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Solution 1:
Decomposition reaction.
Solution 2:
The various types of chemical reactions are:
(i) Combination reactions.
(ii) Decomposition reaction.
(iii) Displacement reaction.
(iv) Double displacement reaction.
(v) Oxidation and reduction reactions.
Solution 3:
The colour of copper sulphate solution changes when iron nail is kept immersed in it due to the displacement reaction taking place between iron and copper leading to formation of iron sulphate.
Solution 4:
$Zn + 2AgNO_3 \rightarrow Zn(NO_3)_2 + 2Ag$
Solution 5:
Rancidity.
Solution 6:
Anti-oxidants.
Solution 7:
The digestion of food in the body is an example of decomposition reaction.
Solution 8:
Anti-oxidant is a substance which prevents oxidation. They are added to fat and oil containing foods so that they do not get oxidized easily and hence do not turn rancid.
Solution 9:
Food products containing fats and oils are packaged in nitrogen so that there is no oxygen to cause oxidation of food and make it rancid.
Solution 10:
(a) When fused sodium chloride is decomposed by passing electricity, sodium metal is obtained.
(b) When lead nitrate is heated strongly, it breaks down to form lead monoxide, nitrogen dioxide and oxygen.
Solution 11:
Decomposition reactions (carried out by electricity).
Solution 12:
BHA (Butylated Hydroxy Anisole) and BHT (Butylated Hydroxy Toluene).
Solution 13:

(a) Decomposition reaction where heat is supplied for energy:

$$2Pb(NO_3)_2\ (s) \xrightarrow[Decomposition]{Heat} 2PbO\ (s) + 4NO_2\ (g) + O_2\ (g)$$

Lead Nitrate (Colourless) | Lead monoxide (Yellow) | Nitrogen Dioxide (Brown Fumes) | Oxygen

(b) Decomposition reaction where light is supplied for energy:

$$2AgCl\ (s) \xrightarrow[Decomposition]{Light} 2Ag\ (s) + Cl_2\ (g)$$

Silver Chloride (White) | Silver (Grey-white) | Chlorine (Yellowish-green)

(c) Decomposition reaction where electricity is supplied for energy:

$$2H_2O\ (l) \xrightarrow[Decomposition]{Electricity} 2H_2\ (g) + O_2\ (g)$$

Water | Hydrogen | Oxygen

Solution 14:

$2AgNO_3\ (aq) + Cu\ (s) \rightarrow Cu(NO_3)_2\ (aq) + 2Ag\ (s)$

Solution 15:

(i) Decomposition.
(ii) Combination.
(iii) Decomposition.
(iv) Decomposition.
(v) Combination.

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Solution 16:

(a) Combination.
(b) Decomposition.
(c) Decomposition.
(d) Decomposition.
(e) Combination.

Solution 17:

Displacement reaction.
(ii) Combination reaction.
(iii) Decomposition reaction.
(iv) Double displacement reaction.
(v) Displacement reaction.

Solution 18:

$$(a)\ 2FeSO_4 \xrightarrow[Decomposition]{Heat} Fe_2O_3 + SO_2 + SO_3$$

$$(b)\ 2Pb(NO_3)_2 \xrightarrow[Decomposition]{Heat} 2PbO + 4NO_2 + O_2$$

Solution 19:

(a) Displacement reaction.
(b) Combination reaction.

Solution 20:

(a) Combination reaction.
(b) Displacement reaction.
(c) Displacement reaction.
(d) Decomposition reaction.
(e) Double displacement reaction.

Solution 21:

(a) H_2O_2
(b) PbS

Solution 22:

H_2S

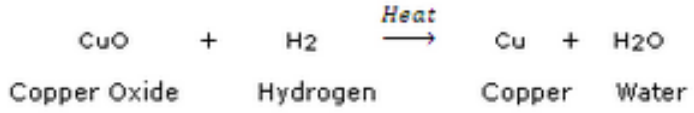
Solution 23:

Substance oxidised: H_2S
Substance reduced: SO_2

Solution 24:

(a) Oxidation; reduction.
(b) Reduction; oxidation.

(c) Rancidity.
Solution 25:
Oxidation Reaction: The addition of oxygen (or removal of hydrogen) to a substance is called oxidation.
(i) C (ii) ZnO
Solution 26:
(a) The oxidation and reduction reactions occurring together are called a redox reaction. Example: In this reaction, copper oxide is being reduced to copper whereas hydrogen is being oxidised to water.
(b) Magnesium is oxidised as addition of oxygen to magnesium takes place leading to formation of magnesium oxide.



(c) (i) HCl
(ii) MnO_2
(iii) MnO_2
(iv) HCl

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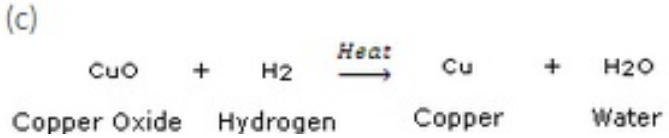
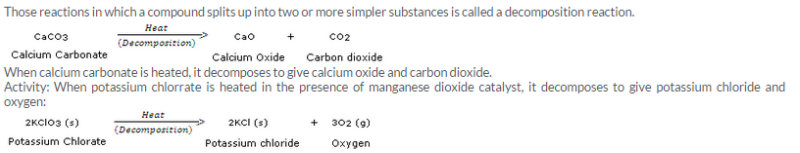
Solution 27:
(a) Those reactions in which two or more substances combine to form a single substance is called a combination reaction.
Solution 28:



In this reaction, copper oxide is being reduced to copper whereas hydrogen is being oxidised to water.
Solution 29:
(a) The colour of ferrous sulphate is green. It changes to brown after heating.
(b) The product formed is ferric oxide. This is a decomposition reaction.
Solution 30:



This decomposition takes place in the presence of heat and catalyst. In this decomposition reaction, a single compound, potassium chlorate, is splitting up into two simpler substances, potassium chloride and oxygen. This decomposition reaction is used for preparing oxygen gas in the laboratory.
Solution 31:
ZnO + C
(i) Zinc oxide.
(ii) Carbon.
Solution 32:

(a)

$$2Cu + O_2 \xrightarrow{Heat} 2CuO$$

Copper Oxygen Copper Oxide

(b)

$$CuO + H_2 \xrightarrow{Heat} Cu + H_2O$$

Copper Oxide Hydrogen Copper Water

Solution 33:

(a) Those reactions in which one element takes the place of another element in a compound, are known as displacement reactions.

Equation: $CuSO_4$ (aq)+ Zn (s) → $ZnSO_4$+ Cu

Those reactions in which two compounds react by an exchange of ions to form two new compounds are called double displacement reactions.

Equation: $AgNO_3$ (aq) + NaCl (aq) → AgCl (s)+ $NaNO_3$ (aq)

(b) Any reaction in which an insoluble solid (called precipitate) is formed that separates from the solution is called a precipitation reaction.

Example: The reaction between barium chloride and sodium sulphate solution to form a white barium sulphate precipitate (alongwith sodium chloride solution) is an example of a precipitation reaction.

$$BaCl_2 (aq) + Na_2SO_4 (aq) \rightarrow BaSO_4 (s) + 2NaCl (aq)$$

Barium Chloride Sodium sulphate Barium sulphate (White ppt.) Sodium Chloride

Solution 35:

(a) (i) $H_2S + Cl_2 \rightarrow S + 2HCl$

In this reaction, H_2S is changing into S. That is, Hydrogen is being removed from hydrogen sulphide. Now, by definition, the removal of hydrogen from a compound is called oxidation, so, we can say that hydrogen sulphide is being oxidised to sulphur. On the other hand, Cl_2 is changing into HCl. That is, hydrogen is being added to chlorine. By definition, the addition of hydrogen to a substance is called reduction, so we can say that chlorine is being reduced to hydrogen chloride.

(b) $2Mg + O_2 \rightarrow 2MgO$

(i) Mg (ii) O_2

Solution 36:

(a) Those reactions in which one element takes the place of another element in a compound, are known as displacement reactions.

Example: $CuSO_4$ (aq) + Zn (s) → $ZnSO_4$ + Cu

When a strip of zinc metal is placed in copper sulphate solution, then zinc sulphate solution and copper are obtained. In this reaction, zinc displaces copper from copper sulphate compound so that copper is set free. The blue colour of copper sulphate solution fades due to the formation of zinc sulphate.

(b) Those reactions in which two compounds react by an exchange of ions to form two new compounds are called double displacement reactions.

Example: $AgNO_3$ (aq) + NaCl (aq)

When silver nitrate solution is added to sodium chloride solution, then a white precipitate of silver chloride is formed alongwith sodium nitrate solution. In this reaction, two compounds, silver nitrate and sodium chloride, react to form two new compounds, silver chloride and sodium nitrate.

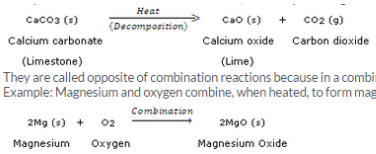
Solution 37:

Those reactions in which a compound splits up into two or more simpler substances are known as decomposition reactions.

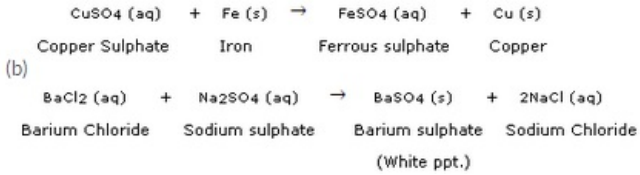
Example: When calcium carbonate is heated, it decomposes to give calcium oxide and carbon dioxide.

They are called opposite of combination reactions because in a

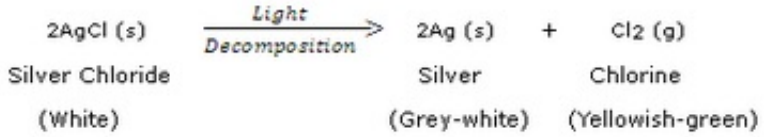
combination reaction, two or more substances combine to form a single substance.
Example: Magnesium and oxygen combine, when heated, to form magnesium oxide.
(b) $Cu\ (s) + 2AgNO_3\ (aq) \rightarrow Cu(NO_3)_2\ (aq) + 2Ag\ (s)$



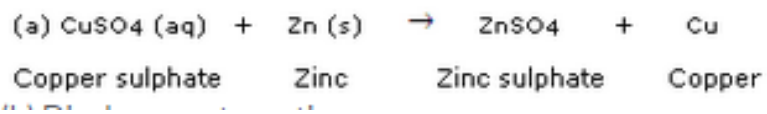
Solution 38:
(a) When a piece of iron metal is placed in copper sulphate solution, then magnesium sulphate solution and copper metal are formed. This is a type of displacement reaction.
(b)



Solution 39:
(a) H_2
(b) CuO
(c) CuO
(d) H_2
Solution 40:
When silver nitrate
solution is added to sodium chloride solution, then a white precipitate of
silver chloride is formed alongwith sodium nitrate solution.
(a) $AgNO_3(aq) + NaCl\ (aq)$
(b) Double displacement reaction.
Solution 41:
When silver chloride is exposed to light, it decomposes to form silver metal and chlorine gas.



This reaction is used in black and white photography.
Solution 42:
When a strip of zinc metal is placed in copper sulphate solution, then zinc sulphate solution and copper are obtained.



(b) Displacement reaction.

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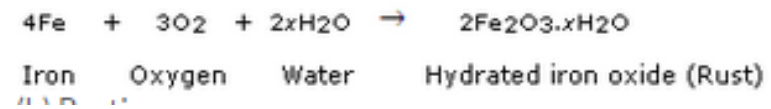
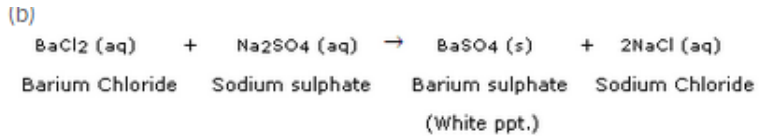
Solution 43:
(a) Corrosion is the process in which metals are eaten up gradually by the action of air, moisture or a chemical (such as an acid) on their surface. Rusting of iron metal is the most common form of corrosion.
During the corrosion of iron, iron metal is oxidised by the oxygen of air in the presence of water (moisture) to form hydrated iron oxide

called rust.



Solutions 43:

(b) Rusting.
(c) Oxidation.
(d) Railings, car bodies and bridges.
Solution 44:
(a) The condition produced by aerial oxidation of fats and oils in foods marked by unpleasant smell and taste is called rancidity. It spoils the food materials prepared in fats and oils which have been kept for a considerable time and makes them unfit for eating.
(b) Oxidation.
(c) (i) Rancidity can be prevented by adding anti-oxidants to foods containing fats and oils.
(ii) It can be prevented by packaging fat and oil containing foods in nitrogen gas.
(iii) Rancidity can be retarded by keeping food in a refrigerator.
(iv) Rancidity can be prevented by storing food in air-tight containers.
(v) Storing foods away from light can also prevent rancidity.
Solution 45:
(a) When barium chloride solution is added to sodium sulphate solution, then a white precipitate of barium sulphate is formed alongwith sodium chloride solution.
(b)



(c) Solid sodium sulphate and Solid barium chloride
(d) Double displacement reaction.
(e) Double displacement reaction between silver nitrate solution and sodium chloride solution forms a white precipitate of silver chloride and sodium nitrate solution.

********** END **********