pH, pOH & Strong Acids/Bases

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. **A 0.010 M HCl solution has approximate pH…**

   A. 1.00 B. 2.00 C. 10.00 D. 12.00

2. **At 25 °C, a solution with pH 9.00 has pOH…**

   A. 5.00 B. 9.00 C. 14.00 D. −5.00

3. **Which solution has greater [H_3O^+]?**

   A. pH 6 B. pH 5 C. same D. cannot compare

4. **A one-unit decrease in pH corresponds to how much increase in [H_3O^+]?**

   A. 2× B. 5× C. 10× D. 100×

5. **0.0010 M NaOH at 25 °C has approximate pH…**

   A. 3.00 B. 7.00 C. 11.00 D. 13.00

6. **Which is a strong monoprotic acid in water?**

   A. acetic acid B. HF C. HCl D. carbonic acid

Part B — Application and explanation

7. What is the pH of 0.0010 M HCl at 25 °C?

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8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Do not assume that pH + pOH = 14 at every temperature; 14.00 is the standard classroom approximation at 25 °C.

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REFERENCE RELATIONSHIP

$pH = -\log_{10}[H_3O^+]$; at 25 °C, pH + pOH = 14.00