STUDENT WORKSHEET | Aromaticity and Huckel's Rule

Name: _____ Date: _____

Instructions: Answer questions 1-6. Show structural reasoning for 7-8. One best answer per multiple-choice item.

1. Which condition is essential for an aromatic ring?

A. An sp atom at every ring position
B. A continuous cyclic system of p orbitals
C. A nonplanar structure

2. How many pi electrons are in benzene?

A. 4
B. 6
C. 8

3. A planar conjugated ring has 4 pi electrons. It is generally

A. Aromatic
B. Antiaromatic
C. Always a radical

4. What is the classification of ordinary cyclooctatetraene?

A. Antiaromatic
B. Aromatic
C. Nonaromatic

5. Which lone pair is in the aromatic sextet of pyridine?

A. Nitrogen's in-plane lone pair
B. No nitrogen lone pair; the six electrons come from pi bonds
C. Both nitrogen lone pairs

6. What is the pi-electron count of cyclopentadienyl anion?

A. 4
B. 5
C. 6

Written practice - show all reasoning and label any diagrams.

7. Draw benzene and cyclobutadiene. For each, state pi-electron count and aromaticity, assuming a planar fully conjugated ring for cyclobutadiene.

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8. Explain why cyclooctatetraene is nonaromatic even though its formula permits four alternating double bonds.