

Case study based questions  
10th Science

## Acids, Bases and Salts

Passage - 1

5 Marks



Salts of a strong acid and a strong base are neutral with pH value of 7. On the other hand, salts of a strong acid and weak base are acidic with pH value less than 7 and those of a strong base and weak acid are basic in nature, with pH value more than 7.

Q1. (1) Less than 7

Q2. (3) 7

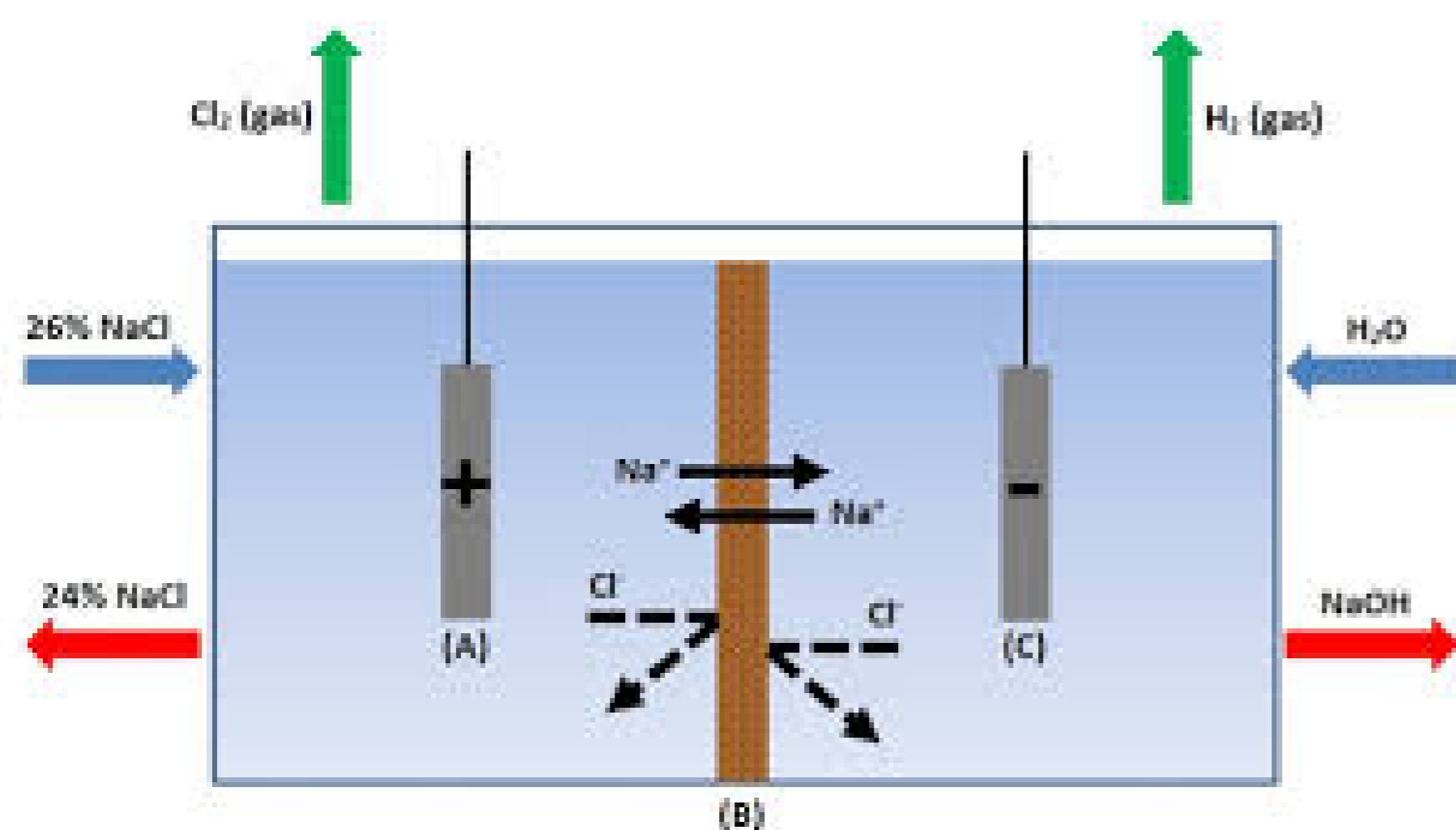
Q3. (1) Hydrochloric Acid

Q4. (3) All of the above

Q5. (1) Water

Passage - 2

5 Marks



The common salt is an important raw material for various materials of daily use, such as sodium hydroxide, baking soda, washing soda, bleaching powder and many more. When electricity is passed through an aqueous solution of sodium chloride (called brine), it decomposes to form sodium hydroxide. The process is called the chlor-alkali process because of the products formed- chlor for chlorine and alkali for sodium hydroxide.

Q1. (1) Cooking

Q2. (2) Products formed are chlorine and sodium hydroxide

Q3. (1) Brine

Q4. (2) Sodium hydroxide

Q5. (1) YES

Passage - 3

5 Marks



Baking powder is a mixture of baking soda (sodium hydrogencarbonate) and a mild edible acid such as tartaric acid. When baking powder is heated or mixed in water, it evolves carbon dioxide gas which gets converted into sodium carbonate. Carbon dioxide produced during the reaction can cause bread or cake to rise making them soft and spongy.

Q1. (1) Carbon dioxide

Q2. (1) Carbon dioxide

Q3. (1) Tartaric

Q4. (2) Sodium hydrogencarbonate

Q5. (1) Sodium carbonate

Passage - 4

5 Marks

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A stain of curry on a white cloth becomes reddish brown when soap is scrubbed on it because Curry contains turmeric powder and soap is basic in nature. Bases turn turmeric red. Hence, when soap (which is basic in nature) is scrubbed on the stain, the stain turns red. When the cloth is washed with plenty of water, the soap is removed and the yellow colour of the stain reappears.

Q1. (1) Turmeric

Q2. (2) Red

Q3. (1) YES

Q4. (2) As it is basic in nature

Q5. (2) It turns yellow again

Passage - 5

5 Marks

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Soda-acid fire extinguisher contains sodium bicarbonate and sulphuric acid, which are in separate containers. When knob of fire extinguisher is pressed, then sulphuric acid mixes with sodium bicarbonate solution and produces a lot of  $CO_2$  gas, which forms a blanket over the fire and cuts it off from the supply of the air to the burning substance and the fire stops.

Q1. (3) Both A and B

Q2. (1) To get rid of fire

Q3. (2) Sodium bicarbonate

Q4. (1) Red

Q5. (1) YES

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## Acids, Bases and Salts

Passage - 1

5 Marks

### Water of crystallization



[https://en.wikipedia.org/wiki/File:Copper\\_sulfate.jpg](https://en.wikipedia.org/wiki/File:Copper_sulfate.jpg)

The water of crystallization means having a fixed number of molecules present in one formula of a unit of salt. Crystal salts with water of crystallization are known as hydrates. The other names of water crystallization are crystallization water or water of hydration. The water of crystallization is caused by forming purified crystals from an aqueous solution. These crystals do not include contaminants. These crystals are easily affected by the heat. Examples of water of crystallization are proteins with more than 50% of the water of crystallization and copper sulfate pentahydrate with five molecules of water of crystallization\

Q1. (1) TRUE

Q2. (1) TRUE

Q3. (2) Five

Q4. (1) Hydrates

Q5. (2) Hydration water

Passage - 2

5 Marks



Curd and sour substances should not be kept in brass and copper vessels because these and other sour food-stuffs contain acids which can react with the metal of the vessel to form poisonous metal compounds which can cause food poisoning and affect our health adversely.

Q1. (2) Sour

Q2. (3) Both A and B

Q3. (1) YES

Q4. (1) TRUE

Q5. (2) Copper and zinc

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## Passage - 3

5 Marks



While diluting an acid it is recommended that the acid should be added to water and not water to the acid because if water is added to concentrated acid to dilute it, then a large amount of heat is evolved at once. This heat changes some of the water to steam explosively which can splash the acid on one's face or clothes and cause acid burns.

Q1. (3) All of the above

Q2. (1) Burns

Q3. (1)  $H^+$  ions

Q4. (2) Water

Q5. (1) Salt and water

Passage - 4

5 Marks



Distilled water does not conduct electricity because it does not contain any ionic compound (like acids, bases or salts) dissolved in it. Rainwater, while falling to the earth through the atmosphere, dissolves an acidic gas carbon dioxide from the air and forms carbonic acid ( $H_2CO_3$ )

). Carbonic acid provides hydrogen ions,  $H^+$  (aq) and carbonate ions, to rainwater. Hence, due to the presence of carbonic acid which provides ions to rainwater, the rainwater conducts electricity.

Q1. (2) NO

# Answer Key 2.6

Marks - 20

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Q2. (1) Hydrogen ions

Q3. (2) NO

Q4. (1) Carbonic

Q5. (4) All of the above

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