Multiple Choice Questions

1. The correct way of making a solution of acid in water is to
(a) add water to acid.
(b) add acid to water.
(c) mix acid and water simultaneously.
(d) add water to acid in a shallow container.

Soln:

Answer is (b) add acid to water.

Explanation:

If we add water to acid it will be exothermic reaction which will produce a lot of heat which may lead to explosion. Hence water should be added to acid.

2. Products of a neutralisation reaction are always
(a) an acid and a base.
(b) an acid and a salt.
(c) a salt and water.
(d) a salt and a base.

Soln:

Answer is (c) a salt and water.

3. Turmeric is a natural indicator. On adding its paste to acid and base separately, which colours would be observed
(a) Yellow in both acid and base.
(b) Yellow in acid and red in base.
(c) Pink in acid and yellow in base.
(d) Red in acid and blue in base.

Soln:

Answer is (b) Yellow in acid and red in base.

Explanation:

Turmeric paste is yellow in color and it is acidic in nature hence it remains yellow in acid whereas it is converted to red due to neutralization by base.

4. Phenolphthalein is a
synthetic indicator and its colours in acidic and basic solutions, respectively are
(a) red and blue.
(b) blue and red.
(c) pink and colourless.
(d) colourless and pink

Soln:

Answer is (d) colourless and pink

5.When the soil is too basic, plants do not grow well in it. To improve its quality what must be added to the soil?

(a) Organic matter
(b) Quick lime
(c) Slaked lime
(d) Calamine solution

Soln:

Answer is (a) Organic matter

Explanation:

Organic matter is added to basic soil to neutralize its base which improves its quality.

6. 'Litmus', a natural dye is an extract of which of the following?
(a) China rose (Gudhal)
(b) Beetroot
(c) Lichen
(d) Blue berries (Jamun)

Soln:

Answer is (c) Lichen

7. Neutralisation reaction is a

(a) physical and reversible change.
(b) physical change that cannot be reversed.
(c) chemical and reversible change.
(d) chemical change that cannot be reversed.

Soln:

Answer is (d) chemical change that cannot be reversed.

Explanation:

It is a chemical reaction where an acid and base reacts with each other quantitatively. Neutralization is an irreversible process.

8. A solution changes the colour of turmeric indicator from yellow to red. The solution is

(a) basic
(b) acidic
(c) neutral
(d) either neutral or acidic

Soln:

Answer is (a) basic

Explanation:

Turmeric is acidic in nature hence it is converted to red due to neutralization by base.

9. Which of the following set of substances contain acids?
(a) Grapes, lime water
(b) Vinegar, soap
(c) Curd, milk of magnesia
(d) Curd, vinegar

Soln:

Answer is (d) Curd, vinegar

Explanation:

Curd contains lactic acid and vinegar contains acetic acid.

10. On adding phenolphthalein indicator to a colourless solution, no change is observed. What is the nature of this solution?

(a) Basic
(b) Either acidic or basic
(c) Either acidic or neutral
(d) Either basic or neutral

Soln:

Answer is (c) Either acidic or neutral

Explanation:

Color of phenolphthalein indicator will not change with acidic or neutral solution.

11. Which of the following is an acid-base indicator?

(a) Vinegar
(b) Lime water
(c) Turmeric
(d) Baking soda

Soln:

Answer is (c) Turmeric

Explanation:

Turmeric will be yellow in acidic solution and red in basic solution.

Very Short Answer Questions

12. Look at the given reaction.

Hydrochloric acid + Sodium hydroxide (base) → Sodium chloride (salt) + Water

Sodium chloride formed in this reaction remains in solution form. Can we get solid sodium chloride from this solution? Suggest a method (if any).

Soln:

Sodium chloride is soluble in water hence we get solution of Sodium chloride. We can get solid Sodium chloride by evaporation method.

13. State whether the following statements are true or false. Correct the false statements.
(a) All substances are either acidic or basic.
(b) A compound if acidic will turn all indicators red.
(c) Lime water turns red litmus blue.
(d) Common salt dissolved in water turns blue litmus red.
(e) Phenolphthalein is a natural indicator.
(f) Calamine can be used to treat ant's sting.
(g) Lemon water is basic in nature.

Soln:

a) False- Substance can be acidic, basic or neutral in nature
b) False- Acids do not turn all indicators red.
c) True
d) False- Color of the litmus paper will not change at all
e) False- Phenopthalein is man made indicator
f) True
g) False- Lemon water is acidic in nature

14. Paheli is suffering from indigestion due to acidity. Is it advisable to give her orange juice in this situation and why?

Soln:

No, Orange juice is not advised because orange juice is acidic is nature.

Short Answer Questions

15. Look at Figure 5.1 which shows solutions taken in test tubes A,B,C and D. What colour is expected when a piece of red litmus paper is dropped in each test tube? Nature of the solutions is given in the table for your help.

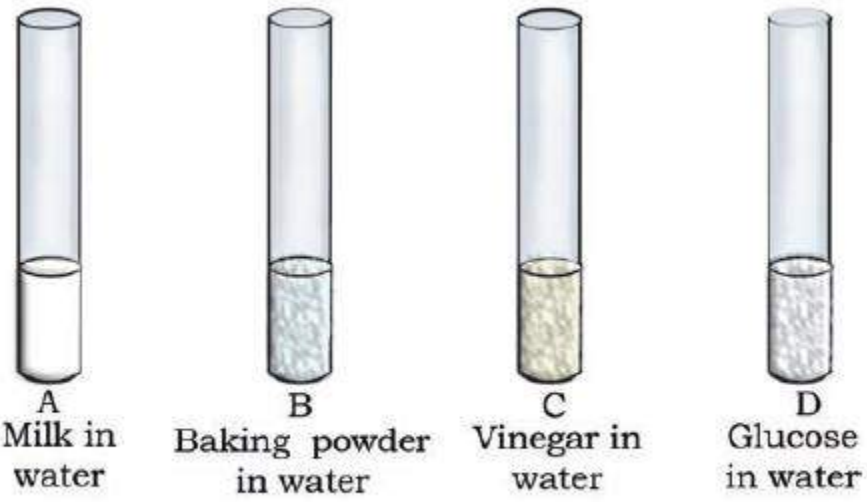


Fig. 5.1

Soln:

Test tube	Nature of Solution	Change in Color of red litmus
A	Neutral	No change
B	Basic	Turn blue
C	Acidic	
D	Neutral	

16. While playing in a park, a child was stung by a wasp. Some elders suggested applying paste of baking soda and others lemon juice as remedy. Which remedy do you think is appropriate and why?

Soln:

Wasp releases a liquid substance into body when it sting. This liquid will be acidic in nature hence baking soda should be applied as a remedy and adding lemon juice will increase the pain and redness.

17. Form a sentence using the following words – baking soda, ant bite, moist, effect, neutralised, rubbing.

Soln:

The effect of an ant bite can be neutralised by rubbing moist baking soda.

18. Match the substances in Column I with those in Column II.

Column I	Column II
a) Tartaric acid	i. Soap
b) Calcium hydroxide	ii. Curd
c) Formic acid	iii. Unripe mangoes
d) Sodium Hydroxide	iv. Ant's sting
e) Lactic acid	v. Lime water

Soln:

Column I	Column II
a) Tartaric acid	iii. Unripe mangoes
b) Calcium hydroxide	v. Lime water
c) Formic acid	iv. Ant's sting
d) Sodium Hydroxide	i. Soap
e) Lactic acid	ii. Curd

19. Fill the blanks in the following sentences
(a) Lemon juice and vinegar taste _____ because they contain _____.
(b) Turmeric and litmus are _____ acid-base indicators.
(c) Phenolphthalein gives _____ colour with lime water.
(d) When an acidic solution is mixed with a basic solution, they _____ each other forming _____ and water.

Soln:

(a) Lemon juice and **vinegar** taste sour because they contain **acids**.
(b) Turmeric and litmus are **natural** acid-base indicators.
(c) Phenolphthalein gives **pink** colour with lime water.
(d) When an acidic solution is mixed with a basic solution, they **neutralize** each other forming **salt**

Long Answer Questions

20. Boojho, Paheli and their friend Golu were provided with a test tube each containing China rose solution which was pink in colour. Boojho added two drops of solution 'A' in his test tube and got dark pink colour. Paheli added 2 drops of solution 'B' to her test tube and got green colour. Golu added 2 drops of solution 'C' but could not get any change in colour. Suggest the possible cause for the variation in their results.

Soln:

Since solution A turns China rose color to dark pink hence Solution A is an acidic solution. solution B turns China rose color to green color hence Solution B is a basic solution. Since Solution C did not change the color of china rose Solution it is a neutral solution.

21. Fill in the cross word given as Figure 5.2 with the help of the clues provided.

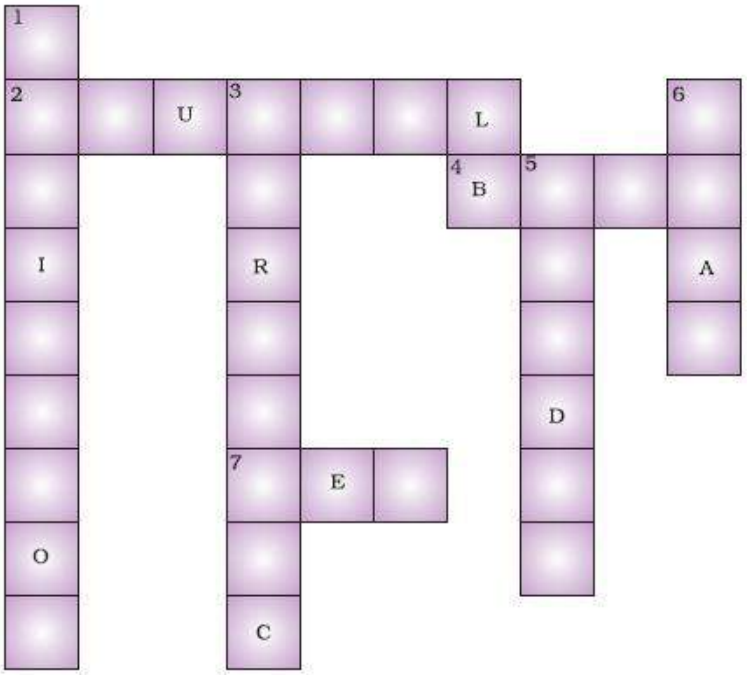


Fig. 5.2

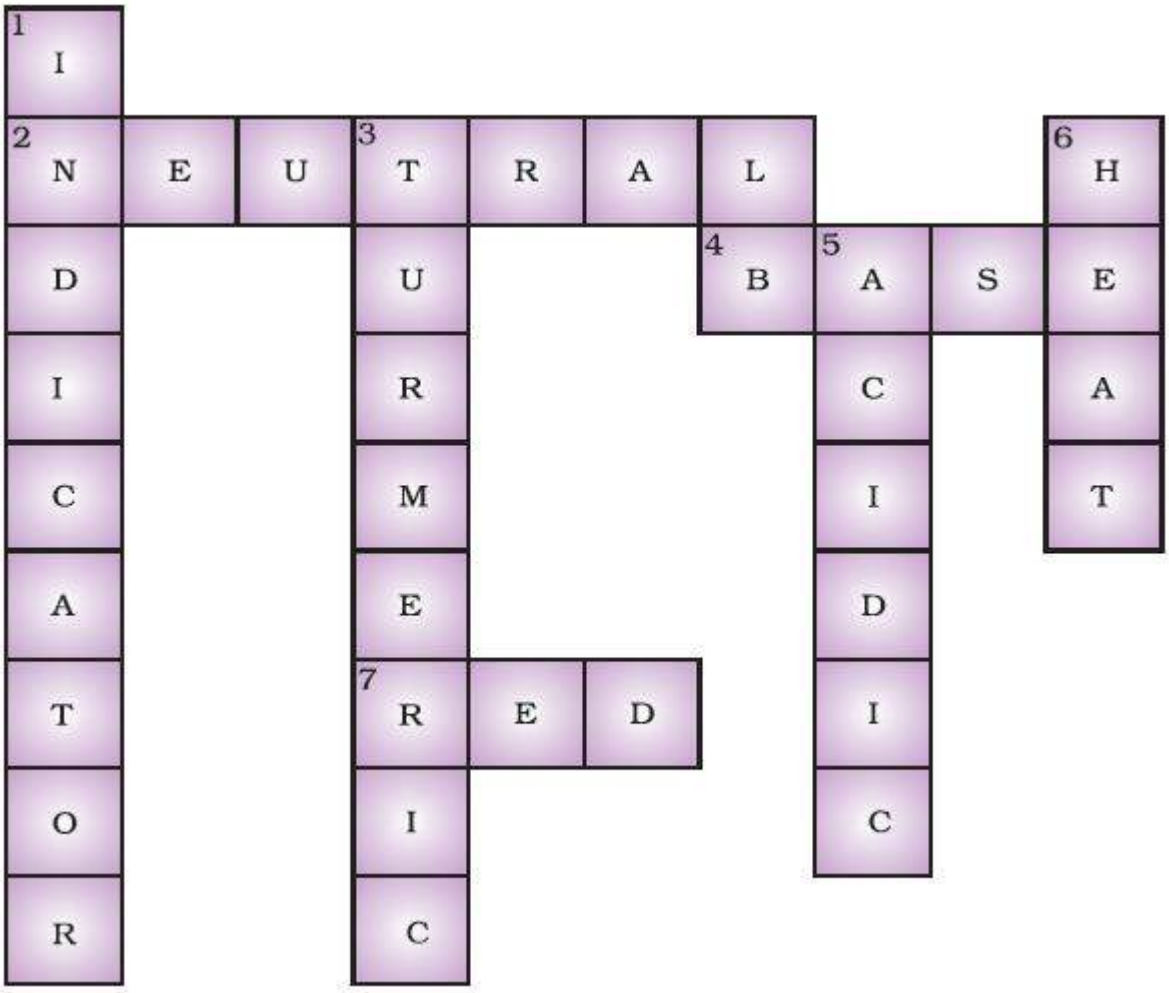
Across

(2) The solution which does not change the colour of either red or blue litmus.
(4) Phenolphthalein gives pink colour in this type of solution.
(7) Colour of blue litmus in lemon juice.

Down

(1) It is used to test whether a substance is acidic or basic.
(3) It is a natural indicator and gives pink colour in basic solution.
(5) Nature of ant's sting.
(6) It is responsible for increase in temperature during a neutralisation reaction.

Soln:



22. A farmer was unhappy because of his low crop yield. He discussed the problem with an agricultural scientist and realised that the soil of his field was either too acidic or too basic. What remedy would you suggest the farmer to neutralise the soil?

Soln:

If the soil is too acidic, it is treated with bases such as quick lime (calcium oxide) or slaked lime (calcium hydroxide).If the soil is too basic, organic matter is added to it. Organic matter releases acids which neutralises the basic nature of the soil.

23. You are provided with four test tubes containing sugar solution, baking soda solution, tamarind solution, salt solution. Write down an activity to find the nature (acidic/basic/neutral) of each solution.

Soln:

Add blue litmus solution and then red litmus solution for the testtubes containing sugar solution, baking soda solution, tamarind solution, salt solution. One can observe the colour changes to find the nature of each of them. It is as follows.

Sugar and salt solution are neutral as there is no color change

Baking soda turn red litmus to blue and it is a basic solution.

Tamarind solution turns blue litmus to red and it is acidic in nature

24. You are provided with three test tubes A, B and C as shown in Figure 5.3 with different liquids. What will you observe when you put
(a) a piece of blue litmus paper in each test tube.
(b) a piece of red litmus paper in each test tube.
(c) a few drops of phenolphthalein solution to each test tube.

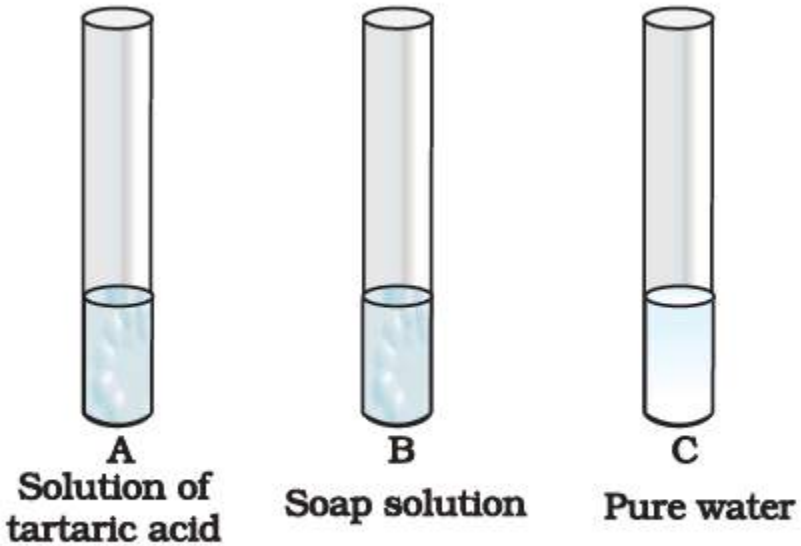


Fig 5.3

Soln:

Test tube	Effect on blue litmus	Effect on red litmus	Effect on Phenolphthalein Solution
A	Turns red	Remains red	Colorless
B	Remains Blue	Turns blue	Pink color
C	Remains blue	Remains red	Colorless

25. Paheli observed that most of the fish in the pond of her village were gradually dying. She also observed that the waste of a factory in their village is flowing into the pond which probably caused the fish to die.
(a) Explain why the fish were dying.
(b) If the factory waste is acidic in nature, how can it be neutralised?

Soln:

a) As Factory waste is disposed off in the river it can kill the fish as factory waste may contain acids, bases and other toxic compounds.
b) If the factory waste is acidic in nature, it can be neutralised by adding basic substances.

26. Explain two neutralisation reactions related to daily life situation.

Soln:

A) Acidity

Acidity is caused in the stomach as indigestion releases lot of acids. This can be controlled by taking antacids like milk of magnesia.

(b) Ant's sting

Ant's sting releases formic acid in the skin. It can be neutralised by rubbing baking soda or putting calamine lotion.