

Chemistry 328N Spring 2019

Homework #5

Due: in the box by 5PM on Monday, February 25

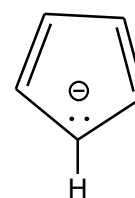
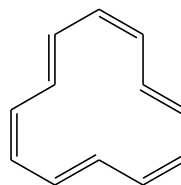
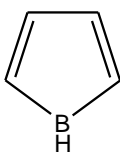
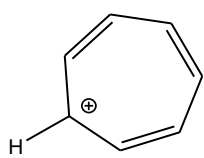
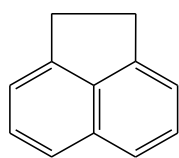
Read: Chapter 21 pages 938-953

Do: 21.1, 21.2, 21.3, 21.4, 21.15; 21.17, 21.20

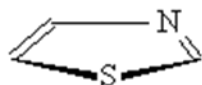
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Supplemental Problems:

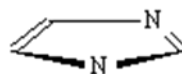
1. State the number of p-orbital electrons in each of the following structures and circle those you predict to be aromatic:



2. The structures of the aromatic heterocycles thiazole and imidazole are shown below. Please draw p orbitals on each of the sp^2 hybridized carbons and draw the appropriate orbitals on the hetero atoms. Clearly indicating which electrons from each element are incorporated into the pi system of the rings.



Thiazole



Imidazole