

#### 4. Rocks and Minerals

- Which of the following metals can be extracted from bauxite?
  - Aluminium
  - Copper
  - Lead
  - Iron
- Which of the following metals can be found free in the Earth's crust?
  - Iron
  - Lead
  - Magnesium
  - Silver

- Which of the following combinations is correct?

	<u>Metal</u>	<u>Name of ore</u>
A	Iron	cinnabar
B	Lead	galena
C	Potassium	pyrite
D	Sodium	calcite

- Potassium can be obtained from potassium chloride by
  - electrolysis of molten potassium chloride.
  - heating the chloride strongly.
  - heating the chloride with carbon.
  - heating the chloride with iron powder.
- Arrange procedures for the extraction of a metal from its ore in order.
  - Extraction of metal from ore
  - Mining of the ore
  - Separation of useful ore from waste materials
  - Refining of impure metal
  - (2) → (3) → (4) → (1)
  - (3) → (4) → (2) → (1)
  - (3) → (1) → (2) → (4)
  - (2) → (3) → (1) → (4)

6. Which of the following combinations concerning the extraction of metals from their ores is / are correct?

	<u>Metal</u>	<u>Method of extraction</u>
(1)	Aluminium	electrolysis of molten ore
(2)	Copper	physical separation
(3)	Lead	heating the ore alone

- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

7. Which of the following statements concerning the extraction of iron from its ore is / are correct?

- (1) Iron is usually extracted from cinnabar.
- (2) The extraction is carried out in a blast furnace.
- (3) Iron is extracted by heating the ore alone.

- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

8. In which of the following processes would a metal be produced?

- (1) Electrolyzing a molten ore of magnesium
- (2) Heating aluminium with carbon
- (3) Heating silver oxide in air

- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

9. When calcium carbonate is strongly heated, a solid is obtained. Which of the following statements concerning the solid is correct?

- A It is black in colour.
- B It reacts with water to give slaked lime.
- C It is calcium hydroxide.
- D It is a mixture.

10. Which of the following statements concerning limewater is INCORRECT?

- A It is colourless.
- B It is produced by dissolving calcium carbonate in excess water.
- C It is an aqueous solution of calcium hydroxide.
- D It becomes milky and then colourless when carbon dioxide is bubbled into it until excess.

11. Directions: Questions 11 and 12 refer to the diagram shown below.



What could gas X and solid Y be?

- |   |                |                   |
|---|----------------|-------------------|
|   | <u>X</u>       | <u>Y</u>          |
| A | Carbon dioxide | calcium carbonate |
| B | Oxygen         | calcium carbonate |
| C | Carbon dioxide | calcium oxide     |
| D | Hydrogen       | calcium oxide     |

12. Directions: Questions 11 and 12 refer to the diagram shown below.



What would be observed if excess gas X is bubbled into limewater?

- A Effervescence occurs.
- B Solid Y dissolves.
- C The solution becomes yellow in colour.
- D There is no observable change.

13. Which of the following processes would NOT produce carbon dioxide?

- A Respiration
- B Photosynthesis
- C Heating limestone strongly
- D Adding calcium carbonate to dilute hydrochloric acid

14. Calcium carbonate can be produced from quicklime through two processes as shown below.

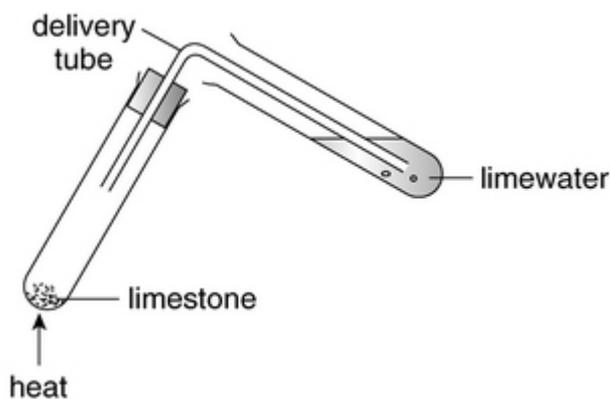


Which of the following combinations is correct?

- |   |                           |                           |
|---|---------------------------|---------------------------|
|   | <u>Process 1</u>          | <u>Process 2</u>          |
| A | Adding water              | Adding carbon dioxide gas |
| B | adding carbon dioxide gas | Adding water              |
| C | Adding water              | Heating                   |
| D | Heating                   | Adding water              |

15. To identify an unknown powder, a student heated the powder in a Bunsen flame. A brick-red flame was observed. When the powder was added to dilute hydrochloric acid, it dissolved without any observable changes. What might the powder be?
- A Calcium carbonate
  - B Sodium carbonate
  - C Calcium chloride
  - D Sodium chloride

16. Limestone is heated strongly for about 15 minutes in an experiment.



Which of the following statements concerning the experiment are correct?

- (1) Effervescence occurs.
  - (2) A white solid remains in the test tube after heating.
  - (3) The limewater turns milky.
- A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)
17. Which of the following statements concerning the products formed from heating limestone are true?
- (1) The gas evolved turns limewater milky.
  - (2) Slaked lime is formed.
  - (3) The solid product gives a brick-red flame in flame test.
- A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)

18. What would be observed when a piece of limestone is added to dilute hydrochloric acid?

- (1) Effervescence occurs.
- (2) The limestone dissolves.
- (3) A white precipitate forms.

- A (1) and (2) only
- B (1) and (3) only
- C (2) and (3) only
- D (1), (2) and (3)

19. In which of the following processes would carbon dioxide gas be produced?

- (1) Respiration
- (2) Heating slaked lime strongly
- (3) Adding dilute hydrochloric acid to quicklime

- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

20. Which of the following methods can be used to distinguish between solid sodium chloride and solid calcium carbonate?

- (1) Testing the solubility of the solids in water
- (2) Observing the colour of the solids
- (3) Adding dilute nitric acid followed by silver nitrate solution

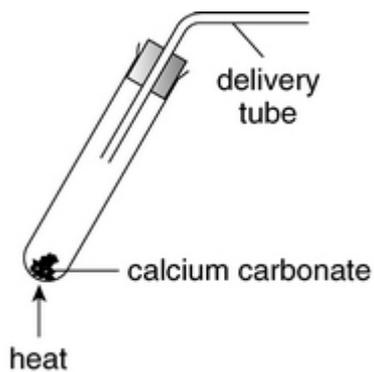
- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

21. Which of the following reactions would produce a white precipitate?

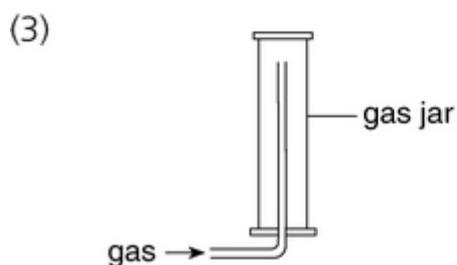
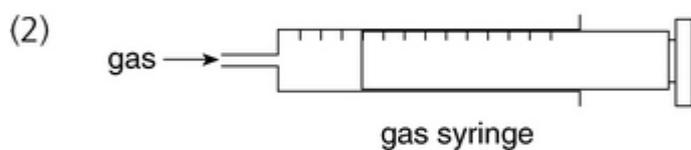
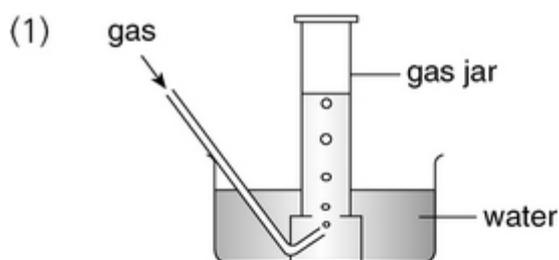
- (1) Mixing silver nitrate solution with sea water
- (2) Heating calcium carbonate strongly
- (3) Bubbling carbon dioxide gas into calcium hydroxide solution

- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

22. In an experiment, calcium carbonate was heated in a boiling tube as shown below:



A gas was produced in the process. Which of the following set-ups can be connected to the delivery tube to collect the gas?



- A (1) and (2) only
- B (1) and (3) only
- C (2) and (3) only
- D (1), (2) and (3)

23. Which of the following statements concerning calcium carbonate is INCORRECT?

- A Limestone, chalk and marble are different forms of calcium carbonate.
- B Marble is the cheapest among the different forms of calcium carbonate.
- C Chalk is formed from the remains of sea animals with shells.
- D Calcium carbonate contains calcium, carbon and oxygen.

24. Which of the following statements concerning chalk is correct?
- A It is formed from the remains of plants.
  - B It is used to manufacture plastics.
  - C It is softer than marble.
  - D It is an element.
25. What is the purpose of adding quicklime to soil?
- A To kill microorganisms in the soil.
  - B To neutralize the acidity of the soil.
  - C To increase the plant growth rate.
  - D To increase the amount of calcium in plants.
26. Which of the following is a use of slaked lime?
- A To make concrete.
  - B To construct roads.
  - C To neutralize acidity in lakes.
  - D As a drying agent in industry.
27. Which of the following statements concerning marble is / are correct?
- (1) It is formed from limestone under high temperature and pressure.
  - (2) It is soluble in water.
  - (3) It has a low melting point.
- A (1) only
  - B (2) only
  - C (1) and (3) only
  - D (2) and (3) only
28. Which of the following are uses of limestone?
- (1) Manufacture of cement
  - (2) Manufacture of glass
  - (3) Manufacture of soap
- A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)

29. Which of the following can erode limestone?

- (1) Wind
- (2) Running water
- (3) Gravity

- A (1) and (2) only
- B (1) and (3) only
- C (2) and (3) only
- D (1), (2) and (3)

30. Which of the following explain(s) why rainwater can erode limestone?

- (1) Limestone is soluble in water.
- (2) Carbon dioxide in air dissolves in rainwater to form carbonic acid which dissolves limestone.
- (3) Limestone reacts with water to form soluble calcium hydroxide.

- A (1) only
- B (2) only
- C (1) and (3) only
- D (2) and (3) only

1	<u>A</u>	2	<u>D</u>	3	<u>B</u>	4	<u>A</u>	5	<u>D</u>
6	<u>A</u>	7	<u>B</u>	8	<u>C</u>	9	<u>B</u>	10	<u>B</u>
11	<u>A</u>	12	<u>B</u>	13	<u>B</u>	14	<u>A</u>	15	<u>C</u>
16	<u>C</u>	17	<u>B</u>	18	<u>A</u>	19	<u>A</u>	20	<u>C</u>
21	<u>C</u>	22	<u>A</u>	23	<u>B</u>	24	<u>C</u>	25	<u>B</u>
26	<u>C</u>	27	<u>A</u>	28	<u>A</u>	29	<u>D</u>	30	<u>B</u>