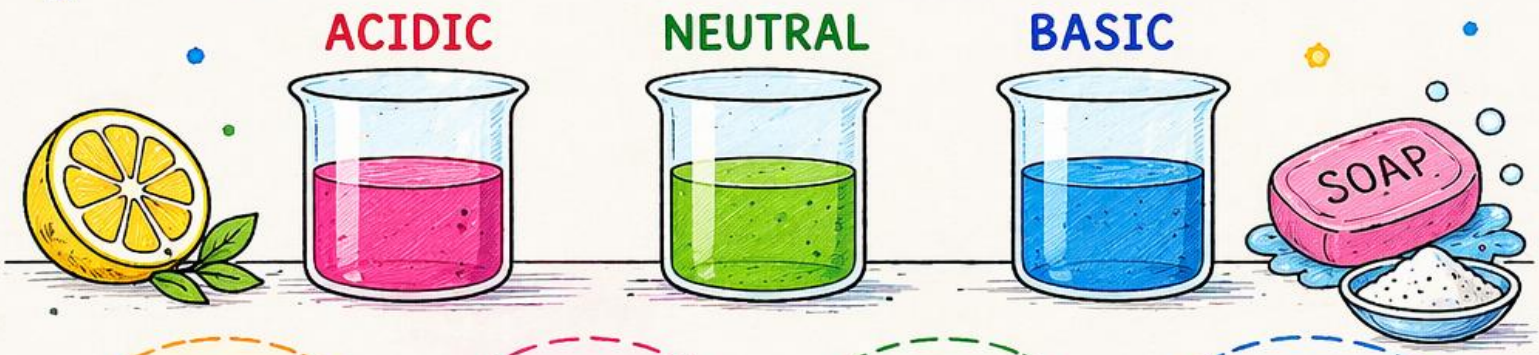
CLASS 7 SCIENCE

CHAPTER 2

EXPLORING SUBSTANCES: ACIDIC, BASIC AND NEUTRAL



STUDY NOTES

KEYWORDS

NCERT SOLUTIONS

MIND MAP

KEYWORDS WITH DEFINITIONS

CLASS VII SCIENCE

CHAPTER 2

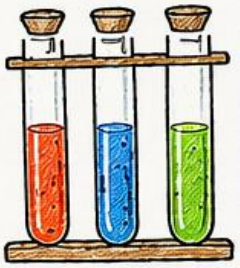
EXPLORING SUBSTANCES : ACIDIC , BASIC AND NEUTRAL

1	Acid	:	A substance that turns blue litmus red and usually tastes sour.
2	Base	:	A substance that turns red litmus blue and feels bitter and slippery.
3	Neutral Substance	:	A substance that does not change the colour of litmus.
4	Indicator	:	A substance that shows a colour change to identify whether something is acidic or basic.
5	Litmus	:	A natural indicator obtained from lichens, used to test acids and bases.
6	Acidic Substance	:	A substance that shows acidic properties (turns blue litmus red).
7	Basic Substance	:	A substance that shows basic properties (turns red litmus blue).
8	Natural Indicator	:	Indicators obtained from natural sources (e.g., litmus, turmeric, red rose).
9	Synthetic Indicator	:	Indicators made in laboratories (used in advanced studies).
10	Olfactory Indicator	:	A substance whose smell changes in acidic or basic solutions (e.g., onion).
11	Turmeric Indicator	:	A natural indicator that turns red in basic solution and shows no change in acid.
12	Red Rose Indicator	:	A natural indicator that gives red colour in acid and green in base.
13	Neutralisation	:	A reaction in which an acid reacts with a base to form a neutral substance.
14	Neutralisation Reaction	:	Chemical reaction : Acid + Base → Salt + Water + Heat
15	Salt	:	A substance formed during neutralisation reaction.
16	Olfactory Change	:	Change in smell when substances react with acids or bases.
17	Soil Treatment	:	Process of correcting soil nature.
18	Acidic Soil	:	Soil containing excess acid, harmful for plant growth.
19	Basic Soil	:	Soil containing excess base, also unsuitable for plants.
20	Environmental Balance	:	Maintaining proper conditions in nature using processes like neutralisation.

STUDY NOTES
CLASS VII SCIENCE
CHAPTER 2
EXPLORING SUBSTANCES: ACIDIC, BASIC AND NEUTRAL

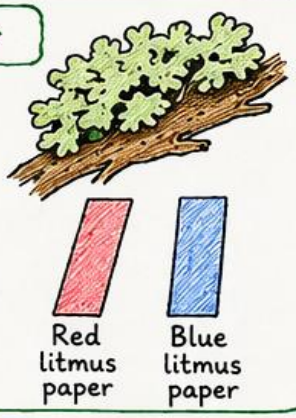
1 Types of Substances

- Substances are classified as acidic, basic, or neutral based on their properties.



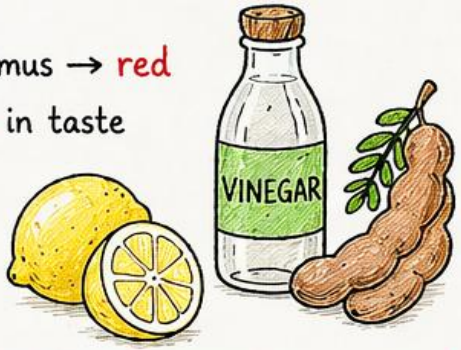
2 Litmus Indicator

- Litmus is a natural indicator obtained from lichens.
- Available as red and blue litmus paper.
- Used to test the nature of substances.



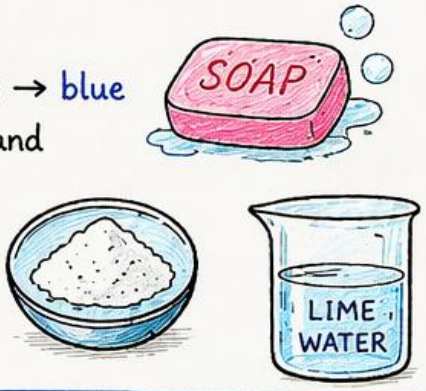
3 Acids

- Turn blue litmus → red
- Usually sour in taste
- Examples: lemon juice, vinegar, tamarind



4 Bases

- Turn red litmus → blue
- Usually bitter and slippery
- Examples: soap solution, baking soda, lime water



5 Neutral Substances

- Do not change the colour of litmus
- Examples: water, sugar solution, salt solution

6 Indicators

- Substances that show colour change are called indicators.
- Types:
  - → Natural (litmus, turmeric, red rose)
  - → Synthetic (laboratory-made)

QUICK FACT !

- Acids → sour
- Bases → bitter, slippery
- Neutral → no change in litmus

SAFETY FIRST !

Never taste unknown substances. Always be careful in the lab.

EXPLORE ICTSCIENCEREKHA PLATFORM TO GET ECONTENT FOR ALL CLASSES (I – XII)

STUDY NOTES

CLASS VII SCIENCE

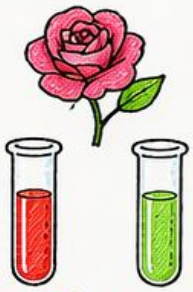
CHAPTER 2

EXPLORING SUBSTANCES: ACIDIC, BASIC AND NEUTRAL

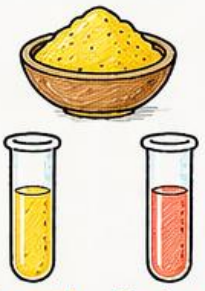
1 Natural Indicators Examples

- Red rose extract → red in acid, green in base
- Turmeric → turns red in base, no change in acid
- Olfactory indicators → change smell (e.g., onion)

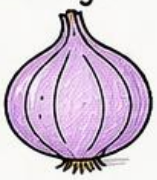
Red rose extract



Turmeric



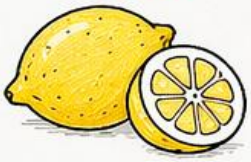
Olfactory indicator



Change smell (e.g., onion)

2 Properties of Acids and Bases

Acids



- Sour taste

Bases

- Bitter taste
- Soapy feel

CAUTION

Never taste unknown substances.

3 Neutraliastion Reaction

- When acid + base react → neutral solution forms

4 Uses of Neutralisation in Daily Life

Ant bite

↓ Baking soda neutralises acid

Acidic soil

↓ Treated with lime (base)

Basic soil

↓ Treated with organic matter

Industrial waste

↓ Neutralised before release

5 Environment Connection

Improper disposal of substances → Neutralisation helps maintain → environmental balance

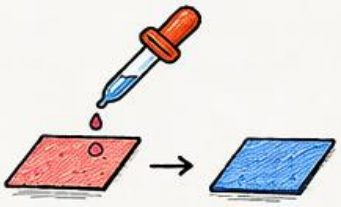
EXPLORE ICTSCIENCEREKHA PLATFORM TO GET ECONTENT FOR ALL CLASSES (I - XII)

NCERT SOLUTIONS
CLASS VII SCIENCE
CHAPTER 2
EXPLORING SUBSTANCES: ACIDIC, BASIC AND NEUTRAL

1 A solution turns red litmus paper to blue. Excess addition of which solution would reverse the change?

Options:

(i) Lime water
(ii) Baking soda
(iii) Vinegar
(iv) Common salt solution



Answer:

✔ (iii) Vinegar

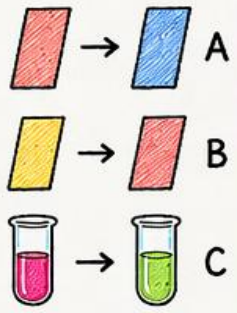
Reason:

Vinegar is acidic, so it will reverse the effect of a base.

2 Identify the nature of solutions A, B, and C based on indicators.

Observations:

- A → Red litmus turns blue
- B → Turmeric turns red
- C → Red rose extract turns green



Answer:

✔ (iii) Basic, Basic, Acidic

Explanation:

- A → Basic (turns red litmus blue)
- B → Basic (turmeric turns red)
- C → Acidic (red rose extract turns green in acid, given option is closest correct)

3 Identify the nature of solutions in given figures (using red rose indicator).

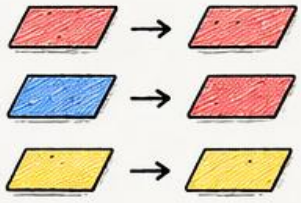
Answer:

- Green colour → Basic
- Red colour → Acidic
- No change → Neutral

4 Identify the nature of a liquid using indicators.

Observations:

- Red litmus → No change
- Blue litmus → Turns red
- Turmeric → No change



Answer:

✔ The liquid is acidic

Reason:

- Blue litmus turning red indicates acid
- No change in turmeric confirms it is not basic

5 Which indicator should a blindfolded student use and why?

Answer:

✔ Use olfactory indicators (like onion)

Reason:

- They work based on smell change, not colour
- Suitable when vision is not available

6 Suggest materials for invisible writing (secret message).

Answer:

Writing Material	Spray Liquid	Result
Soap solution	Turmeric solution	Red colour appears
Lemon juice	Litmus solution	Colour change visible

Concept:

Based on acid-base indicator reactions.

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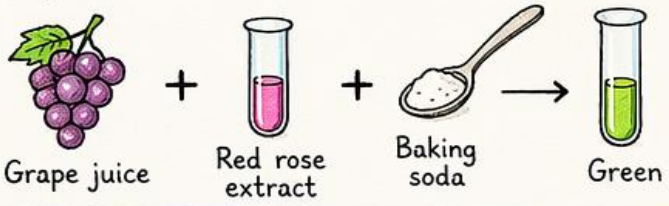
7 What happens if baking soda is added to grape juice + red rose extract?

Answer:

✔ Colour will turn green.

Reason:

- Baking soda is a base
- Red rose indicator shows green in basic solution



8 How to reveal a message written with orange juice?

Answer:

✔ Use an indicator like litmus or turmeric.

Reason:

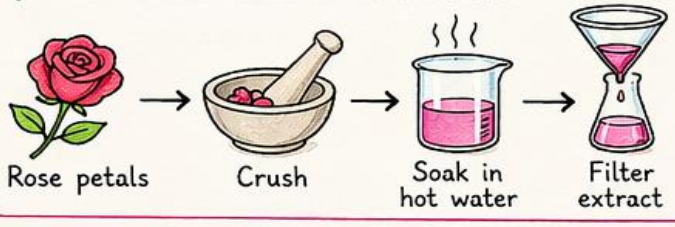
- Orange juice is acidic
- Indicator will show colour change and reveal message

9 How are natural indicators prepared? Give example.

Answer:

- Take flower petals (e.g., red rose)
- Crush and soak in hot water
- Filter the extract

✔ This extract acts as an indicator



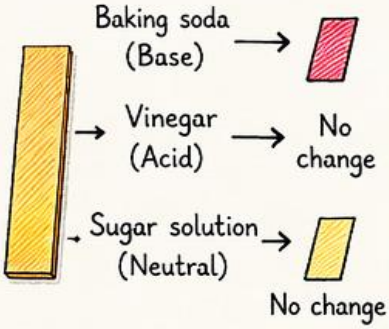
10 Can turmeric paper identify vinegar, baking soda, and sugar solution?

Answer:

✘ No, not completely.

Reason:

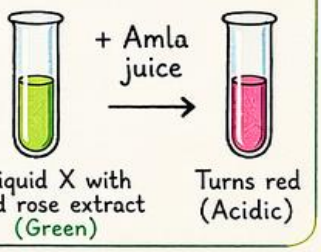
- Turmeric only identifies bases (turns red)
- Cannot distinguish acid and neutral



11 Red rose extract turns liquid X green. What is its nature? What happens if amla juice is added?

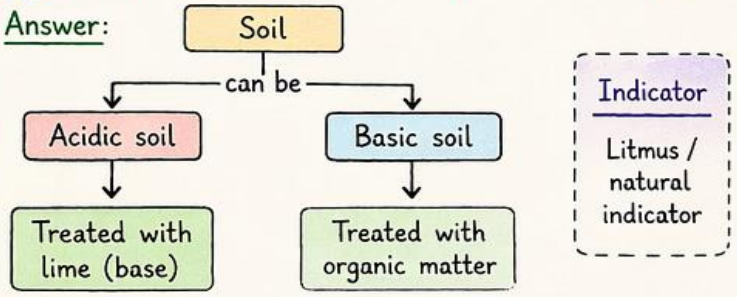
Answer:

- Liquid X → Basic
- After adding amla juice → turns red (acidic)



12 Complete the flowchart (soil treatment).

Answer:



MIND MAP

CHAPTER 2 EXPLORING SUBSTANCES: ACIDIC, BASIC AND NEUTRAL

1. TYPES OF SUBSTANCES

Substances are classified as acidic, basic or neutral based on their properties.

2. LITMUS INDICATOR

- Litmus is a natural indicator from lichens.
- Available as red and blue litmus paper.
- Used to test the nature of substances.

3. ACIDS

- Turn blue litmus → red
- Usually sour in taste
- Examples: lemon juice, vinegar, tamarind

4. BASES

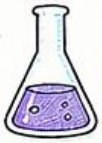
- Turn red litmus → blue
- Usually bitter and slippery
- Examples: soap solution, baking soda, lime water

5. NEUTRAL SUBSTANCES

- Do not change the colour of litmus.
- Examples: water, sugar solution, salt solution

6. INDICATORS

- Substances that show colour change are called indicators.
- Types:
  - → Natural : litmus, turmeric, red rose
  - → Synthetic : laboratory-made



NATURAL INDICATORS EXAMPLES

Red rose extract	Turmeric	Olfactory indicators
Red in acid, Green in base	No change in acid, Turns red in base	Change smell (e.g., onion)

7. PROPERTIES OF ACIDS AND BASES

Acids	Bases
• Sour taste	• Bitter taste • Soapy feel

⚠ **Caution:** Never taste unknown substances.

8. NEUTRALISATION REACTION

- When acid + base react, neutral solution forms.

- Products: Salt + Water + Heat

9. USES OF NEUTRALISATION IN DAILY LIFE

- Ant bite → baking soda neutralises acid
- Acidic soil → treated with lime (base)
- Basic soil → treated with organic matter
- Industrial waste → neutralised before release

10. ENVIRONMENT CONNECTION

- Improper disposal of substances affects soil and water.
- Neutralisation helps maintain environmental balance.

KEY TAKEAWAY

Indicators help identify acidic, basic or neutral substances. Neutralisation keeps our surroundings safe and balanced!