SmartKalike

CBSE Class 10 · Science

Acids, Bases and Salts

10 most probable questions for Boards 2027

Q1. 1 mark · Multiple choice

When sodium hydrogencarbonate reacts with dilute hydrochloric acid, which gas is produced and what happens when it is passed through lime water?
(A) Hydrogen; lime water turns milky
(B) Carbon dioxide; lime water turns milky
(C) Carbon dioxide; a pop sound is heard
(D) Oxygen; lime water remains unchanged

Answer

(B) Carbon dioxide; lime water turns milky — all metal carbonates and hydrogencarbonates react with acids to give a corresponding salt, carbon dioxide and water.

Q2. 2 marks · Short answer

How do indicators show whether a substance is acidic or basic?

Answer

Indicators show whether a substance is acidic or basic through a change in colour. Red and blue litmus, phenolphthalein and methyl orange are colour indicators; olfactory indicators such as onion change odour in acidic or basic media.

Q3. 3 marks · Medium answer

What is water of crystallisation? State how many water molecules are present in one formula unit of hydrated copper sulphate and write its formula.

Answer

1. Water of crystallisation is the fixed number of water molecules present in one formula unit of a salt.
2. Five water molecules are present in one formula unit of hydrated copper sulphate.
3. Its chemical formula is $CuSO_4 \cdot 5H_2O$, showing that the five water molecules are part of the salt's crystal composition, rather than moisture simply clinging to its surface.

Q4. 5 marks · Long answer

Describe what is observed when blue copper sulphate crystals are heated and then moistened with a few drops of water. Explain the colour changes and the appearance of droplets in the boiling tube.

Answer

Blue copper sulphate crystals are hydrated crystals that change on heating and regain their colour when water is added.

1. The blue crystals contain water of crystallisation, the fixed number of water molecules present in

one formula unit of a salt. Five water molecules are present in each formula unit of copper sulphate.
2. On heating, the water of crystallisation is removed, and the blue crystals turn white as copper sulphate without water of crystallisation forms. The released water appears as droplets on the cooler inner surface of the boiling tube.
3. The droplets therefore come from the heated crystals, not from outside the tube. The change is represented by $CuSO_4 \cdot 5H_2O \rightarrow$ (heat) $CuSO_4 + 5H_2O$.
4. When two or three drops of water are added to the white sample, its blue colour reappears as hydrated copper sulphate forms again.

Thus, the colour change shows that copper sulphate crystals contain water of crystallisation.

Q5. 1 mark · Multiple choice

What is formed when excess carbon dioxide is passed through calcium carbonate in water?
(A) Insoluble calcium oxide
(B) Soluble calcium hydrogencarbonate
(C) Calcium chloride and water
(D) Sodium hydrogencarbonate and oxygen

Answer

(B) Soluble calcium hydrogencarbonate — on passing excess carbon dioxide, calcium carbonate forms calcium hydrogencarbonate, which is soluble in water.

Q6. 2 marks · Short answer

What are olfactory indicators?

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Q7. 3 marks · Medium answer

Common salt is used to prepare sodium hydroxide and sodium hydrogencarbonate. Briefly state how each is prepared from common salt and write a balanced chemical equation for each process.

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Q8. 5 marks · Long answer

Gypsum also contains water of crystallisation. State how many water molecules are present in one formula unit of gypsum and write its chemical formula. Relate this to the idea of a fixed number of water molecules in a salt formula unit.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/science/acids-bases-and-salts

Q9. 1 mark · Multiple choice

Why are non-metallic oxides considered acidic in nature?
(A) They react with bases to produce salt and water
(B) They react with metals to produce hydrogen
(C) They dissolve only in acids
(D) They produce hydroxide ions in water

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/science/acids-bases-and-salts

Q10. 2 marks · Short answer

What happens when zinc granules are added to dilute sulphuric acid? State what happens to the hydrogen atoms of the acid.

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