

7.3

CONCENTRATION OF ACIDS
AND ALKALIS

QUESTION 1

The concentration of a solution refers to

- A the quantity of solute in a given volume of solution
- B the amount of water in a given volume of solution
- C the quantity of hydrogen ions in a given volume of solution
- D the quantity of hydroxide ions in a given volume of solution

QUESTION 2

The molarity of a solution is the

- A number of grams of solute present in the solution
- B number of ions present in 1 dm^3 of the solution
- C number of molecules present in 1 dm^3 of the solution
- D number of moles of solute present in 1 dm^3 of the solution

QUESTION 3

A student dissolves 40g of sodium hydroxide, NaOH, in water to make a 500 cm³ of solution. Calculate the concentration of the solution in g dm⁻³.

A 0.08

C 40

B 20

D 80

QUESTION 4

A student prepares a solution by dissolving 0.35 mol of sodium chloride in distilled water to make a 200 cm³ of solution. Calculate the molarity of the solution.

A 5.7 mol dm⁻³

C 0.75 mol dm⁻³

B 7.5 mol dm⁻³

D 1.75 mol dm⁻³

QUESTION 5

The molarity of a bottle of potassium hydroxide solution is 1.5 mol dm^{-3} . What is the concentration of the solution in g dm^{-3} ?

[Relative atomic mass: K, 39; H, 1; O, 16]

A 25

B 50

C 84

D 90

QUESTION 6

The concentration of a sodium hydroxide solution is 8 g dm^{-3} . Calculate the molarity of the solution.

[Relative atomic mass: Na, 23; O, 16; H, 1]

A 0.1 mol dm^{-3}

C 0.3 mol dm^{-3}

B 0.2 mol dm^{-3}

D 0.5 mol dm^{-3}

QUESTION 7

The concentration of a solution of calcium hydroxide is 0.2 mol dm^{-3} . Find the number of moles of calcium hydroxide in 25.0 cm^3 of calcium hydroxide solution.

A 0.5 mol

C 0.0375 mol

B 0.005 mol

D 0.0005 mol

QUESTION 8

Which of the following is true about the relationship between the pH value of an alkali and its molarity?

	Molarity of alkali	pH value
A	Increases	Decreases
B	Increases	Increases
C	Decreases	Not affected
D	Decreases	Increases

QUESTION 9

Which of the following is true?

I A standard solution is a solution in which its concentration is accurately known.

II A standard solution is prepared using a volumetric flask.

III Pure anhydrous sodium carbonate is usually used to make a standard alkaline solution.

IV Hydrochloric acid is usually used to make a standard acidic solution

A I and II only

C I, II and III only

B II and IV only

D I, III and IV only

QUESTION 10

Find the volume of 2.0 mol dm^{-3} sulphuric acid needed to be diluted to make 200 cm^3 of 1.0 mol dm^{-3} sulphuric acid.

A 50 cm^3

C 200 cm^3

B 100 cm^3

D 400 cm^3

QUESTION 11

Which of the following contains the most of hydrogen ions?

- A 400 cm³ of 1 mol dm⁻³ sulphuric acid
- B 700 cm³ of 1 mol dm⁻³ ethanoic acid
- C 600 cm³ of 1 mol dm⁻³ hydrochloric acid
- D 400 cm³ of 1 mol dm⁻³ sodium hydroxide

QUESTION 12

The pH value of 1 mol dm⁻³ ethanoic acid is higher than that of 1 mol dm⁻³ hydrochloric acid. This is because ethanoic acid

- A ionises only partially in water
- B ionises completely in water
- C has a higher concentration of hydrogen ions
- D has a higher concentration of hydroxide ions

QUESTION 13

100 cm³ of distilled water is added to 400 cm³ of 2.0 mol dm⁻³ of hydrochloric acid. What is the concentration in mol dm⁻³, of the diluted solution?

A 1.6

C 2.0

B 1.8

D 2.5

QUESTION 14

What is the volume of distilled water that is needed to be added to 8 g of sodium hydroxide to make 0.4 mol dm^{-3} sodium hydroxide solution?

[Relative atomic mass: Na, 23; H, 1; O, 16]

A 2 dm^3

C 0.2 dm^3

B 0.5 dm^3

D 0.08 dm^3

QUESTION 15

The table shows the volume, concentration and pH value of two acids.

Acid	Volume and concentration	pH
Hydrochloric acid	50 cm ³ of 1 mol dm ⁻³	1
Ethanoic acid	50 cm ³ of 1 mol dm ⁻³	3

Why is there a difference in pH value between the two acids?

- A The number of moles of ethanoic acid is less than of hydrochloric acid.
- B Ethanoic acid is more soluble in water than hydrochloric acid.
- C The degree of ionisation of ethanoic acid is less than that of hydrochloric acid.
- D The concentration of hydrogen ions is higher in ethanoic acid than in hydrochloric acid.

ANSWERS

1	A	6	B	11	A
2	D	7	B	12	A
3	D	8	B	13	A
4	D	9	C	14	B
5	C	10	B	15	C