Unit 10 Common acids and alkalis

A Multiple-choice questions

1. D
2. B
3. B
4. D
5. C
6. D
7. A
8. C
9. A
10. D
11. B
12. B
13. D
14. C
15. A
16. A
17. D
18. B
19. D
20. D

B True or false questions

1. F
2. F
3. F
4. F
5. T
6. T
7. T
8. F
9. F
10. F

C Fill-in-the-blanks

1. neutralize
2. litmus, 7
3. alkaline
4. hydrogen, carbon dioxide
5. marble / sandstone / limestone
6. universal indicator
7. cleansing agents
8. hydrochloric acid
9. pH scale, alkalinity
10. corrosive

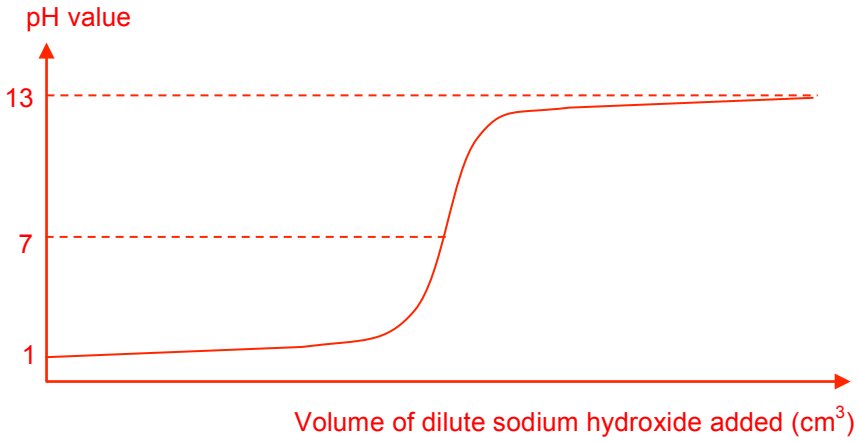
D Short questions

1. (a)–(3), (b)–(4), (c)–(2), (d)–(1)

2. Wash the affected area under slow running water for at least 10 minutes. If the eyes are hurt, wash them with water using an eye-wash bottle. Gently remove any contaminated clothing while washing the affected area. Call for medical aid if the accident is serious. Bring the sample of the acids or alkalis to hospital for reference.

3. Put an egg in vinegar or dilute acid for two or three days. The acid will dissolve the calcium carbonate of the shell and the shell will become soft.

4.



5. Most micro-organisms cannot live in a low pH environment. Vinegar is an acid. It can slow down the growth of micro-organisms and even kill them by providing an environment of low pH. Hence, vinegar can preserve food.

6. He can put some soil into a beaker and add water to it, then the pH of the water (the same as the pH of the soil) can be measured by pH paper or pH meter. If the soil is acidic, he can add lime.

7. Wear safety goggles.
   Wear gloves and/or protective coats when necessary.
   Do not use too much acids or alkalis.
   Do not pour the wastes into the sink. Pour them into suitable waste bottles.
   (any THREE or other reasonable answers)

8. It is because acid is produced by the bacteria in our mouth and the acid is harmful to our teeth. Therefore, some toothpaste is slightly alkaline to neutralize the acid.

9. He is correct. It is because, in most cases, electricity is generated by burning fossil fuels and that produces sulphur dioxide and nitrogen oxides. These gases form acid rain when they dissolve in rainwater. Hence, if we save electricity, less fossil fuel will be consumed, less acidic gas will be produced and we can control acid rain.

10. Glutinous rice dumpling, noodle

E Long questions

1.

a Sodium hydroxide + hydrochloric acid → sodium chloride + water

b Neutralization

c 10 cm^3

d Temperature of the mixture changes as the dilute sodium hydroxide is added to dilute hydrochloric acid..

2.

a Stomach: hydrochloric acid
Small intestine: sodium hydrogencarbonate

b Hydrochloric acid + sodium hydrogencarbonate → sodium chloride + carbon dioxide + water

c Neutralisation

3.

a Hydrogen

b Zinc + hydrochloric acid → zinc chloride + hydrogen

c Measure the volume of gas collected in a certain period of time.

d Use zinc fillings instead of strips.
Use hydrochloric acid of higher concentration.
(any ONE)

4.

a Carbon dioxide, sulphur dioxide and nitrogen oxides.

b These acidic gases will form acid rain when they dissolve in rainwater. And acid rain is harmful to the environment. Removing the acidic gases from the fumes can prevent acid rain and reduce environmental problems.

c Sodium hydroxide
(or any other alkali)

d Neutralization

e Carbon particles
dust particles
particulates
(any ONE or other reasonable answers)

5.

a The major source is burning of fossil fuels for energy.

b Nitrogen oxides.

c It can kill fish and other marine organisms.
It corrodes buildings, statues, etc. that made of marble or metals.
It is harmful to the health of people.
(any TWO or other reasonable answers)

d Since south-westerly wind blows across these provinces, the wind would carry acidic gases in provinces B, C, D and F to province E. Also, province E could be a major producer of acidic gases. Hence, the problem of acidic rain in province E is serious and causes a high percentage of forest loss.