

3. Ocean

- Which of the following statements concerning sea water is correct?
 - Sea water covers over 90% of the surface area of the Earth.
 - Seawater contains 3.5% by mass of common salt.
 - Magnesium chloride is the second most abundant salt in sea water.
 - Oxygen is the only gas dissolved in sea water.

- Which of the following statements concerning sea water is / are correct?
 - Sea water is a mixture.
 - Sodium chloride in it is a solvent.
 - It has a sharp boiling point.
 - (1) only
 - (2) only
 - (1) and (3) only
 - (2) and (3) only

- Which of the following are major salts dissolved in sea water?
 - Copper(II) sulphate
 - Magnesium chloride
 - Sodium sulphate
 - (1) and (2) only
 - (1) and (3) only
 - (2) and (3) only
 - (1), (2) and (3)

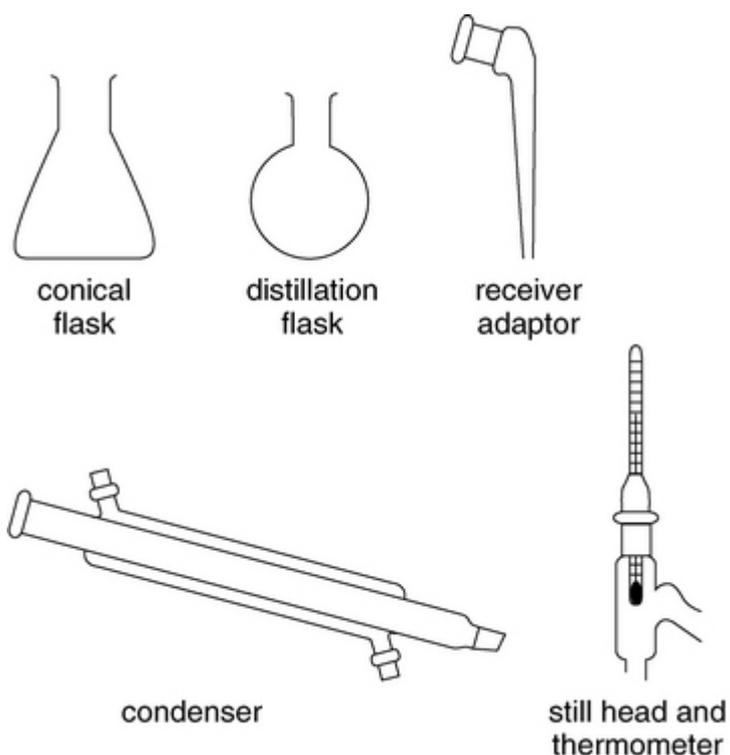
- Which of the following methods can be used to remove coarse sand from sea water?
 - Crystallization
 - Decantation
 - Distillation
 - Evaporation

- Which of the following processes occur in distillation?
 - Condensation followed by crystallization
 - Sublimation followed by evaporation
 - Evaporation followed by condensation
 - Evaporation followed by sublimation

6. Which of the following correctly describes the sequence of procedures to separate chalk, salt and water from a mixture of chalk powder and salt solution?
- A Evaporation, crystallization
 - B Filtration, distillation
 - C Filtration, evaporation
 - D Crystallization, filtration, distillation

7. Which of the following statements concerning the evaporation of sea water is / are correct?
- (1) Evaporation is a heat absorbing process.
 - (2) Pure water can be obtained.
 - (3) Pure sodium chloride can be obtained.
- A (1) only
 - B (2) only
 - C (1) and (3) only
 - D (2) and (3) only

8. Consider the following pieces of apparatus:



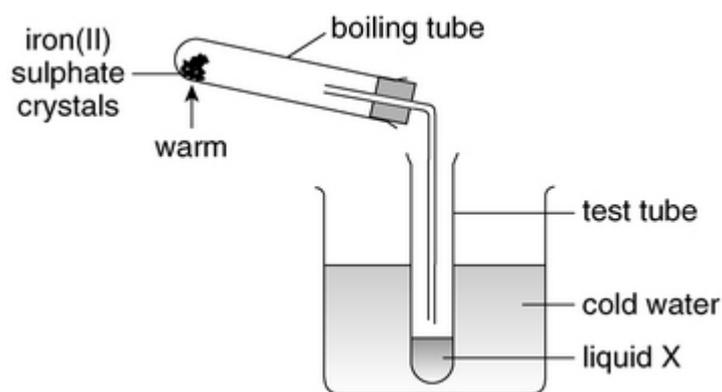
Which of the following processes can be performed by using some or all of the above apparatus?

- (1) Obtaining pure water from sea water
 - (2) Separating oil and water
 - (3) Obtaining hydrogen from water
- A (1) only
 - B (2) only
 - C (1) and (3) only
 - D (2) and (3) only

9. What colour can be observed when a sample of solid sodium chloride is heated in a Bunsen flame?
- A Lilac
 - B Red
 - C Green
 - D Golden yellow
10. What would be observed if a sodium chloride solution is added to a solution containing dilute nitric acid and silver nitrate solution?
- A Effervescence occurs.
 - B There is no observable change.
 - C The solution becomes blue in colour.
 - D A white precipitate forms.
11. Which of the following compounds does NOT give a characteristic flame colour in flame test?
- A Aluminium sulphate
 - B Copper(II) sulphate
 - C Potassium sulphate
 - D Sodium sulphate
12. A solid X gives a lilac flame in flame test. X reacts with dilute hydrochloric acid to give a gas. X could be
- A potassium carbonate.
 - B potassium chloride.
 - C sodium carbonate.
 - D sodium chloride.
13. Which of the following methods can be used to distinguish between copper(II) sulphate crystals and sodium chloride crystals?
- (1) Perform a flame test.
 - (2) Add dilute nitric acid followed by silver nitrate solution to their solutions.
 - (3) Observe their colours.
- 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 methods can be used to distinguish between solid calcium chloride and solid potassium chloride?
- (1) Add dilute hydrochloric acid.
 - (2) Perform a flame test.
 - (3) Dissolve the solids in water.
- A (1) only
B (2) only
C (1) and (3) only
D (2) and (3) only
15. When dilute nitric acid and silver nitrate solution are added to a beaker containing an unknown solution, a white precipitate forms. The unknown solution could be
- (1) sodium nitrate solution.
 - (2) potassium chloride solution.
 - (3) sea water.
- A (1) only
B (2) only
C (1) and (3) only
D (2) and (3) only
16. When a piece of dry cobalt(II) chloride paper is placed on a sample of moist sodium chloride, what will be observed?
- A The dry cobalt(II) chloride paper turns pink.
B The dry cobalt(II) chloride paper turns blue.
C Effervescence occurs.
D There is no observable change.
17. Which of the following statements concerning water are correct?
- (1) It is a compound.
 - (2) It turns dry cobalt(II) chloride paper pink.
 - (3) It turns anhydrous copper(II) sulphate blue.
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)

18. Iron(II) sulphate crystals are warmed in a boiling tube as shown below. A liquid X is collected in the test tube.



Which of the following statements concerning the experiment are correct?

- (1) The iron(II) sulphate crystals turn from blue to white upon warming.
- (2) Liquid X is colourless.
- (3) Liquid X can turn dry cobalt(II) chloride paper pink.

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

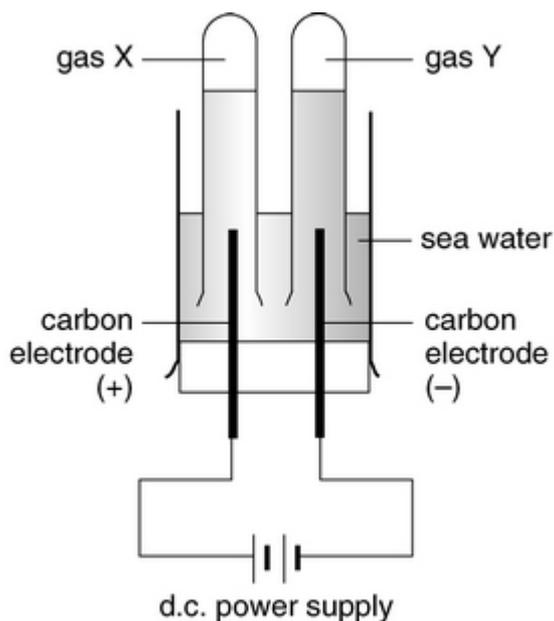
19. Which of the following substances CANNOT be obtained in the electrolysis of sea water?

- A Argon
B Hydrogen
C Chlorine
D Sodium hydroxide

20. Which of the following statements concerning the electrolysis of sea water is correct?

- A It involves a chemical change.
B It produces oxygen.
C It gives pure sodium chloride.
D It gives elements only.

21. Directions: Questions 21 and 22 refer to the following set-up for the electrolysis of sea water using carbon electrodes.



Which of the following combinations is correct?

	<u>Gas X</u>	<u>Gas Y</u>
A	Chlorine	Hydrogen
B	Hydrogen	Oxygen
C	Hydrogen	Chlorine
D	Oxygen	Hydrogen

22. Directions: Questions 21 and 22 refer to the following set-up for the electrolysis of sea water using carbon electrodes.

After the electrolysis, the sea water in the setup becomes

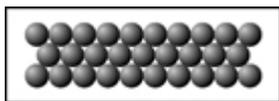
- A hydrochloric acid.
- B sodium chloride solution.
- C sodium hydroxide solution.
- D pure water.

23. Which of the following is NOT a major use of hydrogen?

- A As rocket fuel
- B Manufacture of ammonia
- C Manufacture of hydrochloric acid
- D Manufacture of plastics

24. Which of the following are major uses of chlorine?
- (1) Sterilizing swimming pool water
 - (2) Manufacture of soap
 - (3) Manufacture of hydrochloric acid
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)
25. Which of the following is / are major use(s) of sodium hydroxide?
- (1) Manufacture of bleach
 - (2) As a fuel
 - (3) Manufacture of soap
- A (1) only
B (2) only
C (1) and (3) only
D (2) and (3) only
26. Which of the following items require the use of products obtained from the electrolysis of sea water?
- (1) Manufacture of hydrochloric acid
 - (2) Manufacture of organic solvents
 - (3) Manufacture of soaps
- A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)
27. In which of the following substances are the particles furthest apart from each other at room temperature and pressure?
- A Nitrogen
B Calcium carbonate
C Sodium chloride
D Water

28. The following diagram shows the arrangement of particles in element X at room temperature and pressure.



X could be

- A argon.
- B bromine.
- C hydrogen.
- D magnesium.

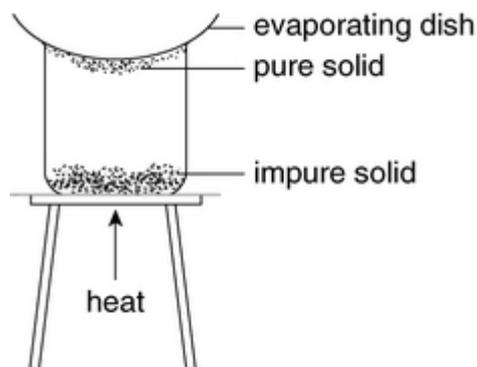
29. Which of the following processes is a chemical change?

- A Passing electricity through a copper wire
- B Dissolving sugar in water
- C Bleaching the hair
- D Melting butter

30. Which of the following processes is NOT a physical change?

- A A glass cup breaks.
- B Mix coffee powder into water.
- C Jewellery tarnishes.
- D Separate sand from gravel.

31.



Which of the following solids can be purified using the above set-up?

- A Lead(II) chloride
- B Iodine
- C Potassium carbonate
- D Sodium

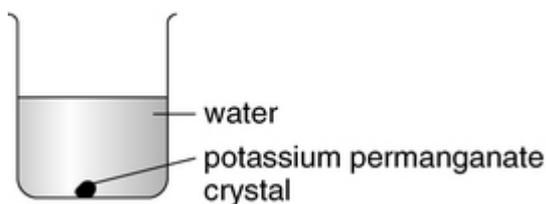
32. Which of the following processes involves a chemical change?

- A Distilling sea water to obtain pure water
- B Whipping egg whites
- C Mixing sea water with silver nitrate solution
- D Magnetizing a compass needle

33. Which of the following combinations concerning the change of physical state of a substance is correct?

	<u>Change of physical state</u>	<u>Process</u>
A	Gas to solid	freezing
B	Solid to liquid	boiling
C	Solid to gas	sublimation
D	Liquid to gas	condensation

34. In a certain experiment, a student placed a piece of potassium permanganate crystal in a beaker of water as shown below.



Which of the following statements concerning the experiment is / are correct?

- (1) A yellow colour spread in the beaker.
- (2) The potassium permanganate particles mixed with the water particles.
- (3) A chemical change occurred.

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

35. Which of the following processes is / are physical change(s)?

- (1) Spoiling food
- (2) Hammering wood together to build a playhouse
- (3) Squeezing oranges to prepare orange juice

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

36. Which of the following processes are chemical changes?

- (1) Electrolysis of water
- (2) Photosynthesis
- (3) Heating copper(II) sulphate crystals

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

37. Which of the following processes are physical changes?

- (1) Bread rising
- (2) Sublimation of iodine
- (3) Whipping cream to make whipped cream

- 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>C</u>	4	<u>B</u>	5	<u>C</u>
6	<u>B</u>	7	<u>A</u>	8	<u>A</u>	9	<u>D</u>	10	<u>D</u>
11	<u>A</u>	12	<u>A</u>	13	<u>D</u>	14	<u>B</u>	15	<u>D</u>
16	<u>A</u>	17	<u>D</u>	18	<u>C</u>	19	<u>A</u>	20	<u>A</u>
21	<u>A</u>	22	<u>C</u>	23	<u>D</u>	24	<u>B</u>	25	<u>C</u>
26	<u>D</u>	27	<u>A</u>	28	<u>D</u>	29	<u>C</u>	30	<u>C</u>
31	<u>B</u>	32	<u>C</u>	33	<u>C</u>	34	<u>B</u>	35	<u>D</u>
36	<u>D</u>	37	<u>C</u>						