

Acids, bases and salts – 2019 Nov

1. 0620/11,21/O/N/19/No.16,20

Carbonic acid is a weak acid formed when carbon dioxide dissolves in water.

What is the pH of the solution?

A 1

B 5

C 7

D 9

2. 0620/11/O/N/19/No.17

Solid X is tested as shown.

reaction with dilute aqueous sodium hydroxide	flame test	reaction with dilute hydrochloric acid
no reaction	red flame	gas produced which turned limewater milky

What is X?

A copper(II) carbonate

B lithium carbonate

C potassium carbonate

D sodium sulfate

3. 0620/11/O/N/19/No.18

Which oxide is basic?

A carbon dioxide

B sodium oxide

C sulfur dioxide

D water

4. 0620/11,12,13,21,22,23/O/N/19/No.19,21

A method used to make copper(II) sulfate crystals is shown.

- 1 Place dilute sulfuric acid in a beaker.
- 2 Warm the acid.
- 3 Add copper(II) oxide until it is in excess.
- 4 Filter the mixture.
- 5 Evaporate the filtrate until crystals start to form.
- 6 Leave the filtrate to cool.

What are the purposes of step 3 and step 4?

	step 3	step 4
A	to ensure all of the acid has reacted	to obtain solid copper(II) sulfate
B	to ensure all of the acid has reacted	to remove the excess of copper(II) oxide
C	to speed up the reaction	to obtain solid copper(II) sulfate
D	to speed up the reaction	to remove the excess of copper(II) oxide

5. 0620/12/O/N/19/No.16

Which statement describes the properties of hydrochloric acid?

- A Carbon dioxide is produced when limestone reacts with hydrochloric acid.
- B Hydrogen is produced when sodium hydroxide reacts with hydrochloric acid.
- C Methyl orange turns yellow in strong hydrochloric acid.
- D Red litmus paper turns blue when dipped into hydrochloric acid.

A sample of X is heated with aqueous sodium hydroxide and small pieces of aluminium.

A gas is produced which turns red litmus paper blue.

6. 0620/12/O/N/19/No.17

A sample of X is heated with aqueous sodium hydroxide and small pieces of aluminium.

A gas is produced which turns red litmus paper blue.

Aqueous sodium hydroxide solution is added to a second sample of X. A pale green precipitate is observed.

What is X?

- A ammonium nitrate
- B chromium(II) chloride
- C iron(II) nitrate
- D iron(II) sulfate

7. 0620/12/O/N/19/No.18

Which element forms an acidic oxide?

- A calcium
- B lithium
- C magnesium
- D sulfur

8. 0620/13/O/N/19/No.16

Which statements about dilute sulfuric acid are correct?

- 1 It turns red litmus paper blue.
- 2 It reacts with magnesium(II) oxide to form magnesium(II) sulfate and water.
- 3 It reacts with magnesium to form magnesium(II) sulfate and carbon dioxide.
- 4 Its pH is below pH 7.

- A 1 and 2 only B 1 and 3 only C 2 and 4 only D 3 and 4 only

9. 0620/13/O/N/19/No.17

X is a white powder. The following tests are done on X.

- No precipitate is seen when a few drops of aqueous sodium hydroxide are added to a solution of X.
- No gas is formed when X is heated with aqueous sodium hydroxide.
- X gives a lilac colour when put into a flame.
- When acidified aqueous silver nitrate is added to a solution of X a yellow precipitate is seen.

What is X?

- A ammonium bromide
- B ammonium iodide
- C potassium bromide
- D potassium iodide

10. 0620/13/O/N/19/No.18

Which three oxides are all acidic?

- A CaO, NO₂, SO₂
- B CaO, CO₂, Na₂O
- C CO₂, NO₂, SO₂
- D CO₂, Na₂O, SO₂

11. 0620/21/O/N/19/No.19

Which statement about amphoteric oxides is correct?

- A They are made by combining an acidic oxide with a basic oxide.
- B They react with water to give a solution of pH 7.
- C They react with both acids and bases.
- D They do not react with acids or bases.

12. 0620/21/O/N/19/No.22

Lead(II) sulfate is an insoluble salt.

Which process is **not** used to prepare a pure sample of this salt?

- A crystallisation
- B drying
- C filtration
- D precipitation

13. 0620/22/O/N/19/No.19

Which oxide is classified as an amphoteric oxide?

- A aluminium oxide
- B calcium oxide
- C copper(II) oxide
- D nitrogen oxide

14. 0620/22/O/N/19/No.20

Which statement describes the properties of hydrochloric acid?

- A Carbon dioxide is produced when limestone reacts with hydrochloric acid.
- B Hydrogen is produced when sodium hydroxide reacts with hydrochloric acid.
- C Methyl orange turns yellow in strong hydrochloric acid.
- D Red litmus paper turns blue when dipped into hydrochloric acid.

15. 0620/22/O/N/19/No.22

Lead(II) sulfate is an insoluble salt.

Which reaction produces a mixture from which lead(II) sulfate is obtained by filtration?

- A adding solid lead(II) carbonate to dilute sulfuric acid
- B adding solid lead(II) hydroxide to dilute sulfuric acid
- C adding metallic lead to dilute sulfuric acid
- D adding aqueous lead(II) nitrate to dilute sulfuric acid

16. 0620/23/O/N/19/No.19

Which substance is a neutral oxide?

- A aluminium oxide
- B carbon monoxide
- C sulfur dioxide
- D zinc oxide

17. 0620/23/O/N/19/No.20

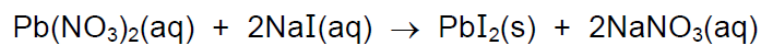
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- 4 Its pH is below pH 7.

- A 1 and 2 only B 1 and 3 only C 2 and 4 only D 3 and 4 only

18. 0620/23/O/N/19/No.22

Lead(II) iodide is formed as a precipitate in the reaction shown.



Which method is used to separate the lead(II) iodide from the mixture?

- A crystallisation
- B distillation
- C evaporation
- D filtration

