

Electron Configurations & Orbital Diagrams

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. Maximum electrons in a p subshell?

A. 2 B. 6 C. 10 D. 14

2. Which configuration describes neutral sodium?

A. [Ne] 3s¹ B. [Ne] 3s² C. [Ar] 4s¹ D. [He] 2s¹

3. The electron configuration of Mg²⁺ is...

A. [Ne] B. [Ne] 3s² C. [Ar] D. [He] 2s²

4. Which rule describes single filling of equal-energy p orbitals?

A. Hess's law B. Hund's rule C. Boyle's law D. Le Châtelier's principle

5. Which pair of electrons may share one orbital?

A. same spin B. opposite spins C. both always unpaired D. four electrons

6. For Fe²⁺, which electrons are removed first from neutral Fe?

A. 3d B. 2p C. 4s D. 3p

Part B — Application and explanation

7. Write the electron configuration of chlorine (Z = 17).

8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Do not apply Aufbau as an exception-free law: some atoms such as Cr and Cu have configurations beyond the simplest filling prediction.

REFERENCE RELATIONSHIP

s holds 2, p holds 6, d holds 10, f holds 14 electrons