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:

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

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

Q-4: Which of the following is the correct chemical formula for quick lime?
a) $Ca(OH)_2$
b) CaO
c) Na_2O
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 $Ca(OH)_2$.

1 mole of $Ca(OH)_2$ contains 2 Hydrogen atoms
2 moles of $Ca(OH)_2$ 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
$CaCO_3$ + heat → A + CO_2
a) Predict A and the valency of atoms present in it.
b) Identify the name of A

Answer:
a) The reaction is: $CaCO_3$ + heat → CaO + 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) $NaHCO_3$
C) Caustic Soda	iii) $Ca(OH)_2$
D) Baking Soda	iv) CaO
E) Quick lime	v) $Mg(OH)_2$

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 NH_4Cl by slaked lime, that is, $Ca(OH)_2$ is
$Ca(OH)_2 + 2NH_4Cl \rightarrow CaCl_2 + 2NH_3 + 2H_2O$

Molar mass of $Ca(OH)_2$ = 74 g
Molar mass of NH_4Cl = 107 g

From the above equation, we can see that
107 g of NH_4Cl are decomposed by 74 g of $Ca(OH)_2$
8 g of NH_4Cl are decomposed by $Ca(OH)_2$ = (8×74)/107 = 5.53 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(CaO), Ca^{2+} ion is bonded to O^{2-} via an ionic bond. It is an ionic compound.

Q-10: The 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 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 OH^- and Ca^{2+}. Ca^{2+} is a monatomic cation because it only has one atom, whereas OH^- is a diatomic anion because it has two atoms- oxygen and hydrogen.

Q-12: The chemical formula for slaked lime is $Ca(OH)_2$. How many electrovalent bonds does it contain?
Answer: Ca^{+2} ion form one ionic bond with each 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(Ca_3P_2) and excess of water is
$Ca_3P_2 + 6H_2O \rightarrow 3Ca(OH)_2 + 2PH_3$
Hence, we can clearly see that 3 moles of $Ca(OH)_2$(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:
$CaO + H_2O \rightarrow Ca(OH)_2$

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: $Ca(OH)_2$ 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. Ca^{+2} ions form one ionic bond with each OH^- ion in slaked lime.

Q-2: In the chemical formula of the quick lime, CaO, the 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

$Ca(HCO_3)_2 + Ca(OH)_2 \rightarrow 2CaCO_3 + 2H_2O$

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× 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 = 6.022×10^{23} atoms

1 mole of quick lime (CaO) contains O-atoms = 6.022×10^{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^{+}, dioxycacide

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

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