Exploring Substances: Acidic, Basic, and Neutral

Standard difficulty · 20 questions · 40 marks · Time: 36 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Litmus is obtained from:
(a) rose petals **(b)** cabbage **(c)** turmeric **(d)** lichens

2. Which of these is BASIC?
(a) baking soda solution **(b)** sugar solution
(c) salt solution **(d)** curd

3. Which of these is ACIDIC?
(a) tap water **(b)** salt solution **(c)** soap solution **(d)** amla juice

4. What colour do you see with turmeric in curd?
(a) blue **(b)** red **(c)** yellow **(d)** green

5. Curd contains:
(a) formic acid **(b)** acetic acid **(c)** tartaric acid **(d)** lactic acid

6. To neutralise an ant bite, we use:
(a) an antacid, a mild base **(b)** more fertiliser
(c) moist baking soda **(d)** a base, before it is let out

7. 2 mL of diluted lemon juice needs 11 drops of lime water to neutralise it. How many drops would 8 mL need?
(a) 55 drops **(b)** 44 drops **(c)** 15 drops **(d)** 11 drops

8. A farmer adds 300 g of lime to each square metre of acidic soil. How much lime is needed for 35 square metres?
(a) 1,050 g **(b)** 335 g **(c)** 10,500 g **(d)** 10,800 g

Section B — Short answer — 8 × 2 = 16 marks

9. What is an acid-base indicator? Give two examples.

10. Is each "acidic", "basic" or "neutral"? (a) washing powder solution (b) tap water

11. What colour do you see? (a) turmeric in lime water (b) turmeric in amla juice

12. Name the acid in (a) an ant sting (b) curd

13. How is each treated, and why? (a) acidic waste from a factory (b) a bee sting (acidic)

14. To make rose indicator, 25 petals are soaked in 50 mL of hot water. How many petals are needed for 150 mL?

15. A box has 56 litmus strips. Each group uses 4 strips. How many strips are left after 14 groups?

16. A field of 90 square metres needs 2 kg of compost for every 10 square metres to correct basic soil. How much compost is needed?

Section C — Word problems — 4 × 4 = 16 marks

17. Describe an activity to show neutralisation using lemon juice, lime water and litmus.

18. You test salt solution, washing powder solution, amla juice with blue litmus, red litmus and turmeric. Write the colour each indicator shows in each, and say whether the substance is acidic, basic or neutral.

19. Blue litmus is added to 14 mL of lemon juice. Lime water is then added drop by drop; after 14 drops the colour changes. (a) What colour is the litmus before and after? (b) Name the process. (c) Write its word equation. (d) How many drops would 28 mL need?

20. Explain how neutralisation helps with (a) acidic waste from a factory and (b) soil that is too acidic. Name the acid or base used.

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Answer key

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Q	Answer	Working
1	**(d) lichens**	a fungus and an alga living together
2	**(a) baking soda solution**	—
3	**(d) amla juice**	—
4	**(c) yellow**	—
5	**(d) lactic acid**	—
6	**(c) moist baking soda**	—
7	**(b) 44 drops**	11 × 4 = 44
8	**(c) 10,500 g**	35 × 300 = 10,500
9	**A substance that shows by its colour whether something is acidic or basic; litmus and turmeric.**	—
10	**(a) basic (b) neutral**	—
11	**(a) red (b) yellow**	—
12	**(a) formic acid (b) lactic acid**	—
13	**(a) a base, before it is let out (b) baking soda paste**	—
14	**75 petals**	25 × 3 = 75
15	**0 strips**	56 − 4 × 14
16	**18 kg**	90 ÷ 10 × 2
17	**Add blue litmus solution to dilute lemon juice: it turns red (acid). Add lime water drop by drop and stir: at one point the colour changes back to blue, showing the acid has been neutralised by the base, forming salt and water and giving out heat.**	—
18	**salt solution: blue litmus blue, red litmus red, turmeric yellow (neutral); washing powder solution: blue litmus blue, red litmus blue, turmeric red (basic); amla juice: blue litmus red, red litmus red, turmeric yellow (acidic)**	—
19	**(a) Red before, blue after (b) Neutralisation (c) Acid + base → salt + water + heat (d) About 28 drops**	—
20	**(a) a base, before it is let out (b) lime**	—