

Intermolecular Forces & Properties

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. Which force acts between every pair of molecules?

A. hydrogen bonding B. ionic bonding C. London dispersion D. metallic bonding

2. Which pure liquid exhibits hydrogen bonding?

A. CH₄ B. NH₃ C. H₂S D. CO₂

3. Which molecule is nonpolar overall?

A. H₂O B. NH₃ C. CO₂ D. HCl

4. Strongest characteristic IMF in pure HCl (besides dispersion)?

A. hydrogen bonding B. dipole-dipole C. metallic bonding D. ion-dipole

5. Why does I₂ have stronger dispersion forces than F₂?

A. iodine is smaller B. iodine is more polarizable C. fluorine is ionic D. I₂ has H bonds

6. Which change usually requires overcoming intermolecular attractions?

A. boiling a molecular liquid B. breaking C-H bonds C. fission of nuclei D. removing a proton from a nucleus

Part B — Application and explanation

7. Why is the boiling point of water much higher than that of H₂S?

8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Do not confuse intermolecular forces with covalent bonds within a molecule. Boiling generally separates molecules, not atoms within molecules.

REFERENCE RELATIONSHIP

all particles have dispersion forces; H bonding requires H bonded to N, O or F