

Maharashtra State Board

Class VIII Science

Board Paper – 1

Solution

I.

1. (b)

Valency is the capacity of an element to combine with another element. In aluminium chloride (AlCl_3), the valency of aluminium is 3 and that of chlorine is 1.

2. (a)

Mercury is the smallest planet in the Solar System and closest to the Sun. It is difficult to see Mercury because of the presence of very bright sunlight.

3. (c)

Antibiotics are antibacterial or antifungal agents made using bacterial or fungal cultures. They inhibit the growth of disease-causing organisms. Hence, antibiotics are prescribed to combat bacterial and/or fungal infections.

4. (c)

Pure water or distilled water is free of dissolved salts and hence is a poor conductor of electricity.

5. (d)

National Parks, sanctuaries and reserved biodiversity zones aim to conserve the varied biological diversity on the planet Earth. Dams help in the conservation of water during water crisis.

6. (d)

Contagious diseases spread through direct or close contact with the infected person. Scabies and eczema are contagious diseases. AIDS is a non-contagious disease.

7. (a)

Burning of 1 kg of wood releases about 1700 kilojoules of energy.

8. (d)

In a magnetic compass, the magnetic needle is mounted in a way as to rotate freely in the horizontal plane and to come to rest with its north pole pointing north. It can be used to ascertain directions.

9. (b)

The components of crude oil can be separated by fractional distillation. The difference in the boiling points of various components present in crude oil allows their separation by fractional distillation.

10. (a)

Coke is a non-crystalline form of carbon. Graphite, diamond and fullerene are crystalline forms of carbon.

11. (d)

When the soil is turned and loosened, it allows the roots of plants to penetrate deep into the soil and breathe. It also facilitates the growth of the microbes in the soil which helps in the growth of plants.

12. (b)

Helium, argon, neon and xenon are inert gases. Helium is used to obtain very low temperatures. Argon is used in electric bulbs. Neon is used in neon lights and in hoardings which display advertisements.

13. (c)

Lead is a poor conductor of electricity. Hence, even though the circuit is complete, the bulb will not glow because of lack of sufficient electric current.

14. (d)

A scythe is used for harvesting crops. A spade is used for pulling and spreading the soil.

15. (d)

All liquids exert pressure on the walls of the container in which they are stored. When the holes in the container are at the same height, the pressure exerted on the container is also the same, and hence, the water which gushes out from the pot from the two holes falls at the same distance from the pot.

II.

16. The area covered by the tiles is greater than the area covered by our feet. The weight of the person crossing the slushy patch is exerted over a large area of the tiles. Therefore, there is a decrease in the pressure, and hence, the tiles do not sink more in the slushy patchy ground. This helps us to cross the slushy patch of the ground with ease.

17. Dogs are useful to mankind in the following ways:

(a) They guard the house.

(b) They provide company to man.

(c) Because of a very keen sense of smell, they help track criminals and detect bombs planted by terrorists.

18. Catalysts and the reactions in which they are used:

- (a) Manganese dioxide: It is used as a catalyst in the preparation of oxygen from potassium chlorate.
- (b) Raney nickel: It is used as a catalyst in the preparation of hydrogenated oil (*vanaspati* ghee) from vegetable oil.

19. The period of revolution of a planet depends on the distance between the planet and the Sun. As the distance increases, the period of revolution increases. The radii of orbits of planets differ widely. Hence, the period of revolution is different for different planets.

20.

Column A	Column B
(a) Squirrel	(ii) Gnaws the fruit
(b) Snake	(i) Swallows the prey
(c) Hen	(iv) Picks up grains
(a) Dog	(iii) Licks the food

III.

21. Characteristics of a magnet:

- (a) When a magnet is freely suspended, it always comes to rest in the north-south direction.
- (b) When a magnet is brought near a piece of iron, the latter gets attracted towards the magnet.
- (c) The two poles of a magnet cannot be separated from each other.

22. On the basis of the alpha (α) ray experiment performed by Rutherford, the following conclusions were drawn:

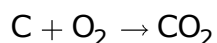
- (a) Most of the alpha (α) rays pass through the thin sheet of gold without any deviation. This shows that an atom must be hollow with lot of empty space.
- (b) Alpha (α) particles are positively charged. Some alpha (α) particles collide with the nucleus and turn back because of electric repulsion. This shows that the region in which the positive charge of the atom is concentrated must be very small as compared to the size of the atom.

23.

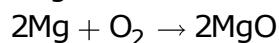
- (a) Water is poured on calcium oxide.



- (b) Coal is burnt in air.



- (c) Magnesium wire is lit.



24. Differences between algae and fungi:

Algae	Fungi
1. In algae, chlorophyll is present.	1. In fungi, chlorophyll is absent.
2. Algae are autotrophic.	2. Fungi are heterotrophic.
3. Algae act as producers in the food chain.	3. Fungi act as decomposers in the food chain.
4. Most of the algae are useful to man.	4. Most of the fungi are harmful to man.
5. Antibiotics cannot be prepared from algae.	5. Antibiotics can be prepared from fungi.

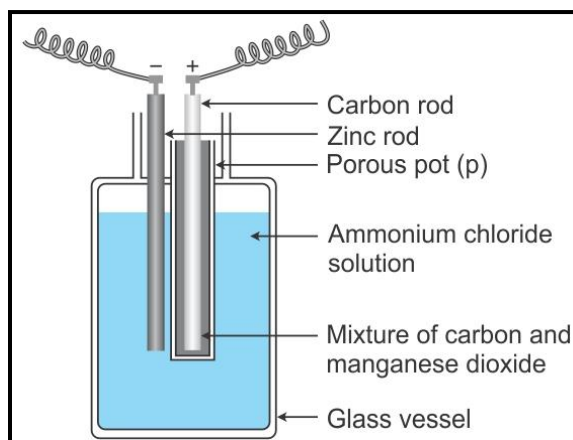
25. Common symptoms of tuberculosis:

- (a) Constant cough
- (b) Continuous low grade fever
- (c) Blood in spittle
- (d) Pain in chest region
- (e) Difficulty in breathing
- (f) Loss of weight

IV.

26. Construction of a Leclanché cell:

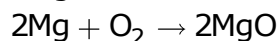
- (a) A Leclanché cell consists of a porous pot, which consists of a mixture of manganese dioxide and carbon.



- (b) A carbon rod is placed in this pot which acts as a positive pole, while a zinc rod acts as a negative pole.
- (c) Ammonium chloride solution is filled in a large glass container, and the porous pot and zinc rod are placed in it.
- (d) Electric current flows because of the chemical reaction between manganese dioxide, zinc and ammonium chloride.

27.

- (a) Metals combine with oxygen in the air to form their respective oxides.
Example: When magnesium burns in air, it combines with oxygen to form magnesium oxide.



- (b) The solution of metal oxides turns red litmus blue.
Example: Take magnesium oxide in a test tube and add water to it. Shake the test tube well. Test the solution with red and blue litmus papers. The blue litmus paper remains as it is, while the red litmus paper turns blue. This shows that magnesium oxide is alkaline.
Therefore, we can say that oxides of metals are alkaline.

28.

- (a) Marble is a form of calcium carbonate.
(b) Calcium carbonate reacts with an acid to form the corresponding calcium salt and carbon dioxide.
(c) We often use acidic substances such as lemon, tamarind and buttermilk in the kitchen.
(d) If accidentally spilled, these substances will react with marble and cause its surface to become rough.
(e) Therefore, it is advisable not to use marble tiles in the kitchen.

29.

- (a) Cytoplasm: It holds the cell organelles which carry out various functions of the cell.
(b) Nucleus: It controls and regulates all the functions of the cell. It takes an active part in the process of cell division.
(c) Vacuole: It stores products of excretion. It also temporarily stores the secretions of cells.
(d) Cell membrane: It protects the inner parts of the cell. It regulates the flow of materials in and out of the cell. It maintains the shape of the cell.

30. Differences between sandy soil, clayey soil and silt:

Sandy soil	Clayey soil	Silt
1. Consists of greater proportion of large soil particles	1. Consists of greatest proportion of fine soil particles	1. Consists of fine to medium sized soil particles
2. Has the least water-holding capacity	2. Has the greatest water-holding capacity	2. Has medium water-holding capacity
3. Highly aerated	3. Less aerated	3. Well aerated