CHM 090 Atoms Worksheet

Names __________________________________________________________________

I. Fill in the table

<table>
<thead>
<tr>
<th>atom</th>
<th>mass</th>
<th># protons</th>
<th># neutrons</th>
<th># electrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>¹⁷O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>⁷Li</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>²⁵Mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

II. Chemical formulas:
- Symbolically express the number of atoms of each element in a compound.
- Number of atoms is indicated by a subscript following the element’s symbol.

Example: water = H₂O has 2 H atoms, 1 O atom
sodium carbonate = Na₂CO₃ has ___ Na, ___ C, ___ O atoms
potassium phosphate = K₃PO₄ has ___ K, ___ P, ___ O atoms
calcium nitrate = Ca(NO₃)₂ has ___Ca, ___N, ___O atoms

III. Questions

1. What subatomic particle is positively charged? ________________
2. What subatomic particle is neutral? ________________
3. What subatomic particle is negatively charged? ________________
4. Which subatomic particle is NOT in the nucleus? ________________
5. How many protons are in an oxygen (O) atom? __________
6. How many protons are in a chlorine (Cl) atom? __________
7. How many electrons are in a sodium (Na) atom? ________
8. How many electrons are in a helium (He) atom? ________
9. Write the atomic notation for phosphorus-32. (P) ________
10. How many neutrons are in an atom of phosphorus-32? __________
11. Write the atomic notation for nitrogen-15 (N) __________

12. How many neutrons are in an atom of nitrogen-15? __________

13. The atomic number is the number of neutrons. Circle True or False

14. The atomic mass is the sum of ALL the subatomic particles. Circle True or False

15. All carbon (C) atoms have 6 protons. Circle True or False

16. All hydrogen (H) atoms have 2 neutrons. Circle True or False

17. An electron weighs the same as a proton. Circle True or False

18. Which of the following is an isotope of chlorine-35?
   a. Chlorine-37
   b. Sulfur-35
   c. Fluorine-35
   d. All of the above
   e. None of the above

19. The mass of one atom must be a whole number. Circle True or False

20. The average mass of all atoms is a whole number. Circle True or False

21. Isotopes have
   a. Same number of protons, different number of electrons
   b. Same number of neutrons, different number of protons
   c. Same number of protons, different number of neutrons
   d. Same number of electrons, different number of neutrons
   e. Same number of neutrons, different number of electrons

22. You can have ½ of a proton. Circle True or False

23. How many neutrons are in an atom of $^{238}\text{U}$? __________

24. How many electrons are in an atom of $^{238}\text{U}$? __________

25. Electrons are in the nucleus. Circle True or False

26. How many atoms total are in one molecule of HBrO$_4$? __________