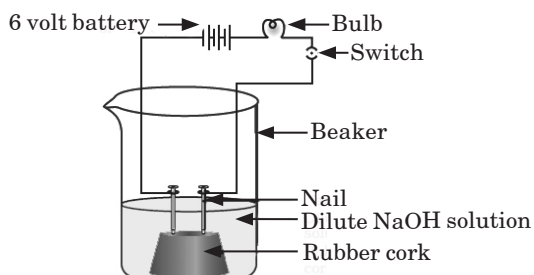




PRACTICAL QUESTIONS

Multiple Choice Questions

1. In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus was set up.

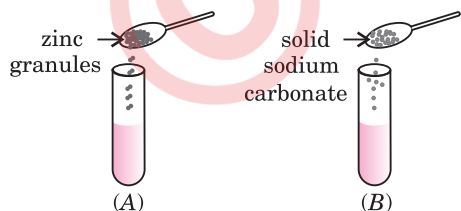


Which among the following statement(s) is(are) correct?

- (i) Bulb will not glow because electrolyte is not acidic.
 - (ii) Bulb will glow because NaOH is a strong base and furnishes ions for conduction.
 - (iii) Bulb will not glow because circuit is incomplete.
 - (iv) Bulb will not glow because it depends upon the type of electrolytic solution.
- (a) (i) and (iii) (b) (ii) and (iv)
(c) (ii) only (d) (iv) only

Ans. (c) : Bulb will glow because NaOH is a strong base and furnishes ions for conduction.

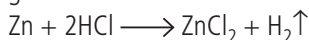
2. A student took two test tubes containing 2 mL of dilute hydrochloric acid and added zinc granules to test tube (A) and solid sodium carbonate to test tube (B) as shown below :



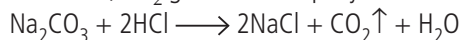
The correct observation would be

- (a) rapid reaction in both the test tubes
- (b) slow reaction in (A) and rapid reaction in (B)
- (c) rapid reaction in (A) but a slow reaction in (B)
- (d) no reaction in any of the test tube.

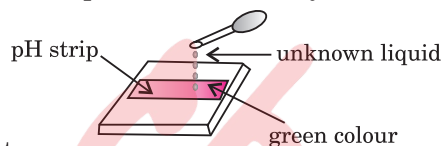
Ans. (a) : When zinc granules are added to hydrochloric acid, zinc displaces hydrogen from acid rapidly and thus hydrogen gas is evolved.



On the other hand, when solid sodium carbonate is added to dilute HCl, CO_2 gas evolves rapidly.



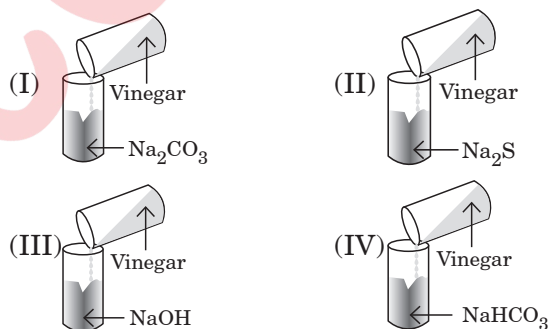
3. On putting few drops of an unknown liquid on pH strip, the colour of pH strip changed to green. The liquid taken is likely to be



- (a) water
- (b) dilute hydrochloric acid
- (c) lemon juice
- (d) dilute sodium hydroxide solution.

Ans. (a) : The unknown liquid turns the colour of pH strip to green which indicate that it is a neutral liquid. Therefore, it must be water.

4. A student added vinegar to test tubes I, II, III, IV and then introduced a burning matchstick, near the mouth of the test tubes.

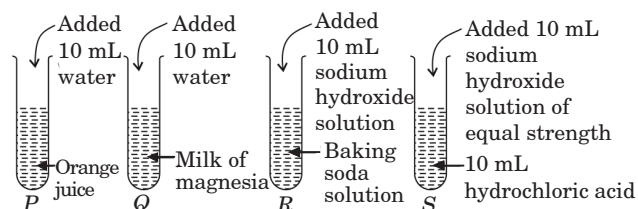


The matchstick will be extinguished in test tubes

- (a) I and IV
- (b) II and III
- (c) III and IV
- (d) I and II

Ans. (a) : Vinegar (acetic acid) reacts with metal carbonates (Na_2CO_3) and metal hydrogen carbonates (NaHCO_3) to produce carbon dioxide gas which extinguishes burning matchstick.

5. Ashish took four test tubes P, Q, R and S, each containing 10 mL of different solutions as shown in figure. Then few drops of methyl orange are added to each tube. The solution in which tube will turn methyl orange to red?

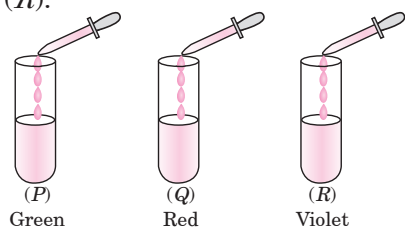


- (a) *P* (b) *Q*
(c) *R* (d) *S*

Ans. (a) : Methyl orange turns red in acidic solution. In test tube *P*, water is added to orange juice which is acidic. It dilutes the solution but it still remains acidic.

Test tubes *Q* and *R* contains basic solutions. Solution in tube *Q* remains basic even after dilution. In test tube *R*, the basic solution (sodium hydroxide) is added. So it remains basic. Test tube *S* contains hydrochloric acid which is neutralized on adding equal volume of sodium hydroxide (a base) of equal strength, resulting into a neutral solution which does not change the colour of methyl orange. Hence, solution of test tube *P* only turns methyl orange to red.

6. On adding a few drops of universal indicator to three unknown colourless solutions (*P*), (*Q*) and (*R*) taken separately in three test tubes shown in the following diagrams, a student observed the changes in colour as green in (*P*), red in (*Q*) and violet in (*R*).



The decreasing order of pH of the solution taken is

- (a) $P > Q > R$ (b) $R > P > Q$
(c) $Q > P > R$ (d) $R > Q > P$

Ans. (b)

7. Sodium hydrogen carbonate when added to acetic acid evolves a gas.

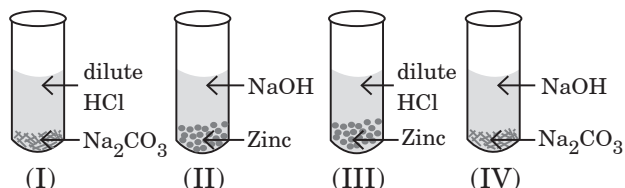
Which of the following statements are true about the gas evolved?

- (i) It turns lime water milky.
(ii) It extinguishes a burning splinter.
(iii) It dissolves in a solution of sodium hydroxide.
(iv) It has a pungent odour.

- (a) (i) and (ii) (b) (i), (ii) and (iii)
(c) (ii), (iii) and (iv) (d) (i) and (iv)

Ans. (b) : $\text{NaHCO}_3 + \text{CH}_3\text{COOH} \rightarrow \text{CH}_3\text{COONa} + \text{CO}_2\uparrow + \text{H}_2\text{O}$
Carbon dioxide gas is evolved which turns limewater milky. It extinguishes a burning splinter since it is not a supporter of combustion. It dissolves in sodium hydroxide solution and it is an odourless gas.

8. Four students were asked by their teacher to arrange the set-ups I-IV as given below and identify the gas evolved in each case, if any.



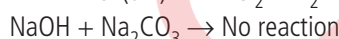
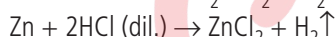
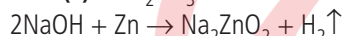
The students observed the gases evolved and recorded their inferences in the table given below :

Student	I	II	III	IV
A	Hydrogen	No gas	Carbon dioxide	Hydrogen
B	Carbon dioxide	Hydrogen	No gas	Carbon dioxide
C	Carbon dioxide	Hydrogen	Hydrogen	No gas
D	No gas	Carbon dioxide	Carbon dioxide	Hydrogen

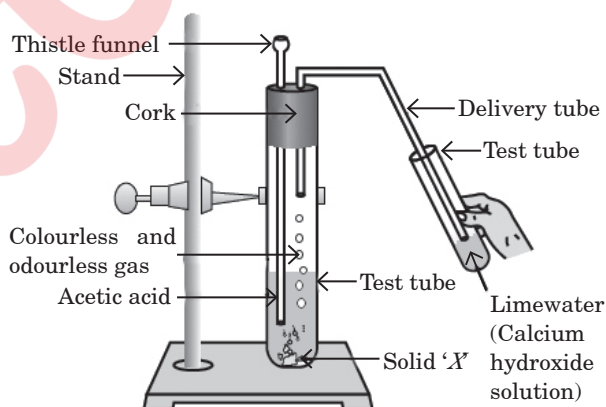
The correct inferences have been reported by student

- (a) *A* (b) *B*
(c) *C* (d) *D*

Ans. (c) : $\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2\uparrow$

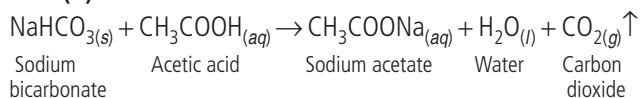


9. Acetic acid was added to a solid '*X*' taken in a test tube. A colourless and odourless gas was evolved. The gas was passed through lime water which turned milky. It was concluded that

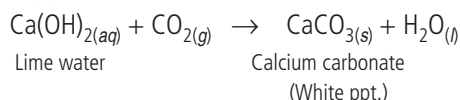


- (a) solid *X* is sodium hydroxide and the gas evolved is carbon dioxide
(b) solid *X* is sodium bicarbonate and the gas evolved is carbon dioxide
(c) solid *X* is sodium acetate and the gas evolved is carbon dioxide
(d) solid *X* is sodium chloride and the gas evolved is carbon dioxide.

Ans. (b) :



(X)



10. When you prepare 20% sodium hydroxide solution in a beaker containing water, then while preparing the solution you record certain observations. Select from the following the observations which are correct.

I. Sodium hydroxide is in the form of pellets/flakes.

II. It dissolves in water readily.

III. The beaker appears cold when touched from outside immediately after adding sodium hydroxide to water.

IV. When red litmus paper is dipped into the solution, it turns blue.

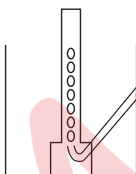
- (a) I, II and III (b) II, III and IV
(c) I, III and IV (d) I, II and IV

Ans. (d): (III) is wrong because dissolution of NaOH is a exothermic process and the beaker become hot.

Subjective Questions

11. A metal is treated with dil. H_2SO_4 , the gas evolved is collected by the method shown in the figure. Answer the following :

- Name the gas.
- Name the method of collection of the gas.
- Is the gas soluble or insoluble in water?
- Is the gas lighter or heavier than air?



- Ans.** (i) H_2 gas
(ii) Downward displacement of air.
(iii) The gas is insoluble in water.
(iv) The gas is lighter than air.

12. The tanks in which milk is stored for retail selling are cleaned with sodium hydroxide solution every time, fresh milk is filled in them. Give the reason for this practice.

Ans. Milk contains lactic acid and its effect remains in the empty tank. The acidic effect in the tank can be neutralized by cleaning it with a solution of a base, e.g., NaOH. It changes the acid into salt which then gets removed from the tank by cleaning with water.

13. You have been provided with three test tubes. One of them contains distilled water and the other two contain an acidic solution and a basic solution, respectively. If you are given only red litmus paper, how will you identify the contents of each test tubes?

Ans. Take three small pieces of red litmus paper. Put one drop each of the given solutions on these litmus papers.

The liquid which turns red litmus into blue is a basic solution. Divide the blue litmus paper so formed into two parts. Put one drop each of the other two liquids separately on these two pieces of litmus paper.

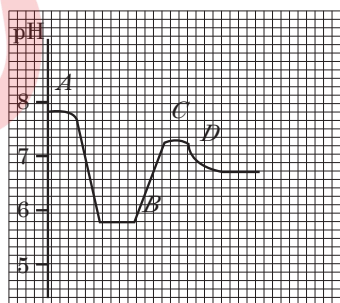
The solution which turns blue litmus paper red is acidic solution. The solution which does not affect the colour of litmus paper is water.

14. What do you observe when you drop a few drops of acetic acid to a test tube containing :

- phenolphthalein
- universal indicator
- distilled water
- sodium hydrogen carbonate?

Ans. (a) Acetic acid will remain colourless in phenolphthalein.
(b) Universal indicator gives orange colour with acetic acid.
(c) Acetic acid will dissolve in distilled water forming a clear solution.
(d) Sodium hydrogen carbonate will give brisk effervescence due to the formation of CO_2 gas.

15. The graph shows how the pH of the soil in a farmer's field changed over a period of time.



- At which point A, B, C or D did the farmer apply lime to the field.
- What is the importance of pH in our daily life?
- Give two examples showing importance of neutralization in our daily life.

Ans. (a) Lime is added when the soil becomes acidic thus, the farmer must have added lime at point B.

(b) pH is very important in daily life as plants require a specific pH range for their healthy growth and living organisms can also survive only in a narrow range of pH.

(c) (i) Our stomach produces hydrochloric acid. It helps in the digestion of food without harming the stomach. During indigestion the stomach produces too much acid and this causes pain and irritation which can be relieved by taking an antacid like milk of magnesia which is basic in nature.

(ii) Bee-sting leaves an acid which causes pain and irritation. Use of a mild base like baking soda on the stung area gives relief.

