



CHEMISTRY

BOOKS - NAVNEET PUBLICATION

MEASUREMENT OF MATTER

Examples

1. What is the Dalton's atomic theory?



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2. How are the compounds formed?



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3. What are the molecular formulae of salt, slaked lime, water, lime, lime stone?



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4. Which discovery did point out that an atom has internal structure ?



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5. What are the two parts of an atom? What are they made up of?



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6. Is it possible to weigh one molecule using a weights of different substances?



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7. Will the number of molecules be the same in equal weights of different substances?



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8. If we want equal numbers of molecules of different substances, will it work to take equal weights those substances?



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9. Determine the valencies of H, Cl, O and Na from the molecular formulae H_2 , HCl, H_2O and NaCl.



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10. What is the type of chemical bond in NaCl and $MgCl_2$.



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1. Fill in the blanks:

Atomic radius is expressed in.....



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2. Fill in the blanks:

The unit of atomic mass is called.....



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3. Fill in the blanks:

Positively charged ions are called.....



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4. Fill in the blanks:

The sum of the number ofand.....in the nucleus of the atom is called the atomic mass number.



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5. Fill in the blanks:

One mole of any substance always contains
.....molecules.



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6. Fill in the blanks:

There is no....orin the weight of the matter
during a chemical reaction.'



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7. Fill in the blanks:

The proportion by.....of the constituent elements in the various samples of a compound is fixed.



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8. Fill in the blanks:

The capacity of an element to combines is called its.....



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9. Fill in the blanks:

The number 6.022×10^{23} is called.....



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10. Fill in the blanks:

The electronic configuration of an element is (2, 5). Hence, its valency is.....



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11. Fill in the blanks:

The molecular formula of potassium sulphate is



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12. Fill in the blanks:

The electronic configuration of an element is (2, 4). Hence, its valency is.



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13. Choose the correct alternative and write it along with its allotted alphabet:

.....is a simple radical.



Answer: D



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14. Choose the correct alternative and write it along with its allotted alphabet:

.....is a positively charged composite radical.

A. sulphate

B. Carbonate

C. Nitrate

D. Ammonium

Answer: D



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15. Choose the correct alternative and write it along with its allotted alphabet:

Copper Hydroxide is a

- A. diacidic base
- B. monobasic acid
- C. dibasic acid
- D. monoacidic base

Answer: A



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16. Choose the correct alternative and write it along with its allotted alphabet:

Phosphoric acid is a

- A. diacidic acid
- B. tribasic acid
- C. diacidic base
- D. triacidoc base

Answer: B



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17. Choose the correct alternative and write it along with its allotted alphabet:

.....is a composite radical.



Answer: A



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18. Choose the correct alternative and write it along with its allotted alphabet:

In a chemical reaction the total weight of the reactants isthe total weight of the product formed due to the chemical reactions.

A. more than

B. less than

C. double

D. the same as

Answer: D



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19. Choose the correct alternative and write it along with its allotted alphabet:

The elements present in sodium sulphate are.....,.....and.....

A. sodium, sulphur and hydrogen

B. carbon, sulphur and hydrogen

C. sodium, sulphur and oxygen

D. carbon, sulphur and oxygen

Answer: C



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20. State whether the following statements are True or False:

Matter is neither gained nor lost during a chemical reaction.



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21. State whether the following statements are

True or False:

In a compound, the elements are always present in different proportions by weight.



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22. State whether the following statements

are True or False:

The proportion of carbon and oxygen by weight in carbon dioxide is 3: 6.





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23. State whether the following statements are True or False:

The molecular mass of a substance is the sum of the atomic masses of all the atoms in its molecule.



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24. State whether the following statements are True or False:

The number 6.022×10^{22} is called Avagadro's number.



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25. State whether the following statements are True or False:

The mass of an atom of hydrogen is the average relative mass of the atom as compared to $\frac{1}{12}$ th the mass of one carbon atom.



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26. State whether the following statements are True or False:

In ammonia, the valency of nitrogen is 5.



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27. State whether the following statements are True or False:

Neon is chemically active.



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28. State whether the following statements are True or False:

Two or more elements combine to form a compound.



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29. State whether the following statements are True or False:

The combining capacity of an element is known as its valency.





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30. State whether the following statements are True or False:

The method of chemical symbols is based on the method invented by Berzelius.



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31. State whether the following statements are True or False:

Iron (Fe) exhibits the variable valencies 2 and 4.



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32. State whether the following statements are True or False:

Carbinate ion is a composite radical.



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33. State whether the following statements are True or False:

Sulphate ion is a negatively charged simple radical.



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34. State whether the following statements are True or False:

The magnitude of charge on any radical is its valency.





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35. Consider the relation between the items in the first pair and write the correlation:

Calcium:Ca:: Cadmium:.....



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36. Consider the relation between the items in the first pair and write the correlation:

Valency of C:.....:Valency of N : 3.



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37. Consider the relation between the items in the first pair and write the correlation:

Aluminium chloride: $AlCl_3$:: Sodium phosphate:.....



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38. Consider the relation between the items in the first pair and write the correlation:

Na^+ : Monoatomic ion :: PO_4^{3-} :.....



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39. Define Symbol of an element.



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40. Define Mole explaining mole concept.



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41. State the laws/ Define

valency



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42. Define Variable valency.



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43. Define Radicals.



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44. Answer the following questions:

State law of conservation of matter.



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45. Answer the following questions:

State the law of constant proportion. Give illustration.



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46. Answer the following questions:

Two samples 'm' and 'n' of slaked lime were obtained from two different reactions. The details about their composition are as follows:

'Sample m' mass: 7g

Mass of constituent oxygen: 2g

Mass of constituent calcium :5g

'sample n' mass: 1.4g

Mass of constituent oxygen: 0.4

Mass of constituent calcium : 1.0g

Which law of chemical combination does this prove ? Explain.



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47. Answer the following questions:

How is the size of an atom determined?



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48. Answer the following questions:

What is meant of atomic radius?



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49. Answer the following questions:

What are nucleons?



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50. Answer the following questions:

The magnesium atom is smaller than the sodium atom. Explain.



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51. Answer the following questions:

What is meant by Unified Atomic mass unit?



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52. Answer the following questions:

Name two elements having independent existence.



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53. Answer the following questions:

What is meant by symbol of an element?



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54. How is an element represented in Chemistry?



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55. Write down the symbols of the elements you know.



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56. Write down the symbols for the following elements : antimony, iron, gold, silver, mercury, lead, sodium.



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57. Answer the following questions:

What is meant by a molecule?



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58. Answer the following questions:

What is meant by molecular mass?



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59. Answer the following questions:

Explain with examples what is meant by a mole of a substance.



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60. Answer the following questions:

What do you mean by Avogadro's number (Avogadro constant).



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61. Answer the following questions:

Write a short note on Avagadro's number (Avagadro constant).



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62. Answer the following questions:

Explain the term valency with suitable examples.



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63. Answer the following questions:

What is meant by valency electron?



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64. Answer the following questions:

Write the valency of the following

Hydrogen



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65. Answer the following questions:

Write the valency of the following

Sodium



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66. Answer the following questions:

Write the valencie of the following

Carbon



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67. Answer the following questions:

Write the valency of the following

Nitrogen



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68. Answer the following questions:

Write the valency of the following

Oxygen



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69. Answer the following questions:

Write the valency of the following

Neon



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70. Answer the following questions:

Write the valency of the following

Aluminium



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71. Answer the following questions:

Write the valencie of the following

Chlorine



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72. Answer the following questions:

Write the valencie of the following

Calcium



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73. Answer the following questions:

Write the valence of the following

Magnesium



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74. Answer the following questions:

Explain why some elements are bivalent.



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75. Answer the following questions:

State the valency of copper in copper sulphate

($CuSO_4$).



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76. Answer the following questions:

State the valency of nitrate in silver nitrate

($AgNO_3$)



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77. Answer the following questions:

Explain how the element sodium is monovalent.



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78. Answer the following questions in one sentence each :

How many electrons could there be in the outermost orbit of an element whose valency is 3 ?



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79. Answer the following questions:

Which group elements have seven electrons in the outermost shell?



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80. Answer the following questions:

Name three composite radicals with valency one.



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81. Answer the following questions:

Name two composite radicals with valency two.



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82. How will the compounds, $MgCl_2$ and CaO be formed from their elements?



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83. Answer the following questions:

Name the element with variable valency and its compounds.



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84. Answer the following questions :

State the units of heat.



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85. Answer the following questions:

Write a short note on radicals.



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86. Answer the following questions:

Write symbols of the following elements and the radicals obtained from them, indicate the charge on the radicals.

Mercury, potassium, nitrogen, copper, sulphur, carbon, chloride, oxygen.





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87. Answer the following questions:

Give examples:

Positive ions



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88. Give two examples.

Basic radicals



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89. Give two examples.

Composite radicals



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90. Give two examples.

Metals with variable valency



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91. Give examples.

Bivalent acidic radicals



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92. Give examples.

Trivalent basic radicals



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93. Give the scientific reasons:

The valency of oxygen is 2.



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94. Give the scientific reasons:

The valency of carbon is 4.



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95. Give the scientific reasons:

The valency of neon is zero.

Neon is a chemically inert element.



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96. Solve the examples

Following are atomic masses of a few elements in Daltons and the molecular formulae of some compounds. Deduce the molecular masses of those compounds.

Molecular formulae:



(Atomic masses: H=1, O=16, N=14, C=12, Na=23,
Cl=35.5, K=39, Mg=24, Al=27, Ca=40, P=31, S=32)



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97. Solve the examples

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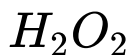


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101. Solve the examples

Following are atomic masses of a few elements in Daltons and the molecular formulae of some compounds. Deduce the molecular masses of those compounds.

Molecular formulae:

NaOH.

(Atomic masses: H=1, O=16, N=14, C=12, Na=23,
Cl=35.5, K=39, Mg=24, Al=27, Ca=40, P=31, S=32)

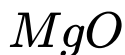


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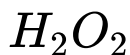


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104. Solve the examples

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105. Solve the examples

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Molecular formulae:



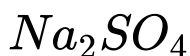
(Atomic masses: H=1, O=16, N=14, C=12, Na=23,
Cl=35.5, K=39, Mg=24, Al=27, Ca=40, P=31, S=32)



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106. Solve the examples

Write the names of the following compounds
and deduce their molecular masses.



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107. Solve the examples

Write the names of the following compounds
and deduce their molecular masses.



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108. Solve the examples

Write the names of the following compounds
and deduce their molecular masses.





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109. Solve the examples

Write the names of the following compounds and deduce their molecular masses.



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110. Solve the examples

Write the names of the following compounds

and deduce their molecular masses.



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111. Solve the examples

Write the names of the following compounds
and deduce their molecular masses.



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112. Solve the following examples:

12 grams of carbib contains 1 mole of carbon atoms. What is the mass of one atom of carbon?



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113. Solve the following examples:

How many molecules of water are there in 1 g of wate (H_2O) ?



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114. Solve the following examples:

What is the mass in grams of 0.4 mole of carbon dioxide (CO_2) ?



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115. Solve the following examples:

If 0.2 mol of the following substances are required how many grams of those substances should be taken?

Sodium chloride



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116. Solve the following examples:

If 0.2 mol of the following substances are required how many grams of those substances should be taken?

Magnesium oxide



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117. If 0.2 mol of the following substances are required how many grams of those substances should be taken?

Sodium chloride, magnesium oxide, calcium carbonate



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118. Deduce the number of molecules in the compound in the given quantity. 32g of oxygen.





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119. Solve the following examples:

Deduce the number of molecules of the following compounds in the given quantities:

90 g water



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120. Solve the following examples:

Deduce the number of molecules of the

following compounds in the given quantities:

8.8 g carbon dioxide



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121. Solve the following examples:

Deduce the number of molecules of the following compounds in the given quantities:

7.1 g chlorine



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122. Calculate the number of atoms in FCC



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123. Solve the following examples:

Calculate the number of moles in the following:

46 grams of sodium



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124. Solve the following examples:

Calculate the number of moles in the following:

0.5 gram of hydrogen.



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125. Solve the following examples:

Calculate the following :

The mass of 0.2 mole of water.



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126. Solve the following examples:

Calculate the following :

The mass of 0.2 mole of water.



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127. Solve the following examples:

Calculate the following :

The number of atoms of 2.5 moles of sodium



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128. Solve the following examples:

Calculate the following :

The number of atoms of 2.5 moles of sodium



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129. Solve the following examples:

Calculate the following :

Mass of 2.4×10^{24} atoms of iron.



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130. Solve the following examples:

Calculate the following :

Mass of 2.4×10^{24} atoms of iron.



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131. How many molecules of water are there in

36g water?



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132. How many molecules of H_2SO_4 are there in a 49g sample?



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133. Calculate the number of moles in the following:

36 grams of water



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134. Calculate the number of moles in the following:

68 grams of ammonia.



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135. Calculate the mass of the following:

Mass of 0.4 mole of water.



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136. Calculate the number of moles in the following:

Mass of 3.5 g of hydrogen



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137. Calculate the following:

Atom in 3.5 moles of hydrogen



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138. Calculate the following:

Atoms of 2 moles of calcium.



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139. Calculate the number of moles in the following:

Mole of 3.2×10^{24} atoms of calcium



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140. Calculate the number of moles in the following:

Mole of 3.2×10^{24} atoms of calcium



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141. Write the steps in deducing the chemical formulae of the following compounds.

Sodium sulphate, potassium nitrate, ferric phosphate, calcium oxide, aluminium hydroxide





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142. Write the steps of deduce the chemical formula of the following compounds:

Potassium hydroxide



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143. Write the steps in deducing the chemical formulae of the following compounds.

Sodium sulphate, potassium nitrate, ferric

phosphate, calcium oxide, aluminium
hydroxide



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144. Write the steps in deducing the chemical formulae of the following compounds.

Sodium sulphate, potassium nitrate, ferric
phosphate, calcium oxide, aluminium
hydroxide



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145. Write the steps in deducing the chemical formulae of the following compounds.

Sodium sulphate, potassium nitrate, ferric phosphate, calcium oxide, aluminium hydroxide



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146. Write the steps of deduce the chemical formula of the following compounds:

Magnesium chloride



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147. Write the steps of deduce the chemical formula of the following compounds:

Silver nitrate



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148. Write the steps of deduce the chemical formula of the following compounds:

Potassium hydroxide



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149. Write the steps of deduce the chemical formula of the following compounds:

Ammonium sulphate



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150. Write the steps of deduce the chemical formula of the following compounds:

Sodium phosphate



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151. Write the steps of deduce the chemical formula of the following compounds:

Aluminium chloride.



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152. M is a bivalent metal. Write down the steps to find the chemical formulae of its compounds formed with the radicals sulphate and phosphate.



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153. Write the steps to deduce the chemical formulae of the following compounds:

Calcium carbonate



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154. Write the steps of deduce the chemical formula of the following compounds:

Sodium phosphate



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155. Write the steps to deduce the chemical formulae of the following compounds:

Silver chloride



Watch Video Solution

156. Write the steps to deduce the chemical formulae of the following compounds:

calcium hydroxide



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157. Write the steps to deduce the chemical formulae of the following compounds:

magnesium oxide



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158. Write the steps to deduce the chemical formulae of the following compounds:

Ammonium phosphate



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159. Write the steps to deduce the chemical formulae of the following compounds:

Cuprous bromide



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160. Write the steps to deduce the chemical formulae of the following compounds:

Copper sulphate



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161. Write the steps to deduce the chemical formulae of the following compounds:

Sodium dichromate.



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162. The formula of sodium chloride is $NaCl$ while that of zinc chloride is $ZnCl_2$. Why is it so?



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163. Complete the following table:

The relative atomic masses of some elements in the chart below are given. You have to find the relative atomic masses of the others.

| Elements | Atomic mass | Elements | Atomic mass | Elements | Atomic mass |
|-----------|-------------|-----------|-------------|------------|-------------|
| Hydrogen | 1 | Oxygen | - | Phosphorus | - |
| Helium | 4 | Fluorine | 19 | Sulphur | 32 |
| Lithium | 7 | Neon | 20 | Chlorine | 35.5 |
| Beryllium | 9 | Sodium | - | Argon | - |
| Boron | 11 | Magnesium | 24 | Potassium | - |
| Carbon | 12 | Aluminium | - | Calcium | 40 |
| Nitrogen | 14 | Silicon | 28 | | |



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164. Complete the following table:

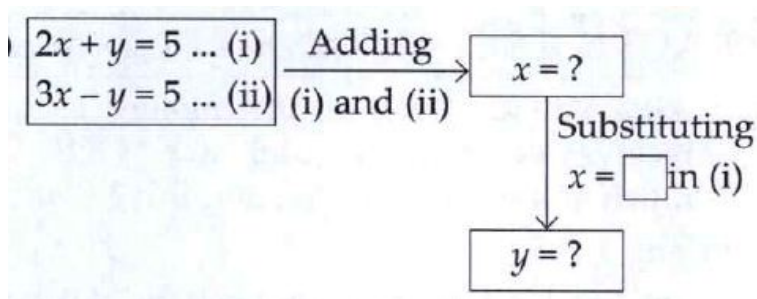
Make a list of elements in the mono-atomic

and in the di-atomic molecular state.



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165.



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166. Complete the following table:

Complete the following chart:

| Elements | Atomic number | Electron configuration | Valence electrons | Valency |
|-----------|---------------|------------------------|-------------------|---------|
| Hydrogen | 1 | 1 | 1 | 1 |
| Helium | 2 | 2 | 2 | 0 |
| Lithium | - | 2, 1 | - | - |
| Beryllium | 4 | - | - | 2 |
| Boron | 5 | 2, 3 | - | - |
| Carbon | - | 2, 4 | 4 | - |
| Nitrogen | 7 | - | - | 3 |

| | | | | |
|-----------|----|---------|---|---|
| Oxygen | - | 2, 6 | 6 | - |
| Fluorine | 9 | - | 7 | - |
| Neon | 0 | - | - | - |
| Sodium | - | 2, 8, 1 | 1 | 1 |
| Magnesium | 12 | - | 2 | - |
| Aluminium | 13 | 2, 8, 3 | - | - |
| Silicon | 14 | - | 4 | - |



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