

Subject – Science

Class- 7

Topic – chapter-5 acids,bases,and salts



Exercise

(Use Cordova Smart Class Software on the smart board in class to do these exercises.)

A Tick (✓) the correct options.

1. Acid present in tamarind

- (a) lactic acid (b) citric acid (c) tartaric acid (d) acetic acid

2. Choose base from the following compounds.

- (a) salt (b) acid of salt (c) washing soda (d) malic acid

3. Gas formed by the reaction of acid and Zn

- (a) hydrogen (b) nitrogen (c) CO₂ (d) oxygen

4. Which of the following is nitric acid?

- (a) HNO₃ (b) H₂SO₄ (c) HCl (d) CH₃COOH

B Fill in the blanks.

1. Bases turn red litmus to blue.

2. Reaction of acid with base forms salt and water.

3. Acid reacts with sodium bicarbonate and evolves CO₂ gas.

4. HCl + NaOH = NaCl + H₂O

C Match the following correctly.

Column A

- Sodium chloride c
- Acid of sulphur a
- Baking soda b
- Vinegar e
- Quick lime d

Column B

- H₂SO₄
- NaHCO₃
- NaCl
- CaO
- CH₃COOH

D Short answer type questions

1. Write the names of any two natural indicators. Turmeric, China rose

2. In which reaction do acids and bases react to form salt and water? Neutralisation reaction

3. Write three properties of bases. 70

4. A blue litmus is dipped in a solution. It becomes red. Write the nature of the solution. Explain it. Acidic solution

5. What is acidity? Write its treatment. 73

6. What happens if waste material of industries is drained off without treatment?

7. Why do we not use metal container to keep lemon juice? because lemon juice acidic in nature and it react with metal can be poison

E Long answer type questions

1. What are indicators? Name any two indicators. Explain the effect of these indicators on acids and bases. 65

2. Write three differences between acids and bases. 71

3. Write uses of the following: 70, 73
 (a) Washing soda 73 (b) Sodium chloride 73 (c) Sulphuric acid 70
 (d) Calcium oxide 70 (e) Acetic acid 70

ADDITIONAL QUESTIONS FOR PRACTICE

A Tick (✓) the correct options.

- Which of the following is found in vinegar?
 (a) amino acid (b) acetic acid (c) tannic acid (d) glycolic acid
- Which of the following acids is present in tomato?
 (a) malic acid (b) glycolic acid (c) lactic acid (d) oxalic acid
- Which of the following is corrosive?
 (a) concentrated acid (b) organic acids
 (c) salts (d) both (a) and (b)
- Which of the following is a neutral substance?
 (a) amino acid (b) sodium hydroxide
 (c) citric acid (d) glucose
- Lemon juice changes blue litmus paper to
 (a) red (b) blue (c) green (d) black
- Which of the following affects turmeric paper?
 (a) hydrochloric acid (b) sulphuric acid
 (c) lemon juice (d) soap

B Fill in the blanks.

- The word acid comes from the Latin word acidus.
- Tartaric acid mixed with baking soda is used in making cakes and biscuits.
- Bases are bitter in taste.
- Solution of litmus in distilled water is mauve in colour.
- When neutral litmus solution is added to an acidic solution, it turns red.
- Bases turn yellow turmeric paper red.
- China rose has no effect on neutral substances.
- Salt solutions are good conductors of electricity.
- A large amount of hydrochloric acid leads to acidity in stomach.
- Milk of magnesia contains milk that neutralises acid.
- Calamine solution is basic in nature.

C Short answer questions

- (a) Name three edible substances that are sour in taste. lemon, orange, vinegar
 (b) Name two organic acids and mineral acids. citric acid, lactic acid, Nitric acid, sulphuric acid
- How are organic acids different from mineral acids?

3. What is meant by concentrated acid? Why should we never handle the mineral acids with bare hands?

4. What are neutral substances? Give two examples.

5. Name the plant from which litmus indicator is extracted. How are red and blue litmus solutions are made from neutral litmus solution? *65*

6. What happens when red litmus is added to nitric acid? *it does not change its colour*

7. What happens when washing soda solution is added to yellow turmeric paper? *turns it to red, as it (washing soda) is a base*

8. Name the substances that can be added when soil is too: (a) acidic (b) basic

D Long answer questions

1. How do you prepare an indicator from china rose petals? *acidic soil can be treated with base such as quick lime, calcium oxide or slaked lime calcium hydroxide*

2. (a) Define neutralisation reaction. *71*

(b) Write any two properties of salts. *72*

F 3. Why do we feel painful burning and swelling when ants or bees sting or bite a person? How can a person gets relief from the pain caused by the sting?

E Think and answer

1. When you are provided with three colourless solutions: dil. NaOH, water and dil. HCl, then how will you identify water from them without tasting? [Remember: We should not taste chemicals.]

2. Rohan observes the following while doing an experiment.

Solution	P	Q	R	S
Blue litmus	Red	Deep Red	No change	Mauve
Red litmus	No change	No change	Blue	Mauve

(a) Which of these is strongly acidic and basic?

(b) Which two solutions will react to show neutralisation reaction?

Chapter 5: Acids, Bases And Salts

Multiple Choice Questions

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1. (a) 2. (d)

Multiple Choice Questions

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1. (b) 2. (c)

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Multiple Choice Questions

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1. (a) 2. (b)

Multiple Choice Questions

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1. (d) 2. (c)

Multiple Choice Questions

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1. (a) 2. (c)

EXERCISE

A. Tick (✓) the correct options.

1. (c) 2. (c) 3. (a) 4. (a)

B. Fill in the blanks.

1. blue 2. salt
3. hydrogen 4. NaCl, H₂O

C. Match the following correctly.

1. (c) 2. (a) 3. (b) 4. (e) 5. (d)

D. Short answer type questions

- China rose petals, turmeric, litmus, red cabbage juice (any two)
- Acids and bases react to form salt and water in neutralisation reaction.
- Three properties of bases are :
 - They are bitter in taste.
 - They feel soapy to touch.
 - They turn red litmus blue.
- The solution is acidic in nature. This is because basic solutions turn blue litmus red.
- When we eat very spicy food, the stomach produces a large amount of hydrochloric acid that leads to the acidity in stomach. Acidity can be treated by taking weak bases called antacids, such as milk of magnesia.
- The waste materials of industries contain acids. When these wastes are directly discharged (or drained) into the water bodies without the treatment, the acids present in the wastes kill the fishes and other aquatic organisms that live in these water bodies.
- Lemon contains citric acid. Therefore, lemon juices are acidic in nature. Due to this acidic nature of lemon juice, it reacts with the metals in contact with it to form hydrogen gas and their respective salts. So, we do not use a metal container to keep lemon juice.

E. Long answer type questions

1. Indicators are special substances that have different colours in acidic and basic mediums. They are used to check whether a substance is

acidic, basic or neutral in nature. These indicators are called acid-base indicators. Indicators change their colour when added to a solution containing an acidic or a basic substance. Examples of indicators are turmeric and phenolphthalein.

The effect of these indicators on acids and bases is as follows:

- (i) Turmeric is a natural indicator which turns yellow turmeric paper red on reaction with bases, whereas acids and neutral substances show no effect on the turmeric paper.
- (ii) Phenolphthalein is a human-made indicator which turns colourless phenolphthalein solution pink on reaction with basic solutions, whereas it remains colourless with acidic or neutral solutions.

S. No.	Acids	Bases
(i)	Acids are sour in taste.	Bases are bitter in taste.
(ii)	They are not soapy to touch.	They are soapy to touch.
(iii)	They turn blue litmus paper red.	They turn red litmus paper blue.

3. (a) **Uses of washing soda:**
 - (i) It is used in the manufacturing of detergent.
 - (ii) It is used for the softening of hard water.
- (b) **Uses of sodium chloride:**
 - (i) It is an important component of food items.
 - (ii) It is used as a preservative in food items like pickles.
 - (iii) It is used in the freezing of mixtures.
 - (iv) It is used in the manufacturing of soap to solidify it.
 - (v) It is also used in the preparation of many substances on a large scale, like chlorine, hydrogen, soda lime, washing soda and hydrochloric acid.
- (c) **Uses of sulphuric acid:**
 - (i) It is used in manufacturing of fertilisers, automobiles' batteries, plastics, textiles and paper.
 - (ii) It is used in leather industry.
- (d) **Uses of calcium oxide:**
 - (i) It is used in homes for white washing.
 - (ii) It is used for treating wounds.
 - (iii) It is used in the manufacturing of ammonia.
 - (iv) It is used in the extraction of iron in industries.
- (e) **Uses of acetic acid:**
 - (i) It is used in making pickles.
 - (ii) It is used in making medicines.
 - (iii) It is used in making white lead and in industries.

ADDITIONAL QUESTIONS FOR PRACTICE

A. Tick (✓) the correct options.

1. (b) 2. (d) 3. (a) 4. (d) 5. (a)
6. (d)

B. Fill in the blanks.

1. *acidus* 2. Tartaric 3. bitter
4. mauve (purple) 5. red 6. red
7. neutral 8. good 9. hydrochloric acid
10. magnesium hydroxide 11. basic

C. Short answer questions.

1. (a) Lemon, orange and vinegar
(b) Organic acids: Citric acid and lactic acid
Mineral acids: Nitric acid and sulphuric acid

2.

S. No.	Organic acids	Mineral acids
(i)	The acids that are found in plants and animals are called organic acids.	The acids prepared from the minerals on the earth are called mineral acids.
(ii)	They are not strong and corrosive.	They are very strong and highly corrosive.
(iii)	Tartaric acid and acetic acid are examples of organic acids.	Sulphuric acid and nitric acid are examples of mineral acids.

3. A concentrated acid is an acid in almost pure form or has a very small quantity of water.
Mineral acids are highly corrosive in nature and can cause severe burns to the skin. Therefore, these acids should never be handled with bare hands.
4. The substances that are neither acidic nor basic in nature are called neutral substances. Pure water (or distilled water) and cane sugar are examples of neutral substances.
5. Litmus is a dye extracted from lichens. To make blue litmus solution, a few drops of a base are added to neutral litmus solution and to make red litmus solution, a few drops of an acid are added to the neutral litmus solution.
6. When red litmus is added to nitric acid, it does not change its colour.
7. Washing soda solution turns yellow turmeric paper red as it is a base.
8. (a) Acidic soil can be treated with bases such as quicklime (calcium oxide) or slaked lime (calcium hydroxide).
(b) The decaying organic matter (called manure or compost) is added to the soil when it is too basic.



D. Long answer questions

1. We can prepare china rose indicator from the petals of china rose flower by following method:
 - (i) Collect some petals of china rose flower and place them in a beaker.
 - (ii) Add some warm water. Keep the china rose petals immersed in warm water for some time till the water in the beaker becomes light pink in colour.
 - (iii) Filter the solution. The light pink filtrate obtained is the china rose indicator.
2. (a) The reaction in which an acid reacts with a base to form salt and water is called neutralisation reaction.
(b) Properties of salts are as follows:
 - (i) Salts exist in solid state.
 - (ii) They have high melting and boiling points.
3. When ants or bees sting or bite a person, they inject formic acid into the skin of the person that causes painful burning and swelling.
The effect of the sting can be neutralised by rubbing a mild base like baking soda (sodium hydrogen carbonate) or calamine solution (zinc carbonate) on the stung area of the skin. Being a base, baking soda solution or calamine solution neutralises the formic acid injected by the ants or bees and thus, the person gets relief from the pain caused by the sting.

E. Think and answer

1. We can identify water from three colourless solutions by using the litmus paper. The solution in which blue litmus changes to red is acidic (dil.HCl) and in which red litmus changes to blue is basic (dil.NaOH). The solution in which colour of both the litmus remains unchanged is neutral, i.e., water.
2. (a) Solution Q is strongly acidic and solution R is strongly basic.
(b) The following solutions will react to show neutralisation reaction:
 - (i) Q and R
 - (ii) P and R

