

Practice Test: Chemical Reactions of s-Block Elements

Topic: Reactivity with Water, Air, and Nitrogen

Maximum Marks: 10 | Total Questions: 10 Multiple Choice Questions

Q1. Which alkali metal uniquely reacts directly with nitrogen gas in air at room temperature or upon heating to form a nitride?

- (a) Sodium (Na)
- (b) Potassium (K)
- (c) Lithium (Li)
- (d) Rubidium (Rb)

Q2. When potassium metal burns in excess air or oxygen, what is the primary product formed?

- (a) Potassium oxide (K_2O)
- (b) Potassium peroxide (K_2O_2)
- (c) Potassium superoxide (KO_2)
- (d) Potassium suboxide (K_3O)

Q3. Which of the following alkaline earth metals does NOT readily react with water even when heated, owing to the formation of a protective oxide film?

- (a) Beryllium (Be)
- (b) Magnesium (Mg)
- (c) Calcium (Ca)
- (d) Barium (Ba)

Q4. The reaction of magnesium nitride (Mg_3N_2) with water yields magnesium hydroxide and which gas?

- (a) Nitrogen (N_2)
- (b) Ammonia (NH_3)
- (c) Hydrogen (H_2)
- (d) Nitrous oxide (N_2O)

Q5. Among the alkali metals, which one reacts least vigorously with water due to its high hydration energy and high melting point?

- (a) Lithium (Li)
- (b) Sodium (Na)
- (c) Potassium (K)
- (d) Caesium (Cs)

Q6. Both magnesium and lithium show diagonal relationships. When burned in air, magnesium forms MgO and Mg_3N_2 . What does lithium form?

- (a) Only Li_2O
- (b) Only Li_3N
- (c) Li_2O and Li_3N
- (d) Li_2O_2 and Li_3N

Q7. What is the reason why alkali metals like sodium are stored under kerosene oil?

- (a) To prevent reaction with nitrogen
- (b) To prevent reaction with atmospheric moisture and oxygen
- (c) To decrease their metallic radius
- (d) To catalyze their reaction with air

Q8. Which alkaline earth metal hydroxide is the most soluble in water?

- (a) $\text{Be}(\text{OH})_2$

(b) $\text{Mg}(\text{OH})_2$

(c) $\text{Ca}(\text{OH})_2$

(d) $\text{Ba}(\text{OH})_2$

Q9. When calcium reacts with cold water, it starts floating because of the bubbles of which gas sticking to its surface?

(a) Oxygen (O_2)

(b) Hydrogen (H_2)

(c) Nitrogen (N_2)

(d) Carbon dioxide (CO_2)