Standardized Test Prep

Answer the following items on a separate piece of paper.

MULTIPLE CHOICE

1. Water is an excellent solvent because
- **A.** it is a covalent compound.
- **B.** it is a nonconductor of electricity.
- **C.** its molecules are quite polar.
- **D.** it is a clear, colorless liquid.

2. Two liquids are likely to be immiscible if
- **A.** both have polar molecules.
- **B.** both have nonpolar molecules.
- **C.** one is polar and the other is nonpolar.
- **D.** one is water and the other is methyl alcohol, CH_3OH.

3. The solubility of a gas in a liquid would be increased by an
- **A.** addition of an electrolyte.
- **B.** addition of an emulsifier.
- **C.** agitation of the solution.
- **D.** increase in its partial pressure.

4. Which of the following types of compounds is most likely to be a strong electrolyte?
- **A.** a polar compound
- **B.** a nonpolar compound
- **C.** a covalent compound
- **D.** an ionic compound

5. A saturated solution can become supersaturated under which of the following conditions?
- **A.** It contains electrolytes.
- **B.** The solution is heated and then allowed to cool.
- **C.** More solvent is added.
- **D.** More solute is added.

6. Molarity is expressed in units of
- **A.** moles of solute per liter of solution.
- **B.** liters of solution per mole of solute.
- **C.** moles of solute per liter of solvent.
- **D.** liters of solvent per mole of solute.

7. What mass of NaOH is contained in 2.5 L of a 0.010 M solution?
- **A.** 0.010 g
- **B.** 1.0 g
- **C.** 2.5 g
- **D.** 0.40 g

8. Which one of the following statements is false?
- **A.** Gases are generally more soluble in water under high pressures than under low pressures.
- **B.** As temperature increases, the solubilities of some solids in water increase and the solubilities of other solids in water decrease.
- **C.** Water dissolves many ionic solutes because of its ability to hydrate ions in solution.
- **D.** Many solids dissolve more quickly in a cold solvent than in a warm solvent.

SHORT ANSWER

9. Several experiments are carried out to determine the solubility of cadmium iodide, CdI_2, in water. In each experiment, a measured mass of CdI_2 is added to 100 g of water at 25°C and the mixture is stirred. Any undissolved CdI_2 is then filtered off and dried, and its mass is determined. Results for several such experiments are shown in the table below. What is the solubility of CdI_2 in water at this temperature?

Mass of CdI_2 added, g	Mass of undissolved CdI_2 recovered, g
17.9	0.0
38.2	0.0
53.6	0.0
79.3	0.0
93.6	7.4
104.3	18.1

EXTENDED RESPONSE

10. Explain why oil and water do not mix.

11. Write a set of instructions on how to prepare a solution that is 0.100 M KBr, using solid KBr (molar mass 119 g/mol) as the solute. Your instructions should include a list of all materials and equipment needed.

Test TIP Allow a few minutes at the end of the test-taking period to check for careless mistakes, such as marking two answers for a single question.