

Honors Chemistry Chapter 2 Review

1. What are the diatomic molecules (Write the symbols for all 7)?
2. Uranium-235 is the isotope of uranium commonly used in nuclear power plants. How many neutrons, protons and electrons are in the U^{2+} ion formed from this isotope?
3. Which group on the periodic table has one metalloid and no nonmetals?
4. Write the names for: ICl_3 , PH_3 , $Cu_3(PO_4)_2$, AlN , HNO_2 , H_2S .
5. Write the formula and name for an ionic compound whose cation is a transition metal with 25 protons and 22 electrons and whose anion is an oxoanion of nitrogen with two oxygen atoms.
6. Write the formula and name for a molecule made up of a metalloid in group 3A and three atoms of a halogen in period 2.
7. Determine the charge on the arsenate polyatomic ion given $Mg_3(AsO_4)_2$
8. What is the name of the element that has a Z number of 17?
9. How many neutrons are there in ^{27}Al ?
10. What is the atomic mass of an element with $Z = 7$ and $A = 14$
11. Which element(s) on the periodic table contains no neutrons?
12. Give the names of the two elements on the periodic table that each contain 12 neutrons
13. Identify those of the following that qualify as compounds and those that qualify as molecules.
 CO_2 , He, Cl_2 , MgO
14. Give the formula for a compound containing magnesium and fluorine.
15. What is the net charge on a compound that contains 12 protons, 14 neutrons and 14 electrons?
16. Give the formula for the compound trinitrogen tetrachloride.
17. How many total protons are in the compound carbon dioxide (CO_2)?
18. What did Rutherford's Gold Foil Experiment reveal?
19. In what order were the proton, neutron and electron discovered?
20. Who determined the charge to mass ratio for the electron?

21. Who determined the charge on an electron and by what name is the experiment that determined this known?
22. Why are certain elements grouped together into the same column?
23. What is the special name for the group containing the element fluorine?
24. What are most of the elements on the periodic table classified as (metals, nonmetals or metalloids)?
25. Classify an element that has properties of being a shiny, gray metal that is brittle and does not conduct electricity well.
26. Compare the mass and charge of an electron to that of a proton.
27. Give the name corresponding to the compound P_2I_4
28. Who said, "It is almost as if one fired a cannon ball at a piece of tissue paper and it bounced back and hit you."
29. Who was the first person to arrange the elements into the form of the precursor of the modern periodic table?
30. What is the "plum pudding model" and who came up with it?
31. Write the name and formula for the compound made from selenium and gallium. Classify this type of compound.

Answers:

1. H_2 , N_2 , F_2 , O_2 , I_2 , Cl_2 , Br_2

(Have No Fear Of Ice Cold Beverages)

2. $n^0 = 143$, $p^+ = 92$, $e^- = 90$

3. Group 3A

4. iodine trichloride; phosphorus trihydride; cupric phosphate (or copper(II)phosphate); aluminum nitride; nitrous acid; hydrosulfuric acid.

5. $\text{Mn}(\text{NO}_2)_3$ manganese(III)nitrite

6. BF_3 ; boron trifluoride

7. Since Mg is always $2+$ and there are 3 of them, the arsenate ion has to be a $3-$ since there are 2 of them.

8. chlorine

9. 14 (27proton + neutrons – 13protons)

10. 14u (The A number is the mass number)

11. Only hydrogen (protium isotope) has no neutrons

12. magnesium and sodium

13. CO_2 (compound and molecule), He (element), Cl_2 (element and molecule), MgO (compound)

14. MgF_2

15. $2-$ (There are 2 more electrons than protons)

16. N_3Cl_4

17. 22 (6+8+8)

18. The nucleus of the atom

19. (first)electron, proton, neutron(last)

20. J.J. Thomson

21. Robert Millikan, Millikan's Oil-drop Experiment

22. They have similar chemical properties (groups or families)

23. halogens (from the word "salt forming")

24. Metals (There are only 17 nonmetals and (about) 8 metalloids)

25. metalloid or semi-metal (has intermediate properties between metals and nonmetals)
26. Charges are equal and opposite but mass of electron is over 1800 times smaller.
27. diphosphorus tetraiodide
28. Ernest Rutherford (with regard to the gold-foil experiment)
29. Dimitri Mendeleev (Russian school teacher 1869)
30. J.J. Thomson's model for explaining the presence of electrons in a "sphere" of positive charge. An early atomic model.
31. Ga_2Se_3 , gallium selenide, ionic compound.