

## Write the chemical formula of quicklime and slaked lime questions Chemistry Questions with Solutions

**Q-1:** The chemical name of slaked lime is

- a) Calcium oxide
- b) Calcium hydroxide
- c) Magnesium oxide
- d) Magnesium hydroxide

**Answer:** b) Calcium hydroxide is the chemical name of slaked lime.

**Q-2:** What is another term for slaked lime?

- a) Caustic lime
- b) Lime water
- c) Hydrated lime
- d) All of the above

**Answer:** d) All of the above

Explanation: Calcium hydroxide, also known as caustic lime, hydrated lime, builders' lime, slaked lime and pickling lime.

**Q-3:** CaO is the empirical formula for calcium oxide. Determine the oxygen percentage by mass in this compound. Atomic weights: Ca= 40 g/mol, O = 16 g/mol

**Answers:**

$$\% \text{ Oxygen} = \frac{\text{Mass of Oxygen}}{\text{Mass of CaO}} \times 100$$

$$\% \text{ Oxygen} = \frac{16}{56} \times 100 = 28.6\%$$

**Q-4:** Which of the following is the correct chemical formula for quick lime?

- a) Ca(OH)<sub>2</sub>
- b) CaO
- c) Na<sub>2</sub>O
- d) NaOH

**Answer:** b) CaO

Explanation: CaO is the correct chemical formula for quick lime.

**Q-5:** How many grams of hydrogen are present in 2 moles of slaked lime?

**Answer:** The chemical formula for slaked lime is  $\text{Ca}(\text{OH})_2$ .

1 mole of  $\text{Ca}(\text{OH})_2$  contains 2 Hydrogen atoms

2 moles of  $\text{Ca}(\text{OH})_2$  contains 4 Hydrogen atoms

1 atom of hydrogen has a mass of 1g.

Thus, 4 hydrogen atoms will have a mass of 4g.

**Q-6:** In the reaction



a) Predict A and the valency of atoms present in it.

b) Identify the name of A

**Answer:**

a) The reaction is:  $\text{CaCO}_3 + \text{heat} \rightarrow \text{CaO} + \text{CO}_2$

Thus, A is CaO.

The charge on the atoms in the compound is referred to as valency. Calcium is in the +2 oxidation state (charge) and O is in the -2 oxidation state in the compound CaO. As a result, the valency of both atoms is 2.

b) The name of A is calcium oxide or quicklime.

**Q-7:** Match column I with column II

Column I	Column II
A) Milk of magnesia	i) NaOH
B) Slaked lime	ii) $\text{NaHCO}_3$
C) Caustic Soda	iii) $\text{Ca}(\text{OH})_2$
D) Baking Soda	iv) CaO
E) Quick lime	v) $\text{Mg}(\text{OH})_2$

**Answers:** A)-v), B)-iii), C)-i), D)-ii) , E)-iv)

**Q-8:** How much slaked lime would be needed to completely decompose 8 grams of ammonium chloride?

**Answer:** The equation representing the decomposition of  $\text{NH}_4\text{Cl}$  by slaked lime, that is,  $\text{Ca}(\text{OH})_2$  is  
 $\text{Ca}(\text{OH})_2 + 2\text{NH}_4\text{Cl} \rightarrow \text{CaCl}_2 + 2\text{NH}_3 + 2\text{H}_2\text{O}$

Molar mass of  $\text{Ca(OH)}_2 = 74 \text{ g}$

Molar mass of  $\text{NH}_4\text{Cl} = 107 \text{ g}$

From the above equation, we can see that

107 g of  $\text{NH}_4\text{Cl}$  are decomposed by 74 g of  $\text{Ca(OH)}_2$

8 g of  $\text{NH}_4\text{Cl}$  are decomposed by  $\text{Ca(OH)}_2 = (8 \times 74) / 107 = 5.53 \text{ g}$

**Q-9:** Quick lime contains

- a) only covalent bonds
- b) only ionic bonds
- c) one covalent and one ionic bond
- d) one ionic and one coordinate bond

**Answer: b)** only ionic bonds

Explanation: In quick lime ( $\text{CaO}$ ),  $\text{Ca}^{2+}$  ion is bonded to  $\text{O}^{2-}$  via an ionic bond. It is an ionic compound.

**Q-10:** The  $\text{Ca}^{2+}$  ion constituent in quicklime's chemical formula is isoelectronic with

- a) Chlorine
- b) Neon
- c) Argon
- d) Potassium

**Answer: c)** Argon

Explanation: There are 18 electrons in the  $\text{Ca}^{2+}$  ion. Argon is the only element in here with 18 electrons. As both have the same number of electrons, therefore they are isoelectronic species.

**Q-11:** Write the atomicity of different constituent ions in slaked lime's chemical formula.

**Answer:** Slaked lime contains the constituent ions  $\text{OH}^-$  and  $\text{Ca}^{2+}$ .  $\text{Ca}^{2+}$  is a monatomic cation because it only has one atom, whereas  $\text{OH}^-$  is a diatomic anion because it has two atoms- oxygen and hydrogen.

**Q-12:** The chemical formula for slaked lime is  $\text{Ca(OH)}_2$ . How many electrovalent bonds does it contain?

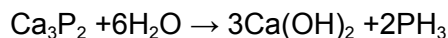
**Answer:**  $\text{Ca}^{+2}$  ion form one ionic bond with each  $\text{OH}^-$  ion in slaked lime. Thus it contains two electrovalent bonds(ionic bonds).

**Q-13:** When one mole of calcium phosphide reacts with an excess of water, it produces

- a) 1 mol of slaked lime
- b) 2 mol of phosphine
- c) 3 mol of slaked lime
- d) 1 mol of phosphoric acid

**Answer: c)** 3 mol of slaked lime

Explanation: The balanced chemical reaction between calcium phosphide( $\text{Ca}_3\text{P}_2$ ) and excess of water is

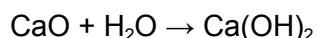


Hence, we can clearly see that 3 moles of  $\text{Ca}(\text{OH})_2$ ( slaked lime) are formed.

**Q-14:** Is quick lime hygroscopic in nature? If yes, write the reaction involved?

**Answer:** Yes, quick lime is hygroscopic in nature. It readily absorbs moisture from the environment.

The reaction involved is:



**Q-15:** Milk of lime is formed when slaked lime is added in water. It is a

- a) Mixture
- b) suspension
- c) Colloid
- d) Homogenous mixture

**Answer: b)** suspension

Explanation: When slaked lime is added to water it forms a suspension called milk of lime.

## Practise Questions on Write the chemical formula of quicklime and slaked lime

**Q-1:** Slaked lime is a

- a) covalent compound
- b) Ionic compound
- c) coordinate compound
- d) coordination compound

**Answer: b)** Ionic compound

Explanation:  $\text{Ca}(\text{OH})_2$  is the chemical formula for calcium hydroxide. It is a type of ionic compound in which two electrons are lost by calcium to polyatomic hydroxide ions.  $\text{Ca}^{+2}$  ions form one ionic bond with each  $\text{OH}^-$  ion in slaked lime.

**Q-2:** In the chemical formula of the quick lime,  $\text{CaO}$ , the  $\text{O}^{2-}$  ion is

- a) polyatomic
- b) Monoatomic
- c) diatomic
- d) triatomic

**Answer: b)** Monoatomic

Explanation: Since  $O^{2-}$  contains only one atom, therefore it is monoatomic.

**Q-3:** Calculate the amount of slaked lime required to remove the hardness of 60,000 litres of well water which has been found to contain 1.62 g of calcium bicarbonate per 10 litre.

**Answer:**

**i) Calculation of total  $Ca(HCO_3)_2$  present**

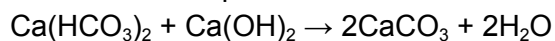
10 litre of water contains  $Ca(HCO_3)_2 = 1.62$  g

Therefore, 60,000 litres of water will contain  $Ca(HCO_3)_2 = (1.62 \times 60000)/10 = 9720$  g

**ii) Calculation of lime required**

The chemical formula for slaked lime is  $Ca(OH)_2$ .

The balanced equation for the reaction involved is



Molar mass of  $Ca(HCO_3)_2 = 162$  g/mol

Molar mass of  $Ca(OH)_2 = 74$  g/mol

162 g of  $Ca(HCO_3)_2$  require lime = 74 g

9720 g of  $Ca(HCO_3)_2$  requires lime =  $(74 \times 9720)/162 = 4440$  g

**Q-4:** Which of the following has the largest number of oxygen atoms?

1 mole of quick lime or 1 mole of slaked lime

**Answer:** 1 mole of substance contains atoms =  $6.022 \times 10^{23}$  atoms

1 mole of quick lime ( $CaO$ ) contains O-atoms =  $6.022 \times 10^{23}$  atom

1 mole of slaked lime ( $Ca(OH)_2$ ) contains O-atoms =  $2 \times 6.022 \times 10^{23}$  atoms  
=  $12.044 \times 10^{23}$  atoms

Hence, 1 mole of slaked lime has the largest number of oxygen atoms.

**Q-5:** Which of the following correctly represents the cation, anion and chemical name of quick lime?

a)  $Ca^{2+}$ ,  $OH^{2-}$ , calcium dihydroxide

b)  $Ca^{2+}$ ,  $O_2^{2-}$ , calcium oxide

c)  $O_2^{2-}$ ,  $Ca^+$ , dioxyacide

d)  $Ca^{2+}$ ,  $O^{2-}$ , calcium oxide

**Answer: d)**  $Ca^{2+}$ ,  $O^{2-}$ , calcium oxide