Atomic Structure, Isotopes & Atomic Mass

STUDENT PRACTICE WORKSHEET

Name: _____ Date: _____

Directions: Circle the best answer for 1–6. Show your full reasoning and units for 7–8. Compare with the separate key after completing the page.

Part A — Concept checks

1. **What determines the identity of an element?**

   A. neutron count B. proton count C. mass number D. electron energy

2. **How many neutrons are in carbon-14?**

   A. 6 B. 8 C. 14 D. 20

3. **How many electrons are in Mg^{2+}?**

   A. 10 B. 12 C. 14 D. 24

4. **Two isotopes of the same element differ in what?**

   A. protons B. element identity C. neutrons D. atomic number

5. **An atom contains 11 protons and 12 neutrons. Its mass number is…**

   A. 1 B. 11 C. 12 D. 23

6. **What does the periodic-table atomic mass typically represent?**

   A. one isotope’s mass number B. a weighted isotope average C. the neutron number D. the ion charge

Part B — Application and explanation

7. How many neutrons are in chlorine-37?

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8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Do not subtract electrons to calculate neutron count; use mass number minus proton number.

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REFERENCE RELATIONSHIP

mass number A = protons + neutrons; average atomic mass = Σ(fraction × isotope mass)