

Science

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(Chapter - 1) (Chemical Reactions and Equations) (Practice Test 1 Answers) (Class X)

Section - A

1. A physical change is the one in which the **chemical properties of a substance do not change.**

Let's check all the options

- In the case of **boiling of water** and melting of ice, only the **physical state of water changes**. Therefore, these both are physical changes.
- In the case of **melting ice**, only the **physical state of water changes**. Therefore, these both are physical changes.
- When we **dissolve salt** in water, **salt simply fits into the voids/gaps between the water molecules** and no chemical property is changed. Hence, it is also a physical change.
- However, during combustion of LPG, **it reacts with oxygen** to release CO_2 gas. This is a **chemical change**.)]

So, the correct option is (d).

2. **Displacement Reaction:** Reaction in which a more reactive element takes the place of a less reactive element.

Combination Reaction: When two or more substances react to form a single product, it is known as combination reaction.

Neutralization reaction: A reaction in which acid and base react to form salt and water.

Redox reaction: In this type of reaction, both oxidation and reduction take place simultaneously.

The above reaction is an example of displacement as well as redox reaction.

So, the correct answer is (c) - (i) and (iii).

3. **Exo means out** and **thermic means heat**.

Here:

1. **Reaction of water with quicklime** - Heat is released. So, it is **exothermic**

2. **Dilution of an acid** - When acid is diluted, Heat is released. So, it is **Exothermic**.

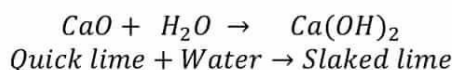
3. **Evaporation of water** - Heat needs to be absorbed for this reaction to take place. So, it is endothermic.

4. **Sublimation of camphor (crystals)** - For sublimation to take place, heat needs to be absorbed. So, it is endothermic.

Thus, reaction of water with quicklime and dilution of acid are exothermic reactions.

So, the correct option is **(a) - (i) and (ii)**.

4. Slaking of Lime:



Here,

- Since heat is liberated in the reaction, it is an exothermic reaction.
- The end product formed is $Ca(OH)_2$ i.e calcium hydroxide. It is a base, so the *pH* of the resulting solution will be more than 7.
- So, the correct option is **(b) - (ii) and (iii)**.

Section - B

5.

- Magnesium is a highly reactive element.
- When kept open in the air, it reacts with the atmospheric oxygen to form Magnesium Oxide (MgO).
- The MgO layer does not burn or slows down the burning process and thus should be removed
- So the Magnesium ribbon should be cleaned with a sandpaper before burning to prevent the impurities deposited on the Magnesium ribbon from interfering in the reaction.
- When cleaned, only pure Magnesium is present and burns in air with a dazzling flame.

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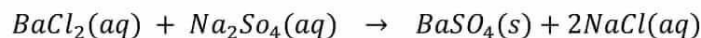
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6.



Note that the reaction does not happen if Barium Chloride and Sodium Sulfate are solid. This is an example of a Double Displacement reaction.

7.

(i) We know that slaked lime $Ca(OH)_2$ is used for whitewashing. The solution of slaked lime ($Ca(OH)_2$) is formed by reaction of Quicklime (CaO) and Water H_2O . Hence, the substance 'X' is Calcium Oxide / Quicklime and its formula is CaO .

(ii) The reaction of 'X' with water is given as $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$.

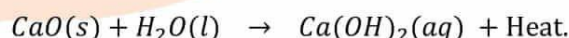
8. The spoilage of food in such a way that it becomes unfit to eat is called rancidity. It is caused by oxidation of fats and oils present in food. It causes a change in the smell and taste of food. Nitrogen acts as an antioxidant, thus preventing oxidation of food and getting it spoiled. This is the reason why oil and fat containing food items are flushed with nitrogen.

9.

1. Evolution of gas
2. Formation of precipitate
3. Change in colour
4. Change in temperature.

Section - C

10. A chemical reaction in which a large amount of heat / energy is produced along with the products is called an exothermic reaction. For example, Calcium Oxide (Quick Lime) reacts with Water to produce Calcium Hydroxide (Slaked Lime) and Heat.



Since heat is produced / released in this reaction, this reaction is called an exothermic reaction. A chemical reaction in which a large amount of heat / energy is absorbed is called an endothermic reaction.

11. A precipitate is an insoluble substance. A reaction in which any insoluble solid precipitate is formed is called Precipitation Reaction. For example,

When Sodium Sulfate solution is mixed with Barium Chloride solution It forms Barium Sulfate and Sodium Chloride solution. In this reaction, a white precipitate of Barium Sulfate is formed.

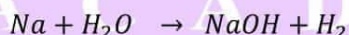


Section - D

12.

Sodium + Water \rightarrow Sodium hydroxide + Hydrogen.

The skeletal chemical equation of the above reaction is



Name of the Element	Number of atoms in Reactants	Number of atoms in Products
Sodium	1	1
Hydrogen	2	3
Oxygen	1	1

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1. Number of atoms of Hydrogen in reactants \neq number of atoms of Hydrogen in products. So balance the number of Hydrogen, We multiply the $NaOH$ in the product by 2 (If H_2 is multiplied, the total number of H in the product will be odd while that in the reactant is even. This will make balancing difficult.)

The chemical equation becomes $Na + H_2O \rightarrow 2NaOH + H_2$

Name of the Element	Number of atoms in Reactants	Number of atoms in Products
Sodium	1	2
Hydrogen	2	4
Oxygen	1	2

2. Now,

Number of atoms of Sodium in reactants \neq number of atoms of Sodium in products

To balance number of Sodium,

We multiply the Na in the Reactants by 2

The chemical equation becomes $2Na + H_2O \rightarrow 2NaOH + H_2$

Name of the Element	Number of atoms in Reactants	Number of atoms in Products
Sodium	2	2
Hydrogen	2	4
Oxygen	1	2

3. Now,

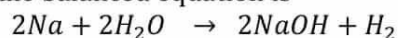
Number of atoms of Hydrogen in reactants \neq number of atoms of Hydrogen in products. To balance Hydrogen and Oxygen,

We multiply H_2O in the Reactants by 2



Name of the Element	Number of atoms in Reactants	Number of atoms in Products
Sodium	2	2
Hydrogen	4	4
Oxygen	2	2

Now, all the elements are balanced and the balanced equation is



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