

O. P. JINDAL SCHOOL, RAIGARH (CG) 496 001, INDIA

Phone: 07762-227042, 227293, (Extn. 227001 - 49801, 02, 04, 06, 09); Fax: 07762-262613; website: www.opjsrgh.in; e-mail: opjsraigarh@jspl.com

Class X : Chemistry

- Write a balanced chemical equation for each of the following reaction and also classify them-
 - Lead acetate solution is treated with dilute hydrochloric acid to form lead chloride and acetic acid solution.
 - A piece of sodium metal is added to absolute ethanol to form sodium ethoxide and hydrogen gas.
 - Iron (III) oxide on heating with carbon monoxide gas reacts to form solid iron and liberates carbon dioxide gas.
 - Hydrogen sulphide gas reacts with oxygen gas to form solid sulphur and liquid water.
- Balance the chemical equation and identify the type of reaction-
 - $\text{Mg(s)} + \text{Cl}_2\text{(g)} \longrightarrow \text{MgCl}_2\text{(s)}$
 - $\text{HgO(s)} \xrightarrow{\text{heat}} \text{Hg(l)} + \text{O}_2\text{(g)}$
 - $\text{Na(s)} + \text{S(s)} \xrightarrow{\text{fuse}} \text{Na}_2\text{S(s)}$
 - $\text{TiCl}_4\text{(l)} + \text{Mg(s)} \longrightarrow \text{Ti(s)} + \text{MgCl}_2\text{(s)}$
 - $\text{CaO(s)} + \text{SiO}_2 \longrightarrow \text{CaSiO}_3\text{(s)}$
 - $\text{H}_2\text{O}_2\text{(l)} \xrightarrow{\text{UV}} \text{H}_2\text{O(l)} + \text{O}_2\text{(g)}$
- What is the difference between the following two types of reaction?
 $\text{AgNO}_3\text{(aq)} + \text{HCl (aq)} \longrightarrow \text{AgCl (s)} + \text{HNO}_3\text{(aq)}$
 $\text{Mg(s)} + 2\text{HCl (aq)} \longrightarrow \text{MgCl}_2\text{(aq)} + \text{H}_2\text{(g)}$
- Identify the reducing agent in the following reactions-
 - $4\text{NH}_3\text{(g)} + 5\text{O}_2\text{(g)} \longrightarrow 4\text{NO(g)} + 6\text{H}_2\text{O(g)}$
 - $\text{H}_2\text{O(g)} + \text{F}_2\text{(g)} \longrightarrow \text{HF(g)} + \text{HOF(g)}$
 - $\text{Fe}_2\text{O}_3\text{(s)} + 3\text{CO (g)} \longrightarrow 2\text{Fe(s)} + 3\text{CO}_2\text{(g)}$
- Identify the oxidizing agent in the following reactions-
 - $\text{Pb}_3\text{O}_4\text{(s)} + 8\text{HCl (aq)} \longrightarrow 3\text{PbCl}_2\text{(s)} + \text{Cl}_2\text{(g)} + 4\text{H}_2\text{O(l)}$
 - $\text{CuO (s)} + \text{H}_2\text{(g)} \longrightarrow \text{Cu(s)} + \text{H}_2\text{O(g)}$
 - $2\text{Mg(s)} + \text{O}_2\text{(g)} \longrightarrow 2\text{MgO(s)}$
- Why Iron corrodes but Aluminum does not?
- The marble statues often slowly get corroded when kept in open for a long time. Assign a suitable explanation.
- A solid substance P which is very hard is used for construction in many buildings especially floor. When P is heated strongly it decomposes to form another solid Q and gas R is given out. Solid Q reacts with water and releases a lot of heat to form a substance S. when gas R is passed into a clear solution of S the substance T is formed and it has the same chemical composition as that of P.
 - What is substance P? Write its common name as well as its chemical formula.
 - What is substance Q?
 - What is gas R?
 - What is substance S? What is its clear solution known as?
 - What is substance T? Name any two natural forms in which it occurs in nature.
- A metal X forms water soluble salt XNO_3 when an aqueous solution of XNO_3 is added to common salt solution then a white precipitate of compound Y is formed along with sodium nitrate solution. Metal X is said to be the best conductor of electricity and it do not evolve hydrogen when put in dilute HCl solution.
 - What is metal X?

- What is salt XNO_3 ?
 - What is compound Y?
 - Write the chemical equation of the reaction which takes place on reacting XNO_3 solution with common salt solution giving the physical state of all the reactants and the products.
 - What type of chemical reaction is illustrated in the above equation?
10. What are antioxidants? Why are they added to fat and oil containing food?
11. A reddish brown vessel developed a green coloured solid X when left open in air for a long time. When reacted with dilute H_2SO_4 it forms a blue coloured solution along with brisk effervescence due to colourless and odourless gas Z, X decomposes to form black coloured oxide Y of a reddish brown metal along with gas Z. identify X,Y,Z.
12. Grapes hanging on the branches do not ferment but once they are plucked they undergo fermentation. Why?
13. Why do fire flies glow at night?
14. Complete the missing components x and y in the following reactions-
- $Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(x) + KNO_3(y)$
 - $Cu(s) + 2AgNO_3(aq) \longrightarrow Cu(NO_3)_2(aq) + x(s)$
 - $Zn(s) + H_2SO_4(aq) \longrightarrow ZnSO_4(x) + H_2(y)$
15. You are provided with two containers made up of copper and aluminum. You are also provided with solution of dilute HCl, dilute HNO_3 , $ZnCl_2$ and water. In which of the above container the above solutions can be placed?
16. Calculate the oxidation number of all atoms in the following compound and ions.
 CO_2 , SiO_2 , $PbSO_4$, ClO_4^-
17. Balance the following equations by oxidation number method:
- $Cu(s) + NO_3^-(g) \longrightarrow NO_2(g) + Cu^{2+}(aq)$
 - $FeS_2(s) + O_2(g) \longrightarrow Fe_2O_3(s) + SO_2(g)$
18. Balance the following Redox equations by Ion electron method:(In acidic solution)
- $MnO_4^-(aq) + SO_2(g) \longrightarrow Mn^{2+}(aq) + HSO_4^-(aq)$
 - $H_2O_2(aq) + Fe^{2+}(aq) \longrightarrow Fe^{3+}(aq) + H_2O(l)$
19. Balance the following equations by oxidation no. and Ion electron method: (in basic solution)
- $P_4(s) + OH^-(aq) \longrightarrow PH_3 + HPO_2^-(aq)$
 - $MnO_4^-(aq) + I^-(aq) \longrightarrow MnO_2(s) + I_2(s)$
20. Fluorine reacts with ice and results in the change : $H_2O(g) + F_2(g) \longrightarrow HF(g) + HOF(g)$
 Justify that this reaction is a Redox reaction.