01.04.2020

Senior School, Gulshan

Class- VIII

Worksheet 1 on Atomic Structure and Elements, compounds and mixtures

1. The list gives the names of some methods used in the separation of mixtures:

   A chromatography

   B crystallisation

   C distillation

   D filtration

   Use names from the list to choose a suitable method for each separation.

   Each name may be used once, more than once or not at all.

   (i) Separating water from sodium chloride solution.

   (ii) Separating the blue dye from a mixture of blue and red dyes.

   (iii) Separating potassium nitrate from potassium nitrate solution.

2. This question is about the structure of an atom.
   a) Draw the structure of an atom with atomic number 3 and neutron number 2.
   b) Name the central part of an atom.
   c) Name the positively charged particle in an atom.
   d) How does your diagram to (a) shows that the atom is neutral.
   e) Give the mass number of this atom.
   f) Identify the atom using the periodic table.

3. With the help of a diagram explain how you would separate ethanol from a mixture of water and ethanol.

4. Carbon is found in three stable states: ^{12} C, ^{13}C and ^{14}C.
   a) What is the difference between these three forms of carbon?
   b) What are they commonly called?

05.04.2020

Senior School, Gulshan

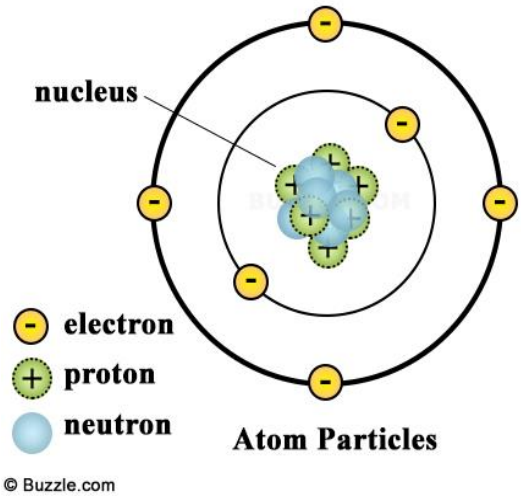
Class- VIII

Worksheet 2 on Atomic Structure and the Periodic Table

1. A naturally occurring sample of the element boron contains 20% ^{10}B and 80% ^{11}B. Calculate the relative atomic mass.

2. What do you understand by the term nucleon number?

3. The diagram shows the atomic structure of an element.



a) Explain with reason
   I) The group number of the element.
   II) The period number of the element.
b) How many valence electrons do the atom has?
c) What is an energy level and how many energy levels does the atom have?
d) Using the periodic table, identify the element and hence, or otherwise, state the number of protons, neutrons and electrons that the element has.

4. Helium, Neon and Argon are all found in the last group of the periodic table. They are in Group 8 also known as Group O elements.
   a) Write down the electronic configuration of a neon atom.
   b) What are these elements commonly called?
   c) Using your answer to part (a) explain they are unreactive?

5. Give four properties of the non-metals.
6. What do you mean by malleable and ductile?

09.04.2020

Senior School, Gulshan

Class- VIII

Worksheet 3 on The Alkali Metals

1. Litium, sodium and potassium are all members of the alkali metals.

a) Why do these elements belong to the same group in the periodic table?

b) Why are they called the alkali metals?

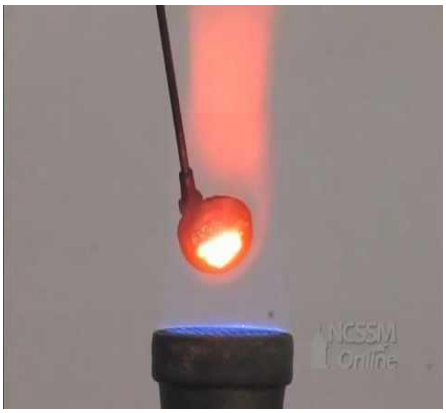
c) Draw the atomic structure of lithium.

d) How are these metals stored?

e) Write down the properties of the group 1 elements.

f)

2. The diagram shows the reaction of lithium with oxygen when heated.

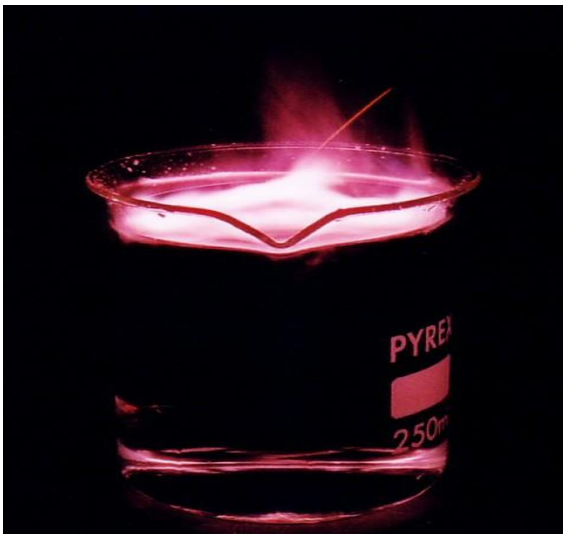


a) Write a balanced chemical equation for this reaction.

b) State the colour observed when lithium reacts with oxygen.

c) Sodium reacts in a similar way with oxygen and shows a characterstic flame.
State the flame colour that sodium would show when reacted in the same manner.

3. Potassium reacts with water violently and catches fire.



a) Apart from catching fire, what other observations can be made when the reaction happens?
b) Sodium reacts with water in a more or less similar manner but slowly. Suggest why sodium gives a slower reaction compared to potassium.
c) Write a word equation for this reaction.
d) Explain why Cesium and Rubidium are not reacted with water in a laboratory.
e) How is Rubidium stored?
f) Predict three properties that francium might have.

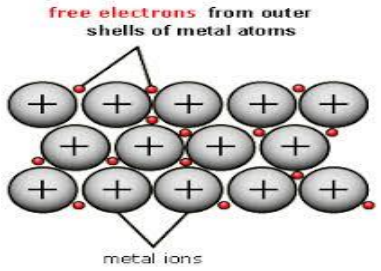
15.04.2020

Senior School, Gulshan

Class- VIII

Worksheet 4 on Metallic bonding and Chemical Formulae, Equations and Calculations: Part 1

1. The diagram shows the metallic bonding in sodium.



   a) Explain how metallic bonding is formed in sodium.
   b) Explain why metallic bonding in magnesium are stronger than the metallic bonding in sodium.
   c) Explain why metals have a high melting and boiling point.

2. Copper reacts with concentrated nitric acid according to the following equation.

$$\mathbf{Cu\,(s) + 4HNO_3\,(aq) \rightarrow Cu\,(NO_3)_2\,(aq) + 2NO_2\,(g) + 2H_2O}$$

   A student carried out an experiment to make copper(II) nitrate crystals.

   a) The student started with 2.00g of copper and added excess nitric acid. Calculated the maximum mass of copper (II) nitrate that can be obtained.
   b) Explain the method the student could use to obtain crystals of copper (II) nitrate from from the copper nitrate solution.
   c) The copper nitrate crystallizes out of the solution as $Cu\,(NO_3)_2.3H_2O$.
      The student did some calculations and found out that he should make 7.61g of crystals. He actually only made 5.23g. Calculate the percentage yield of the student's experiment.