Page No 136:
Solution 89
(a) Basic oxide.
(b) Metal .
(c) Sodium, Na .
Solution 90
(a) Amphoteric oxide .
(b) Amphoteric oxide .
(c) Aluminium, Al.
(d) Zinc, Zn .
Solution 91
(a) Neutral oxide.
(b) Acidic o xide .
(c) X is non-metal because non-metals form acidic and basic oxide .
(d) Carbon, C .
Solution 92
(a) No displacement reaction will take place because go ld is less reactive than copper.
(b) No reaction will take place between copper and copper sulphate solution ; there is no reaction possible.
(c) Zinc displaces copper from copper sulphate solution to form zinc sulphate solution and copper metal because zinc is m ore reactive than copper .
(d) No displacement reaction will take place because mercury is less reactive than copper
Solution 93
(a) Non-metal chloride: Carbon tetrachloride, CCl_4
(b) Sodium chloride solution conducts electricity whereas carbon tetrachlori de does not conduct electricity.
(c) Sodium chloride is an ionic compoun d whereas carbon tetrachloride is a covalent compound.

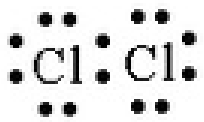
Page No 137:
Solution 94
M is more reactive than lead since it is able to displace lead from lead acetate solution
Solution 95
Zinc is most r eactive and copper is least reactive out of the three since iron displaced copper from its solution and zinc displaced iron from its solution.
Solution 96
Reaction (a) will not occur because Cu is less reactive than Mg
Reaction (c) will also not occur because Fe is less reactive than Mg .
Solution 97
Metal B will be nearer to the top of the activity series since it is highly reactive and is hence found in the form of its compounds and not in free state.
Solution 98
K being the lowest in the reactivity series is least reactive and is most likely to occur in a free state in nature.
Solution 99
(a) (i) Iron (ii) Gold
(b) More heat is evolved during the reaction of sodium metal with water due to which the hyd rogen gas formed catches fire. O n the other hand, less heat is evolved during the reaction of calcium

metal with water which cannot make the hydrogen gas bu rn .
Solution 100
Zinc metal is more reactive than copper. Some of the zinc metal of zinc plate dissolves and displaces copper from copper sulphate solution. This dissolving of zinc metal forms tiny holes in zinc plate. Blue colour of copper sulphate solution gets lighter and lighter due to the formation of colourless zinc sulphate solution.

Page No 167:
Solution 1
(a) Covalent bond.
(b) Ionic bond .
Solution 2
Carbon dioxide
Solution 3

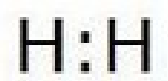
Solution 4
(a) Ionic bond.
(b) Covalent bo nd.
Solution 5
(a) Ions
(b) Anions
(c) Cations
Solution 6
(a) No. of electrons in Na^+ = 10
(b) No. of electrons in Cl^- = 18
Solution 7
X will form X 2-
Y will form Y 2+
Solution 8
(a) (i) E.C of Mg = 2, 8, 2 (ii) E.C of Mg^{2+} = 2, 8
(b) (i) E.C of S = 2, 8, 6 (ii) E.C of S^{2-} = 2, 8, 8
Solution 9
Ionic bonds.
Solution 10
False (It should be 'ions' in place of 'electrons') .
Solution 11
Covalent bond.
Solution 12
(i)

(ii)

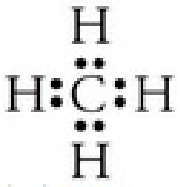


Solution 13
Covalent bonds are present in a water molecule. Electron dot structure of water:

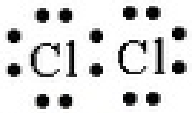
Solution 14
Methane: Covalent bonds
Sodium chloride: Ionic bonds
Solution 15
Ionic compounds conduct electricity when dissolved in water or melted whereas covalent compounds do not conduct electricity.
Ionic compound - NaCl
Covalent compound - Carbon Dioxide
Solution 16
Covalent bonds are present in the given molecules
(i) H2



(ii) CH4



(iii) Cl2



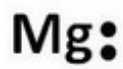
(iv) O2

.
Solution 17
Argon; E.C = 2, 8,8
Solution 18
Ionic compounds: Sodium chloride, Ammoniu m chloride, Magnesium chloride.
Covalent compounds:
Urea, Cane sugar, Hy drogen chloride,
Carbon tetrachloride, Ammonia, Alcohol.
Solution 19
(i) Hydrog en
(ii) Oxygen
(iii) Nitrogen
(iv) Sodium chloride

Page No 168:
Solution 20
(i) Covalent
(ii) Covalent
(iii) Two
(iv) Three
(v) Two
(vi) Higher
Solution 21
(a) The chemical bond formed by the sharing of electrons between two atoms is known as a covalent bond.
(i) Covalent bonds (ii) Ionic bonds
(b) The chemical bond formed by the transfer of electrons from one atom to another is known as an ionic bond.
Covalent bond is present in an oxygen molecule.
Solution 22
(a) An ion is an electrically charged atom (or group of atoms).
Example: Sodium ion, Na^+ , magnesium ion, Mg^{2+} .
(b) (i) Positive charge (ii) Negative charge
(c) Cation: Magnesium ion, Mg^{2+}
Anion: Chloride ions, $2Cl^-$
Solution 23
(a) Covalent bond ; Because whenever two atoms of the same element combine to form a molecule, a covalent bond is formed.
(b) The atomic number of chlorine is 17, so its electronic configuration is 2,8,7. Chlorine atom has 7 electrons in its outermost shell and needs 1 more electron to complete its octet and become stable.
It gets this electron by sharing with another chlorine atom. So, two chlorine atoms share one electron each to form a chlorine molecule. Because the two chlorine atoms share electrons, there is a strong force of attraction between them which holds them together. This force is called covalent bond.
Now, each chlorine atom in the chlorine molecule has the electronic configuration 2,8,8 resembling its nearest inert gas argon. Since the chlorine atoms in a chlorine molecule have inert gas electron arrangements, therefore, a chlorine molecule is more stable than two separate chlorine atoms.
Solution 24
(a) (i) The compounds containing ionic bonds are known as ionic compounds. They are formed by the transfer of electrons from one atom to another.
Example: Sodium chloride, NaCl.
(ii) The compounds containing covalent bonds are known as covalent compounds. They are formed by the sharing of electrons between atoms. Example: Methane, CH_4 .
(b) Ionic compounds
(i) Ionic compounds are usually crystalline solids.
(ii) Ionic compounds have high melting and boiling points.
(iii) Ionic compounds are usually soluble in water.
Covalent compounds
(i) Covalent compounds are usually liquids or gases.
(ii) Covalent compounds have low melting and boiling points.
(iii) Covalent compounds are usually insoluble in water.
Solution 25
(a) Covalent compounds have generally low melting points because they are made up of electrically neutral molecules. So, the force of attraction between the molecules of a covalent compound is ve ry weak. Hence, only a small amount of heat energy is required to break these weak molecular forces.
(b) Ionic compounds are made of up of positive and negative ions. There is a strong force of attraction between the oppositely charged ions, so a lot of heat energy is required to break this force of attraction and melt or boil the ionic compound. Due to this, ionic

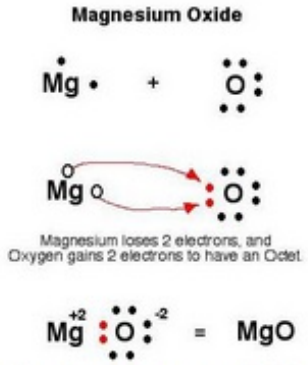
compounds have high melting points.
Solution 26
(a) Ionic compounds:
(i) They have high melting and boiling points.
(ii) They are usually soluble in water.
Covalent compounds:
(i) They have low melting and boiling points.
(ii) They are usually insoluble in water.
(b) An aqueous solution of sodium chloride conducts electricity but a sugar solution does not conduct electri city.
Solution 27
(a) Ionic compounds conduct electricity in solution because they are made up of electrically charged ions but covalent compounds are made u p of electrically neutral molecules so they do not conduct electricity.
(b) Conduct electricity: $MgCl_2$, NaCl, Na_2S (Ionic compounds)
Do not conduct electricity: CCl_4, CS_2 (Covalent compounds) .
Solution 28
(a) Ionic compound: Sodium chloride, NaCl.
Covalent compound: Carbon tetrachloride, CCl_4
(b) Out of A and B, the compound whose aqueous solution cond ucts electricity will be an ionic compound.
Solution 29
Common salt is an ionic compound containing ionic bonds whereas cane sugar is a covalent compound containing covalent bonds. Since, ionic compounds conduct electricity and covalent compounds do not, hence common salt is a good conductor of electricity and cane sugar is a non-conductor of electricity.
Solution 30
(a) Mg_3N_2
(b) Li_2O
(c) $AlCl_3$
(d) KH
Solution 31
(a) There are some elements in group 18 of the periodic table which do not combine with other elements. These elements are helium, neon, argon, krypton, xenon and radon . They are known as noble gases or inert gases because they are unreactive.
If we look at the electronic configuration of noble gases, we would notice that except helium, all other inert gases have 8 electrons (helium has 2) in their outermost shells. This is considered to be the most stable arrangement of electrons.
(b) Atoms form chemical bonds to achieve stability by acquiring the inert gas electron configuration.
Solution 32

(i) Magnesium



Oxygen

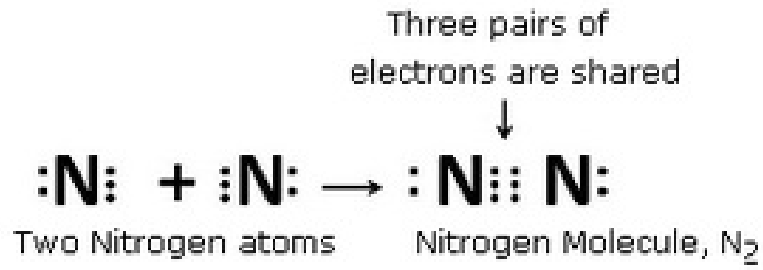
(ii) Formation of MgO



(iii) Both positive and negative ions i.e. Mg^{2+} and O^{2-} respectively.

Solution 33

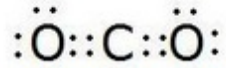
(i) Helium
(ii) Argon
Solution 34
(i) Ionic bonding.
(ii) Covalent bonding.
(iii) Covalent bonding.
Page No 169:
Solution 35
The atomic number of sodium is 11, so its electronic configuration is 2,8,1. Sodium atom has only 1 electron in its outermost shell. So, the sodium atom donates one electron (to a chlorine atom) and forms a sodium ion, Na^+ . The atomic number of chlorine is 17, so its electronic configuration is 2,8,7. Chlorine atom has 7 electrons in its outermost shell and needs 1 more electron to achieve the stable 8-electron inert gas configuration. So, a chlorine atom takes one electron (from the sodium atom) and forms a negatively charged chloride ion, Cl^- This type of bonding is called ionic bonding.
Solution 36
A positively charged ion is known as cation. A cation is formed by the loss of one or more electrons by an atom. For example: sodium loses 1 electron to form a sodium ion, Na^+, which is a cation.
A negatively charged ion is known as anion. An anion is formed by the gain of one or more electrons by an atom. For example: A chlorine atom gains (accepts) 1 electron to form a chloride ion, Cl^-, which is an anion.
Solution 37
Since nitrogen has 5 electrons in its outermost shell so, to achieve the 8-electron structure of an inert gas, it needs 3 more electrons and hence combines with another nitrogen atom to form a molecule of nitrogen gas.



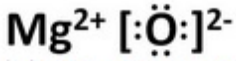
This type of bonding is called covalent bonding.

Solution 38

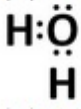
(i) CO2 - Covalent bond



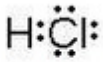
(ii) MgO - Ionic bond



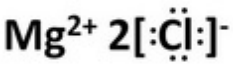
(iii) H2O - Covalent bond



(iv) HCl - Covalent bond

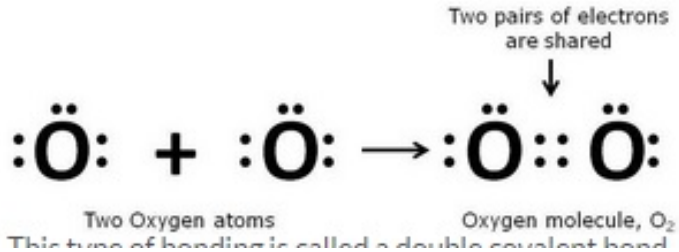


(v) MgCl2 - Ionic bond



Solution 39

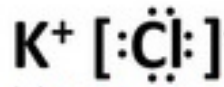
Since an oxygen atom has 6 electrons in its outermost shell so, it needs 2 more electrons to achieve the stable 8-electron inert gas configuration. Hence, it combines with another oxygen atom and forms a molecule of oxygen.



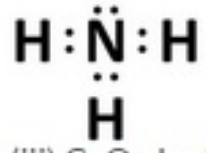
This type of bonding is called a double covalent bond.

Solution 40

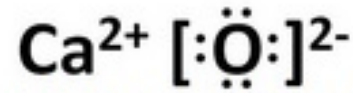
(i) KCl - Ionic bond



(ii) NH3 - Covalent bond

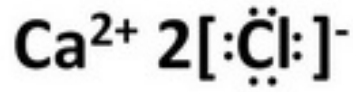


(iii) CaO - Ionic bond



(iv) N2 - Covalent bond

(v) CaCl2 - Ionic bond



Solution 41

Although solid ionic compounds are made up of ions but they do not conduct electricity in solid state. This is because in the solid ionic compound, the ions are held together in fixed positions by strong electrostatic forces and cannot move freely. However, when we dissolve the ionic solid in water or melt it, the crystal structure is broken down and ions become free to move and conduct electricity. Thus, an aqueous solution of an ionic compound conducts electricity because there are plenty of free ions in the solution which are able to conduct electric current.

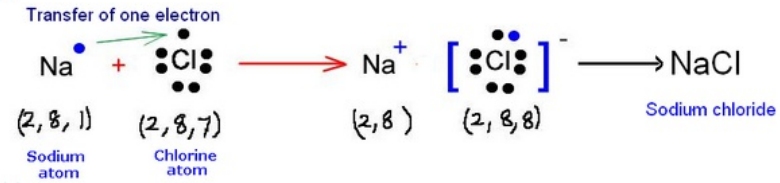
Solution 42

(a) (i) Sodium - 2, 8, 1 (ii) Chlorine - 2, 8, 7

(b) (i) Sodium = 1 (ii) Chlorine = 7

(c)

(c)



(d) Sodium chloride has a high melting point because it is an ionic compound and these compounds are made of up of positive and negative ions. There is a strong force of attraction between the oppositely charged ions, so, a lot of heat energy is required to break this force of attraction and melt or boil the ionic compound.

(e) Anode: Thick block of impure copper metal; Cathode: Thin strip of p ure copper metal

Solution 43

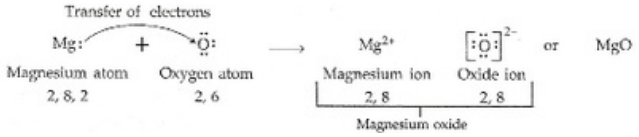
(a) (i) Magnesium -2, 8, 2

(ii) Oxygen - 2, 6

(b) (i) Magnesium = 2

(ii) Oxygen = 6

(c)



(d) Water .

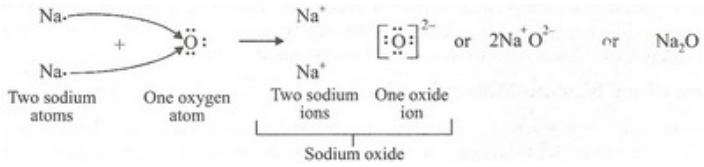
(e) An aqueous solution of an ionic compound conducts electricity because there are plenty of free ions in the solution which are able to conduct electric current.

Solution 44

(a) (i) 2,8,1 (ii) 2,6

(b) (i) 1 (ii) 6

(c)



(d) Ionic compounds are usually hard because their oppositely charged ions attract one another strongly and form a regular crystal structure.

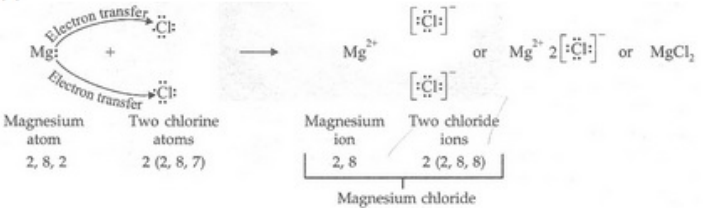
(e) Although solid ionic compounds are made up of ions but they do not conduct electricity in solid state. This is because in the solid ionic compound the ions are held together in fixed positions by strong electrostatic forces and cannot move freely. However, when we dissolve the ionic solid in water or melt it, the crystal structure is broken down and ions become free to move and conduct electricity. Thus, an aqueous solution of an ionic compound conducts electricity because there are plenty of free ions in the solution which are able to conduct electric current.

Solution 45

(a) (i) Magnesium: 2, 8, 2 (ii) Chlorine: 2, 8, 7

(b) (i) 2 (ii) 7

(c)



(d) Magnesium chloride will conduct electricity because it is an ionic compound.

(e) Covalent compounds are generally poor conductors of electricity b ecause they do not contain ions.

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