***MINI EXAMPLE OF THE TEST. The actual test will be longer.***

Name:

Date:

Period: Unit 1 Test Form A

**Directions: For multiple choice record your answer on your scantron for other questions write directly on the test. Make sure to *WRITE THE FORM LETTER* on your scantron.*****SHOW WORK ON CALCULATIONS* on written part of test.**

**Standard 1: Elements are different types of atoms with different properties and all matter is made of atoms**.

1. Which of the following is 71Zn?

|  |  |  |  |
| --- | --- | --- | --- |
| Atom | p+ | n0 | e- |
| 1 | 32 | 42 | 32 |
| 2 | 30 | 41 | 31 |
| 3 | 30 | 44 | 30 |
| 4 | 33 | 42 | 33 |

* 1. Atom 1
  2. Atom 2
  3. Atom 3
  4. Atom 4

1. What property makes magnesium-24 and manganese-55 different element?
   1. Number of electrons
   2. Number of protons
   3. Number of neutrons
   4. Mass number
2. Fill in the following chart (1/2 point per square)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element Shorthand**  **(AX or X-A)** | **Atomic #** | **Protons** | **Neutrons** | **Electrons** | **Mass #** |
|  | 70 |  | 104 |  |  |
|  |  | 40 | 54 |  |  |
|  |  |  | 15 |  | 34 |

**Standard 2: Atoms of the same element can have different masses because of isotopes**

**Answer the following *two questions* using the chart below**

|  |  |  |  |
| --- | --- | --- | --- |
| Atom | p+ | n0 | e- |
| 1 | 32 | 42 | 32 |
| 2 | 30 | 41 | 31 |
| 3 | 30 | 44 | 30 |
| 4 | 33 | 42 | 33 |

1. Which two have the same mass?
2. Atoms 1 & 2
3. Atoms 1 & 3
4. Atoms 2 & 4
5. Atoms 3 & 4
6. Which two are isotopes of the same element?
7. Atoms 1 & 2
8. Atoms 1 & 3
9. Atoms 2 & 3
10. Atoms 1 & 4
11. Oxygen has three stable isotopes: oxygen-16, oxygen-17, oxygen-18.
    1. What property is the reason they are all oxygen? (1 pt)
    2. Which is the most common isotope and how do you know? (1 pt)
    3. What properties are different for the isotopes? (1 pt)

**Test continues on next page**

**Standard 3: Changes in the nucleus of an atom result in the emission of radioactivity and elemental identity change**

1. What is the change in atomic mass when an atom emits alpha radiation?
2. It increases by 1
3. It remains the same
4. It decreases by 2
5. It decreases by 4
6. An element as changed into a new element, but the mass remains the same. What type of decay did it undergo?
   1. Alpha
   2. Beta
   3. Gamma
   4. More information is required
7. Name a condition that can cause an unstable nucleus. (1 pt)
8. Find the half life of yttrium-90 given it takes 320 years for a 100 g sample to decay to 3.1 g. (2 pts)
9. Does a nuclear or chemical reaction produce more energy? (1 pt)

**Standard 4: All the known elements in the universe were created from the processes of fission and fusion during the lifecycle of a star**

Answer the following question using the chart below



1. State the trend in abundance of elements as atomic number increases. (1 pt)
2. How are the elements after Fe formed? (1 pt)

**Overarching Concepts (Standards Based Question)**

1. Draw and label the parts for sodium-22.
2. What is happening inside the atom when Lead - 214 decays into Bismuth - 214