CHEMISTRY

BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

CHEMICAL BONDING

Question

1. Pure HCI is a bad conductor of electricity. Explain.

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2. NaCl has a high melting point and boiling point as compared to carbon tetrachloride.

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3. Explain why carbon tetrachloride does not dissolve in water.

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4. Explain why a solution of cane sugar does not conduct electricity where as a solution of sodium chloride is a good conductor.

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5. Why H^+ ion is known as proton?

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Worksheet 1 Fill In The Blanks With Suitable Words

1. In ..... symbols the electrons present are represented with the help of dots.

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2. A positive ion is formed by the ..... of one or more electrons.

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3. The atoms of various elements combine to acquire a state of ..... energy.

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4. Helium is stabilised by the law of .....

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5. The number of electrons lost or gained by an atom is known as ..... .

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6. Aluminium has a tendency to loose ..... electrons.

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7. Sodium and chloride ions are held together by strong .....

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8. Cation and anion get stabilised by achieving ..... configuration.

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9. Greater is the ..... difference, stronger is the bond formed.

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10. ..... energy is released when oppositely charged ions get packed to form one mole of an ionic solid.

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Worksheet 1 Answer The Following Questions

1. Why do ionic compounds possess high melting and boiling points ?

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2. Why are ionic compounds usually solids ?

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3. Ionic compounds are soluble in water and not in alcohol. Explain.

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4. Ionic compounds are good conductors of electricity. Explain.

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5. Why is sodium ion stable ?

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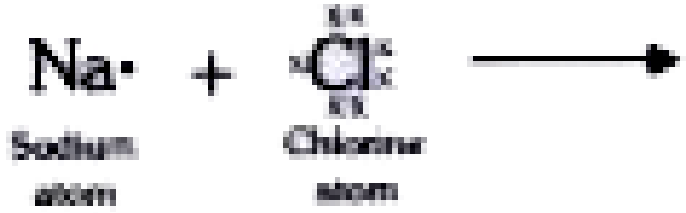
Worksheet 1

1. Complete the following electron dot diagrams:



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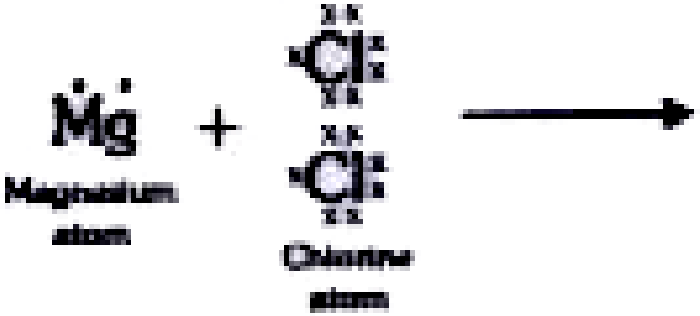
2. Complete the following electron dot diagrams:



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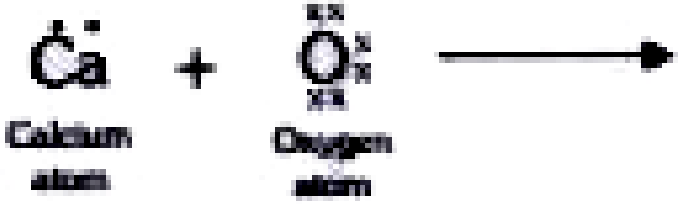
3. Complete the following electron dot diagrams:



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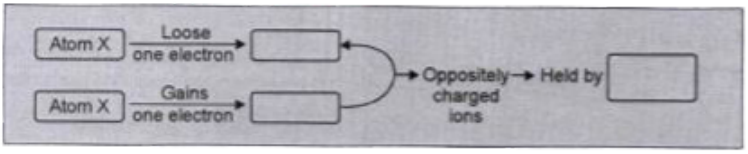
4. Complete the following flow chart:



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Worksheet 2 Fill In The Blanks With Appropriate Words

1. Double covalent bond is formed by sharing .....electrons.

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2. Nitrogen molecule contains a ..... bond.

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3. Hydrogen molecule shares ..... pair of electron.

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4. Carbon tetrachloride has got ..... single bonds.

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5. Polarity of a molecule depends on its ..... difference.

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6. Covalent compounds undergo ..... reactions.

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7. Covalent bonds are ..... hence they show isomerism.

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8. Compounds which are covalent but develop ions in solution are known as .....

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9. ..... molecules do not produce ions in solutions.

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10. Polar covalent compounds contain ..... separation.

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Worksheet 2

1. Complete the following electron dot diagrams:

$$\underset{\text{Oxygen atom}}{:\dot{\underset{\cdot\cdot}{O}}:} + \underset{\text{Oxygen atom}}{:\dot{\underset{\cdot\cdot}{O}}:} \rightarrow$$

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2. Complete the following electron dot diagrams:

$$\underset{\text{Carbon atom}}{\cdot\dot{C}\cdot} + \underset{\text{Hydrogen atom}}{4H\cdot} \rightarrow$$

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3. Complete the following electron dot diagrams:

$$\underset{\text{Nitrogen atom}}{\cdot \dot{\underset{\cdot}{N}} \cdot} + \underset{\text{Hydrogen atom}}{3 \cdot H} \rightarrow$$

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4. Explain the following:

HCl is a covalent compound still it conducts electricity in its aqueous state.

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5. Explain the following:

Covalent compounds usually have low melting and boiling points.

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6. Explain the following:

Covalent compounds are insoluble in water.

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7. Explain the following:

Methane is a non-conductor of electricity.

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8. Explain the following:

Ammonia is polar covalent molecule.

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9. Give one example for the following:

A non-polar covalent compound $\rightarrow$

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10. Give one example for the following:

A polar covalent compound $\rightarrow$

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11. Give one example for the following:

Forces which exist between covalent compounds $\rightarrow$

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12. Give one example for the following:

A gas which possesses two double bonds $\rightarrow$

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Worksheet 3 Give One Word For The Following

1. A pair of electron which is shared between two atoms is known as_____.

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2. A pair of electron which is not shared with another atom is known as ____.

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3. Positively charged hydrogen atom is known as

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4. Number of lone pairs present in water.

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5. Ion formed when a proton is removed from water.

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6. Process of decomposing a compound with the help of electricity.

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7. Gas containing tripple bond.

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8. Gas containing double bond.

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9. The ion formed when hydrogen loses one electron.

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10. Compounds which do not allow electric current to pass through them.

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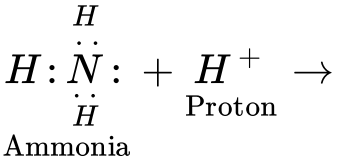
Worksheet 3

1. Complete the following electron dot diagrams :



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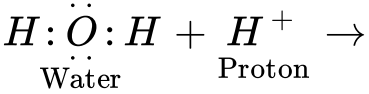
2. Complete the following electron dot diagrams :



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3. Complete the following electron dot diagrams :

$$\underset{\text{Water}}{H:\ddot{\underset{\cdot\cdot}{O}}:H} + \underset{\text{Proton}}{H^+} \rightarrow$$

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4. Explain :

Cation has smaller size than neutral atom.

.....

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5. Explain :

Anion has larger size than neutral atom.

.....

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6. Explain:

Electrolysis can distinguish between covalent and ionic compounds.

.....

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7. Explain:

Cation has a smaller size than parent atom.

.....

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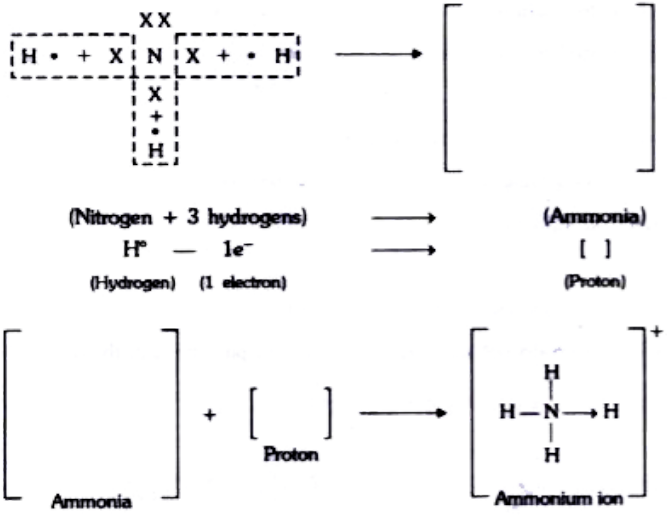
8. Complete the following flow chart related to the structure of ammonium ion.

N(7) $\rightarrow$ _____, _____ (electronic configuration) H(1) $\rightarrow$ _____ (electronic configuration) Nitrogen needs _____ electrons to complete its octet and hydrogen needs _____ electron to complete its duplet.



Ammonia possesses one _____ pair of electrons and three _____ pairs of electrons. Thus the pair of

electron is used in making a _____ with proton. Such a bond is known as _____ bond.

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Worksheet 3 Tick The Correct Answer

1. Hydrogen without any electron is :

A. Protium

B. Deuterium

C. Tritium

D. None of these

Answer:

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2. A gas which contains double bond is :

A. Oxygen

B. Chlorine

C. Nitrogen

D. Phosphene

Answer:

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3. Negative ions are known as

A. Cations

B. Anions

C. Fermions

D. None of these

Answer:

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4. A compound having one lone pair of electrons :

A. Water

B. Methane

C. Ammonia

D. Carbon tetrachloride

Answer:

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5. The most symmetrical structure is possessed by :

A. Water

B. Methane

C. Ammonia

D. Hydrogen sulphide

Answer:

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Additional Questions For Practice

1. An atom X has 2, 8,7 electrons in its shells. It combines with Y having 1 electron in its outermost shell.

What type of bond will be formed between X and Y ?

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2. An atom X has 2,8,7 electrons in its shells. It combines with Y having 1 electron in its outermost shell.

Write the formula of the compound formed.

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3. An atom X has 2, 8,7 electrons in its shells. It combines with Y having 1 electron in its outermost shell.

Would it be soluble in water?

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4. The electronic configuration of chloride ion is the same as that of an argon atom. What is the difference between the two ?

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5. In the formation of the compound XY_2, an atom X gives one electron to each Y atom. What is the nature of

bonds in XY_2 ? Give two properties of XY_2.

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6. An atom has two electrons more than the noble gas configuration. What type of ion will it form?

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7. What are the conditions necessary for the formation of covalent molecules ? Give their properties.

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8. Elements A, B and C have atomic numbers 9, 20 and 10 respectively.

State which one is :

(i) a non-metal

(ii) a metal

(iii) chemically inert.

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9. Elements A, B and C have atomic numbers 9, 20 and 10 respectively.

Write down the formula of the compound formed by two of the above elements.

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10. State three differences between 'X' and 'X^+' i.e., an atom and an ion.

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11. Differentiate between polar and non-polar covalent molecules.

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12. Explain with the help of (i) an ionic equation (ii) electron dot structural diagram (iii) atomic or orbital structural diagram for the formation of the following:

(a) Sodium chloride (b) Calcium oxide (c) Magnesium chloride.

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13. Draw the structure of ammonia molecule.

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14. Explain the following:

Ionic compounds conduct electricity.

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15. Explain the following:

Ionic compounds have high melting point and boiling point while covalent compounds have low melting and boiling points.

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16. Explain the following:

Ionic compounds dissolve in water whereas covalent do not.

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17. Explain the following:

Ionic compounds are usually hard crystals.

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18. Predict the type of bonding in the following molecules:

Oxygen

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19. Predict the type of bonding in the following molecules:

calcium oxide

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20. Predict the type of bonding in the following molecules:

water

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21. Predict the type of bonding in the following molecules:

methane

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22. Predict the type of bonding in the following molecules:

ammonium ion

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23. Five atoms are labelled from A to E

Atoms	Mass No.	Atomic No.
A	40	20
B	19	9
C	7	3
D	16	8
E	14	7

Which one of these atoms :

(i) contains 7 protons ?

(ii) has an electronic configuration 2, 7 ?

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24. Five atoms are labelled from A to E

Atoms	Mass No.	Atomic No.
A	40	20
B	19	9
C	7	3
D	16	8
E	14	7

Write down the formula of the compound formed between C and D.

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25. Five atoms are labelled from A to E

Atoms	Mass No.	Atomic No.
A	40	20
B	19	9
C	7	3
D	16	8
E	14	7

Predict which are :

(i) metals ?

(ii) non-metals?

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26. Match the atomic number 4, 14, 8, 15 and 19 with each of the following:

A solid non-metal of valency 3.

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27. Match the atomic number 4, 14, 8, 15 and 19 with of the following:

A gas of valency 2.

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28. Match the atomic number 4, 14, 8, 15 and 19 with of the following:

A metal of valency 1.

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29. Match the atomic number 4, 14, 8, 15 and 19 with of the following:

A non-metal of valency 4.

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30. Elements X, Y and Z have atomic numbers 6, 9 and 12 respectively. Which one :

forms an anion

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31. Elements X, Y and Z have atomic numbers 6, 9 and 12 respectively. Which one :

forms a cation

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32. Elements X, Y and Z have atomic numbers 6, 9 and 12 respectively. Which one :

has four electrons in the valency shell ?

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Questions From Previous Icse Board Papers 2005

1. Compound X consists of molecules. Choose the letter corresponding to the correct answer from the choices

given below:

The type of bonding in X will be :

A. ionic

B. electrovalent

C. covalent

D. molecular

Answer:

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2. Compound X consists of molecules. Choose the letter corresponding to the correct answer from the choices given below:

X is likely to have a : [A] low melting point and high boiling point. [B] high melting point and low boiling point. [C] low melting point and low boiling point. [D] high melting point and high boiling point.

A. low melting point and high boiling point.

B. high melting point and low boiling point.

C. low melting point and low boiling point.

D. high melting point and high boiling point.

Answer:

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3. Compound X consists of molecules. Choose the letter corresponding to the correct answer from the choices given below:

In the liquid state, X will:

A. become ionic

B. be an electrolyte

C. conduct electricity

D. not conduct electricity

Answer:

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4. Acids dissolve in water and produce positively charged ions. Draw the structure of these positive ions.

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5. Explain why Carbon tetrachloride does not dissolve in water.

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6. Elements Q and S react together to form an ionic compound. Under normal conditions, which physical state will the compound QS exist in ?

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7. Can Q and S, both be metals ? Justify your answer.

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Questions From Previous Icse Board Papers 2006

1. What is a lone pair of electrons ?

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2. Draw an electron dot diagram of a hydronium ion and label the lone pair of electron.

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3. Name a neutral covalent molecule which contains lone pair of electrons.

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4. Choose the correct answer

The property which is characteristic of an electrovalent compound is that : [A] it is easily vaporized; [B] it has a high melting point; [C] it is a weak electrolyte ; [D] it often exists as a liquid.

A. it is easily vaporized

B. it has a high melting point

C. it is a weak electrolyte

D. it often exists as a liquid.

Answer:

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5. Choose the correct answer

When a metallic atom becomes an ion ?

A. It loses electrons and is oxidised.

B. It gains electrons and is reduced.

C. It gains electrons and is oxidised.

D. It loses electrons and is reduced.

Answer:

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Questions From Previous Icse Board Papers 2007

1. Name the charged particles which attract one another to form electrovalent compounds.

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2. In the formation of electrovalent compounds, electrons are transferred from one element to another. How are electrons involved in the formation of a covalent compound ?

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3. The electronic configuration of nitrogen is 2,5. How many electrons in the outer shell of a nitrogen atom are not involved in the formation of a nitrogen molecule ?

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4. In the formation of magnesium chloride (by direct combination between magnesium and chlorine), name the substance that is oxidised and the substance that is reduced.

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Questions From Previous Icse Board Papers 2008

1. What is the term defined below?

A bond formed by a shared pair of electrons each bonding atom contributing one electron to the pair.

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2. What are the terms defined in given below?

A bond formed by a shared pair of electrons with both electrons coming from the same atom.

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3. Which of the following is not a common characteristic of an electrovalent compound ?

A. High melting point.

B. Conducts electricity when molten.

C. Consists of oppositely charged ions.

D. Ionizes when dissolved in water.

Answer:

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Questions From Previous Icse Board Papers 2009

1. Among the following the one which is composed of all the three kinds of bond (ionic, covalent and coordinate bond) is :

A. Sodium chloride

B. Ammonia

C. Carbon tetrachloride

D. Ammonium chloride

Answer:

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2. Fill in the blanks with the correct words from the brackets.

Generally ionic compounds exist in ..... (solid/liquid/gas) state.

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3. Fill in the blanks with the correct words from the brackets.

Melting and boiling points of covalent compounds are generally ..... (low / high).

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Questions From Previous Icse Board Papers 2010

1. Select the correct answer from the choices which are given.

Write only the letter corresponding to the correct answer.

A particular solution contains molecules and ions of the solute so it is a :

A. weak acid

B. strong acid

C. strong base

D. salt solution.

Answer:

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2. Match the column A with column B.

Column A	Column B
(i) Sodium chloride	Covalent bond
(ii) Ammonium ion	Tonic bond
(iii) Carbon tetrachloride	Covalent and Coordinate bond

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Questions From Previous Icse Board Papers 2011

1. Fill in the blanks from the choices given below:

In covalent compounds, the bond is formed due to the ..... (sharing/transfer) of electrons.

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2. Fill in the blanks from the choices given below:

Electrovalent compounds have a..... (low/high) boiling point.

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3. Fill in the blanks from the choices given below:

A molecule of ..... contains a triple bond. (hydrogen, ammonia, nitrogen)

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4. By drawing an electron dot diagram, show the lone pair effect leading to the formation of ammonium ion from ammonia gas and hydrogen ion.

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Questions From Previous Icse Board Papers 2012

1. Draw an electron dot diagram to show the structure of hydronium ion. State the type of bonding present in it.

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Questions From Previous Icse Board Papers 2013

1. Give suitable chemical term for the following:

A bond formed by a shared pair of electrons with both electrons coming from the same atom.

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2. Choose the most appropriate answer from the following options :

Among the following compounds identify the compound that has all three bonds (ionic, covalent and coordinate bond).

A. Ammonia

B. Ammonium chloride

C. Sodium hydroxide

D. Calcium chloride.

Answer:

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3. Choose the most appropriate answer from the following options :

Which of the following is not a typical property of an ionic compound?

A. High melting point.

B. Conducts electricity in the molten and in the aqueous solution state.

C. They are insoluble in water.

D. They exist as oppositely charged ions even in the solid state.

Answer:

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4. Compare the compounds carbon tetrachloride and sodium chloride with regard to solubility in water and electrical conductivity.

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Questions From Previous Icse Board Papers 2014

1. Choose the correct answer from the options given below :

A compound X consists of only molecules. Hence, X will have :

A. A crystalline hard structure

B. A low melting point and low boiling point

C. An ionic bond

D. A strong force of attraction between its molecules

Answer:

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2. Choose the correct answer from the options given below :

The molecule containing a triple covalent bond is : ammonia, methane, water, nitrogen

A. ammonia

B. methane

C. water

D. nitrogen

Answer:

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3. Draw the structure of the stable positive ion formed when an acid dissolves in water.

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4. Why do covalent compounds exist as gases, liquids or soft solids ?

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5. Name the kind of particles present in Sodium Hydroxide solution.

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6. Name the kind of particles present in Carbonic acid.

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7. Name the kind of particles present in Sugar solution.

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8. M is a metal above hydrogen in the activity series and its oxide has the formula M_2O. This oxide when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity. In the above context answer the following:

What kind of combination exists between M and O?

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9. M is a metal above hydrogen in the activity series and its oxide has the formula M_2O. This oxide when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity. In the above context answer the following:

How many electrons are there in the outermost shell of M

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10. M is a metal above hydrogen in the activity series and its oxide has the formula M_2O. This oxide when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity. In the above context

answer the following:

Name the group to which M belongs.

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11. M is a metal above hydrogen in the activity series and its oxide has the formula M_2O. This oxide when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity. In the above context answer the following:

State the reaction taking place at the cathode.

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12. M is a metal above hydrogen in the activity series and its oxide has the formula M_2O. This oxide when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity. In the above context answer the following:

Name the product at the anode.

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Questions From Previous Icse Board Papers 2015

1. Choose the most appropriate answer for each of the following:

Bonding in this molecule can be understood to involve coordinate bonding.

A. Carbon tetrachloride

B. Hydrogen

C. Hydrogen chloride

D. Ammonium chloride

Answer:

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2. Carbon tetrachloride does not conduct electricity.

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3. Explain the bonding in methane molecule using electron dot structure.

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4. Element X is a metal with a valency 2, Y is a non metal with a valency 3.

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5. An element L consists of molecules.

What type of bonding is present in the particles that make up L?

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6. An element L consists of molecules.

When L is heated with iron metal, it forms a compound FeL. What chemical term would you use to describe the change undergone by L?

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Questions From Previous Icse Board Papers 2016

1. Choose the correct answer from the options given below :

An element with the atomic number 19 will most likely

combine chemically with the element whose atomic number is :

A. 17

B. 11

C. 18

D. 20

Answer:

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2. The following table shows the electronic configuration of the elements W, X, Y, Z:

Element	W	X	Y	Z
Electronic Configurations	2,8,1	2,8,7	2,5	1

Answer the following questions based on the table above

:

What type of Bond is formed between :

1. Wand X 2. Y and Z

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3. The following table shows the electronic configuration of the elements W, X, Y, Z:

Element	W	X	Y	Z
Electronic Configurations	2,8,1	2,8,7	2,5	1

Answer the following questions based on the table above

:

What is the formula of the compound formed between :

1. X and Z 2 . W and X

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4. By drawing an electron dot diagram show the formation of Ammonium Ion [Atomic No. : N = 7 and H = 1]

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Questions From Previous Icse Board Papers 2017

1. Explain why Carbon tetrachloride does not dissolve in water.

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2. Choose the correct answer from the options given below:

Which of the following is a common characteristic of a covalent compound?

A. high melting point

B. consists of molecules

C. always soluble in water

D. conducts electricity when it is in the molten state

Answer:

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3. Identify the substance underlined in the following case :

The $\underline{\text{particles}}$ present in a liquid such as kerosene, that is a non electrolyte.

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4. Draw an electron dot diagram to show the formation of each of the following compounds :

(i) Methane

(ii) Magnesium Chloride

[H = 1, C = 6, Mg = 12, Cl = 17]

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Questions From Previous Icse Board Papers 2018

1. Give a reason for each of the following:

Ionic compounds have a high melting point.

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2. Give a reason for each of the following:

Inert gases do not form ions.

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3. Give a reason for each of the following:

Alkali metals are good reducing agents.

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4. Fill up the blank with the correct choice given in bracket.

Ionic or electrovalent compounds do not conduct electricity in their state. (fused/solid)

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5. What do you understand by a lone pair of electrons ?

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6. Draw the electron dot diagram of Hydronium ion. (H = 1, O = 8)

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Questions

1. Name the charged particles which attract one another to form electrovalent compounds.

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2. How are electrons involved in the formation of a covalent compound.

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3. The electronic configuration of nitrogen is 2, 5. How many elelctrons in the outer shell nitrogen atom are not involved in the formation of a nitrogen molecule.

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4. In the formation of magnesium chloride (by direct combination between magnesium and chlorine), name the substance that is oxidised and the substance that is reduced.

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5. Which of the following is not a common characteristic of an electrovalent compound ?

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6. State the terms defined in each case: A bond formed by - [a] a shared pair of electrons, each bonding atom

contibuting one electron to the pair. [b] a shared pair of electrons with both electrons coming from the same atom.

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7. The ane which os composed of all the three kinds of bond [ionic, covalent and corodinate bond] is: [A] Sodium chloride [B] Ammonia [C] Carbon tetrachloride [D] Ammonia chloride

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8. Draw the structural formula of carbon tetrachloride & state the type of bond present in it.

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9. Select the correct answer from A, B, C & D - Metals lose electrons during ionization - this change is called A: Oxidation B: Reduction C: Redox D: Displacement.

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10. Select the right answer from the choicce - covalent bond/ ionic bond/ covalent & coordinate bond for each of the following - [i] Sodium chloride [ii] Ammonium ion [iii] Carbon tetrachloride.

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11. [i] Incovalent compounds, the bond is formed due to __ [sharing/ transfer] of electrons. [ii] Electrovalent compounds have a__ [low/ high] boiling point. [iii] A milecule of __ contains a triple bond. [hydrogen, ammonia, nitrogen].

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12. Draw an electron dot diagram: showing the lone pair effect for information of - NH_4^{1+} ion from NH_3 gas & H^{1+} ion.

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13. Give reason - Hydrogen chloride can be termed as a polar covalent compound.

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14. Draw an electron dot diagram to show the structure of hydronium ion. State the type of bonding present in it.

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15. There are three elements E, F, G with atomic numbers 19, 8 and 17 respectively.

Give the molecular formula of the compound formed

between E and G and state the type of chemical bond in this compound.

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16. A chemical term for. A bond formed by a shared pair of electrons with both electrons coming from the same atom.

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17. Among the compiound identify the compound that has all three bonds [ionic, covalent & coordinate bond] A: Ammonia B: Ammonium chloride C: Sodium hydroxide D: Calcium chloride

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18. State which is not a typical property of an ionic compound. A: high m.p. B: Conducts electricity in moltern & in the aq. Soln. state. C : Are insoluble in water. D: Exist as oppositely charged ions even in the solid state.

Watch Video Solution

19. Compare carbon tetrachloride & sodium chloride with regard to solubility in water & electrical conductivity.

Watch Video Solution

20. Compound 'X' consists of only molecules. 'X' will have - A: Crystalline hard stucture B: A low m.p. & low b.p. C: An ionic bond D: A strong force of attraction between its molecules.

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21. The molecules which contains a triple covalent bond is: A: ammonia B: methane C: water D: nitrogen

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22. Give one word or phrase for the following:

Formation of ions from molecules.

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23. Give a reason why covalent compounds exist as gases, liquid or soft solids.

Watch Video Solution

24. Bonding in which - A: CCl_4 B: H_2, C: HCl D: NH_4Cl - involves coordinate bonding.

Watch Video Solution

25. Give scientific reason : Carbon tetrachloride does not conduct electricity.

Watch Video Solution

26. Explain the bonding in methane molecule using electron dot structure.

Watch Video Solution

27. An element L consists of molecules. [i]What type of bonding is present in the particles that make up L. [ii] When L is heated with ieon metal, it forms a compound FeL. What chemical term would you use to describe the change undergone by L.

Watch Video Solution

28. Fill in the blanks from the choice given: Electrovalent compoun have ____ [high/low] melting points.

Watch Video Solution

29. Elemants - W, X, Y & Z have electronic configurations W = 2, 8, 1 , X = 2, 8, 7 , Y = 2, 5 , Z = 1

[i] What type of bond is formed between: [a] W & X [b] Y & Z

[ii] What is the formula of the compound formed between: [a] X & Z [b] W & X

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30. Draw an electron dot diagram to show the formation of ammonium ion [N = 7, H = 1]

Watch Video Solution

31. Fill in the blank - The compound that does not have a lone pair of electrons is ___ . [water, ammonia, carbon tetrachloride]

Watch Video Solution

32. State which of the following is a common characteristic of a covalent compound. A. High melting

point B. Consists of molecule C. Always soluble in water D. Conducts electricity when it is the moltern state.

Watch Video Solution

33. State the type of Bonding in the following molecules:

(i) Water (ii) Calcium oxide

Watch Video Solution

34. Draw an electron dot diagram to show the formation of each of the following compounds :

(i) Methane

(ii) Magnesium Chloride

[H = 1, C = 6, Mg = 12, Cl = 17]

Watch Video Solution

35. Give one word or a phrase for - Process of formation of ions from molecules which are not in the ionic state.

Watch Video Solution

36. Give a reason for each of the following:

Ionic compounds have a high melting point.

Watch Video Solution

37. Fill up the blank with the correct choice given in bracket.

Ionic or electrovalent compounds do not conduct electricity in their state. (fused/solid)

Watch Video Solution

38. State the meaning of - 'lone pair of electrons' . Draw the electron dot diagram of - Hydronium ion. [H = 1, O = 8]

Watch Video Solution

39. Give the approppriate term for : The covalent bond in which the electrons are shared equally between the combining atoms.

Watch Video Solution

40. Draw the electron dot structure of :

[i] Nitrogen molecule [N = 7] , [ii] Sodium chloride [Na = 11, Cl = 17] , [iii] Ammonium ion [N = 7, H = 1]

Watch Video Solution

41. Fill up the blank with the correct choice given in bracket.

Ionic or electrovalent compounds do not conduct electricity in their state. (fused/solid)

Watch Video Solution

42. In the molten state (liquid state) ionic compounds conduct electricity.

Watch Video Solution

43. When ionic compounds are dissolved in water, they conduct electricity. Explain .

Watch Video Solution

44. In the solid state, electrovalent compounds are poor conductor of electricity. Give reason.

Watch Video Solution

45. In the molten state (liquid state) ionic compounds conduct electricity.

Watch Video Solution

46. Choose the correct answer

The property which is characteristic of an electrovalent compound is that : [A] it is easily vaporized; [B] it has a high melting point; [C] it is a weak electrolyte ; [D] it often exists as a liquid.

A. it is easily vapourised.

B. it has a high melting point.

C. it is a weak electrolyte.

D. it often exists as a liquid.

Answer: B

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47. Elements Q and S react together to form an ionic compound. Under normal conditions, which physical state will the compound QS exist in ?

Watch Video Solution

48. Can Q and S, both be metals ? Justify your answer.

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49. Atomic number of hydrogen is 1 and the atomic number of fluorine atom is 9. Write the formation of hydrogen fluoride (HF).

Watch Video Solution

50. State the type of bonding in the following molecules - [i] Water , [ii] Calcium oxide

Watch Video Solution

51. Predict the type of bonding in the following molecules:

calcium oxide

Watch Video Solution

52. Describe the formation of a double bond in a molecule of carbon dioxide (CO_2).

Watch Video Solution

53. Write the valency of each atom in CO_2

Watch Video Solution

54. Draw an electron dot diagram to show the formation of each of the following compounds :

(i) Methane

(ii) Magnesium Chloride

[H = 1, C = 6, Mg = 12, Cl = 17]

Watch Video Solution

55. Draw an electron dot diagram to show the formation of each of the following compounds :

(i) Methane

(ii) Magnesium Chloride

[H = 1, C = 6, Mg = 12, Cl = 17]

Watch Video Solution

56. Hydrogen chloride can be termed as a polar covalent compound. Give reason.

Watch Video Solution

57. An element L consists of molecules.

What type of bonding is involved in the particle of L ?

Watch Video Solution

58. An element L consists of molecules.

When L is heated with iron metal, it forms a compound

FeL. What type of chemical term would you use for the change undergone by L ?

Watch Video Solution

59. Choose the correct answer from the options given below:

Which of the following is a common characteristic of a covalent compound?

A. High melting point

B. consists of molecules

C. always soluble in water

D. conducts electricity when it is in the molten state.

Answer:

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60. The following table shows the electronic configurations of the elements W, X, Y and Z.

Element	W	X	Y	Z
Electronic configuration	2, 8, 1	2, 8, 7	2, 5	1

Answer the following question based on the above table:

W and X

Watch Video Solution

61. The following table shows the electronic configurations of the elements W, X, Y and Z.

Element	W	X	Y	Z
Electronic configuration	2, 8, 1	2, 8, 7	2, 5	1

Answer the following question based on the above table:

Name the type of bond is formed between: Y and Z

Watch Video Solution

62. The following table shows the electronic configurations of the elements W, X, Y and Z.

Element	W	X	Y	Z
Electronic configuration	2, 8, 1	2, 8, 7	2, 5	1

Answer the following question based on the above table:

Give the formula of the compound formed between: X and Z

Watch Video Solution

63. The following table shows the electronic configurations of the elements W, X, Y and Z.

Element	W	X	Y	Z
Electronic configuration	2, 8, 1	2, 8, 7	2, 5	1

Answer the following question based on the above table:

W and X

Watch Video Solution

64. Compound X consists of molecules. Choose the letter corresponding to the correct answer from the choices given below:

The type of bonding in X will be :

A. Ionic

B. electrovalent

C. covalent

D. molecular

Answer:

Watch Video Solution

65. Compound X consists of molecules.

Choose the letter corresponding to the correct answer from the choices A, B, C and D given below:

X is likely to have a

A. low melting point and high boiling point.

B. high melting point and low boiling point.

C. low melting point and low boiling point.

D. high melting point and high boiling point.

Answer:

Watch Video Solution

66. Compound X consists of molecules. Choose the letter corresponding to the correct answer from the choices given below:

In the liquid state, X will:

A. become ionic.

B. be an electrolyte

C. conduct electricity.

D. not conduct electricity.

Answer:

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67. Name the bond formed by a shared pair of electrons with both the electrons coming from the same atom.

Watch Video Solution

68. What is a lone pair of electrons ?

Watch Video Solution

69. Draw an electron dot diagram of a hydronium ion and label the lone pair of electron.

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70. Fill in the blank - The compound that does not have a lone pair of electrons is ____ . [water, ammonia, carbon tetrachloride]

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71. By drawing an electron dot diagram, show the lone pair effect leading to the formation of ammonium ion from ammonia gas and hydrogen ion.

Watch Video Solution

72. By drawing an electron dot notation show the formation of ammonium ion .

Watch Video Solution

Additional Question

1. State the force which holds two ro more atoms together as a stable molecule.

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2. Draw the geometrical atomic structure representing the electronic configuration of atoms of elements of

[a] Period- 2

[i] group 14 [IVA] - carbon [at. no. 6]

[ii] group 15[VA] - nitrogen [at. no. 7]

[iii] group 16 [VIA] - oxygen [at. no. 8]

[b] Period - 3

[i] group 1[IA] - sodium[at. no. 11]

[ii] group 2[IIA] - magnesium[at. no. 12]

[iii] group 17[VIIA] - chlorine[at. no. 17]

[c] Period - 4

[i] group 2[IIA] - calcium [at. no. 20].

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3. What is the meant by the term 'chemical bond' and 'chemical bonding'.

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4. State why noble gases are unreactive while atoms of elements other than noble gases are chemically reactive.

Watch Video Solution

5. State the reasons for chemical bonding between two atoms and the mothods involved for achieving the same.

State how 'duplet and octet' rules are involved for an atom to achieve stable electronic config.

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6. State the type of compounds formed by transfer of valence electrons from one atom to another, and explain the method of formation of the same. State the role of 'cations' and 'anions' in their formation.

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7. Define the terms : [i] Electrovalent or ionic bond

Watch Video Solution

8. What is meant by the term 'electrovalency'. State why Na [at. no. 11] has a electropositive valency of +1 and Cl [at. no. 17] an electronegative valency of -1.

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9. State three differences between 'X' and 'X^+' i.e., an atom and an ion.

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10. Explain the terms 'oxidation' and 'reduction' with reference to an atom or ion.

Watch Video Solution

11. State which of the following are oxidation reactions and which are reduction reactions:

[i] $Cu \rightarrow Cu^{2+} + 2e^-$ [ii] $Cu^{2+} + 2e^- \rightarrow Cu$ [iii] $Sn^{4+} + 2e^- \rightarrow Sn^{2+}$ [iv] $2Cl^- \rightarrow Cl_2 + 2e^-$ [v] $Fe^{2+} \rightarrow Fe^{3+} + 1e^-$ [vi] $X + 2e^- \rightarrow X^{2-}$ [vii] $Y - 1e^- \rightarrow Y^{1+}$ [viii] $Z^{3+} + 1e^- \rightarrow Z^{2+}$

Watch Video Solution

12. State which of the following are oxidation reactions and which are reduction reactions: [i] $Zn \rightarrow Zn^{2+}$ [ii] $S \rightarrow S^{2-}$ [iii] $Sn^{2+} \rightarrow Sn$ [iv] $Fe^{2+} \rightarrow Fe^{3+}$

Watch Video Solution

13. Explain with the help of [i] an ionic equation [ii] electron dot structural diagram - the formation of the following

[a] Sodium chloride [b] Calcium oxide [c] Magnesium chloride. [at.nos. Na = 11, Cl = 17, Ca = 20, O = 8, Mg = 12].

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14. Fill in the blanks with the appropriate word/s from the brackets.

NaCl an eletrovalent compounds is formed as a result of transfer of _____ [one, two, three] valence electrons from

metallic sodium to non- metallic chlorine atom. CaO is similarly formed as a result of transfer of ____ [one, two, three] valence electron/s from metallic calcium to non-metallic oxygen and megnesium chloride by transfer of ____ [one, two, three] valence electron/s from ____ [one, two] magnesium atom/s to ____[one, two] chlorine atom/s.

Watch Video Solution

15. Fill in the blanks with the appropriate word/s from the brackets.

Covalent compounds are formed by sharing electron pairs between non- metallic atoms. Non- metallic atoms

having __,___,___ valence electrons [4, 5, 6, 7] share one, two or three pairs of electrons respectively.

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16. Define and explain the term - [i] covalent or molecular bond [ii] covalent or molecular compound [iii] Covalency [iv] Shared pair of electrons

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17. Give two differences between the covalent compounds - methane [non- polar] and HCl [polar].

Watch Video Solution

18. Explain with the help of - electron dot diagrams - the formation of the following molecules, stating the valency of each element involved.

[a] Hydrogen [b] Chlorine [c] Oxygen [d] Nitrogen [e] Water [f] Methane [g] Carbon tetrachloride [h] Ammonia [i] Carbon dioxide [at.nos. H = 1, C = 6, N = 7, O = 8, Cl = 17].

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19. Give reasons for the following:

Molecules of hydrogen and chlorine have single covalent bonds between their atoms while oxygen has a double covalent and nitrogen a triple covalent bond respectively.

Watch Video Solution

Watch Video Solution

20. Give reasons for the following:

A molecule of methane has four single covalent bonds.

Watch Video Solution

21. Give reasons for the following:

Formation of ammonia involves one atom of nitrogen sharing three electrons one with each of the three atoms of hydrogen.

Watch Video Solution

22. Explain the terms [a] Lone pair of electrons [b] Coordinate bond.

Watch Video Solution

23. Explain diagrammatically the lone pair effect of

[a] The nitrogen atom of the ammonia molecule leading to the formation of ammonium ions $[NH_4]^+$

[b] The oxygen atom of the H_2O molecule leading to formation of hydronium $\left[H_3O^+\right]$ & hydroxyl ions $[OH]^-$

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24. Give reasons for the following

Electrovalent compounds are soluble in water, insoluble in organic solvents, good conductors of electricity in molten or aq.solution state, have high meltimg points and undergo electrolytic dissociation on pasaage of electric current, while covalent compounds are soluble in organic solvents, insoluble in water, non-conductors of electricity, have low melting points & undergo ionisation on passage of electric current.

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Unit Test Paper 2

1. Give reasons for the following :

NH_3 gas a covalent compound does not conduct electricity but its aq.soln.NH_4OH is a weak electrolyte.

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2. Give reasons for the following :

$MgCl_2$ is soluble in water but insoluble in acetone, while methane is insoluble in water, but soluble in acetone.

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3. Give reasons for the following :

Iron displaces copper from a solution of a copper salt.

The reaction is deemed as a redox reaction.

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4. Give reasons for the following :

A non- metallic atom [at.no. 9] forms a molecule of the same, containing a single covalent bond.

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5. Give reasons for the following :

In the information of MgO the magnesium atom [at.no. 12] loses two electrons from its valence shell.

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6. With reference to a molecule of water, fill in the blanks with the correct word. [at.no. of H = 1, O = 8]

Water is a _____ [non-polar / polar] covalent molecule in which the atom of _____ [hydrogen / oxygen] attracts electrons more strongly toward itself. The water molecule shows the presence of _____ [double / one single/ two single] covalent bond/s and _____ [one / two] lone pair or electrons present in the _____ [hydrogen / oxygen] atom.

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7. Fill in the blanks with the correct word from the brackets:

The bond between two elements in group 17[VIIA] of the periodic table is likely to be _____ [ionic / covalent]

Watch Video Solution

8. Fill in the blanks with the correct word from the brackets:

In the reaction of $Cl_2 + 2KI \rightarrow 2KCl + I_2$ the conversion of $2I$ to I_2 is deemed as _____ [oxidation / reduction]

Watch Video Solution

9. Fill in the blanks with the correct word from the brackets:

The covalent molecule containing three single covalent bonds is _____ [water / methane / ammonia].

Watch Video Solution

10. Fill in the blanks with the correct word from the brackets:

The molecule of water combines with a _____ [hydrogen atom / proton / hydrogen molecule] to form a hydronium ion.

Watch Video Solution

11. Fill in the blanks with the correct word from the brackets:

For formation of an electrovalent bond between elements 'X' and 'Y' which are a metal and non-matal respectively, X should have a _____ [high / low] ionization potential and 'Y' a _____ [high / low] electron affinity.

Watch Video Solution

12. Electronic configuration of the following elements are given:

1. Sodium - Na = 2, 8, 1 2. Hydrogen - H = 1

3. Carbon - C = 2, 4 4. Chlorine - Cl = 2, 8, 7

5. Lithium - Li = 2, 1

State which of the compounds given below:

[a] have high / low boiling points, [b] are soluble /

insoluble in organic solvents.

A: Hydrogen chloride. B: Sodium chloride. C: Sodium hydriode.

D: Lithium chloride. E: Carbon tetrachloride.

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13. A compound has a formula = ''H_2Y''. Y denotes a non - metal. State the following:

The electronic configuration of Y.

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14. A compound has a formula = ''H_2Y''. Y denotes a non - metal. State the following:

the valency of Y.

Watch Video Solution

15. A compound has a fortmula = $''H_2Y''$. Y denotes a non - metal. State the following:

The bonding present in $'H_2Y'$.

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16. A compound has a formula = $''H_2Y''$. Y denotes a non - metal. State the following:

The bonding present in the compound formed between potassium $\left[{}^{39}_{19}K\right]$ and 'Y'.

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17. A compound has a fortmula = $''H_2Y''$. Y denotes a non - metal. State the following:

The formula of the compound formed between calcium $\left[{}^{40}_{20}Ca\right]$ and Y.

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Questions Fill In The Blanks From The Choices Given In The Brackets

1. In covalent compounds the bond is formed due to the _____ of electrons. (sharing/transfer)

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Watch Video Solution

2. Electrovalent compounds have a _____ boiling point. (lowlhigh)

Watch Video Solution

3. A molecule of _____ contains a triple bond. (hydrogen, ammonia, nitrogen)

Watch Video Solution

4. Fill in the blanks from the choice given: Electrovalent compoun have ___ [high/low] melting points.

Watch Video Solution

Illustrative Assignments

1. Why do covalent compounds exist as gases, liquids or soft solids?

Watch Video Solution

2. Give three examples each of solid, liquid and gaseous covalent compounds.

Watch Video Solution

3. Covalent compounds have lower melting points and lower boiling points than ionic compounds. Give reason.

Watch Video Solution

4. Give three examples each of solid, liquid and gaseous covalent compounds.

Watch Video Solution

5. Covalent compounds generally do not conduct electricity. Give reason.

Watch Video Solution

6. Aqueous solutions of substances involving polar covalent bonds such as HCl, NH_3 and CH_3COOH conduct electricity. Give reason.

Watch Video Solution

7. Name the charged particles which attract one another to form electrovalent compounds.

Watch Video Solution

8. In the formation of electrovalent compounds, electrons are transferred from one element to another. How are

electrons involved in the formation of a covalent compound ?

Watch Video Solution

9. The electronic configuration of nitrogen is 2,5. How many electrons in the outer shell of a nitrogen atom are not involved in the formation of a nitrogen molecule ?

Watch Video Solution

10. In the formation of magnesium chloride (by direct combination between magnesium and chlorine), name the substance that is oxidised and the substance that is reduced.

Watch Video Solution

Question For Practice

1. Name the force which is responsible for the formation of an electrovalent bond.

Watch Video Solution

2. Name the type of chemical bond formed by a complete transfer of electrons from the valence shell of one atom to the valence shell of another atom.

Watch Video Solution

3. Write the electron dot structures of NaCl .

Watch Video Solution

4. Write the electron dot structures of $MgCl_2$

Watch Video Solution

5. Write the electron dot structure of CaO

Watch Video Solution

6. The electronic configuration of an atom A is 2, 8, 2 and that of another atom B is 2, 8, 7. What is the formula of the compound formed by the combination of A and B?

Watch Video Solution

7. An element X burns in oxygen to form an electrovalent compound XO. What is the formula of compounds formed if this element is allowed to combine with chlorine

Watch Video Solution

8. An element X burns in oxygen to form an electrovalent compound XO. What is the formula of compounds formed if this element is allowed to combine with sulphur separately ?

Watch Video Solution

9. In the formation of a compound AB, an atom of element A lost two electrons while an atom of element B gained two electrons. Predict two properties of AB.

Watch Video Solution

10. Write the Lewis structures of a fluorine atom and a fluorine molecule (the atomic number of F is 9).

Watch Video Solution

11. Select the molecules with single bond, double bond and triple bond in H_2, O_2 , and N_2

Watch Video Solution

12. If the electronic configuration of an element is 2, 4, then it is most likely to form which bond, a covalent or electrovalent bond?

Watch Video Solution

Watch Video Solution

13. Draw the electron dot structure of :

Nitrogen molecule (N=7]

Watch Video Solution

14. If the electronic configuration of an element A is 2, 6, then it is most likely to form which molecule, a diatomic molecule (A_2) or a triatomic molecule (A_3)?

Watch Video Solution

15. Write the number of covalent bonds in the molecular formula of ethane.

Watch Video Solution

16. What is the total number of covalent bonds in a molecule of ammonia?

Watch Video Solution

17. Draw the electron dot structure and orbit structure of the following:

H_2

Watch Video Solution

Watch Video Solution

18. Draw the electron dot structure and orbit structure of the following:

Cl_2

Watch Video Solution

19. Draw the electron dot structure of the following:

O_2

Watch Video Solution

20. Draw the electron dot structure of :

Nitrogen molecule (N=7]

Watch Video Solution

21. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

Electrons are shared between two atoms in the formation of _____ bond. (ionic/covalent).

Watch Video Solution

22. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

Atoms combine to form chemical bonds and attain electronic configuration like their nearest _____ . (nonmetals/noble gases).

Watch Video Solution

23. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

The number of electrons in the valence shell of carbon atoms is _____ (four/six)

Watch Video Solution

24. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

The atoms combine to have _____ electrons in their valence shells is the octet rule. (eight/eighteen)

Watch Video Solution

25. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

The _____ theory explains chemical bonding in

terms of sharing of electrons between two atoms. (electronic/electrostatic)

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26. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

Generally ionic compounds exist in _____ state. (solid/liquid/gas)

Watch Video Solution

27. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your

notebook.

Melting points and boiling points of covalent compounds are generally _____ (low/high)

Watch Video Solution

28. Write the correct form of the following statement:

In a methane molecule, the number of C-H bonds is 6.

Watch Video Solution

29. Write the correct form of the following statement:

The number of electrons in the valence shell of C atom is 6.

Watch Video Solution

30. Give suitable chemical term for the following:

A bond formed by a shared pair of electrons with both electrons coming from the same atom.

Watch Video Solution

31. Write the correct form of the following statement:

The fluorine atom is more electronegative than H atom, therefore, the H-F bond is formed by gain and loss of electrons.

Watch Video Solution

32. Mark the odd one out

Watch Video Solution

33. Select the odd one out and justify your choice:

$NaCl, HCl, KCl, MgCl_2$

Watch Video Solution

34. Select the odd one out with justification :

NH_3, H_2O, CaO, CH_4

Watch Video Solution

35. Select the odd one out with justification :

HCl, CH_4, NH_3, H_2O

Watch Video Solution

36. What is a lone pair of electrons ?

Watch Video Solution

37. How many and what types of bonds are present in NH_4^+ ?

Watch Video Solution

38. Which one of H_2O and HCl is capable of forming coordinate bond?

Watch Video Solution

39. Name the bond formed by a shared pair of electrons with both the electrons coming from the same atom.

Watch Video Solution

40. Draw the electron dot structure of ammonia molecule and indicate (i) the shared pair of electrons and (ii) lone pair of electrons

Watch Video Solution

41. Write the name and formula of a species other than NH_4^+ which involves simple covalent bonds and a coordinate bond.

Watch Video Solution

42. Describe the formation of hydronium ion in terms of electron dot structures.

Watch Video Solution

Question For Practice Fill In The Blanks By Selecting A Correct Word Given In The Brackets

1. In the formation of _____ bond, the cations and anions are held together by electrostatic force. (electrovalent/covalent)

Watch Video Solution

2. Give reasons for the following

Electrovalent compounds are soluble in water, insoluble in organic solvents, good conductors of electricity in molten or aq.solution state, have high meltimg points and undergo electrolytic dissociation on pasaage of electric current, while covalent compounds are soluble in organic solvents, insoluble in water, non-conductors of electricity, have low melting points & undergo ionisation on passage of electric current.

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3. In the formation of Na_2O, each Na atom transfers _____ to O atom. (one electron/two electrons)

Watch Video Solution

4. When magnesium is burnt in oxygen _____ compound is formed. (a covalent/an electrovalent)

Watch Video Solution

5. The electrical conductivity of an ionic solid compound is _____ (high/low/nil)

Watch Video Solution

6. On dissolving in _____ electrovalent compounds undergo dissociation. (water/benzene/chloroform)

Watch Video Solution

7. In CaO , the valency of each atom is _____ . (one/two/three)

Watch Video Solution

8. $MgCl_2$, is _____ compound. (an electrovalent/a covalent)

Watch Video Solution

9. In the formation of KCl, an electron is completely transferred from _____(K/Cl)

Watch Video Solution

10. Generally ionic compounds exist in a _____ (solid/liquid/gas) state. Melting and boiling points of covalent compounds are generally (b) _____ (low/high)

Watch Video Solution

Question For Practice On Examination Pattern

1. The force responsible to hold the atoms together in a molecule is called

A. chemical kinetics

B. chemical bonding

C. chemical thermodynamics

D. chemical equilibrium

Answer: B

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2. Define electrovalent bond.

A. electron pair is shared between two atoms.

B. electron pair is contributed by one atom and shared between two atoms.

C. electron is completely transferred from one atom to another atom.

D. electron is transferred by electronegative atom to electropositive atom.

Answer: C

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3. Which one is not true about sodium chloride?

A. It does not conduct electricity in solid state.

B. It is highly soluble in benzene.

C. It has ionic nature.

D. In conducts electric current in molten state.

Answer: B

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4. Which one is a covalent compound?

(a)HCl

(b)NaCl

(c)KCl

(d)$MgCl_2$

A. HCl

B. NaCl

C. KCl

D. $MgCl_2$

Answer: A

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5. The number of covalent bonds in NH_3 is

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

6. Which one is a polar covalent compound?

KCl ; NaCl ; C C l 4 ; HCl ;

A. KCl

B. NaCl

C. CCl_4

D. HCl

Answer: D

Watch Video Solution

7. State true/false:

A bond formed by a shared pair of electrons with both electrons coming from the same atom is a covalent bond.

A. electrovalent bond.

B. Coordinate bond

C. hydrogen bond.

D. Covalent bond

Answer: B

Watch Video Solution

8. In which one of the following are both the covalent and coordinate bonds involved?

A. NH_3

B. H_2O

C. NH_4^+

D. C_2H_2

Answer: C

Watch Video Solution

9. What is a lone pair of electrons ?

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

10. State the meaning of - 'lone pair of electrons' . Draw the electron dot diagram of - Hydronium ion. [H = 1, O = 8]

A. 1

B. 2

C. 3

D. nil

Answer: A

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11. What is the term defined below?

A bond formed by a shared pair of electrons each bonding atom contributing one electron to the pair.

A. coordinate bond.

B. dative bond

C. single covalent bond.

D. ionic bond

Answer: C

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12. The number of lone pair of electrons on each atom of oxygen molecule is

A. 1

B. 2

C. 3

D. nil

Answer: B

Watch Video Solution

13. The valency of C atom in CCl_4 is

A. 1

B. 2

C. 3

D. 4

Answer: A

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14. The valency of C atom in CH_4 is

A. 1

B. 2

C. 3

D. 4

Answer: D

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15. Among the following the one which is composed of all the three kinds of bond (ionic, covalent and coordinate

bond) is :

A. sodium chloride.

B. ammonia

C. carbon tetrachloride.

D. ammonium chloride

Answer: D

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16. Choose the most appropriate answer from the following options :

Among the following compounds identify the compound

that has all three bonds (ionic, covalent and coordinate bond).

A. Ammonia

B. Ammonium chloride

C. Sodium hydroxide

D. Calcium chloride

Answer: B

Watch Video Solution

17. Choose the most appropriate answer from the following options :

Which of the following is not a typical property of an ionic compound?

A. Has high melting point

B. Conducts electricity in the molten state and in aqueous solution

C. Is insoluble in water

D. exists as oppositely charged ions even in solid state

Answer: C

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18. Compound 'X' consists of only molecules. 'X' will have -

A: Crystalline hard stucture B: A low m.p. & low b.p. C: An

ionic bond D: A strong force of attraction between its molecules.

A. A crystalline hard structure.

B. An ionic bond.

C. A low melting point and a low boiling point.

D. A strong force of attraction between its molecules.

Answer: C

Watch Video Solution

19. Fill in the blanks with the correct word from the brackets:

The covalent molecule containing three single covalent bonds is _____ [water / methane / ammonia].

A. Ammonia

B. Methane

C. Nitrogen

D. Water

Answer: C

Watch Video Solution

20. Coordinate bonding is involved in which of the following molecule? Carbon tetrachloride Ammonium chloride Hydrogen Hydrogen

A. Carbon tetrachloride

B. Ammonium chloride

C. Hydrogen

D. Hydrogen

Answer: B

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21. What is the term defined below?

A bond formed by a shared pair of electrons each bonding atom contributing one electron to the pair.

Watch Video Solution

22. What are the terms defined in given below?

A bond formed by a shared pair of electrons with both electrons coming from the same atom.

Watch Video Solution

23. What are the terms defined in below?

A bond formed by complete transfer of an electron from an electropositive atom to an electronegative atom.

Watch Video Solution

24. What is the term defined below?

A bond formed by a shared pair of electrons each

bonding atom contributing one electron to the pair.

Watch Video Solution

25. What are the terms defined in below?

A bond in which the electron pair shifts towards the more electronegative atom.

Watch Video Solution

26. Answer question in one word or one sentence.

Name the linkage that results when two electrons are completely transferred from magnesium to oxygen.

Watch Video Solution

27. Answer question in one word or one sentence.

In which one of NH_3 and NH_4^+ does the N atom carry a lone pair of electrons?

Watch Video Solution

28. Answer question in one word or one sentence.

What is the nature of covalent bond in HCl-polar or nonpolar?

Watch Video Solution

29. Answer question in one word or one sentence.

Which type of force is responsible for the high melting point of NaCl?

Watch Video Solution

30. Answer question in one word or one sentence.

What is the number of valence electrons on F atom?

Watch Video Solution

31. Fill in the blank by selecting a correct word given in the brackets.

Atoms combine to form chemical bonds and attain

electronic configuration like their nearest _____ . (nonmetals/noble gases)

Watch Video Solution

32. Fill in the blank by selecting a correct word given in the brackets.

In the formation of _____ bond, the cations and anions are held together by electrostatic force. (electrovalent/covalent)

Watch Video Solution

33. Fill in the blank by selecting a correct word given in the brackets.

In the formation of MgO, each Mg atom transfers _____ to the O atom. (one electron/two electrons)

Watch Video Solution

34. In CaO , the valency of each atom is _____ . (one/two/three)

Watch Video Solution

35. $MgCl_2$, is _____ compound. (an electrovalent/a covalent)

Watch Video Solution

36. In the formation of KCI, an electron is completely transferred from _____(K/CI)

Watch Video Solution

37. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

Electrons are shared between two atoms in the formation of _____ bond. (ionic/covalent).

Watch Video Solution

38. Fill in the blank by using correct word/term given in the bracket and rewrite the complete sentence in your notebook.

The number of electrons in the valence shell of carbon atoms is _____ (four/six)

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39. Match an item of column A with a correct item of column B.

Column A	Column B
(*i*) Sodium chloride	Increases
(*ii*) Ammonium ion	Covalent bond
(*iii*) Electronegativity across the period	Ionic bond
(*iv*) Nonmetallic character down the group	Covalent and coordinate bond
(*v*) Carbon tetrachloride	Decreases

Answer as follow:

correct item from B matching sodium chloride.

Watch Video Solution

40. Match an item of column A with a correct item of column B.

Column A	Column B
(*i*) Sodium chloride	Increases
(*ii*) Ammonium ion	Covalent bond
(*iii*) Electronegativity across the period	Ionic bond
(*iv*) Nonmetallic character down the group	Covalent and coordinate bond
(*v*) Carbon tetrachloride	Decreases

Answer as follow:

correct item from B matching sodium chloride.

Watch Video Solution

Fill In The Blanks

1. A compound conduct electricity in the fused state. The compound is made up of.....

A. non-metals

B. ions

C. metals

D. alloys

Answer: B

View Text Solution

2. The dupletor octet structure of valence shell makes ..... of an element chemically .....

A. atom, active

B. atom, inactive

C. ions, active

D. ions, inactive

Answer: B

View Text Solution

3. The atomic number of oxygen is 8. The total number of electrons in the O^{2-} ion is.....

A. 10

B. 8

C. 6

D. 9

Answer: A

View Text Solution

4. Melting and boiling points of covalent compounds are generally.....

A. same

B. high

C. low

D. Both (a) and (b)

Answer: C

View Text Solution

5. Covalent bond is rigid and directional, it is responsible for.....

A. rigidity of the molecule

B. definite shape of the molecule

C. fluidity of the molecule

D. None of the above

Answer: B

View Text Solution

6. Most covalent compounds have density that of water.

A. equal to

B. more than

C. less than

D. None of the above

Answer: C

View Text Solution

7. The electronegativities of atoms giving covalent molecules are generally..

A. equal

B. low

C. high

D. keeps changing

Answer: A

View Text Solution

8. Atoms of the same element combine to form molecules by means of ..... bonds.

A. ionic

B. covalent

C. coordinate

D. electrovalent

Answer: B

View Text Solution

9. A molecule of.....contains a triple bond.

A. sulphur

B. nitrogen

C. oxygen

D. carbon

Answer: B

View Text Solution

10. ..... are identical to a normal covalent compound.

A. Coordinate bond

B. metallic bond

C. ionic bond

D. None of the above

Answer: A

View Text Solution

11. Ionic compounds consist of ..... charged ions.

A. equally

B. oppositely

C. negatively

D. positively

Answer: B

View Text Solution

12. Ionic compounds have ..... melting points due to ..... ionic bonds.

A. high, weak

B. low, strong

C. high, strong

D. low, weak

Answer: C

View Text Solution

13. The physical state of ionic compounds is

A. vapour state

B. molten state

C. solid state

D. None of the above

Answer: C

View Text Solution

14. In covalent compounds, the bond is formed due to the.....

A. sharing of electrons

B. donation of electrons

C. high electronegativity of atoms

D. high electron affinity of atoms

Answer: A

View Text Solution

15. A solution of a ..... will contain both ions and molecules of the solute.

A. covalent compound

B. strong electrolyte

C. weak electrolyte

D. None of the above

Answer: C

View Text Solution

16. In the sodium chloride crystal, each Na^+ ion is surrounded by ..... CI^- ions and each CI^- ion by

..... Na^+ ions.

A. five, five

B. three, three

C. six, six

D. six,five

Answer: C

View Text Solution

17. A reducing agent is a substance which can.....

A. Accept electron

B. Donate electrons

C. Accept protons

D. Donate protons

Answer: B

View Text Solution

18. Molecular reactions are generally slow reactions and they are shown by ..... Compounds.

A. Both ionic and covalent

B. Coordinate

C. Ionic

D. Covalent

Answer: D

View Text Solution

19. In NH_4^+ all the four bonds are.....

A. covalent

B. not identical

C. identical

D. coordinate

Answer: C

View Text Solution

20. The water molecules easily break the bonds between the oppositely charged ions. The ions drift in water in all possible directions and hence electrovalent compounds ..... in water.

A. covalent, dissolve

B. covalent, do not dissolve

C. ionic, dissolve

D. ionic, do not dissolve

Answer: C

View Text Solution

Multiple Choice Questions

1. Among the following compounds identify the compound that has all three bonds (ionic, covalent and coordinate bond).

A. Ammonia

B. Ammonium chloride

C. Sodium hydroxide

D. Calcium chloride

Answer: B

View Text Solution

2. Due to the presence of strong electrostatic forces of attraction between ions, ionic compounds.

A. Have high melting and boiling points

B. Conduct electricity in solid state

C. Dissolve in kerosene

D. All of the above

Answer: A

View Text Solution

3. Ionic bond is present in which of the following species:

A. O_2

B. $CHCl_3$

C. $NaBr$

D. CCl_4

Answer: A

View Text Solution

4. The type of bonding in HCl molecule is:

A. Polar covalent bond

B. Pure covalent

C. Non-polar

D. Hydrogen bonding

Answer: A

View Text Solution

5. Formation of a compound through ionic bond _____the ionization energy of the metal ion.

A. does not depends on

B. depend on

C. is independent regarding

D. may or may not depend on

Answer: B

View Text Solution

6. The molecule containing a triple covalent bond is:

A. Ammonia

B. Methane

C. Water

D. Nitrogen

Answer: D

View Text Solution

7. Why do atoms share electrons in covalent bonds?

A. to increase their atomic numbers

B. to attain a noble-gas electron configuration

C. to become more polar

D. to become ions and attract each other

Answer: B

View Text Solution

8. Covalent bond is formed between

A. Metal and non-metal

B. Metals

C. Two non-metals

D. Non-metal and an ion

Answer: C

View Text Solution

9. Valency of aluminium is:

A. 2

B. 3

C. 4

D. 5

Answer: B

View Text Solution

10. Identify the molecule with a single covalent bond.

A. CO_2

B. CO

C. Cl_2

D. N_2

Answer: C

View Text Solution

11. A polar covalent bond will be formed in which one of these pair of atoms:

A. HF

B. H_2

C. Cl_2

D. O_2

Answer: A

View Text Solution

12. Aluminum has a tendency to lose:

A. 2 electron

B. 1 electron

C. 4 electron

D. 3 electron

Answer: D

View Text Solution

13. Which of the following is a common characteristic of a covalent compound?

A. high melting point

B. consists of molecules

C. always soluble in water

D. conducts electricity when it is in the molten state

Answer: B

View Text Solution

14. Which element forms two different stable chlorides?

A. Calcium

B. Sulphur

C. Phosphorus

D. Oxygen

Answer: C

View Text Solution

15. Elements which gains electrons is known as:

A. Electropositive elements

B. Electronegative elements

C. Covalent atom

D. Anion

Answer: D

View Text Solution

16. A gas having double bonds is:

A. Carbon monoxide

B. Oxygen

C. Carbon dioxide

D. None of the above

Answer: B

View Text Solution

17. The ion formed by gain of electrons is known as:

A. Cation

B. Super ion

C. Both (a) and (b)

D. Anion

Answer: D

View Text Solution

18. Lead chloride is:

A. Covalent compound

B. Covalent and co-ordinate bonded compound

C. Ionic compound

D. None of the above

Answer: C

View Text Solution

19. A gas which contains triple bond:

A. Oxygen

B. Hydrogen

C. Nitrogen

D. Argon

Answer: C

View Text Solution

20. Which of the following will show covalent bonding?

A. NaCl

B. KCl

C. $MgCl_2$

D. Cl_2

Answer: D

View Text Solution

21. A compound with low boiling point, is :

A. Sodium chloride

B. Calcium chloride

C. Potassium chloride

D. Carbon tetrachloride

Answer: D

View Text Solution

22. The capacity of an atom to attract the shared pair of electrons towards itself is called:

A. Electronegativity

B. Electron affinity

C. Sharing of electrons

D. Electron donation

Answer: A

View Text Solution

23. Sodium and sodium ions:

A. Are chemically same

B. Have same number of electrons

C. Have same number of protons

D. None of the above

Answer: C

View Text Solution

24. The most ionic compound of periodic table is :

A. Sodium chloride

B. Potassium chloride

C. Magnesium chloride

D. Caesium chloride

Answer: D

View Text Solution

25. A compound having one lone pair of electrons:

A. Water

B. Methane

C. Ammonia

D. Hydrogen sulphide

Answer: C

View Text Solution

26. Molecular reactions which are generally slow reactions are shown by :

A. Covalent compounds

B. Ionic compounds

C. Coordinate compounds

D. Both ionic and covalent compounds

Answer: A

View Text Solution

27. Which of the following doesn't represent oxidation?

A. Loss of electrons

B. Addition of oxygen

C. Increase in oxidation number

D. Addition of hydrogen

Answer: D

View Text Solution

28. Which of the following is not a typical property of an ionic compound?

A. High melting point

B. Conducts electricity in the molten and in the aqueous solution state.

C. They are insoluble in water.

D. They exist as oppositely charged ions even in the solid state.

Answer: C

View Text Solution

29. Bonding in this molecule can be understood to involve coordinate bonding:

A. Carbon tetrachloride

B. Hydrogen

C. Hydrogen chloride

D. Ammonium chloride

Answer: D

View Text Solution

30. Which of the following is a common characteristic of a covalent compound?

A. High melting point

B. Consists of molecules

C. Always soluble in water

D. Conducts electricity when it is in the molten state

Answer: D

View Text Solution

31. Write Lewis dot symbols for atoms of the following elements: Mg and Na.

A. Mg, Na

B. $\ddot{M}g, \dot{N}a$

C. $\dot{M}g, \ddot{N}a$

D. $\ddot{M}g, Na$

Answer: B

View Text Solution

32. The octet rule is observed in:

A. $CaCl_2$

B. CO_2

C. BCl_3

D. SN_4

Answer: B

View Text Solution

33. Hydrogen chloride molecule contains:

A. Polar covalent bond

B. Double bond

C. Coordinate bond

D. Electrovalent bond

Answer: A

View Text Solution

34. Which of the following elements forms mostly covalent compounds as related to other elements which form ionic compounds?

A. Co

B. B

C. Be

D. Rb

Answer: B

View Text Solution

35. Sodium has one electron in its outer shell and chlorine has 7 electrons in its outer shell. The atoms will form a ____bond by ____ their electrons.

A. covalent, sharing

B. covalent, transferring

C. ionic, transferring

D. ionic, sharing

Answer: C

View Text Solution

36. The number of electrons lost or gained by an atom refers to:

A. Electrovalency

B. Covalency

C. Donation

D. Acceptance

Answer: A

View Text Solution

37. Both ionic and covalent bonds are present in:

A. NaOH

B. SO_2

C. CH_4

D. KCl

Answer: A

View Text Solution

38. Which solution of the following compounds will not conduct electricity?

A. NaCl

B. CCl_4

C. $MgCl_2$

D. $CaCl_2$

Answer: B

View Text Solution

Reason Based Questions

1. All atoms other than noble gas atoms are reactive because:

A. They have tendency to complete octet

B. They have tendency to combine with other atoms

C. Both (a) and (b)

D. None of the above

Answer: C

View Text Solution

2. Hydrogen ion called proton due to:

A. Hydrogen ion is only composed of one proton

B. Hydrogen ion is only reacting with one Chloride ion

C. Hydrogen ion is present in 'S' group of Periodic table

D. Hydrogen ion is highly unstable

Answer: A

View Text Solution

3. An anion carries negative charge because:

A. Anion has more protons than electrons

B. Anion has more electrons than protons

C. Anion has more neutron than electrons

D. Anion has positive charge and has instability

Answer: B

View Text Solution

4. Electrovalent compounds have high melting & boiling points due to the reason of:

A. Electrovalent compounds show strong attraction to other ions in their vicinity

B. Electrovalent compounds show weak attraction to other ions in their vicinity

C. Electrovalent compounds show high volatility

D. None of the above

Answer: A

View Text Solution

5. Electrovalent compounds usually dissolve in water because:

A. The forces of attraction between positive and negative charges become strong in water

B. The forces of attraction between positive and negative charges become stable in water

C. The forces of attraction between positive and negative charges become weak in water

D. Water has non polar properties which help to electrovalent compounds easily dissolve in it

Answer: C

View Text Solution

6. Covalent compounds exist as gases, liquids or soft solids because they are formed by:

A. Weak forces of attraction between their molecules

B. Sharing of electrons between the atoms have different electronegativity's

C. Sharing of electrons between the atoms without electronegativity's

D. None of these

Answer: B

View Text Solution

7. Methane molecule regarded as a non-polar covalent compound because:

A. Methane has four carbon-hydrogen single ionic bonds

B. Methane has four carbon-hydrogen single covalent bonds

C. Shared pair lies between the atoms at an unequal distance from both carbon and hydrogen atom

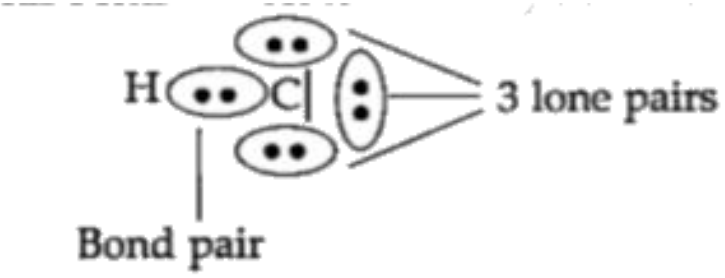
D. None of the above

Answer: B

View Text Solution

Figure Based Questions

1. This bonding occurs primarily between:



A. non-metals

B. metals

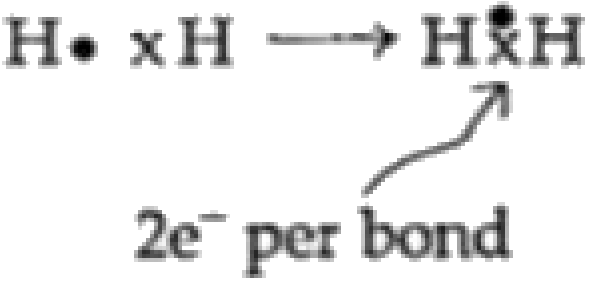
C. Both (a) and (b)

D. gases

Answer: C

View Text Solution

2. In the given figure how many pairs of bond contains in the Hydrogen molecule Electron dot structures of Non-polar covalent compound ?



A. Four

B. Five

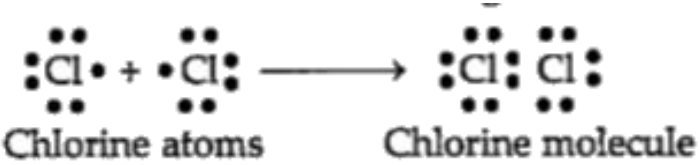
C. Six

D. One

Answer: D

View Text Solution

3. How many pairs of bond and lone pair contains in the given Chlorine Molecule figure?



A. Contains four bond pair and six lone pair

B. Contains one bond pair and six lone pair

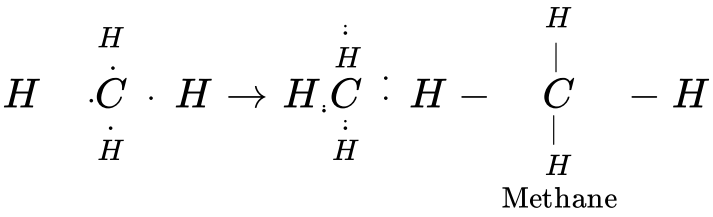
C. Contains two bond pair and six lone pair

D. Contains six bond pair and six lone pair

Answer: B

View Text Solution

4. How many pairs of bond and lone pair contains in the given Methane figure?



A. 4 bond pair and zero lone pair

B. 8 bond pair and zero lone pair

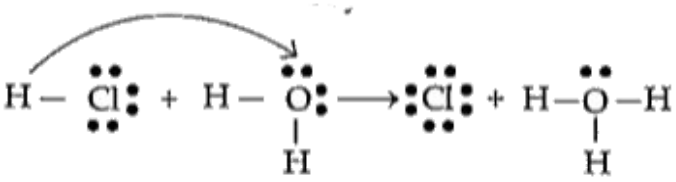
C. 6 bond pair and zero lone pair

D. 4 bond pair and 4 lone pair

Answer: A

View Text Solution

5. Given below ion formed by the combination of:



A. H_2O molecule and H^+ ion

B. Cl_2O molecule and CHO^+ ion

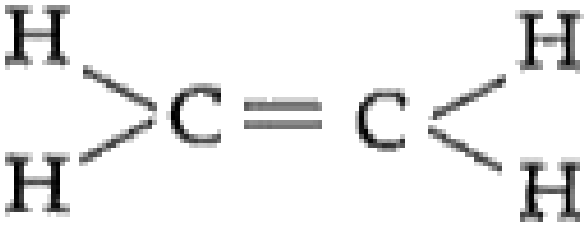
C. HCl_2O molecule and H^+ ion

D. Cl_2 molecule and H^+ ion

Answer: A

View Text Solution

6. Name the given molecule for the following structure:



A. C_2H_6 molecule

B. C_2H_4 molecule

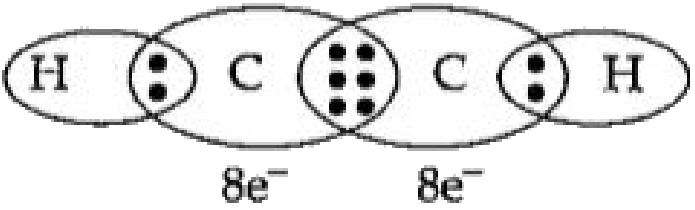
C. C_2H_5 molecule

D. CH_4 molecule

Answer: B

View Text Solution

7. Name the given structure of the Molecule:



A. C_2H_6 molecule

B. C_2H_4 molecule

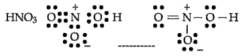
C. C_2H_2 molecule

D. C_3H_4 molecule

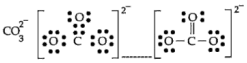
Answer: C

View Text Solution

8. Which of the following molecule/Ion is correctly match with Lewis Representation?

A. 

B. 

C. 

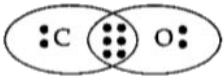
D. All are correctly matched

Answer: D

View Text Solution

9. Lewis dot structure of CO molecule is :

A. $:C = O:$

B. 

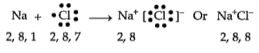
C. Both (a) and (b)

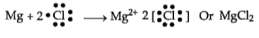
D. None of these

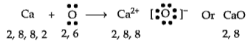
Answer: C

View Text Solution

10. Which of the following electron dot structure is/are correct?

A. 

B. 

C. 

D. All are correctly matched

Answer: D

View Text Solution

Assertion And Reason Based Questions

1. Assertion: Atoms can combine either by transfer of valence of electrons from one atom to another or by sharing of valence electrons.

Reason: Sharing and transfer of valence electrons is done by atoms to have an octet in their valence shell.

A. Assertion and Reason both are correct statements and reason is the correct explanation of the assertion.

B. Assertion and Reason both are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false.

D. Assertion is false, but reason is true.

Answer: A

View Text Solution

2. Assertion: Sodium chloride formed by the action of chlorine gas on sodium metal is a stable compound.

Reason: This is because sodium and chloride ions acquire octet in sodium chloride formation.

A. Assertion and Reason both are correct statements and reason is the correct explanation of the assertion.

B. Assertion and Reason both are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false.

D. Assertion is false, but reason is true.

Answer: A

View Text Solution

3. Assertion: Among the two O-H bonds in H_2O molecule, the energy required to break the first 0-H bond and the other O-H bond is the same.

Reason: This is because the electronic environment around oxygen is the different even after breakage of one O-H bond.

A. Assertion and Reason both are correct statements and reason is the correct explanation of the assertion.

B. Assertion and Reason both are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false.

D. Assertion is false, but reason is true.

Answer: A

View Text Solution

4. Assertion: Water is one of the best solvent.

Reason: H-bonding is present in water molecules.

A. Assertion and Reason both are correct statements and reason is the correct explanation of the assertion.

B. Assertion and Reason both are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false.

D. Assertion is false, but reason is true.

Answer: B

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5. Assertion: Alkanes are insoluble in water.

Reason: Organic compounds do not form hydrogen bonding with water.

A. Assertion and Reason both are correct statements and reason is the correct explanation of the assertion.

B. Assertion and Reason both are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false.

D. Assertion is false, but reason is true.

Answer: A

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