

# PRACTICE MCQS

CLASS 10 SCIENCE (TERM - I)  
**ACIDS BASES AND SALTS**

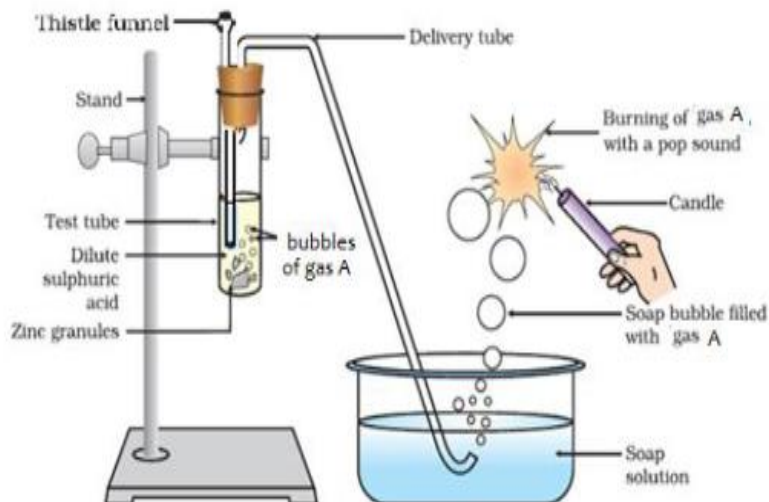
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**Question 1:**

Identify gas A in the following experiment.



- (a) Nitrogen
- (b) Hydrogen
- (c) Oxygen
- (d) Carbon dioxide

**Answer: (b) Hydrogen**

Pop sound shows the burning of hydrogen gas.

**Question 2:**

Bleaching powder gives smell of chlorine because it

- (a) is unstable
- (b) gives chlorine on exposure to atmosphere
- (c) is a mixture of chlorine and slaked lime
- (d) contains excess of chlorine

**Answer: (b) gives chlorine on exposure to atmosphere**





**Question 3:**

What happens when dilute hydrochloric acid is added to iron filings?

- (a) Hydrogen gas and iron chloride are produced
- (b) Chlorine gas and hydrogen gas evolved
- (c) Iron salt and water produced
- (d) No reaction takes place

**Answer: (a) Hydrogen gas and iron chloride are produced**

When dilute hydrochloric acid is added to iron filings then hydrogen gas and iron chloride are produced.



**Question 4:**

Sodium hydroxide turns phenolphthalein solution

- (a) pink
- (b) yellow
- (c) colourless
- (d) orange

**Answer: (a) pink**

Sodium hydroxide is a base hence it turns phenolphthalein solution to pink. It gets colourless in acidic solutions.

**Question 5:**

Which of the following substances would have pH less than 7?

- (a) Antacid
- (b) Soap
- (c) Vinegar
- (d) Water

**Answer: (c) Vinegar**

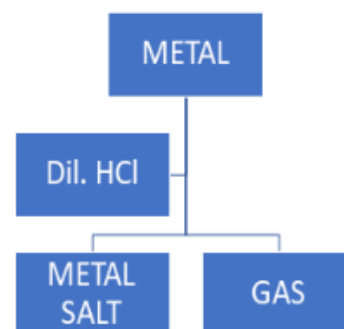


Acidic substances will have pH value less than 7. Vinegar would have pH less than 7 as it is an aqueous solution of acetic acid.

### Question 6:

Which of the following two combinations are correct?

	Metal	Gas Evolved
(i)	Copper	Yes
(ii)	Iron	Yes
(iii)	Magnesium	No
(iv)	Zinc	Yes



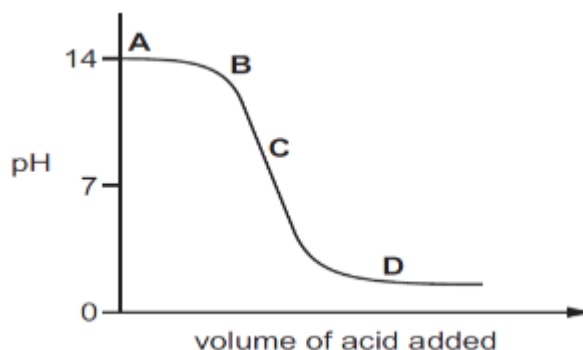
- (a) i and iii
- (b) i and iv
- (c) ii and iii
- (d) ii and iv

**Answer: (d) ii and iv**

### Question 7:

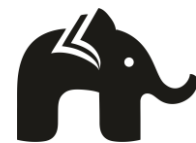
The graph given below depicts a neutralization reaction (acid + alkali → salt + water).

The pH of a solution changes as we add excess of acid to an alkali.



Which letter denotes the area of the graph where both acid and salt are present?

- (a) A



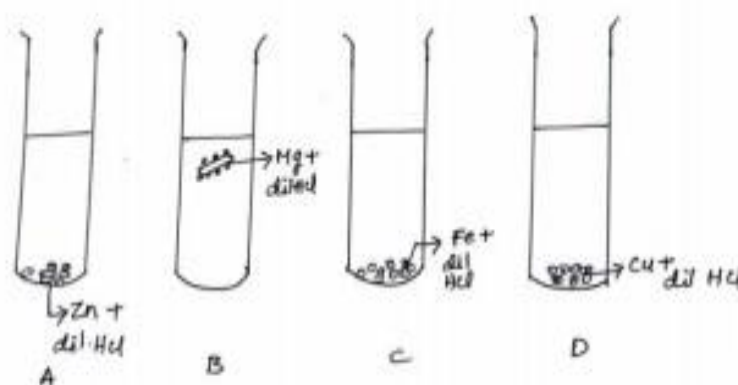
- (b) B
- (c) C
- (d) D

**Answer: (d) D**

As we go on adding acid to an alkali, the solution becomes acidic and pH comes down below 7.

**Question 8:**

The diagram shows the reaction between metal and dil. acid.



What is the reason for different behaviour of Mg in test tube B?

- (a) Mg is lighter element than dil. HCl
- (b) Mg reacts with dil. HCl to produce  $H_2$  gas which helps in floating
- (c) Mg reacts with dil. HCl to produce  $N_2$  gas which helps in floating
- (d) Mg reacts with dil. HCl to produce  $CO_2$  gas which helps in floating

**Answer: (b) Mg reacts with dil. HCl to produce  $H_2$  gas which helps in floating**

**Question 9:**

Acetic acid was added to a solid Y kept in a test tube. A colourless and odourless gas was evolved. The gas was passed through lime water which turned milky. The conclusion is that

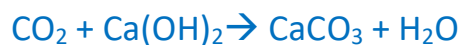
- (a) Solid Y is sodium hydroxide and gas evolved is  $CO_2$
- (b) Solid Y is sodium bicarbonate and gas evolved is  $CO_2$
- (c) Solid Y is sodium acetate and the gas evolved is  $CO_2$



(d) Solid Y is sodium chloride and gas evolved is  $\text{CO}_2$

**Answer: (b) Solid Y is sodium bicarbonate and gas evolved is  $\text{CO}_2$**

Solid Y – sodium bicarbonate.



**Question 10:**

The table shown below gives information about four substances: A, B, C and D.

SUBSTANCE	MELTING POINT (K)	ELECTRICAL CONDUCTIVITY	
		SOLID	LIQUID/ AQUEOUS
A	295	Good	Good
B	1210	Poor	Good
C	1890	Poor	Good
D	1160	Poor	Poor

Identify ionic compounds from the above given substances.

- (a) A, B
- (b) B, C
- (c) A, B, D
- (d) A, C, D

**Answer: (b) B, C**

**Question 11:**

The acid used in making vinegar is

- (a) formic acid
- (b) acetic acid
- (c) sulphuric acid
- (d) nitric acid

**Answer: (b) acetic acid**



6-12% of acetic acid is known as vinegar.

**Question 12:**

Vinay observed that the stain of curry on a white shirt becomes reddish-brown when soap is scrubbed on it, but it turns yellow again when the shirt is washed with plenty of water. What might be the reason for his observation?

- i. Soap is acidic in nature
  - ii. Soap is basic in nature
  - iii. Turmeric is a natural indicator which gives reddish tinge in bases
  - iv. Turmeric is a natural indicator which gives reddish tinge in acids
- (a) i and ii  
(b) ii and iii  
(c) i and iv  
(d) ii and iv

**Answer: (b) ii and iii**

**Question 13:**

Choose the incorrect statement.

- (a) Antacids are mild bases.
- (b) HCl gas does not change the colour of dry blue litmus paper.
- (c) Calcium oxide reacts with chlorine to form bleaching powder.
- (d) Phenolphthalein gives different colours in acidic and basic medium.

**Answer: (c) Calcium oxide reacts with chlorine to form bleaching powder.**

Calcium hydroxide reacts with chlorine to form bleaching powder.

**Question 14:**

What is the common name of  $\text{CaOCl}_2$ ?

- (a) Bleaching powder
- (b) Baking soda



- (c) Washing soda
- (d) Lime water

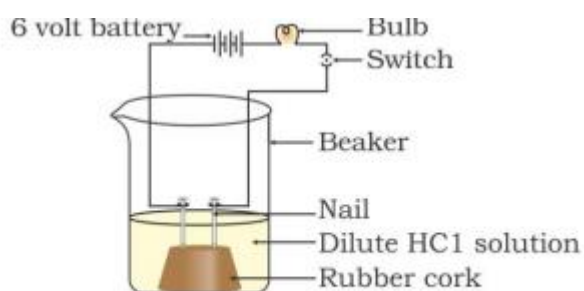
**Answer: (a) Bleaching powder**

The common name of  $\text{CaOCl}_2$  is bleaching powder. Bleaching powder is obtained when chlorine gas is passed through dry slaked lime. It is used as a disinfectant for water treatment.

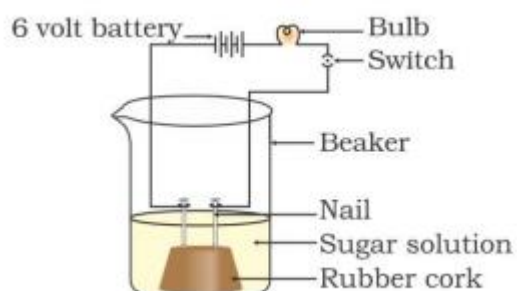
**Question 15:**

In which of the following setups would the bulb glow?

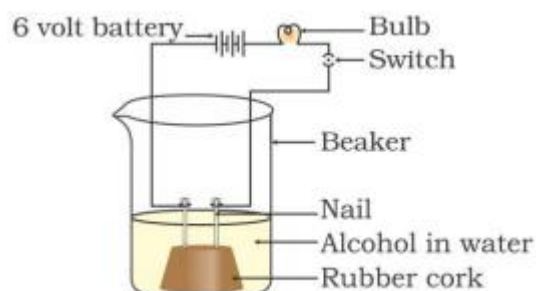
(i)



(ii)



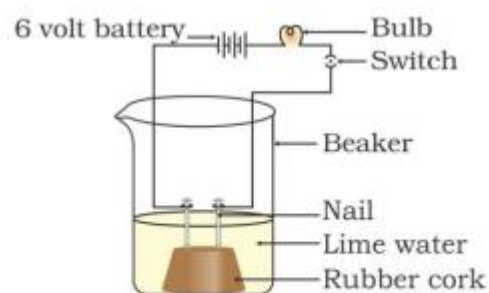
(iii)







(iv)



- (a) i and ii
- (b) i and iv
- (c) ii, iii and iv
- (d) i, ii and iv

**Answer: (b) i and iv**

**Question 16:**

Which of the following is used to neutralize the effect of acidity of the soil?

- (a) Caustic soda
- (b) Slaked lime
- (c) Gypsum
- (d) Baking soda

**Answer: (b) Slaked lime**

If the soil is acidic and in order to make it less acidic, quick or slaked lime is added to the soil which is also known as the liming of the soil. Lime is alkaline and it neutralizes the acidity of the soil and makes it more neutral.

**Question 17:**

When copper oxide and dilute HCl react, colour changes to

- (a) white
- (b) bluish-green
- (c) reddish brown
- (d) black



**Answer: (b) bluish-green**

On the reaction of copper oxide and dilute hydroxide acid, colour changes to bluish green.

**Question 18:**

Which of the following is an organic acid?

- (a) Malic acid
- (b) Nitric acid
- (c) Carbonic acid
- (d) Hydrochloric acid

**Answer: (a) Malic acid**

Acids obtained from plants and animals are organic acids. For example: oxalic acid, malic acid, citric acid.

Inorganic acids are obtained from minerals present in Earth. For example: nitric acid.

**Question 19:**

Tooth decay starts when pH of mouth

- (a) falls below 5.5
- (b) rises above 6.6
- (c) falls below 2.5
- (d) rises above 10

**Answer: (a) falls below 5.5**

Tooth decay starts when pH of mouth falls below 5.5. At that pH, acid reacts with calcium phosphate of tooth enamel and causes its corrosion.

**Question 20:**

Choose the correct match.

- (a) Effect of methyl orange on acid –color change from orange to red
- (b) Effect of onion extract on base – no effect



(c) Effect of phenolphthalein on base – Turns red

(d) Effect of acid on litmus paper – red to blue

**Answer: (a) Effect of methyl orange on acid – color change from orange to red**

Effect of acid on litmus paper, it turns blue litmus red.

Effect of base on litmus paper, it turns red litmus blue.

Effect of phenolphthalein on acid, solution remains colourless.

Effect of phenolphthalein on base, solution turns to pink.

Effect of acid on onion extract due to an acid, same smell.

Effect of base on onion extract due to a base, smell changes.

## Assertion Reason Based Questions

Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true and R is not the correct explanation of A

(c) A is true but R is false

(d) A is False but R is true

**Question 21:**

A: Fresh milk in which baking soda is added, takes a longer time to set as curd.

R: Baking soda decreases the pH value of fresh milk to below 6.

**Answer: (c) A is true but R is false**

Milk becomes more alkaline when a base is added to it. This prevents milk from turning into curd. Baking soda is alkaline in nature, it neutralizes acidic nature of milk.



**Question 22:**

A: HCl produce hydronium ions and chloride ions in aqueous solution.

R: In the presence of water, bases give  $H^+$  ions.

**Answer: (c) A is true but R is false**

HCl produces  $H^+$  ions in aqueous solution becomes  $H^+$  ions in presence of water, acids gives  $H^+$  ions.  $H^+$  ions cannot exist alone so it combines with water molecules and forms  $H_3O^+$ .

**Question 23:**

A: Copper sulphate crystals are wet because it contains water of crystallization.

R: Water of crystallization is the fixed number of molecules of water present in one formula unit of salt.

**Answer: (d) A is False but R is true**

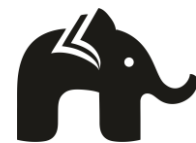
Copper sulphate crystals are not wet but they are hydrated crystals. Presence of water molecules in the crystals imparts blue color to the salt.

## Case Study Based Questions

**Question 24:**

The Salt Story From: The New Indian Express 9 March 2021

The salt pans in Marakkanam, a port town about 120 km from Chennai are the third largest producer of salt in Tamil Nadu. Separation of salt from water is a laborious process and the salt obtained is used as raw materials for manufacture of various sodium compounds. One such compound is Sodium hydrogen carbonate, used in baking, as an antacid and in soda acid fire



extinguishers. The table shows the mass of various compounds obtained when 1litre of sea water is evaporated

COMPOUND	FORMULA	MASS OF SOLID PRESENT /g
Sodium Chloride	NaCl	28.0
Magnesium Chloride	MgCl <sub>2</sub>	8.0
Magnesium Sulphate	MgSO <sub>4</sub>	6.0
Calcium Sulphate	CaSO <sub>4</sub>	2.0
Calcium Carbonate	CaCO <sub>3</sub>	1.0
TOTAL AMOUNT OF SALT OBTAINED		45.0

1. Which compound in the table reacts with acids to release carbon dioxide?

- (a) NaCl
- (b) CaSO<sub>4</sub>
- (c) CaCO<sub>3</sub>
- (d) MgSO<sub>4</sub>

2. How many grams of Magnesium Sulphate are present in 135g of solid left by evaporation of sea water?

- (a) 6g
- (b) 12g
- (c) 18g
- (d) 24g

3. What is the saturated solution of Sodium Chloride called?

- (a) Brine
- (b) Lime water
- (c) Slaked lime
- (d) Soda water

4. What is the pH of the acid which is used in the formation of common salt?

- (a) Between 1 to 3
- (b) Between 6 to 8
- (c) Between 8 to 10
- (d) Between 11 to 13



**Answer:**

1. (c)  $\text{CaCO}_3$



2. (c) 18 g

3. (a) Brine

The saturated solution of sodium chloride is called as brine.

4. (a) Between 1 to 3

Table salt or common salt is formed by mixing sodium hydroxide and hydrochloric acid. pH of hydrochloric acid is between 1 and 3.

**Question 25:**

Marble's popularity began in ancient Rome and Greece, where white and off-white marble were used to construct a variety of structures, from hand-held sculptures to massive pillars and buildings.

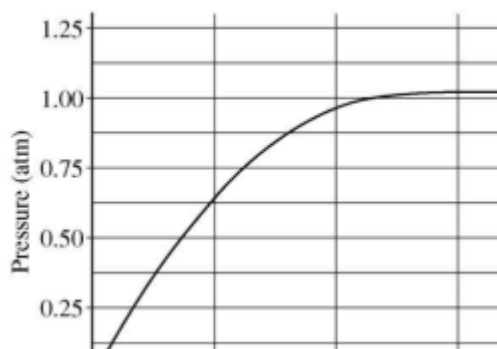


1. The substance not likely to contain  $\text{CaCO}_3$  is

- (a) Dolomite
- (b) A marble statue
- (c) Calcined gypsum
- (d) Sea shells.



2. A student added 10 g of calcium carbonate in a rigid container, secured it tightly and started to heat it. After some time, an increase in pressure was observed, the pressure reading was then noted at intervals of 5 min and plotted against time, in a graph as shown below. During which time interval did maximum decomposition take place?



- (a) 15-20 min
- (b) 10-15 min
- (c) 5-10 min
- (d) 0-5 min

3. Gas A, obtained above is a reactant for a very important biochemical process which occurs in the presence of sunlight. Identify the name of the process –

- (a) Respiration
- (b) Photosynthesis
- (c) Transpiration
- (d) photolysis

4. Marble statues are corroded or stained rain water. Identify the main reason.



- (a) decomposition of calcium carbonate to calcium oxide
- (b) polluted water is basic in nature hence it reacts with calcium carbonate
- (c) polluted water is acidic in nature hence it reacts with calcium carbonate
- (d) calcium carbonate dissolves in water to give calcium hydroxide



5. Calcium oxide can be reduced to calcium, by heating with sodium metal. Which compound would act as an oxidizing agent in the above process?

- (a) Sodium
- (b) sodium oxide
- (c) calcium
- (d) calcium oxide

**Answer:**

1. (c) Calcined gypsum

The composition of gypsum is  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ . It does not have  $\text{CaCO}_3$ .

2.(d) 0-5 min

3.(b) Photosynthesis

4. (c) polluted water is acidic in nature hence it reacts with calcium carbonate

5.(d) calcium oxide

**Question 26:**

Frothing in Yamuna:

The primary reason behind the formation of the toxic foam is high phosphate content in the wastewater because of detergents used in dyeing industries, dhobi ghat Yamuna's pollution level is so bad that parts of it have been labelled 'dead' as there is no oxygen in it for aquatic life to survive.







1. Predict the pH value of the water of river Yamuna if the reason for froth is high content of detergents dissolved in it.

- (a) 10-11
- (b) 5-7
- (c) 2-5
- (d) 7 4.2

2. Which of the following statements is correct for the water with detergents dissolved in it?

- (a) low concentration of hydroxide ion ( $\text{OH}^-$ ) and high concentration of hydronium ion ( $\text{H}_3\text{O}^+$ )
- (b) high concentration of hydroxide ion ( $\text{OH}^-$ ) and low concentration of hydronium ion ( $\text{H}_3\text{O}^+$ )
- (c) high concentration of hydroxide ion ( $\text{OH}^-$ ) as well as hydronium ion ( $\text{H}_3\text{O}^+$ )
- (d) equal concentration of both hydroxide ion ( $\text{OH}^-$ ) and hydronium ion ( $\text{H}_3\text{O}^+$ ).

3. The table provides the pH value of four solutions P, Q, R and S

Solution	pH value
P	2
Q	9
R	5
S	11

Which of the following correctly represents the solutions in increasing order of their hydronium ion concentration?

- (a)  $P > Q > R > S$
- (b)  $P > S > Q > R$
- (c)  $S < Q < R$
- (d)  $S < Q > R$

4. High content of phosphate ion in river Yamuna may lead to

- (a) decreased level of dissolved oxygen and increased growth of algae
- (b) decreased level of dissolved oxygen and no effect of growth of algae
- (c) increased level of dissolved oxygen and increased growth of algae
- (d) decreased level of dissolved oxygen and decreased growth of algae



5. If a sample of water containing detergents is provided to you, which of the following methods will you adopt to neutralize it?

- (a) Treating the water with baking soda
- (b) Treating the water with vinegar
- (c) Treating the water with caustic soda
- (d) Treating the water with washing soda

**Answer:**

1. (a) 10-11

2. (b) high concentration of hydroxide ion ( $\text{OH}^-$ ) and low concentration of hydronium ion ( $\text{H}_3\text{O}^+$ )

3. (c)  $S < Q < R$

4. (a) decreased level of dissolved oxygen and increased growth of algae

5. (b) Treating the water with vinegar

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