Answer Key 3.1

Marks - 25

Case study based questions

10th Science

Metals and Non- Metals

Passage - 1 **5 Marks**

Metal, is any of a class of substances characterized by high electrical and thermal conductivity as well as by malleability, ductility, and high reflectivity of light.The most abundant varieties in the Earth's crust are aluminum, iron, calcium, sodium, potassium, and magnesium. The vast majority of metals are found in ores (mineral-bearing substances), but a few such as copper, gold, platinum, and silver frequently occur in the free state because they do not readily react with other elements.

Q1. (1) Metals

Q2. (4) All of the above

Q3. (2) Ores

Q4. (4) Both A and B

Q5. (2) FALSE

Answer Key 3.1

Marks - 25

Passage - 2

5 Marks

Nonmetal, is a substance having a finite activation energy (band gap) for electron conduction. This means that nonmetals display low (insulators) to moderate (semiconductors) bulk electrical conductivities, which increase with increasing temperature, and are subject to dielectric breakdown at high voltages and temperatures. Like metals, nonmetals may occur in the solid, liquid, or gaseous state. Oxygen, carbon, sulfur and chlorine are examples of non-metal elements.

Q1. (1) Non metal

Q2. (1) Insulators

Q3. (4) All of the above

Q4. (1) TRUE

Q5. (4) All of the above

Passage - 3

5 Marks

Answer Key 3.1

Marks - 25

Metalloid, is an imprecise term used to describe a chemical element that forms a simple substance having properties intermediate between those of a typical metal and a typical nonmetal. The term is normally applied to a group of between six and nine elements (boron, silicon, germanium, arsenic, antimony, tellurium, and possibly bismuth, polonium, astatine) found near the center of the P-block or main block of the periodic table.

Q1. (3) Metalloid

Q2. (1) P

Q3. (4) All of the above

Q4. (2) Nine

Q5. (1) TRUE

Passage - 4 **5 Marks**

Answer Key 3.1

Marks - 25

The process of extracting metal ores buried deep underground is called Mining. The metal ores are found in the earth's crust in varying abundance. The extraction of metals from ores is what allows us to use the minerals in the ground! The ores are very different from the finished metals that we see in buildings and bridges. Ores consist of the desired metal compound and the impurities and earthly substances called Gangue. The extraction of metals and its isolation occurs over a few major steps: Concentration of Ore,Isolation of metal from concentrated Ore, Purification of the metal.

Q1. (2) Mining

Q2. (1) TRUE

Q3. (1) Gangue

Q4. (4) All of the above

Q5. (1) TRUE

Passage - 5

5 Marks

Answer Key 3.1

Marks - 25

Corrosion is a dangerous and extremely costly problem. Because of it, buildings and bridges can collapse, oil pipelines break, chemical plants leak, and bathrooms flood. Corroded electrical contacts can cause fires and other problems, corroded medical implants may lead to blood poisoning, and air pollution. Corrosion has caused damage to works of art around the world.

Q1. (1) Buildings and bridges can collapse

Q2. (1) TRUE

Q3. (1) TRUE

Q4. (2) Blood poisining

Q5. (1) Yes

Answer Key 3.2

Marks - 25

Case study based questions

10th Science

Metals and Non- Metals

Passage - 1 **5 Marks**

When a piece of zinc metal is placed in a solution of mercuric chloride, a white layer of layer of mercury is deposited on zinc metal to give it a silvery shiny look. This is because mercury is lower to zinc in reactivity series and hence zinc can be displaced by mercury from $HgCl_2$

.

Q1. (1) Displacement of mercury from mercuric chloride

Q2. (2) Zinc

Q3. (1) Sodium

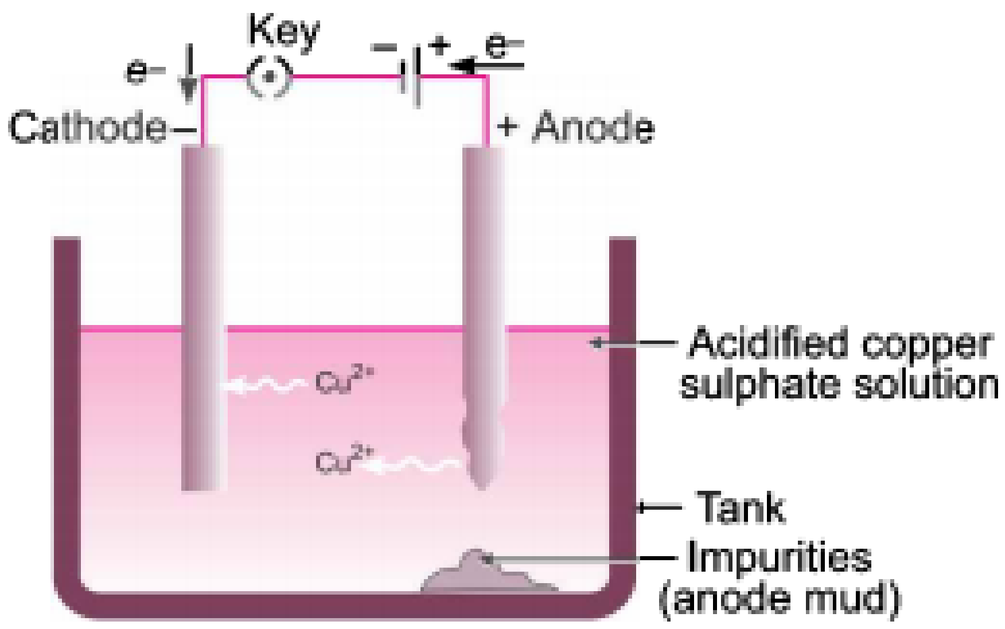
Q4. (3) Galvanisation

Q5. (1) METAL

Passage - 2 **5 Marks**

Answer Key 3.2

Marks - 25



In electrolytic refining process, the impure metal is made as anode and a thin strip of pure metal is made as cathode. A solution of the metal salt is made as an electrolyte. On passing the current through the electrolyte . An equivalent amount of pure metal from the electrolyte is deposited on the cathode. The soluble impurities go into the solution, the insoluble impurities settle down at the bottom of the anode and are known as anode mud.

Q1. (1) Strip of metal

Q2. (2) Go into the solution

Q3. (1) Cathode

Q4. (1) TRUE

Q5. (3) Both A and B

Passage - 3 **5 Marks**

Answer Key 3.2

Marks - 25

Elements are divided into metals and non-metals. All metals are electrical conductors. Many of them have a high density and they are usually ductile and malleable. All these properties influence the way the metals are used. Some metals are sonorous and so they are used for special purposes.

Q1. (1) TRUE

Q2. (4) Lithium

Q3. (1) Ductile

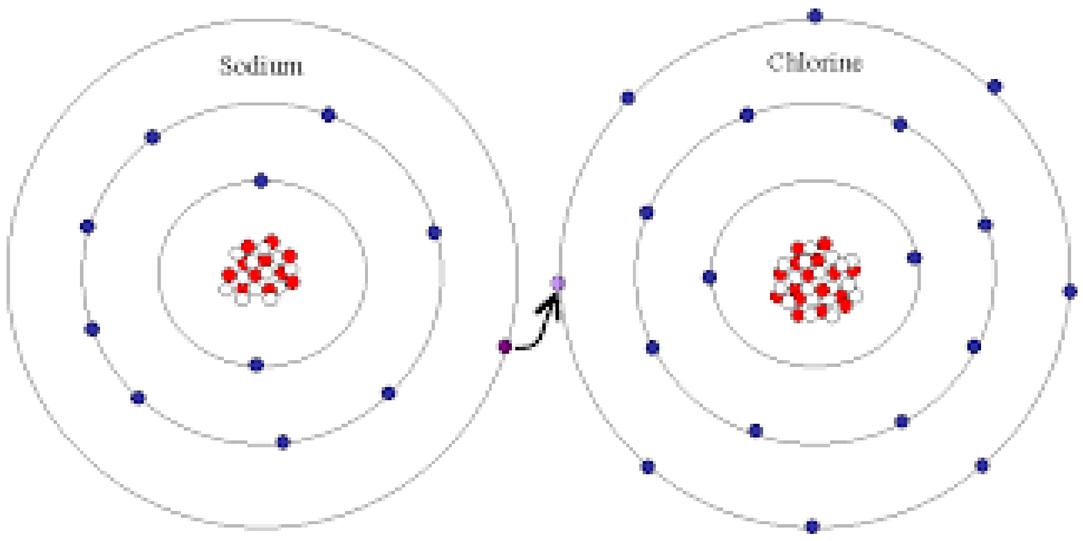
Q4. (1) TRUE

Q5. (2) FALSE

Passage - 4 **5 Marks**

Answer Key 3.2

Marks - 25



Sodium and chloride ions, being oppositely charged, attract each other and are held by strong electrostatic forces of attraction to exist as sodium chloride (NaCl). It should be noted that sodium chloride does not exist as molecules but aggregates of oppositely charged ions.

Q1. (1) Chlorine

Q2. (2) NaCl

Q3. (2) NO

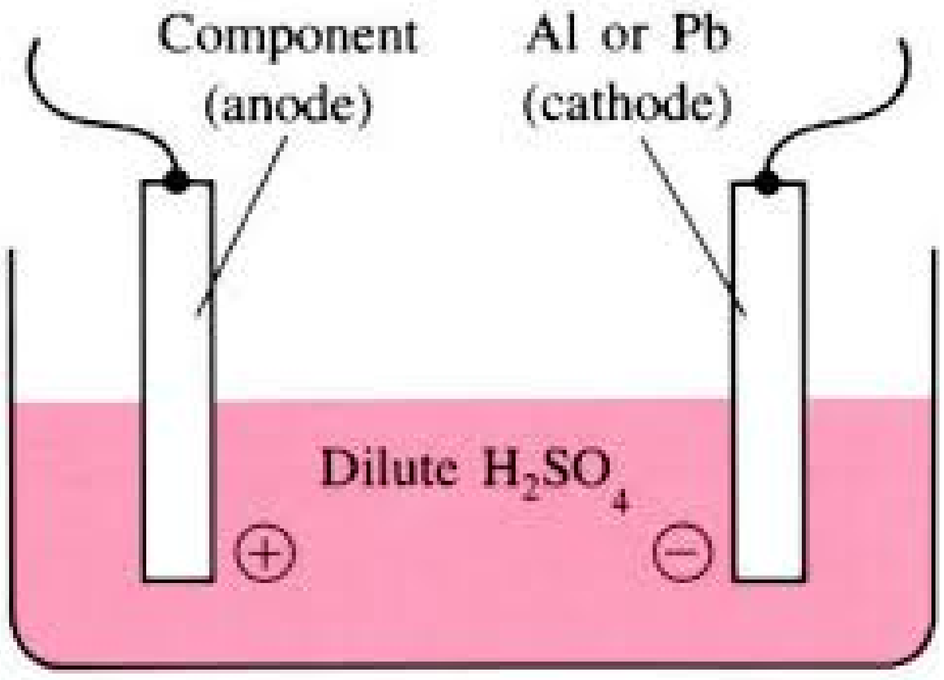
Q4. (2) Electrostatic

Q5. (2) FALSE

Passage - 5 **5 Marks**

Answer Key 3.2

Marks - 25



Anodising is a process of forming a thick oxide layer of aluminium. Aluminium develops a thin oxide layer when exposed to air. This aluminium oxide coat makes it resistant to further corrosion. The resistance can be improved further by making the oxide layer thicker. During anodising, a clean aluminium article is made the anode and is electrolysed with dilute sulphuric acid. The oxygen gas evolved at the anode reacts with aluminium to make a thicker protective oxide layer. This oxide layer can be dyed easily to give aluminium articles an attractive finish.

Q1. (2) Exposed to air

Q2. (1) Corrosion

Q3. (2) Making oxide layer thicker

Q4. (1) Anodising

Q5. (1) TRUE