CHEMISTRY

BOOKS - VGS BRILLIANT CHEMISTRY (TELUGU ENGLISH)

CHEMICAL BONDING

Exercise

1. Explain the difference between the valence electrons and the covalency of an element.

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2. Which chemical compound has the following Lewis notation : How many valence electrons does element Y have?

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3. A Chemical compound has the following Lewis notation : What is the valency of element Y ?

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4. Which chemical compound has the following Lewis notation : What is the valency of element X ?

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5. Which chemical compound has the following Lewis notation : How many covalent bonds are there in the molecule ?

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6. A Chemical compound has the following Lewis notation : To which groups the elements X and Y belong ? (AS_2)

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7. How bond energies and bond lengths of molecule help us in predicting their chemical properties? Explain with examples.

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8. How bond energies and bond lengths of molecule help us in predicting their chemical properties? Explain with examples.

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9. Draw simple diagrams to show how electrons are arranged in the following ionic molecule: Calcium oxide (CaO)

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10. Draw simple diagrams to show how electrons are arranged in the following covalent molecules: Water (H_2O)

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11. Draw simple diagrams to show how electrons are arranged in the following covalent molecules: Chlorine (Cl_2)

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12. Draw simple diagrams to show how electrons are arranged in the following ionic molecule: Calcium oxide (CaO)

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13. Draw simple diagrams to show how electrons are arranged in the following covalent molecules: Water (H_2O)

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14. Draw simple diagrams to show how electrons are arranged in the following covalent molecules: Chlorine (Cl_2)

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15. Represent each of the following atoms using Lewis notation. Beryllium

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16. Represent each of the following atoms using Lewis notation. Calcium

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17. Represent each of the following atoms using Lewis notation. Lithium

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18. Represent each of the following atoms using Lewis notation. Bromine gas (Br_2)

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19. Represent each of the following atoms using Lewis notation. Calcium chloride $(CaCl_2)$

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20. Represent each of the following atoms using Lewis notation. Carbon dioxide (CO_2)

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21. Explain the formation of sodium chloride and calcium oxide on the basis of the concept of electron transfer from one atom to another atom.

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22. Explain the formation of any two compounds according to Kossel's theory. How does ionisation bond form? Explain with an example. Explain the formation of NaCl. Explain the formation of CaO.

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23. A, B, and C are three elements with atomic numbers 6, 11 and 17 respectively : Which of these cannot form covalent bond ? Why ?

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24. A, B, and C are three elements with atomic numbers 6, 11 and 17 respectively : Which of these cannot form covalent bond ? Why ?

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25. A, B, and C are three elements with atomic numbers 6, 11 and 17 respectively : Which of these can form ionic as well as covalent bond ?

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26. How Lewis dot structure helps in understanding bond formation between atoms?

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27. Explain the formation of the following molecules using valence bond theory.N_2 molecule

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28. Explain the formation of the following molecules using valence bond theory. O_2 molecule

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29. Write the formation of double bond and triple bond according to valence bond theory.

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30. Two chemical reactions are described below.(ii) Carbon and hydrogen bond together to form a molecule of methane (CH4). give A) The valence of each of the atoms involved in the reaction.,B) The Lewis structure of the product that is formed.

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31. Two chemical reactions are described below.(ii) Carbon and hydrogen bond together

to form a molecule of methane (CH_4). give A) The valence of each of the atoms involved in the reaction.,B) The Lewis structure of the product that is formed.

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32. Which one of the following four elements is more electronegative?

A. Sodium

B. Oxygen

C. Magnesium

D. Calcium

Answer:

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33. An element ${}_{11}X^{23}$ forms an ionic compound with another element ‘Y’. Then the charge on the ion formed by 'X' is

A. 1

B. 2

C. -1

D. -2

Answer:

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34. An element 'A' forms a chloride ACl_4. The number of electrons in the valence shell of ‘A” is

A. 1

B. 2

C. 3

D. 4

Answer:

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35. The inert gas element which does not have octet electronic configuration in its outermost orbit is

A. Helium

B. Argon

C. Krypton

D. Radon

Answer:

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36. Number of covalent bonds in methane molecule

A. 1

B. 2

C. 3

D. 4

Answer:

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37. The concept 'hybridisation of orbitals of an atom' was introduced by

A. Linus Pauling

B. Moseley

C. Lewis

D. Kossel

Answer:

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38. The value of bond angle in beryllium chloride molecule is

A. 180°

B. 120°

C. 110°

D. 104.31°

Answer:

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39. Collect the information about properties and uses of covalent compounds and prepare a report.

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40. Write the Lewis structure of the given elements in the table. Also consult the periodic table and fill in the group number of the element.

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41. How do they (elements) usually exist?

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42. Why do some elements exist as molecules and some as atoms?

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43. Are there elements which exist as atoms?

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44. Why do some elements exist as molecules and some as atoms?

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45. Why do some elements react vigorously while others are inert?

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46. Why is the chemical formula for water H_2O and for sodium chloride NaCl, why not HO_2 and $NaCl_2$?

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47. Why do some atoms combine while others do not?

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48. Are elements and compounds simply made up of separate atoms individually arranged?

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49. Is there any attraction between atoms?

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50. In pH sclae what is p and what is its meaning?

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51. Why there is absorption of energy in certain chemical reactions and release of energy in other reactions?

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52. Where the absorbed energy goes?

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53. Is there any relation to energy and bond formation between atoms?

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54. What could be the reason for the change in reactivity of elements?

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55. What could be the reason for that?

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56. What is specific heat? write the specific heat of copper?

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57. What have you observed about the main groups?

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58. Why do atoms of elements try to combine and form molecules?

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59. Is it accidental that IA to VIIA main group elements during chemical reactions get eight electrons in the outermost shells of their ions, similar to noble gas atoms?

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60. How do cations and anions of an ionic compound exist in its solid state?

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61. Do you think that pairs of Na^+Cl^- as units would be present in the solid crystal?

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62. Which inventions is most important related to micro organisms? Can you explain the reasons, why it is so important?

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63. Can you say what type of bond exists between atoms of nitrogen molecule?

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64. What do you understand from bond lengths and bond energies?

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65. Are the values not different for the bonds between different types of atoms?

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66. What is the bond angle in a molecule?

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67. How is HCl molecule formed?

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68. Explain the formation of ionic compounds NaCl, $MgCl_2$, Na_2O and $AlCl_3$ through Lewis electron dot symbols (formulae).

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69. Lewis electron dot symbol for $MgCl_2$.

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70. Lewis electron dot symbol for (Na_2O).

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71. Lewis electron dot symbol for $(AlCl_3)$.

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72. Draw the structural diagram of Ammonia molecule as per the valence - shell electron pair repulsion theory.

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73. Write the names of any two compounds which have ionic bond.

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74. Show the formation of HCI molecule with Lewis dot structures using the information given below.

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75. Explain, why bonding angle (HOH) in water is $104^{\circ}.31'$ instead of $109^{\circ}.28'$?

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76. Represent each of the following atoms using Lewis notation. Calcium chloride $(CaCl_2)$

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77. Draw the diagram to show the formation of Oxygen molecule by Valence bond theory.

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78. Draw the structure of the methane molecule. Write its bond angle.

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79. Between a neutral atom and its cations which has bigger size ? Why?

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80. Draw the diagram to show the formation of Oxygen molecule by Valence bond theory.

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81. Explain ionic bond with suitable example.

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82. Explain the formation of BF_3 molecule with the help of Valency Bond theory.

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83. Explain the formation of Boron tri-fluoride molecule by Hybridization.

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84. Explain the formation of the following molecules using valence bond theory.N_2 molecule

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85. Covalent bond is formed by

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86. What is octet rule ?

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87. What is bond length? Discuss different factors influencing bond length.

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88. What is chemical bond? When is it formed?

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89. How is a cation formed?

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90. How is an anion formed?

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91. What are the forces present in an ionic bond?

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92. Organic compounds are soluble in

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93. Which compounds exhibit high melting and boiling points?

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94. What is electronic configuration?

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95. Why are molecules more stable than atoms?

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96. Which forces are weaker forces and where are they operative?

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97. Which compounds exhibit low melting and boiling points?

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98. What is ionic linkage?

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99. On which factors do anions depend?

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100. What is VSEPRT?

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101. How do you know the valence of a metal?

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102. How do you know the valence of a non-metal?

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103. When is ionic bond formed between atoms?

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104. Why do atoms combine and form molecules?

Watch Video Solution

105. What factors that effect the formation cation ?

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106. What is 'orbital concept of bond formation'?

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107. Name the bonds present in the molecules

i) $BaCl_2$

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108. Name the bonds present in the molecules

ii) C_2H_4

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109. What is the use of VSEPR theory?

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110. Why a molecule of hydrogen is more stable than the uncombined atoms?

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111. Why ionic compounds are good electrolytes?

Watch Video Solution

112. When is ionic bond formed between atoms?

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113. What is ‘crystal lattice’?

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114. What is 'Lattice energy'?

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115. How many sigma and pi bonds are present in acetylene molecule?

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116. How is a σ (sigma) bond formed?

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117. How is a π (pi) bond formed?

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118. Which type of atoms easily enter into ionic bonding?

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119. What is a polar bond?

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120. What is meant by inter-nuclear axis?

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121. What are multiple bonds?

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122. How many σ and π bonds are in O_2 molecule?

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123. What are Lewis structures?

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124. In case of ionic substances, a more appropriate term is formula weight, rather than 'molecular weight'. Why?

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125. NaCl dissolves in water but not in benzene. Explain.

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126. What are the bond angles in H_2O and NH_3 molecules as per VBT?

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127. Why noble gases (inert gases) are stable?

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128. What is an ion?

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129. Sulphur dioxide is a diamagnetic molecule. Explain.

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130. What are the structures of sodium chloride and calcium chloride crystals?

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131. Write a short note on bond angles.

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132. What is ionisation? Give one example.

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133. What is a coordination number?

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134. Represent the molecule H_2O using Lewis notation.

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135. How can you explain the formation of H_2O molecule using dot structure?

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136. Distinguish between a sigma bond and a pi bond.

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137. Write the difference between ionic bond and covalent bond.

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138. Write a short note on octet rule with example.

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139. Why a large amount of energy is needed to remove an electron from a neutral gaseous neon atom than the energy needed to remove an electron from gaseous sodium atom?

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140. Why there is absorption of energy in certain chemical reactions and release of energy in other reactions?

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141. Electronic configuration of X is 2, 8, 1 and electronic configuration of Y is 2, 8, 7. Explain what type of bond is formed between them.

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142. Why do valency electrons involve in bond formation , than electrons of inner shells ?

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143. Why ionic compounds dissolve in polar solution and covalent compounds dissolve in non-polar solution?

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144. Predict the reasons for low melting point for covalent compounds when compared with ionic compounds.

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145. "Covalent compounds have low melting point". What is the reason for this statement? Explain.

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146. If the electronic configurations of atoms A and B are $1s^2$,$2s^2$, $2p^6$, $3s^2$, $3p^{1'}$ and $1s^2$, $2s^2$, $2p^4$ respectively, then Which atom forms negative ion ?

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147. If the electronic configurations of atoms A and B are $3S^2$, $2S^2$, $2P^6$, $3S^2$, $3P^1$ and $2, 61S^2$, $2P^4$ respectively, then Which atom forms positive ion?

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148. If the electronic configurations of atoms A and B are $1S^2, 2S^2, 2P^6, 3S^2, 3P^1$ and $2s2, 2p63S^2, 3P^4$ respectively, then What is the valency of atom A?

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149. If the electronic configurations of atoms A and B are $1s^2, 2s^2, 2p^6, 3s^2, 3p^{1'}$ and $1s^2, 2s^2, 2p^4$ respectively, then What is the molecular

formula of the compound formed by atoms A and B ?

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150. (i) Write the electron-dot structures for sodium, oxygen and magnesium.

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151. Show in the form of a picture, the formation of Na_2O and MgO.

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152. What is hybridisation?

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153. What are the important characteristic features of hybridisation?

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154. Write about VSEPR theory.

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155. Most important concept of valence bond theory is

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156. Why do valency electrons involve in bond formation , than electrons of inner shells ?

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157. Why do valency electrons involve in bond formation , than electrons of inner shells ?

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158. What is octet rule ?

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159. How do you appreciate role of the 'octet rule' explaining the chemical properties of elements ?

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160. How do you appreciate role of the 'octet rule' explaining the chemical properties of elements ?

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161. What is hybridisation?

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162. Explain the formation of the following molecules using hybridisation : $BeCl_2$.

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163. Explain the formation of the following molecules using hybridisation : BF_3.

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164. Explain sp^2 hybridization with an example.

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165. Ice floats on water because.....

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166. What are the characteristic features of inert gases?

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167. Explain the formation of uni-positive, di-positive and tri-positive ions with examples.

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168. Explain the formation of uni, di, tri negative ions with examples.

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169. What is Kernel, according to Lewis?

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170. Ionic bond is also called

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171. What are the failures of Bohr's model of atom ?

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172. According to VESPRT, the reason for the bond angle 107° 48' in NH_3, is___

A. The attraction between bonding electron pair and lone pair.

B. The repulsion between bonded pair and lone pair electrons.

C. Equal attraction between bonding electron pair and lone pair.

D. More repulsion of bonding electron pair.

Answer:

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173. Number of π bonds in C_2H_4molecule__

A. 1

B. 2

C. 3

D. 4

Answer:

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174. Which of the following compound formed by ionic bond?

A. H_2O

B. NH_3

C. MgO

D. HCl

Answer:

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175. Which is the linear molecule?

A. BF_3

B. $BeCl_2$

C. CH_4

D. NH_3

Answer:

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176. Metal atoms tend to form ___

A. negative ions

B. positive ions

C. covalent bonds

D. metallic bonds

Answer:

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177. If the element can lose an electron readily, they are said to be

A. Electronegative

B. Electropositive

C. Radio action

D. None of these

Answer:

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178. A metal and non-metal element are likely to combine to form ____ bond.

A. Covalent

B. Ionic

C. Dative

D. Polar covalent

Answer:

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179. The formation of a chemical bond is accompanied by

A. Decrease in energy

B. Increase in energy

C. Neither decrease nor increase in energy

D. The repulsion forces overcoming the attraction forces

Answer:

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180. What will be the nature of the bond between Cs and F in CsF ?

A. Ionic

B. Metallic

C. Covalent

D. Coordinate

Answer:

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181. Covalent bond is formed by

A. Electron transfer

B. Electron sharing

C. Electron donation

D. Electron acceptance

Answer:

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182. The number of valency electrons in carbon atom (Z=6) is

A. 0

B. 2

C. 4

D. 6

Answer:

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183. The total number of electrons that take part in forming the bonds in N_2 is

A. 2

B. 4

C. 6

D. 10

Answer:

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184. Except _____ gas all other noble gases have octet in their valence shell.

A. He

B. Ne

C. Ar

D. Kr

Answer:

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185. Covalency of elements expalins about number of ___ formed by atoms.

A. ionic bonds

B. covalent bonds

C. coordinate covalent bonds

D. double bonds

Answer:

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186. VSEPR theory was proposed by _____.

A. 1. Lewis

B. 2. Mulliken

C. 3. Sidgwick and Powell

D. 4. Bohr

Answer:

187. In _____ bonding the valence electrons are shared among all the atoms of the metallic elements.

A. covalent

B. ionoc

C. hybrid

D. triple

Answer:

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188. The chloride ion has a ___ charge.

A. positive

B. negative

C. no charge

D. depends upon reaction

Answer:

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189. Na^+ and Cl^- ions combine together to form an ___ solid.

A. covalent

B. ionic

C. metallic

D. non-metallic

Answer:

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190. Two electronegative elements combines to form a ___ compound

A. covalent

B. ionic

C. dialectic

D. neutral

Answer:

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191. Noble gases exist as individual ___

A. solids

B. molecules

C. atoms

D. gases

Answer:

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192. The chlorine atom can _____ one electron to become a chloride ion.

A. lose

B. gain

C. retain

D. donate

Answer:

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193. Two atoms of nitrogen form a nitrogen molecule by sharing ____ pairs of electrons.

A. one

B. two

C. three

D. four

Answer:

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194. Noble gases are stable because their outermost shells contain___ or____ electrons.

A. 1. 2,6

B. 2. 3, 8

C. 3. 2, 7

D. 4. 2, 8

Answer:

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195. Molecular formula of methane is

A. CH_3

B. CH_4

C. C_2H_4

D. C_2H_6

Answer:

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196. ___overlap is present in H_2

A. End-on-end

B. Side way.

C. No overlap

D. Top-way

Answer:

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197. _____bond cannot exist independently.

A. 1. σ

B. 2. π

C. 3. Single

D. 4. Ionic

Answer:

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198. Oxygen has __ lone pairs of electrons in water molecule.

A. 1, one

B. 2. two

C. 3. three

D. 4. four

Answer:

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199. H_2 molecule has the configuration of the inert gas

A. He

B. H_3O^+

C. H^+

D. OH^-

Answer:

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200. A pi bond is formed by _____ overlap of orbitals.

A. s, p

B. s, d

C. p, d

D. d, f

Answer:

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201. A sigma bond is formed by _____ overlap of orbitals.

A. axial

B. co-axial

C. side-way

D. without overlapping

Answer:

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202. A pi bond is formed by _____ overlap of orbitals.

A. axial

B. latera

C. without overlapping

D. can't form

Answer:

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203. _____ overlap is present in F_2 molecule.

A. s-s

B. s-p

C. p-p

D. p-d

Answer:

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204. N_2 has ___ sigma and ____pi bonds.

A. 1. 1, 2

B. 2. 2, 1

C. 3. 3,1

D. 4. 1, 3 ,

Answer:

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205. In NaCl ionic crystal each Na^+ ion is surrounded by -------- Cl^- ions and each Cl^- ion is surrounded by -------- Na^+ ions.

A. $1.3\ Cl^-$ ions

B. $2.\ 8Cl^-$ ions

C. $3.\ 4Cl^-$ ions

D. $4.\ 6Cl^-$ ions

Answer:

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206. Multiple covalent bonds exists in a molecule of

A. 1. F_2

B. 2. H_2

C. 3. N_2

D. 4. C_2H_6

Answer:

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207. Which of the following is correct order of repulsive interactions ?

A. 1. L.P - L.P $>$ L.P - B.P $>$ B.P - B.P

B. 2. L.P - B.P $>$ L.P - L.P $>$ B.P - B.P

C. 3. B:P- B.P $>$,L.P- B.P $>$ L.P- L.P

D. 4. Any of three depending upon the type of molecule

Answer:

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208. Hybridization produces a set of orbitals which are

A. parallel

B. perpendicular

C. equivalent

D. none

Answer:

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209. In the Lewis dot structures, cross marks or dots represents

A. 1. Valence electrons & Nucleus

B. 2. valence electron

C. 3. Nucleus

D. 4. Kernel

Answer:

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210. The directional nature of covalent bond was introduced by

A. Electron gas theory

B. Electronic theory of valence

C. Electro chemical theory

D. Hybridisation

Answer:

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211. A pi bond is formed by _____ overlap of orbitals.

A. Lateral overlapping of pure orbitals

B. Lateral overlapping of hybrid orbitals

C. End to end overlapping of pure orbitals

D. End to end overlapping of hybrid orbitals

Answer:

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212. The bond angles in : $BeCl_2, BF_3, H_2O$

A. 1. $180^\circ, 109^\circ 28', 104^\circ 31'$.

B. 2. $180^\circ, 120^\circ, 104^\circ 31'$

C. 3. $109^\circ 28', 120^\circ, 180^\circ$ `

D. 4. $104^\circ 31', 109^\circ 28', 120^\circ$

Answer:

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213. Covalent bond is formed by

A. one electron pair

B. two electron pairs

C. three electron pairs

D. none of the above

Answer:

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214. Hybridisation involves:

A. 1. Orbitals of similar energy in the same atom

B. 2. Orbitals of similar energy in different atoms

C. 3. Orbitals of different energies in the same atom

D. 4. Orbitals of different energies in different atoms

Answer:

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215. Ionic bond is formed between IA group and VII A group, because

A. IA group form anion & VII A group form cation

B. IA group form cation & VII A group form anion

C. IA group form cation & VII A group form cation

D. IA group form anion & VII A group form anion

Answer:

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216. How can you explain the formation of NaCl according to kossel concept?

A. Electrons are shared

B. Electrons are transferred from 'Na` to 'Cl'

C. Electrons are transferred from 'Cl` to 'Na'

D. None of the above

Answer:

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217. In sodium chloride crystal the coordination number of Na^+ is

A. 4

B. 6

C. 8

D. 12

Answer:

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218. Bond formed by mutual sharing electrons is called

A. 1. Covalent bond

B. 2. Electrovalent bond

C. 3. Ionic bond

D. 4. Metallic bond

Answer:

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219. Number of electrons given by an atom of element in the formation of covalent bond is equal to:

A. 1. number of valence electrons

B. 2. total number of electrons

C. 3. electrons required to get octet configuration

D. 4. equal to number of atoms in a molecule

Answer:

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220. Which of the following step is not involved in the formation of $MgCl_2$

A. Mg loses electrons

B. Cl gains electrons

C. Mg forms anion

D. Cl forms anion

Answer:

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221. Why is σ - bond stronger than π - bond ?

A. π is formed by end-on-end overlapping

B. σ is formed by lateral overlapping

C. The extent of overlapping is more in σ bond than π bond

D. All the above

Answer:

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222. Electrons in _____ shell are called valence electrons.

A. innermost

B. outermost

C. present in nuclear

D. free

Answer:

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223. Assertion (A): Na-- forms an ionic bond.

Reason (R): Number of valence electrons in sodium is '1'.

A. 1. A and R are true and A is supported by R.

B. 2. A and R are true but A is not supported by R.

C. 3. A is true but R is false

D. 4. A-is false but R is true

Answer:

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224. Statement (A) : Group IIA elements try to lose two valence electrons from their atoms during chemical change.Statement (B) : Group VII A elements try to lose two valence electrons from their atom during the chemical change.

A. A and B are true

B. A and B are false

C. A is true but B is false

D. A is false but B is true

Answer:

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225. Assertion (A): Helium is noble gas.

Reason (R) : Any species (atoms or ion)with eight electrons in the valence shell is stable.

A. 1. A and R are correct and R is the correct explanation of A.

B. 2. A and R are correct but R is not the correct explanation of A.

C. 3. A is correct but R is incorrect

D. 4. A is incorrect but R is correct

Answer:

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226. Active elements : Group I :: Inactive. elements:__

A. Group 17

B. Group 18

C. Group 2

D. Group 16

Answer:

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227. Group IA elements : Ionic bond : Group VII A elements : ___

A. ionic bond

B. covalent bond

C. both A & B

D. neither A nor B

Answer:

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228. Nacl : ionic bond : : HCL: __

A. ionic bond

B. covalent bond

C. both A & B

D. neither A nor B

Answer:

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229. 11_Na is: __ but _ $12Mg$: di-positive ion

A. 1. unipositive ion

B. 2. di-positive ion

C. 3. tri-positive ion

D. 4. noble ion

Answer:

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230. P: Kernel is the nucleus and all other electrons in the atom except the outer most shell electrons. Q Valency is the outermost shell.

A. P and Q are true

B. P and Q are false

C. P is true but Q is false

D. P is false but Q is true

Answer:

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231. Statement (P) : Ionic bond is formed between atoms of two dissimilar elements. Statement (Q): Covalent bond is formed

between atoms of two similar or dissimilar elements.

A. P and Q are true

B. P and Q are false

C. P is true but Q is false

D. P is false but Q is true

Answer:

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232. Highly reactive metals : alkali metals:: Highly reactive non-metals : __

A. 1. Noble gases

B. 2. Carbon family

C. 3. Halogen family

D. 4. Chalcogen family

Answer:

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233. P: $11Na \rightarrow Na^{+} + e^{-}$. Q : $11Na + e^{-} \rightarrow Na^{+}$

A. P and Q are true

B. P and Q are false

C. P is true but Q is false

D. P is false but Q is true

Answer:

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234. a: Mg^2+ $2Cl^-$ $\rightarrow$ $MgCl_2$. b: 2 Cl+ $2e^-$ $\rightarrow$ 2 Cl^- . c: Mg $\rightarrow$ Mg^{+2} + $2e^-$ Correct order of formation of the ionic bond is

A. a $\rightarrow$ b $\rightarrow$ c

B. b $\rightarrow$ c $\rightarrow$ a

C. c $\rightarrow$ b $\rightarrow$ a

D. b $\rightarrow$ a $\rightarrow$ c

Answer:

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235. Which one is not an example of covalent bond ?

A. 1. $MgCl_2$

B. 2. AlF_3

C. 3. Na_2O

D. 4. All the above

Answer:

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236. P: Electronic configurations of Na^+ and Ne are same. Q : Electronic configurations of O^- andNe are same.

A. P and are true

B. P and Q are false

C. P is true but Q is false

D. P is false but Q is true

Answer:

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237. Assertion (A): It is not possible for one Na^+ to be attracted by one Cl^- and vice - versa in NaCl.

Reason (R) : Electrostatic forces are non-directional.

A. 1. A and R are true and A is supported by R.

B. 2. A and R are true A is not supported by R.

C. 3. A is true but R is false.

D. 4. A is false but R is true.

Answer:

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238. Assertion (A): Mg and Na forms cations.Reason (R) : Tendency of gaining electrons is called the electronegativity.

A. A and R are true and A is supported by R

.

B. A and R are true but A is not supported by R.

C. A is true but R is false.

D. A is false but R is true.

Answer:

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239. Transfer of sharing of electrons by an atom results in the formation of .....between the atoms.

A. Ionic bond

B. Covalent bond

C. Polar covalent bond

D. Hybridization

Answer:

240. Which of the following is wrong ? i) O requires two more electrons to get octet in its

valence shell. ii) There exist one covalent bond in O_2, molecule.

A. i

B. ii

C. i & ii

D. None

Answer:

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241. What is the maximum covalency of oxygen ? Give examples.

A. A and R are true and A is supported by R .

B. A and R are true b A is not supported by R.

C. A is true but R is false.

D. A is false but R is true.

Answer:

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242. 1 nano metre : 10^{-9}metre : : 1angstrom : ..... metre.

A. 10^{-8} metre

B. 10^{-9} metre

C. 10^{-10}metre

D. 10^{-12} metre

Answer:

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243. P: Electronic theory of valence did not explained the shapes of the molecules.

Q: VSEPR Theory explained the shapes of the molecules.

A. 1. P and Q are true

B. 2. P and Q are false

C. 3. P is true but Q is false

D. 4. P is false but Q is true

Answer:

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244. Assertion (A) : $BeCl_2$, molecule is linear in shape.Reason (R) : $BeCl_2$, has one electrons lone pair.

A. A and Rare true and A is supported by R.

B. A and R are true but A is not supported by R.

C. A is true but R is false.

D. A is false but R is true is false

Answer:

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245. i) $BeCl_2$, has no lone pair of electrons. ii) NH_3 has one lone pair of electrons. iii)H_2O has two lone pair of electrons. Which one is correct statement ?

A. i

B. ii

C. iii

D. i, ii and iii

Answer:

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246. Which of the following is not correct regarding bond energies

A. i

B. ii

C. iii

D. i & ii

Answer:

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247. Assertion (A) : $_4Be$ does not form covalent bonds.

Reason (R): Electronic configuration of Be is $1s^2\ 2s^2$ and it has no unpaired electrons.

A. 1. A and R are true and A is supported by R.

B. 2. A and R are true but A is not supported by R.

C. 3. A is true but R is false.

D. 4. A is false but R is true.

Answer:

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248. Assertion (A): The bond angle in HOH (H_2O) decreases from $109^\circ 28'$ to $104^\circ 31'$.

Reason (R) : H_2O has lone pair - lone pair repulsion and lone pair - bond pair repulsion.

A. 1. A and R are true and A is supported by R.

B. 2. A and R are true but A is not supported by R.

C. 3. A is true but R is false.

D. 4. A is false but R is true.

Answer:

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249. Why do ionic compounds have high melting points?

A. A and R are true and A is supported by R.

B. A and R are true but A is not supported by R.

C. A is true but R is false.

D. A is false but R is true.

Answer:

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250. Which of the following statements are correct ?

i) The forces of attractions among covalent molecules are strong.

ii) Covalent compounds are solids in the room temperature.

iii)Covalent compounds have high melting points and high boiling points.

A. 1. i

B. 2. ii

C. 3. i, ii & ii

D. 4. None

Answer:

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251. "Like dissolves in like." This means:

a) Covalent compounds dissolves in covalent compounds.

b) Covalent compounds dissolves in ionic compounds.

c) Ionic compounds dissolves in ionic compounds.

A. a

B. b

C. c

D. a & c

Answer:

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252. Guess the atom with single valency and it can form ionic bond with chlorine.

A. Oxygen

B. Sodium

C. Carbon

D. Hydrogen

Answer:

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253. Guess the atom with two valence electrons and it does not form any bond with other atoms.

A. Oxygen

B. Sodium

C. Carbon

D. Helium

Answer:

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254. By losing an electron a neutral sodium atom becomes:

A. i

B. i, ii & iii

C. ii & iii

D. None

Answer:

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255. Which of the following can gain 2 electrons ?

A. P

B. S

C. Cl

D. Above all

Answer:

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256. What happens if a chlorine atom attracts a sodium atom ?i) They form ionic bond.ii) They form covalent bond.

A. i

B. ii

C. i & ii

D. None

Answer:

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257. Predict the atom which can loss three electrons

A. Na

B. Mg

C. Al

D. Ar

Answer:

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258. If there is no lone pair electrons in H_2O molecule, the angle of H_2O is

A. $104^\circ 31'$

B. $107^{\circ} 48'$

C. 180°

D. $109^{\circ} 28'$

Answer:

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259. 0_2: Double bond ::___ :triple bond.

A. H_2

B. Cl_2

C. Br_2

D. N_2

Answer:

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260. The compound which contains both ionic and covalent bonds is

A. Na

B. Mg

C. Ca

D. Cl

Answer:

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261. Nacl : ionic :: ____:covalent.

A. C_2H_6

B. Cl_2

C. CH_4

D. Any one of the above

Answer:

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262. The electronic configuration of metal 'M' is $1s^2 2s^2 2p^6 3s^2\ 3p^6\ 4s^1$ and non- metal X is $1s^2\ 2s^2 2p^6 3s^2 3p^5$. The formula of ionic compound formed between these two elements is

A. MX

B. M_2X

C. MX_2

D. M_3X_2

Answer:

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263. When sodium reacts with chlorine.

A. each sodium atom gains one electron

B. each chlorine atom loses one electron

C. a covalent bond is formed

D. the compound formed is a solid

Answer:

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264. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be

A. Calcium

B. Sulphur

C. Silicon

D. Arsenic

Answer:

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265. If the formula of carbonate of a metal M is M_2CO_3 then the formula of its chloride is ____

A. M_2Cl

B. MCl_2

C. $M(Cl_2)_2$

D. MCI

Answer:

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266. The charge on a cation 'M' is +2 and anion 'A' is -3. The compound formed has the formula

A. MA_2

B. M_3A_2

C. M_2A_3

D. M_2A

Answer:

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267. X --- $\rightarrow$ 2, 8, 1 and X^+ --- $\rightarrow$ 2, 8. The 'X' can form___bond.

A. 1. Covalent

B. 2. Ionic

C. 3. Polar-covalent

D. 4. 1 or 2

Answer:

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268. Valencies of the elements of the group IA, IIA, VIIA and VIII A are____ respectively.

A. 1, 2, 7, 8

B. 1, 2, 1,0

C. 1, 2, 7,0

D. 1, 2, 3, 4

Answer:

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269. Na, Mg, Al, N, O, F, Ne are given. Which one is more stable ?

A. 1. Na

B. 2. N

C. 3. Ne

D. 4. Mg

Answer:

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270. _ $15P$= 2, 8, 5, _ $16S$ = 2, 8, 6, _ $17Cl$= 2, 8, 7.Which of the above atoms can form 2 - negative anion ?

A. _ $15P$

B. _ $16S$

C. _ $17Cl$

D. Above all

Answer:

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271. An electronic configuration of an atom is 2, 8, 7. The valency of the atom is __

A. 7

B. 2

C. 8

D. 1

Answer:

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272. Which one is different among ?i) Nacl, ii) $MgCl_2$, iii)HCl, iv)Na_2O

A. i

B. ii

C. iii

D. iv

Answer:

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273. Which of the following can form cations ?

i)$11Na$ ii) $15P$ iii)$13Al$ iv)$17Cl$

A. i, iii

B. ii,iv

C. i, ii, iii

D. ii, iii, iv

Answer:

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274. Ne' configuration among the given : i) Cl^- ,ii) Mg^{2+} ,iii)O^{2-}

A. i

B. ii

C. iii

D. ii & iii

Answer:

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275. Component ions in the compound $AlCl_3$ are

A. $Al^{+}, Cl^{3} -$

B. Al^{-}, Cl^{-}

C. $Al^{3} +, Cl^{-}$

D. $Al^{3} +, Cl^{+}$

Answer:

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276. In sodium chloride crystal the coordination number of Na^{+} is

A. 1

B. 6

C. 4

D. 3

Answer:

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277. Bond energies of F-F = 159 KJ/mol.H-F = 570 KJ/mol.H-Cl = 432 KJ/mol.Which of the following bond can dissociate easily ?

A. F -F

B. H-F

C. H-CI

D. Above all

Answer:

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278. Which of the following molecules show lone pair of electrons?

A. $BeCl_2$

B. BF_3

C. H_2O

D. Above all

Answer:

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279. Boiling points of X, Y and Z are 1413°C, -84.9°C and -88.63°c respectively. which of the following is an ionic compound ?

A. X

B. X

C. Z

D. Y and Z

Answer:

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280. Which of the following is a polar molecule

A. i

B. ii

C. iii

D. ii and iii

Answer:

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281. Sodium atoms and sodium ions

A. are chemically the same

B. have the same number of protons

C. have an identical number of electrons

D. form covalent bonds

Answer:

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282. Which of the following can lose two electrons to attain the configuration of argon?

A. Mg

B. Br

C. Ca

D. S

Answer:

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283. Which of the following has largest bond angle?

A. H_2O

B. NH_3

C. CH_4

D. CO_2

Answer:

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284. Which of the following is an ionic compound?

A. CO_2

B. HCl

C. H_2O

D. CaO

Answer:

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285. The electron covalent linkage is not in the compound

A. O_2

B. $\mathbb{C}l_4$

C. $CHCl_3$

D. $MgCl_2$

Answer:

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286. Which of the following is the most reactive ?

A. F

B. Cl

C. Br

D. I

Answer:

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287. Which of the following compound is covalent ?

A. H_2O

B. CaO

C. KCl

D. Na_2s

Answer:

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288. Which contain covalent and ionic compounds ?

A. CH_4

B. KCN

C. $CaCl_2$

D. H_2O

Answer:

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289. Which of the following property is commonly exhibited by a covalent compound ?

A. high solubility in water

B. low melting point

C. high electrical conductance

D. high boiling point

Answer:

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290. Which of the following molecules does not have a linear arrangement of atoms ?

A. Cl_2

B. H_2O

C. $BeCl_2$

D. CO_2

Answer:

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291. Which of the following is correct for ionic compound ?

A. Ionic compounds are conductors in solid state

B. They are soluble in non-polar solvents

C. They conducts electricity molten state

D. Ionic bond is directional

Answer:

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292. Which of the following orbitals are overlapped to form covalent bond?

A. Half-filled orbitals with same spin

B. Half-filled orbitals with opposite spin

C. Filled orbitals with same spin

D. Filled orbitals with opposite spin

Answer:

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293. The electronic configuration of four elements L, P, Q and R are given below.

L- $1s^2 2s^2 2p^4$

P- $1s^2 2s^2 2p^6 3s^1$

Q- $1^2 2s^2 2p^6 3s^2 3p^5$

R- $1s^2 2s^2 2p^6 3s^2$.

Which of the following are correct compounds formed by these elements?

A. 1. L_2P, RL, PQ, R_2Q

B. 2. LP, RL, PQ, RQ

C. 3. P_2L, RL, PQ, RQ_2

D. 4. LP, R_2L, P_2Q, RQ

Answer:

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294. Which of the following element lose one electron to get octet configura tion?

A. K

B. Ca

C. Mg

D. O

Answer:

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295. Which of the following is a property of ionic compounds?

A. 1. Have high M.P and. B.P's

B. 2. Non-directional bond

C. 3. Electric conductivity in molten state

D. 4. All the above

Answer:

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296. Which of the following compound has different bond ?

A. 1. $NaCl$

B. 2. Na_2O

C. 3. H_2O

D. 4.CaO

Answer:

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297. Electronic theory of valencies' is appreciable because, _____

i) it explains formation of an ionic bond

ii) it explains formation of a covalent bond.

A. 1. i

B. 2. ii

C. 3. Both i & ii

D. 4. Neither i nor ii

Answer:

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298. Valence shell electron pair repulsion theory (VSEPRT) is appreciable because.___

i) it successfully explained the bond angles in H_2O,NH_3, $BeCl_2$

ii) it successfully explained the strengths of the bonds.

A. 1. i

B. 2. ii

C. 3. Both i & ii

D. 4. Neither i nor ii

Answer:

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299. Linus Pauling is appreciable scientist, because:

i) he proposed a phenomenon called 'hybridisation' of atomic orbitals.

ii) he proposed a valence bond theory.

A. 1. i

B. 2. ii

C. 3. Both i & ii

D. 4. Neither i nor ii

Answer:

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300. Acrylic paints are soluble in:

a) polar solvents

b) non-polar solvents

A. 1. a

B. 2. b

C. 3. a or b

D. 4. None

Answer:

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301. The polar solvent available in your home is

A. 1. Kerosene

B. 2. Oil paint

C. 3. Water

D. 4. Benzene

Answer:

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302. Crystalline substance in your kitchen is ___

A. NaCl

B. Na_2CO_3

C. $NaHCO_3$

D. Above all

Answer: