Laboratory Measurement, Precision & Error

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. **Measurements clustered together but far from a reference are…**

   A. accurate and precise B. precise but inaccurate C. accurate but imprecise D. neither

2. **What is percent error when measured = 9.0 and accepted = 10.0?**

   A. 1% B. 9% C. 10% D. 90%

3. **Which is an example of systematic error?**

   A. random reading noise B. consistent zero offset in a balance C. varying stopwatch reaction time D. single recording mistake

4. **Which record best preserves an electronic balance display of 2.340 g?**

   A. 2 g B. 2.3 g C. 2.34 g D. 2.340 g

5. **Which is a measure of repeatability?**

   A. precision B. accuracy C. accepted value D. molarity

6. **Why should raw laboratory data be preserved?**

   A. to make error vanish B. to permit transparent analysis and correction C. because all values are exact D. to guarantee perfect yield

Part B — Application and explanation

7. A measured density is 0.980 g/mL and the accepted value is 1.000 g/mL. Find percent error.

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8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Do not confuse uncertainty with an excuse to edit observations. Always preserve raw readings and document any correction.

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REFERENCE RELATIONSHIP

percent error = |experimental − accepted| / |accepted| × 100%