÄÃ¯ïÉ Mvqª£Ä ¸ÆÃ¥Ä ¸½ÃAiÄªÁV vV¸Ävz. ªÄÃ¯ïÉ Mvqz°£ ªÄvÄAiÄ¢AzÁV ªÄt¹£ ¥Ãr F jÃw Z°¸Ävz.

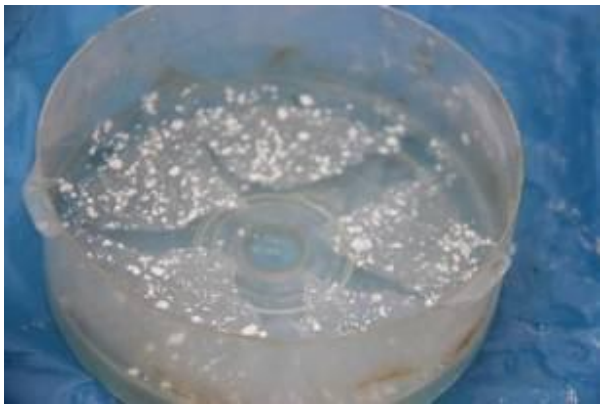
Surface Tension

Objective: To demonstrate the effect of reducing surface tension of water.

Materials Required: Bowl, water, liquid soap, pepper powder

Procedure: Take water in a bowl and sprinkle pepper powder. Apply a little amount of liquid soap onto finger tip and touch the pepper on water. Pepper moves away from finger in all directions.

Reason: Soap reduces the surface tension of water locally. The difference in the surface tension causes this kind of a motion of the pepper powder.



d®ZgU¼Ä vÃ®Äª ªÄvÄ ªÄÄ¼ÄUÄª «zÁ£

zÁÃAiÄ: ªÄÃ®ÄR §®, ¸ÁAzv ªÄvÄ MvqU¼£Ä Dzj¹ d®ZgU¼Ä vÃ®Äª ªÄvÄ ªÄÄ¼ÄUÄª «zÁ£ª£Ä «ªj¸Äª¦zÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: P©tz ¥n, UÁ½AiÄ UÄ¼U¼Ä¼ ¥zg, ¤ÃgÄ, §Pmï, ¥Á¹Pï ¨Ál°, Ju, §®Æ£Ä.

«zÁ£: P©tz ¥n, ¤ÃgÄ vÄA©z ¨Ál°, ¤ÃgÄ vÄA©z §®Æ£Ä ¤Ãj£° ªÄÄ¼ÄUÄvz. CzÃ ¥nU UÁ½AiÄ UÄ¼U¼Ä¼ ¥zgª£Ä ¸Äw. ¨Ál°AiÆ¼U 3/4 ¤ÃgÄ ºÁUÆ 1/4 ¨ÁU Ju vÄA©¹. ¤ÃgÄ vÄA©z §®Æ££Ä ªÄvµÄ H¢ UÁ½ vÄA©¹. FU Eª®ªÇ vÃ®Ävª.

- ¨ÁvÄPÆÃ½U¼°gÄª ¨Á¨ïðU¼° UÁ½ vÄA©z.
- ±ÁPïð ªÄvÄ ªÃ¯ïU¼° Ju (¸Á°Ã£ï) Ez.
- «ÄÃ£ÄU¼° UÁ½ vÄA©z ¹ªïï ¨Áqgï Ez.

EªÄ DAiiÁ d®ZgU¼ vÃ®Ä«P ªÄvÄ ªÄÄ¼ÄUÄ«PAiÄ° ªÄÄR¦ ¥Áv ºÆA¢ª.

Rising and Sinking of Aquatic Animals

Objective: To explain the rising and sinking of aquatic animals based on buoyancy, density and pressure.

Materials Required: Iron strip, bubble wrap, water, bucket plastic bottle, oil, balloon.

Procedure: Iron strip that sinks in water, floats when wrapped with bubble wrap. Ducks have barbs consisting of air which functions in a similar manner

A bottle filled completely with water sinks in water, whereas one with water and oil in the ratio 3:1 floats. Whales, sharks have oil i.e., squalene
A balloon filled with water sinks. Blow some air into the same and it floats.

Fishes have swim bladder consisting of air.

All the three experiments demonstrate that a less dense material floats in a more dense fluid.

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zÁAiÄ: ªiÁ£ª ±jÃgª£Ä§¼¹PÆAqÄ Cw C® ¥ªiÁtz° «zÄvï ±QAiÄ£Ä GvÁ¢¸ÄªÁzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: vÁªÄz vm, C®Æ«Ä¤AiÄA vm, ¹Ã¸z vAw, ªÄÊPÆ C«ÄÃlgï, D°UÃlgï Q¥ïU¼Ä, ªÄgz vÄAqÄU¼Ä.

«zÁ£: vÁªÄ ªÄvÄ C®Æ«Ä¤AiÄA vmU¼£Ä ¥vÁÃP ªÄgz vÄAqÄU¼ ªÄÃ¯ ¤°¹. ¹Ã¸z vAw §¼¹ EªÁU¼£Ä ªÄÊPÆÃ C«ÄÃlgïU ¸A¥Qð¹. ¤ªÄ JgqÆ PÊU¼£Ä MAzÆAzÄ vmAiÄ ªÄÃ°r. ªÄÊPÆ C«ÄÃlgï£° «zÄvï ¥ª»¹z ¸ÆZ£ vÆÃgÄvz.

PÁgt: PÊAiÄ°£ ¨ªgÄ ¨ÁljAiÄ°£ D¹qï£Av PÁAiÄð¤ªð»¸Ävz. J¯PÁ£ïU¼Ä vÁªÄ¢Az C®Æ«Ä¤AiÄA vmU ±jÃgz ªÄÆ®P ¸ÁUÄvz. EzÄªÃ ªÄÊPÆÃ C«ÄÃlgï£° PAqÄ§gÄª Cw C® «zÄvï.

Human Battery

Objective: To produce electric current using our body.

Materials Required: Copper plate, Aluminium Plate, lead wire, micro ammeter, alligator clips, wood blocks.

Procedure: Mount the copper plate and aluminium plate on two different wood blocks. Connect the plates to the micro ammeter using lead wire. Place your hands on both the plates. A deflection is seen in the micro ammeter.

Reason: The sweat in our hands act like an acid in a battery producing a chemical reaction. Our hands takes the electrons from copper plate and give them to aluminium plate. Hence, there is a deflection in the meter.

¸A¥Ætð DAvjP ¥w¥®£

zÁÃAiÄ: ¸A¥Ætð DAvjP ¥w¥®£ªÄ¢ ¤gÆ¦¸ÄªÄzÄ

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ¥Ágz±ðP ¥Á¹Pï ¨Ál°, PÁA¥Ä, ¯Ã¸gï, Jªiï-¹Ã¯ï

«zÁ£: ¨Ál°AiÄ v¼¢Az ¸ÄªiÁgÄ 3 ¸.«ÄÃ. Jvgz° MAzÄ gAz PÆgzÄ ¸t ¥É¥£ÄÃ C¼ªr¹ Jªiï-¹Ã¯ï¤Az ¨z ¥r¹. ¨Ál°AiÄ° ¤ÃgÄ vÄA©¹. PÁA¥ï£ §¼P¬ÄAz ¤Ãj£ ºÆgºjª£ÄÃ ¤AiÄAw¸§ºÄzÄ. ¥É¦£ «gÄz ¢Q¤Az ¯Ã¸gï ¨¼P£ÄÃ ºÁ¬Ä¹. D¥Áv PÆÃ£ª£ÄÃ §z°¸ÄvÁ ºÆÃzg MAzÄ ºAvz° aªÄÄwgÄª ¤Ãj£ ºÁ¢AiÄ¯Ã ¨¼PÆ ¸ÁUÄvz.

PÁgt: ¨¼PÄ ¸ÁAz ªiÁz¦ªÄ¢Az «g¼ ªiÁz¦ªÄP ¸ÁUÄªÁU D¥Áv PÆÃ£ª¦ 48.5^0 VAv ºazÁU ¥Ä£B ¸ÁAz ªiÁz¦ªÄP(¤ÃgÄ) ¸ÁUÄvz.

Total Internal Reflection

Objective: To demonstrate total internal reflection using low cost materials.

Materials Required: Transparent plastic bottle – 2 litres capacity, a clamp, laser light, M-seal and a small transparent pipe.

Experiment: Drill a small hole about 3cm above the base of the bottle. Fix a transparent pipe in the hole using M-seal to prevent leakage. Fill water in the bottle. Use a clamp to control the flow of water. Focus the laser light diametrically opposite to the hole. Adjust the incident angle such a way that the laser light follows the curved path of the flowing water.

Reason: When laser light travels from denser to rarer medium i.e., from water to air, it bends back into the same medium when the angle of incidence is greater than the critical angle, which is about 48 degrees for water-air interface.

§®z ªzð£

zÀÃAiÄ: ªÄÆgÄ gÁm ª¦ª¸À ªÄvÄ MAzÄ gÁm ª¦ª¸À¼ ªÄPÁ¦¤P¯ï CqÁAmÃeï£ ºÆÃ°P.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ªÄÆgÄ gÁm ª¦ª¸À, MAzÄ gÁm ª¦ª¸À, ºUÀU¼Ä, 5 Q¯ÆÃ ªÄvÄ 2 Q¯ÆÃ z JgqgqÄ §lÄU¼Ä.

«zÁ£: ªÄÆgÄ gÁm ª¦ª¸À ºÁUÆ MAzÄ gÁm ª¦ª¸À¼ ªÄÆ®P ¥vÀÃP ºUÀU¼£Ä vÆj¹. JgqÆ ª¦ª¸ÀÄ° ºUÀU¼ MAzÄ vÄ¢U 5 Q¯ÆÃ ªÄvÆAzÄ vÄ¢U 2 Q¯ÆÃ vÆV©r. 2 Q¯ÆÃ vÆPª£Ä J¼AiÄÄª ªÄÆ®P 5 Q¯ÆÃ vÆPª£Ä Jv®Ä ¥AiÄw¹.

«ÃQ¹: ªÄÆgÄ gÁm ª¦ª¸ÀÄ° vÆPª£Ä JvÄª¦zÄ ºZÄ ¸Ä®¨.

PÁgt: ªÄÆgÄ gÁm ª¦ª¸ÀÄ ªÄPÁ¦¤P¯ï CqÁAmÃeï MAzÄ gÁm ª¦ª¸ÀÄ°£zg ªÄÆgÄ ¥lÄ EgÄvz.

Force Multiplier

Objective: To demonstrate the Mechanical advantage of a 3-pulley system over single pulley system.

Materials Required: 3 pulley system, single pulley system, 2 ropes, 5Kg weight and 2Kg weight (2 No.s each).

Experiment: Ropes are passed through both the pulley systems. A 5Kg is suspended at one end and a 2Kg weight at another end of both the ropes. Try to lift 5Kg by pulling the 2 Kg weight in both of them.

Observation: In a 3 pulley system, we can easily lift the weight with less effort but we have to pull more compared to single pulley system.
Reason: Mechanical Advantage= Load * Effort. The mechanical advantage of a 3 pulley system is thrice that of a single pulley system.

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¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ºÉ ªÇÃ¯Ãeï d£gÃlgï, C®Æ¸«Ä¤AiÄA ºÁ¼U¼Ä, ªÄgz ¸ÁÄAqïU¼Ä, ¯ÆÃºz v¼ÄªÁz PA©U¼Ä, PÆPÆqÉ¯ï Q¥ïU¼Ä, ¥ÆÃg¸Amï ¢Ã¥.

«zÁ£: ¯ÆÃºz PA©U¼£Ä¸ ªÄgz ¸ÁÄAqï MAzg ªÄÃ¯ ¤º¹. E£Æ¸AzÄ ¸ÁÄAqï£º ¥ÆÃg¸Amï ¢Ã¥ª£Ä¸ C¼ªr¹. PA©U¼£Ä¸ ºÉ ªÇÃ¯Ãeï ªÄÆ®zÆA¢U ¸A¥Qð¹. «zÄvï ¥ª»¹zÁU PA©U¼ £qÄª Qr ªÄÆqÄvz. ªiÁvª®z, ¸A¥PðªÃ E®¢gÄª ¢Ã¥ ¨¼UÄvz.

PÁgt: ªÄAq®¢Az GAmÁz «zÄvÁAwÃAiÄ PÃvª¸ ¸A¥Pð«®z ¢Ã¥zº ¥ÃjvUÆAqÄ CzÄ ¨¼UÄªAv ªiÁqÄvz.

Hertz Experiment

Objective: To demonstrate the existence of electromagnetic waves.

Materials required: High voltage generator, alluminium sheets, wooden stands, thin metal rods, crocodile clips, fluorescent lamp.

Procedure: Mount the metal rods on one wooden stand and the fluorescent lamp on the other as shown in the picture. The metal rods are connected to a high voltage source. When the source is switched on, there is a spark produced between the rods and the bulb glows even though there is no connection with the source.

Reason: The electromagnetic field produced by the circuit gets induced into the unconnected lamp and makes it glow.

P©tz DPöÉqï£ £Á¸£ÆÃ PtU¼Ä

zÁÃAiÄ: PÆÃ ¥¹¹mÃµ£ï «zÁ£¢Az P©tz DPöÉqï£ £Á¸£ÆÃ PtU¼£Ä vAiiÁj¸ÄªÁzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: ¥jPï PÆÃgÉqï, ¥g¸ï PÆÃgÉqï, ¤ÃgÄ, NaOH, KOH, Jx£Á¯ï, ªiÁ¸UÄnPï ¹ggï, ºÁmï ¨Ávï, ¸An¥Æeï, N°Pï DªÄ.

«zÁ£: 0.86 UÁA ¥g¸ï PÆÃgÉqï ªÄvÄ 2.35 UÁA ¥jPï PÆÃgÉqï C£Ä 40 «Ä° ¤Ãj£° PgV¹. zÁª tª£Ä 15 ¤«ÄµU¼ PÁ® 60^0 vÁ¥z° PÁ¬Ä¹ £Avg 14 «Ä° NaOH ¸Ãj¹, §gÄª P¥Ä ¥¹¦mÃmï££Ä ¸An¥Æeï£° wgÄV¹, ¤Ãj£° vÆ¼zÄ MtV¹. Fe_3o_4 ¥ÄrAiÄÄ zÆgPÄvz.

EzP 3 «Ä° N°Pï DªÄ ¨g¹ PÁ¬Ä¹, §gÄª ¥¹¦mÃmï C£Ä PÁAwÃAiÄªÁV ¨Ã¥ðr¹, ¤ÃgÄ ªÄvÄ Jx£Á¯ï¤Az vÆ¼zÄ MtV¸ÄªÁzjAz ªÄÃ¯ïöÉ ¥jªvð£U¼Ä ¸Ázà.

Co-Precipitation of Fe^{2+} And Fe^{3+} Ions

Objective: To synthesize Iron oxide nano particles by co precipitation of Fe^{2+} and Fe^{3+} aqueous salt solutions by adding a base.

Materials required: Ferric chloride, Ferrous chloride, deionised water, NaOH, KOH, ethanol, magnetic stirrer, hot bath, centrifuge, Oleic acid (surfactant).

Procedure: 0.86g of Ferrous chloride and 2.35g of Ferric chloride should be dissolved in 40ml of deionised water with vigorous stirring. The solution is sealed and heated to 60degree for 15 minute and then 14 ml of NaOH is added. The black precipitate is centrifuged, washed with deionised water and then dried to get Fe3 O4 in powder form.

For surface modification: The mixture is added with 3ml of oleic acid, heated and the precipitate is magnetically separated, washed with water and ethanol and then dried.

«zÄvÁAwÃAiÄ ¥Ãgu

zÁÃAiÄ: «zÄvÁAwÃAiÄ ¥ÃguAiÄ vvªÉÄ ¤gÆ¦¸ÄªÁzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: vÁªÄz ¸ÄgÄ½U¼Ä(2), ±Äz P©tz ¸¯ÁP, DmÆÃ mÁ£ï¥ÁªÄðgï 6v ªÄvÄ 500mA £ «zÄvï ¢Ã¥.

«zÁ£: AC ªÄÆ®ª£ÄÃ 3000 ¸ÄvÄU¼ ¸ÄgÄ½U ¸A¥Qð¹. 2500 ¸ÄvÄU¼ E£ÆÃAzÄ ¸ÄgÄ½U «zÄvï ¢Ã¥ª£ÄÃ ¸A¥Qð¹. F JgqÄ ¸ÄgÄ½U¼ £qÄª ±Äz P©tz ¸¯ÁPAiÄ£ÄÃ Ej¹.

ªÆz®£AiÄ ¸ÄgÄ½AiÄ° «zÄvï ¥ª»¹zÁU Jgq£Ã ¸ÄgÄ½AiÆA¢U ¸A¥Qð¸¯ÁVgÄª ¢Ã¥ ¨¼UÄvz.

PÁgt: ªÆz®£Ã ¸ÄgÄ½AiÄ° ºjª AC «zÄvï §z¯ÁUÄª PÁAvPÃvª£ÄÃ GAlÄªiÁqÄvz. EzjAzÁV Jgq£AiÄ ¸ÄgÄ½AiÄ° «zÄvï ¥ÃjvUÆ¼Ävz ªÄvÄ vvjuÁªÄªÁV ¢Ã¥ ¨¼UÄvz.

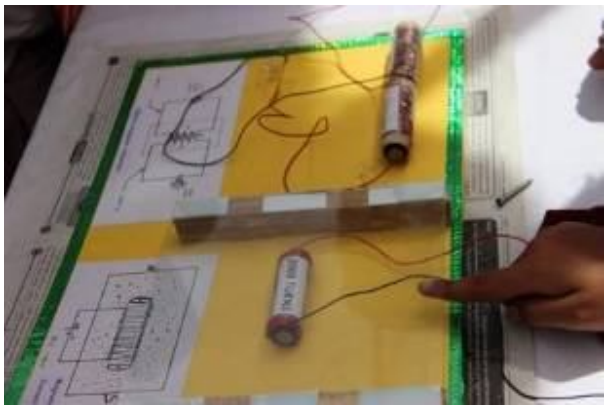
Electro Magnetic Induction

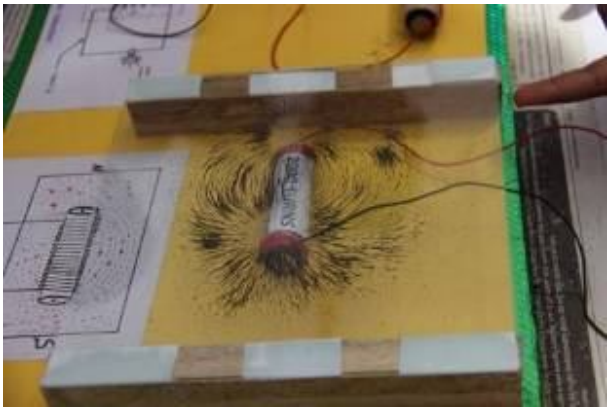
Objective: To demonstrate the principle of electromagnetic induction.

Materials required: Insulated copper wire wounded coils(2 Nos), Soft iron core, auto transformer, bulb of 6Vand 500mA.

Procedure: Connect AC source from auto transformer to the first coil of 3000 turns and the second coil of 2500 turns to a bulb. Place soft iron core in between the two coils. When the current flows through the first coil, the bulb connected to the second coil glows.

Reason: The AC flowing in the first coil gives rise to a varying magnetic field. This induces an emf in the second coil and hence the bulb glows.





r¹ ªÆÃmÁgï

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¨ÃPÁUÄª ¸ÁªÄVU¼Ä: qÆÃ£mï PÁAvU¼Ä (2), ¥ÀÆªÀqï ¸ÁÄAqÄ, ¨Á©£ïU¼Ä, vÁªÄz vAw (100 «ÄÃ), vÁªÄz vmU¼Ä (2)

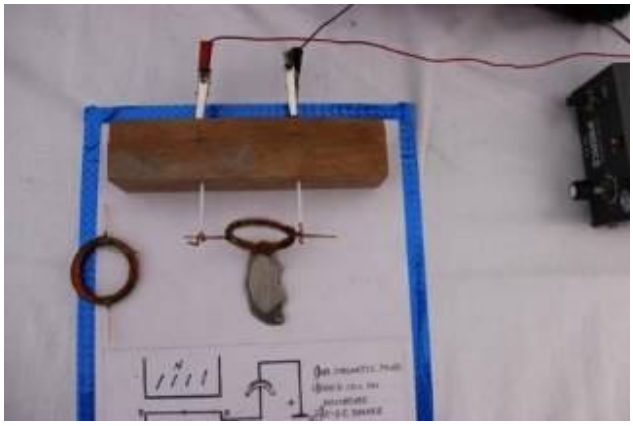
«zÁ£: avz° vÆÃj¹gÄªAv ¸ÁªÄVU¼ eÆÃqu ªiÁrPÆ½. r¹ ªÄÆ®ª£Ä¤ ¹÷mï jAUïU½U ¸A¥Qð¹. ¸ÄgÄ½AiÄ JgqÆ §¢AiÄ° PÁAvU¼£Ä¤ Ej¹. ¸ÄgÄ½AiÄ ªÄÆ®P «zÄvï ¥ª»¹zÁU PÁAvPÃv GAmÁUÄvz. qÆÃ£mï PÁAvU¼ PÁAvPÃv ªÄvÄ ¸ÄgÄ½¬ÄAz §Az PÁAvPÃvU¼ CAvg QAiÄ¬ÄAzÁV Dªvð£ GAmÁUÄvz.

Dc Motor

Objective: To demonstrate the working of DC motor.

Materials required: Donut magnet (2Nos), Ply wood, stand, bobbins, insulated copper wire 100metre, copper plates(2 Nos)

Procedure: The materials are arranged as per the diagram. The DC source is connected to the split rings and the magnets are placed on either side of the coil in the coil stand. The current flowing through the coil gives rise to a magnetic field. The interaction between this field and the field due to the permanent magnets causes rotation.



¥j¸ï ¹Pï

zÀÃAiÄ: PÁAvPÃvU¼ CAvgQAiÄ¬ÄAz Cªª¹v Z®£AiÄ£Ä GAlÄªiÁqÄªzÄ.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: PÁAvU¼Ä, «zÄvï PÁAv, mÆ¼Ä PA©U¼ (2 ¸ªiÁ£ Gzzª, MAzÄ ºa£ GzzÄ ªÄvÆAzÄ VqªÁVgÄª PA©), ªÄgz º®U.

«zÁ£: ¸ªiÁ£ Gzz PA©U¼£Ä º®UAiÄ ªÄÃ¯ v¯P¼UÁz V £Av eÆÃr¹. D vÄ¢U Gz£AiÄ PA©AiÄ ªÄzª ¨ÁUª£Ä ¸Æ ºÁQ PÆj¹. F PA©AiÄ MAzÄ vÄ¢U Vq£AiÄ PA© ªÄvÄ E£ÆAzÄ vÄ¢U CAiÄ¸ÁAvª£Ä Ej¹. Vq PA©AiÄ MAzÄ vÄ¢U ªÄvÆAzÄ PÁAvª£Ä ¹Q¹.

º®UAiÄ P¼U «zÄvïPÁAvª£Ä Ej¹. Gz£AiÄ PA©AiÄ£Ä PÆAZ J¼zÄ vÆU®Ä ©r. Gz ªÄvÄ Vq PA©U¼ Cªª¹v Z®£ §ºÄPÁ® ¸ÁUÄvz.

PÁgt: «zÄvïPÁAv ªÄvÄ E£gqÄ PÁAvU¼ PÃvU¼ CAvgQAiÄ¬ÄAzÁV F jÃwAiÄ Z®£ GAmÁUÄvz.

Ferris Stick

Objective: To demonstrate the chaotic motion of a structure due to interaction of magnetic fields.

Materials required: Magnets, electromagnet, hollow rods (2 of equal length, 1 longer and 1 shorter rod), wooden plank.

Procedure: Fix the rods of equal length on the wooden plank like an inverted V. Fix the midpoint of the longer rod to that apex. The small rod is fixed to one end of the long rod and a magnet to the other. Fix another magnet to one of the ends of the small rod. Place an electromagnet below the plank. Swing the longer tube forward. The structure continues the motion in a chaotic manner for a long time.

Reason: This is due to the interaction of the magnetic fields of electromagnet and the permanent magnets.

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¨ÃPÁUÄª ¸ÁªÄVU¼Ä: UÁ¥ÈmÏ vÄAqÄU¼Ä, ¨ÁÌj, vAwU¼Ä, PÆPÆqÈ¯ï Q¥ïU¼Ä, ªÄÃtz§w, ¨AQ ¥ÆlÌt, UÁf£ eÁr.

«zÁ£: ¨ÁÌjAiÆA¢U ¸A¥Qð¸¯ÁVgÄª UÁ¥ÈmÏ vÄAqÄ ªÄvÄ ¨¼UÄwgÄª ªÄÃtz §wAiÄ£Ä CPÌ-¥PÌz°Ì Ejº. UÁf£ eÁrAiÄ£Ä EªÌU¼ ªÄÃ¯ ¨ÆÃg®Ä ºÁQ. eÁrAiÄ M¼V£ DQd£ï wÃjz ªÄÃ¯ ªÄÃtz §w £AzÄvz. FU ¨ÁÌjAiÄ£Ä D£ï ªiÁr. UÁ¥ÈmÏ vÄAqÄ ºÆ¼AiÄÄvz. ¨¼PÄ ¤ÃqÄvz.

PÁgt: UÁ¥ÈmÏ ºa£ «zÄÁvï gÆÃzz PÁgt ©¹AiiÁUÄvz. ¸ÁPµÄ PÁªÃjzÁU ¨¼PÄ ©ÃgÄvz.

lAU÷l£ï KP? C¢P vÁ¥ªiÁ£U¼° UÁ¥ÈmÏ UÁf£Av ¥ÄrAiiÁUÄvz. F ¸ªÄ¸ÌAiÄ£Ä ¤ªÁj¸®Ä lAU÷£ï vAvÄª£Ä DAiÄ ªiÁq¯Á¬ÄvÄ. CzÄ ºa£ «zÄÁvï gÆÃz ºÆA¢z. PgUÄª ©AzÄªÇ ºZÄ.

Demonstrating Edison's Bulb Experiment

Objective: To demonstrate the basic experiment of Thomas Alva Edison for the invention of the Electric bulb.

Materials Required: Graphite peices, power supply, connecting wire, crocodile clips, candles, lighter, glass bottle.

Procedure: A graphite piece connected to a power supply and a lighted candle are placed inside an inverted glass bottle. The power supply is switched on only after the candle goes off with the exhaustion of oxygen within the bottle. The graphite glows emitting visible light.

Reason: Graphite gets heated up due to high resistance and glows when it is sufficiently hot.

Why Tungsten? The problem with the Graphite is its brittleness at high temperature. This led to the choice of Tungsten filament high resistance, high melting point and good mechanical strength.

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¨ÃPÁUÄª ¸ÁªÄVU¼Ä: C¯Á¸Á¤Pï ±§¦z ªÄÆ® ªÄvÄ ¸£gï, DqÆ¦ð£Æ, PA¥Æ¦lgï ªÄvÄ CqvqAiiÁV §¼¸®Ä MAzÄ º®U/q© EvÁ¦¢.

«zÁ£: ±§¦z ªÄÆ®¢Az ºÆgl C¯Á¸Á¤Pï vgAUU¼Ä Cqvq¬ÄAz ¥w¥°UÆAqÄ ¸£gï C£Ä¦ v®Ä¥Ävz. Ezg Omï¥¦mï C£Ä¦ DqÄ¦ð£ÆÃU PÆq¯ÁVz. F «zÄ¦£Á¦£ G¥Pgt ª¦ PA¥¦lgï£ ¥gzAiÄ ªÄÃ¯ zÆgª£Ä¦ vÆÃj¸Ävz.

* ¨ÁªÁ¦°U¼Ä F jÃwAiÄ zÆg C¼AiÄÄª ¸ÁªÄx¦ðª£Ä¦ ºÆA¢ª.

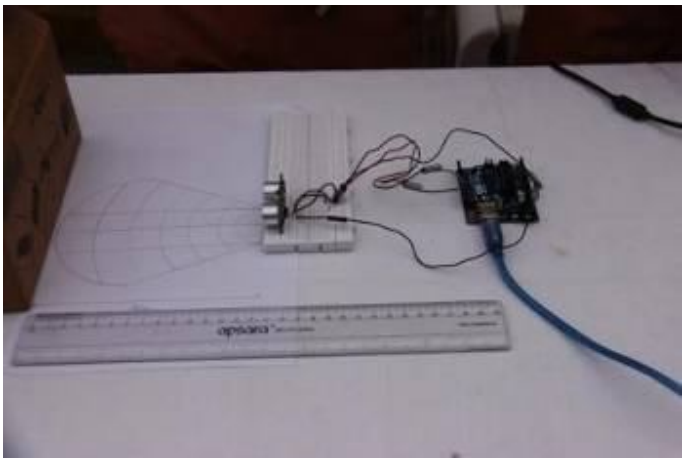
Ranging

Objective: To measure the distance between source of sand and obstacle.

Materials Required: Ultrasonic source and sensor, Arduino, monitor and some object like a box or board to be used as obstacle.

Procedure: The source produces ultrasonic waves. These waves gets reflected by the obstacle and come back to the sensor. The output of the sensor is connected to Arduino which is interfaced with the monitor screen where we can directly read the distance between the source and obstacle.

Bats do this kind of a ranging naturally.



PÁqïPÁ¥gï

zïÃAiÄ: PÁqïPÁ¥gï£ ºÁgÄ«PAiÄ ¤gÆ¥u.

¨ÃPÁUÄª ¸ÁªÄVU¼Ä: P.P.2 ¥ïmï ¨ÆÃqïð, 4 E.J¸ï.¦., 4 §±ïg»v ªÆÃlgï, 4 ¥Æ¥®gïU¼Ä, 1 mÁ¤ïlgï, ¨Ãg ¨Ãg PA¥£ÁAPz 2 j¹ÃªgïU¼Ä, 1 J.J¯ï.r. ¥n, °ÃyAiÄA ¨Áïlj.

KP ºÁgÄvz?

Ptðz JgqÆ §¢U EgÄªAvº gÆÃlgïU¼Ä §®¢Az JqPï wgÄUÄwzïg G½z E£ÆïAzÄ eÆÃr Jq¢Az §®Pï wgÄUÄvz. EzjAzÁV ¤ª¼ ªÄÃ®ÄR §® GAmÁUÄvz ªÄvÄ PÁqïPÁ¥gï ªÄÃ¯ÃgÄvz.

Quad Copter

Objective: To demonstrate the working of a quad copter.

Materials Required: K.K.2 flight board, 4ESP, 4 brushless motor, 4 propellers, 1 transmitter, 2 receivers of different frequencies, 1 LED strip, and lithium power battery.

What brings about the lift?

The rotors that are diagonally opposite rotate in clockwise direction and other pair rotates in counter clockwise direction.

This results in a net upward force because of which the quad copter rises up.