Worksheet 2.3

Marks - 25

Case study based questions

10th Science

Acids, Bases and Salts

Passage - 1 **5 Marks**

Our body works within the pH range of 7.0 to 7.8. Living organisms can survive only in a narrow range of pH change. When pH of rain water is less than 5.6, it is called acid rain. When acid rain flows into the river, it lowers the pH of the river water. The survival of aquatic life in such rivers becomes difficult.

Q 1. Survival of animals in _____ water is difficult.

(1) Acidic
(2) Alkaline
(3) Neutral
(4) None of these

Q 2. Typical acid rain has a pH value of

(1) 2
(2) 7
(3) 11
(4) 4

Worksheet 2.3

Marks - 25

Q 3. pH of our body is slightly

(1) Acidic
(2) Alkaline
(3) Neutral
(4) None of these

Q 4. Optimal pH for many aquatic species is between

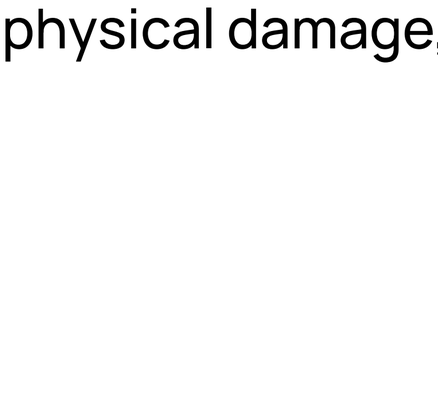
(1) 7 to 9
(2) 11 to 14
(3) 4 to 6
(4) 14

Q 5. True or false. Low pH levels cause fish kill by stressing animal systems and causing physical damage, which in turn makes them more vulnerable to disease.

(1) TRUE
(2) FALSE

Passage - 2 **5 Marks**

Water of crystallization



https://en.wikipedia.org/wiki/File:Copper_sulfate.jpg

The fixed number of water molecules present in one formula unit of a salt is called water of crystallisation. For instance, there are five molecules of water

in one formula unit of copper sulphate and hence the chemical formula for hydrated copper sulphate is
$CuSO_4.5H_2O$
. Gypsum has two molecules of water as water of crystallisation and hence the chemical formula for hydrated gypsum stands out to be
$CaSO_4.2H_2O$
This gypsum on getting heated loses water molecules and becomes calcium sulphate hemihydrate (CaSO4.
$\frac{1}{2}$
H2O). This is known as plaster of Paris. Plaster is used for supporting fractured bones in their appropriate position

Q 1. How many molecules of water of crystallization are there in calcium sulphate?

(1) 1
(2) 2
(3) 3
(4) 4

Q 2. Chemical formula for Plaster of Paris is

(1) $CaSO_4 . \frac{1}{2} H_2O$
(2) $CaSO_4 . 2H_2O$
(3) $CuSO_4 . \frac{1}{2} H_2O$
(4) $CuSO_4 . 2H_2O$

Q 3. Chemical formula for Gypsum is

(1) $CaSO_4 . \frac{1}{2} H_2O$
(2) $CaSO_4 . 2H_2O$
(3) $CuSO_4 . \frac{1}{2} H_2O$
(4) $CuSO_4 . 2H_2O$

Worksheet 2.3

Marks - 25

Q 4. Plaster of Paris is prepared by heating gypsum to a temperature of _____ K in a kiln.

(1) 273
(2) 373
(3) 100
(4) 573

Q 5. True or false. Plaster of paris is not used for making toys, materials for decoration and for making smooth surfaces.

(1) TRUE
(2) FALSE

Passage - 3 **5 Marks**

Nettle is a herbaceous plant which grows in the wild. Its leaves have stinging hair, which cause painful stings when touched accidentally. This is due to the methanoic acid secreted by them. A traditional remedy is rubbing the area with the leaf of the dock plant, which often grows beside the nettle in the wild.

Q 1. Nettle secrets which acid?

(1) Hydrochloric acid

---

(2) Nitric acid
(3) Methanoic acid
(4) Ethanoic acid

Q 2. Which plant grows besides nettle?

(1) Hibiscus
(2) Dock
(3) Neem
(4) Basil

Q 3. True or false. Stinging hair of nettle leaves inject methanoic acid causing burning pain.

(1) TRUE
(2) FALSE

Q 4. Use of a mild base like baking soda on the stung area gives relief. Is this statement true?

(1) YES
(2) NO

Q 5. What is the nature of dock plant?

(1) Acidic
(2) Basic
(3) Neutral
(4) None of these

Passage - 4 **5 Marks**

Worksheet 2.3

Marks - 25

Seawater contains many salts dissolved in it. Sodium chloride is separated from these salts. Deposits of solid salt are also found in several parts of the world. These large crystals are often brown due to impurities. This is called rock salt. Beds of rock salt were formed when seas of bygone ages dried up. Rock salt is mined like coal

Q 1. _____ is separated from sea water by evaporating sea water.

(1) Sugar
(2) Minerals
(3) Common salt
(4) None of these

Q 2. Common Salt (sodium chloride) is used in manufacturing of

(1) Soap
(2) Baking soda
(3) Caustic soda
(4) All of these

Q 3. Salt is responsible for regulation of _____ in our body.

(1) Water
(2) Oxygen

(3) Blood
(4) Cells

Q 4. True or false. Sodium chloride was an important symbol in our struggle for freedom.

(1) TRUE
(2) FALSE

Q 5. True or false. In the case of dehydration we have to rehydrate our body by taking fluid with essential salts.

(1) TRUE
(2) FALSE

Passage - 5 **5 Marks**

Chlorine is produced during the electrolysis of aqueous sodium chloride (brine). This chlorine gas is used for the manufacture of bleaching powder. Bleaching powder is produced by the action of chlorine on dry slaked lime [

$Ca(OH)_2$]. Bleaching powder is represented as $CaOCl_2$, though the actual composition is quite complex.

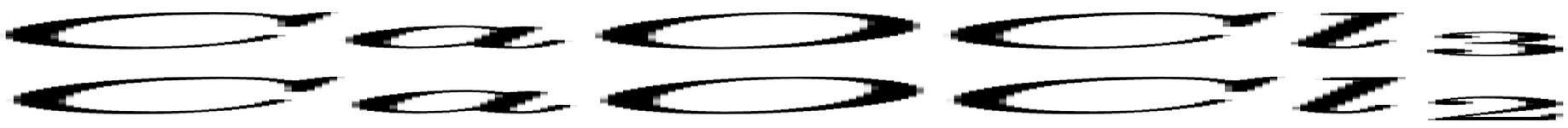
Q 1. Chlorine is produced by which of the following process?

(1) Electrolysis
(2) Evaporation

Q 2. What is produced by the action of chlorine ?

(1) Baking soda
(2) Bleaching powder

Q 3. What is the formula of Bleaching powder?

(1) 

(2)

Q 4. What is used to prepare bleaching powder?

(1) Chlorine gas
(2) Hydrogen gas

Q 5. On the action of dry slaked lime with chlorine what is formed?

(1) Baking soda
(2) Bleaching powder

Worksheet 2.4

Marks - 25

Case study based questions

10th Science

Acids, Bases and Salts

Passage - 1 **5 Marks**

The baking soda is commonly used in the kitchen for making tasty crispy pakoras, etc. Sometimes it is added for faster cooking. The chemical name of the compound is sodium hydrogencarbonate ($NaHCO_3$). It is produced using sodium chloride as one of the raw materials

Q 1. To make pakoras crispy what is added to it?

(1) Baking soda
(2) Bleaching powder

Q 2. What is added to fasten the cooking process ?

(1) Baking soda
(2) Bleaching powder

Q 3. Baking soda is produced using ?

---

(1) Sodium flouride
(2) Sodium chloride

Q 4. What is the chemical name of baking soda?

(1) Sodium chloride
(2) Sodium bicarbonate

Q 5. State true or false: Baking soda is commonly used for cleaning toilets.

(1) TRUE
(2) FALSE

Passage - 2 **5 Marks**

Another chemical that can be obtained from sodium chloride is $Na_2CO_3.10H_2O$ (washing soda). Sodium carbonate can be obtained by heating baking soda; recrystallisation of sodium carbonate gives washing soda. It is also a basic salt.Sodium carbonate and sodium hydrogencarbonate are useful chemicals for many industrial processes as well.

Worksheet 2.4

Marks - 25

Q 1. What is obtained by sodium choride?

(1) Washing soda
(2) Baking soda
(3) All of the above

Q 2. What is a basic salt-

(1) Washing soda
(2) Baking soda
(3) All of the above

Q 3. By heating baking soda what can be obtained?

(1) Sodium chloride
(2) Sodium carbonate

Q 4. Recrystallization of sodium carbonate gives _____.

(1) Washing soda
(2) Baking soda

Q 5. For industrial processess which of the following is(are) used -

(1) Sodium carbonate
(2) Sodium hydrogencarbonate
(3) Sodium chloride
(4) Both A and B

Passage - 3 **5 Marks**

Worksheet 2.4

Marks - 25

Copper sulphate crystals which seem to be dry contain water of crystallisation. When we heat the crystals, this water is removed and the salt turns white. If you moisten the crystals again with water, you will find that blue colour of the crystals reappears. Water of crystallisation is the fixed number of water molecules present in one formula unit of a salt. Five water molecules are present in one
formula unit of copper sulphate. Chemical formula for hydrated copper sulphate is
$CuSO_4.5H_2O$. the molecule of $Na_2CO_3.10H_2O$ is wet.

Q 1. Does copper sulphate crystals contain water of crystallization?

(1) YES
(2) NO

Q 2. When we heat the crustals of copper sulphate the salt colour turns _____.

(1) Black
(2) White

Worksheet 2.4

Marks - 25

Q 3. What is the chemical formula of hydrated copper sulphate?

(1) $CuSO_4 \cdot 5H_2O$.
(2) $CuSO_3 \cdot 3H_2O$.

Q 4. How many water molecules are there in one unit of copper sulphate?

(1) Four
(2) Five

Q 5. State True or False. Water of crystallisation is the random number of water molecules present in one formula unit of a salt

(1) TRUE
(2) FALSE

Passage - 4

5 Marks

On heating gypsum at 373 K, it loses water molecules and becomes calcium sulphate hemihydrate. This is called Plaster of Paris, the substance which doctors use as plaster for supporting fractured bones in the right position. Plaster of Paris is a white powder and on mixing with water, it changes to gypsum once again giving a

hard solid mass.

Q 1. Gypsum losses water at _____ temperature.

(1) 373 K
(2) 383 K

Q 2. When gypsum becomes calcium sulhate hemihydrate it is called as_____

(1) Bleaching powdeer
(2) Plaster of Paris

Q 3. Doctors use plaster of paris for _____.

(1) Supporting building
(2) Supporting fractured bones

Q 4. What is the colour of plaster of paris?

(1) Yellow
(2) Black
(3) White

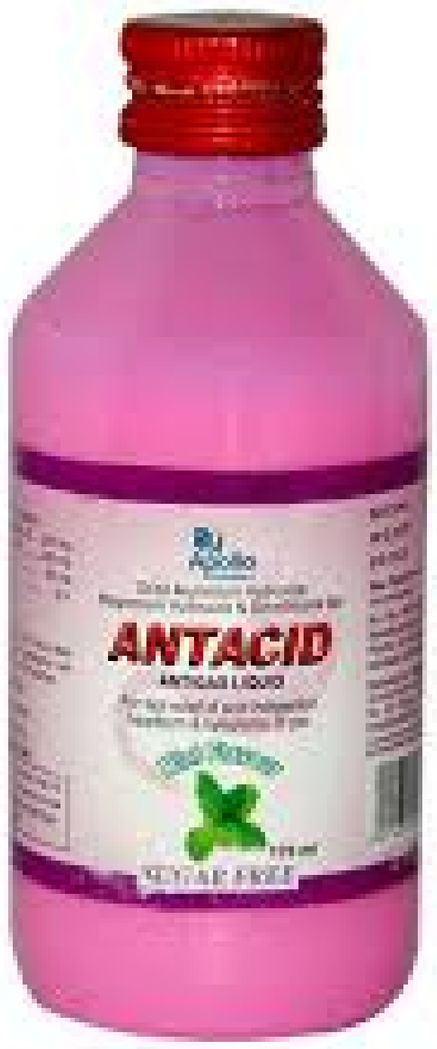
Q 5. When plaster of paris is mixed with water it becomes hard solid mass and changes into _____.

(1) Gypsum
(2) Calcium

Passage - 5 **5 Marks**

Worksheet 2.4

Marks - 25



It is very interesting to note that our stomach produces hydrochloric acid. It helps in the digestion of food without harming the stomach.
During indigestion the stomach produces too much acid and this causes pain and irritation. To get rid of this pain, people use bases called antacids. These antacids neutralise the excess acid. Magnesium hydroxide (Milk of magnesia), a mild base, is often used for this purpose.

Q 1. Which acid does our stomach produces?

(1) Hydrochloric acid
(2) acetic acid

Q 2. Indigestion in stomach causes _____.

(1) Too much of base
(2) Too much of acid

Q 3. Which of the following is the effect of excess of acid in stomach?

(1) Relief
(2) Pain and irritation

Q 4. To get rid of pain of excess acid in the stomach _____are used.

(1) Antacids
(2) Analgesics

Q 5. What is used to neutalize the acid in the stomach?

(1) Milk of Sodium
(2) Milk of magnesium