

**Unit 9 Common acids and alkalis****Pre-lesson Task (PL)****9.1 Common acids and alkalis****A. Acids B. Alkalis**

1. [Acids][Alkalis] (📖 Book 2B P.3-6)
2. (📖 Log Book) Make your own notes about common acids and alkalis: <ol style="list-style-type: none"> <li>List some substances that contain acids and name the acids they contain if possible. Also state ONE common property of the acids found in drinks and foods.</li> <li>List some substances that contain alkalis name the alkalis they contain if possible. Also state TWO common property of the alkalis found in daily life.</li> <li>Name some acids and alkalis used in the school laboratory. Also state TWO common property of the acids and alkalis in the laboratory.</li> </ol>

**9.2 Distinguishing acids and alkalis****A. Natural indicators**

3. [Natural indicators] (📖 Book 2B P.7)
4. (📺 Video)[The story of Robert Boyle's discovery of acid-alkali indicators]  <a href="http://eresources.oupchina.com.hk/NMASCI/video/nms_ani0901_e.html">http://eresources.oupchina.com.hk/NMASCI/video/nms_ani0901_e.html</a>
5. (📖 Log Book) Briefly describe the 4 steps of scientific investigation in Boyle's discovery: (📖 Book 2B P.11) <ol style="list-style-type: none"> <li>the observation made;</li> <li>the hypothesis formed;</li> <li>the experiment carried out; and</li> <li>the conclusion made.</li> </ol>
6. (📖 Log Book) Finish <b>Practical 9.1 [Comparing colour of plant extracts in acids and alkalis]</b> (📖 Book 2B P.7-9)

**B. Litmus**

7. [Litmus] (📖 Book 2B P.12)
8. (📖 Log Book) Finish <b>Practical 9.2 [Comparing the colours of litmus paper in acidic and alkaline solution]</b> (📖 Book 2B P.12-13)
9. (📖 Log Book) Finish <b>Pre-lab Task of Practical 9.3 [Using litmus paper to classify solutions as being acidic, alkaline or neutral]</b> (📖 Book 2B P.14)
10. (📖 Log Book) Make your own notes about litmus: <ol style="list-style-type: none"> <li>The colour changes of litmus papers in different solutions;</li> <li>Draw a flow chart to show the steps to find out whether a solution is acidic, alkaline or neutral.</li> </ol>

## C. Universal indicator and the pH scale

11. [Universal indicator][pH value] (📖Book 2B P.15-16, 19)
12. (📖Log Book) Finish <b>Practical 9.4 [Using pH paper to measure the pH of some substances]</b> (📖Book 2B P.16-17)
13. (📖Log Book) Finish <b>Practical 9.5 [Using universal indicator to measure the pH of some household products]</b> (📖Book 2B P.18)
14. (📖Log Book) Make your own notes about universal indicator, pH paper and pH value: (a) The difference between litmus paper and universal indicator; (b) The relationship between acidity or alkalinity of solutions and their pH values
15. <b>Situation:</b> “The labels of the bottles containing the following solutions are damaged: <b>vinegar, limewater, sodium hydroxide solution and distilled water.</b> ” (📖Log Book) <b>Design and conduct</b> an experiment to identify the solutions W, X, Y and Z. (a) Materials provided: a few pieces of red litmus paper, a few pieces of blue litmus papers and 2 pieces of pH paper (a) Draw a flow chart to show the steps to identify the solutions.

## D. pH meter and data logger

16. [pH meter] [data logger] (📖Book 2B P.20, 23)
17. (📖Log Book) <b>Practical 9.6 [Comparing universal indicator and pH meter in measuring pH]</b> (📖Book 2B P.21-22)
18. (📖Log Book) Make your own notes about pH meter and data logger: (a) What are pH meter and data logger; (b) Give a brief comparison between universal indicator (pH paper) and pH meter

**9.3 Neutralization**

## A. What neutralization is?

19. [Neutralization] (📖Book 2B P.25, 29)
20. (📖Log Book) <b>Practical 9.7 [Change in pH during neutralization]</b> (📖Book 2B P.25-27)
21. (📖Log Book) <b>Practical 9.8 [Products of neutralization]</b> (📖Book 2B P.28-29)
22. [More about word equations of neutralization] (📖Book 2B P.30)
23. (📖Log Book) <b>Practical 9.9 [Conservation of mass in neutralization]</b> (📖Book 2B P.32-33)

## B. Applications of neutralization

24. [Applications of neutralization] (📖Book 2B P.34-35)
25. (📖Log Book) Make your own notes about the applications of neutralization: (a) Give daily life examples of neutralization; (b) Explain how neutralization works

## 9.4 Corrosive nature of acids

### Pre-lesson

#### A. Effect of acids on metals

26. (📖 Log Book) Practical 9.10 [Reactions of dilute acid with some metals] (📖 Book 2B P.37-39)
27. [Word equations of reactions between dilute acids and metals] (📖 Book 2B P.40)

#### B. Effect of acids on building materials

28. [Effect of acids on building materials] (📖 Book 2B P.40, 43)
29. (📖 Log Book) Practical 9.11 [Reactions of dilute acid with some building material] (📖 Book 2B P.41-42)
30. [Word equations of reactions between dilute acids and carbonates] (📖 Book 2B P.44)

#### C. Acid rain

31. [Acid rain][Cause of acid rain] (📖 Book 2B P.45)
32. [Effects of acid rain on environment and living things] (📖 Book 2B P.46-49)
33. (📖 Log Book) Practical 9.12 [Effect of acid rain on the growth of seedlings] (📖 Book 2B P.47-48)