

2. Atmosphere

- Which of the following statements concerning elements is correct?
 - There are thousands of elements on Earth.
 - Compounds can join together chemically to form elements.
 - Elements cannot be broken down into anything simpler by chemical methods.
 - Water is an element.

- Which of the following statements concerning compounds is correct?
 - Sugar is a compound.
 - All compounds occur naturally in pure state.
 - Compounds have chemical properties similar to those of their constituent elements.
 - Compounds can only be separated into its constituents by physical methods.

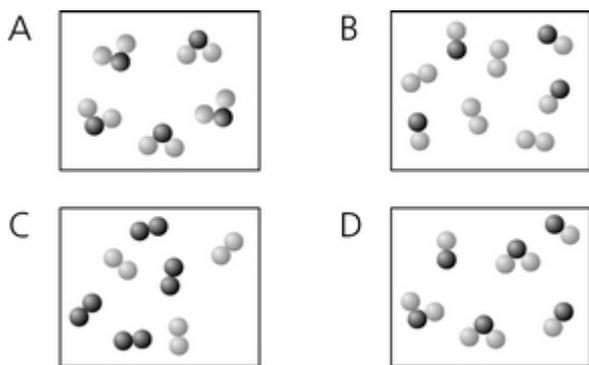
- How many elements does sodium hydroxide consist of?
 - 2
 - 3
 - 4
 - 5

- Which of the following substances is a pure substance?
 - Beer
 - Brass
 - Distilled water
 - Pond water

- Which of the following substances is a compound?
 - Coal
 - Diamond
 - Dry ice
 - Soda water

6. Which of the following diagrams can represent a mixture of two elements?

(In these diagrams,  and  represent a nitrogen atom and an oxygen atom respectively.)



7. Which of the following comparisons between iron(II) sulphide and a mixture of iron and sulphur is correct?

Iron(II) sulphate

A mixture of iron and sulphur

A Elements in it does not have a fixed ratio

elements in it have a fixed ratio

B Attracted to magnet

only iron is attracted to magnet

C Does not have a sharp melting point

has a sharp melting point

D Constituents can be separated by chemical methods

constituents can be separated by physical methods

8. Which of the following substances has a sharp boiling point?

A Liquid air

B Molten copper

C Red wine

D Soft drink

9. Which of the following substances is / are element(s)?

(1) Ammonia

(2) Argon

(3) Silver

A (1) only

B (2) only

C (1) and (3) only

D (2) and (3) only

10. In a certain experiment, a mixture of iron and sulphur was heated to give solid X. Which of the following statements concerning the process are correct?
- (1) The process involves a chemical change.
 - (2) Solid X is a compound.
 - (3) Solid X gives hydrogen when mixed with dilute hydrochloric acid.
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)

11. Which of the following gases is LEAST likely to be found in air?
- A Argon
B Hydrogen
C Nitrogen
D Carbon dioxide

12. Which of the following combinations is INCORRECT?

	<u>Gas in air</u>	<u>Composition by volume</u>
A	Oxygen	21%
B	Nitrogen	78%
C	Carbon dioxide	0.5%
D	Noble gases	0.9%

13. Which of the following statements concerning air are correct?
- (1) It is a mixture.
 - (2) It contains about 4% of carbon dioxide by volume.
 - (3) It contains small amounts of dust and harmful gases.
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)

14. Which of the following statements concerning nitrogen are correct?
- (1) It is an odourless gas.
 - (2) It is used to fill the packets of potato chips.
 - (3) It is an element.
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)

15. Which of the following noble gases can be found in the air?
- (1) Argon
 - (2) Helium
 - (3) Neon
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)
16. Which of the following statements concerning the fractional distillation of liquid air is correct?
- A Air is cooled to 0°C .
B Oxygen boils at -183°C .
C Nitrogen gas is collected at the lower part of the fractionating column.
D Noble gases cannot be separated from air in the fractionating column.
17. Why can gases in air be separated by the fractional distillation of liquid air?
- A The gases have different boiling points.
B The gases have different melting points.
C The gases have different percentages by volume in air.
D The gases have different chemical properties.

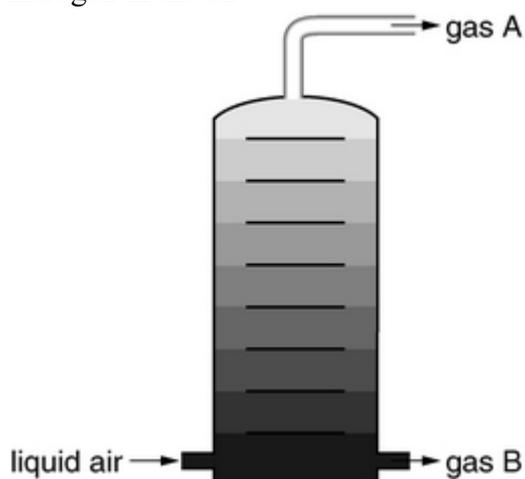
18. The table below gives some information about the components in a sample of gas.

Component	Boiling point ($^{\circ}\text{C}$)
X	- 185
Y	- 196
Z	- 191

The sample is cooled to -200°C . In what order are these components distilled out when the sample undergoes fractional distillation?

- A Y, Z, X
B Y, X, Z
C Z, X, Y
D Z, Y, X

19. Directions: Questions 19 and 20 refer to the diagram showing a column for separating oxygen and nitrogen in the air.

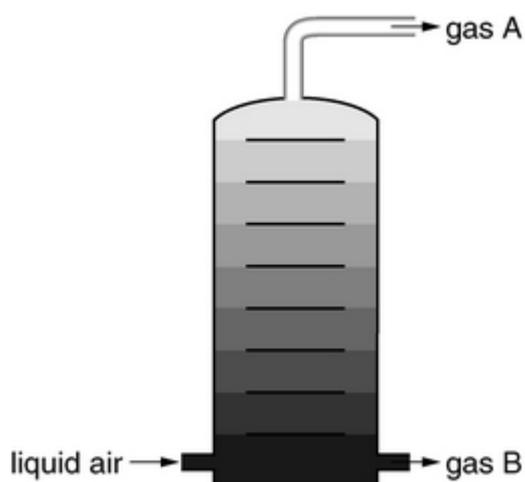


Arrange the steps for separating oxygen and nitrogen in the air in order.

- (1) Liquefaction
- (2) Fractional distillation
- (3) Purification

- A (1) → (2) → (3)
B (3) → (1) → (2)
C (3) → (2) → (1)
D (2) → (1) → (3)

20. Directions: Questions 19 and 20 refer to the diagram showing a column for separating oxygen and nitrogen in the air.



Which of the following statements concerning gases A and B are correct?

- (1) Gas A takes the greatest percentage of air by volume.
- (2) Gas B can relight a glowing splint.
- (3) The boiling point of B is lower than that of A.

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

21. Which of the following are uses of oxygen?
- (1) In oxy-acetylene torches for welding metals
 - (2) Aiding the respiration of premature babies
 - (3) Filling packets of potato chips
- A (1) and (2) only
 B (1) and (3) only
 C (2) and (3) only
 D (1), (2) and (3)
22. Which of the following is NOT a physical property of carbon?
- A It is black in colour.
 B It is a solid at room temperature.
 C It is denser than water.
 D It can burn in air.
23. Which of the following statements describes a chemical property of magnesium?
- A It is a solid at room temperature.
 B It forms magnesium oxide when burnt in air.
 C It has a shiny appearance.
 D It can be hammered into sheets.
24. Which of the following statements describe the chemical properties of carbon dioxide?
- (1) It is colourless.
 - (2) It turns limewater milky.
 - (3) It dissolves in water to give an acidic solution.
- A (1) and (2) only
 B (1) and (3) only
 C (2) and (3) only
 D (1), (2) and (3)

25.

Substance	Melting point (°C)	Boiling point (°C)
W	-200	54
X	10	120
Y	50	320
Z	-100	13

Which of the above substances is / are liquid(s) at room temperature?

- A X only
 B Y only
 C W and X only
 D Y and Z only

26. Which of the following statements describe chemical properties?
- (1) A foam block floats on water.
 - (2) Lithium becomes dull upon exposure to air.
 - (3) A mixture of hydrogen and oxygen explodes upon ignition.
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)
27. Which of the following statements concerning oxygen is INCORRECT?
- A Oxygen relights a glowing splint.
B Oxygen is a constituent element of sugar.
C Oxygen is colourless.
D Air contains 78% of oxygen by volume.
28. Which of the following shows the presence of oxygen in a gas jar?
- A It gives a 'pop' sound with a burning splint.
B It turns limewater milky.
C It relights a glowing splint.
D It extinguishes a burning splint.
29. Which of the following statements concerning oxygen is / are correct?
- (1) It is flammable.
 - (2) It supports combustion.
 - (3) It can relight a burning splint.
- A (1) only
B (2) only
C (1) and (3) only
D (2) and (3) only

30. Which of the following statements concerning oxygen are correct?

- (1) Oxygen is colourless.
- (2) Oxygen is produced in the photosynthesis process.
- (3) A metal cylinder of oxygen should bear the hazard warning label shown below.



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

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