

Problem Set Chapters 18

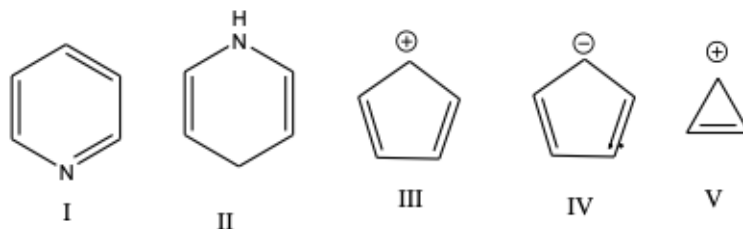
Organic Chemistry for
Life Sciences: CHM 224

Name _____

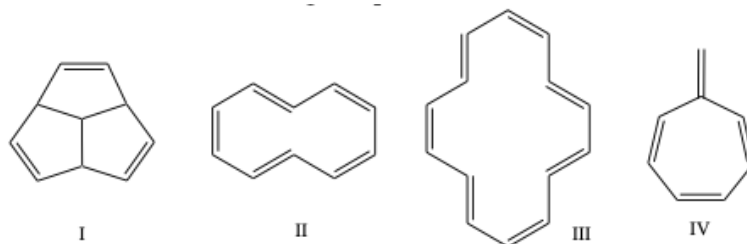
DUE: Monday, January 29th in class

1. Which of the following statements are true (may be more than one answer)?
- A. Aromatic compounds must be cyclic and planar, but antiaromatic may or may not be
 - B. Aromatic compounds must be monocyclic (only one cyclic structure present).
 - C. Antiaromatic compounds must have a conjugated system with a p orbital at every vertex
 - D. Aromatic compounds must satisfy Hückel's rule.
 - E. None of these
 - F. All of these

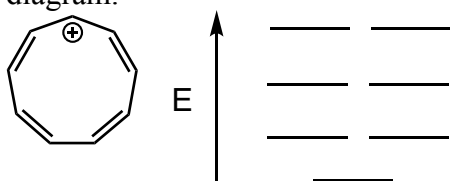
2. Which of the following compound are **nonaromatic** (may be more than one answer)?



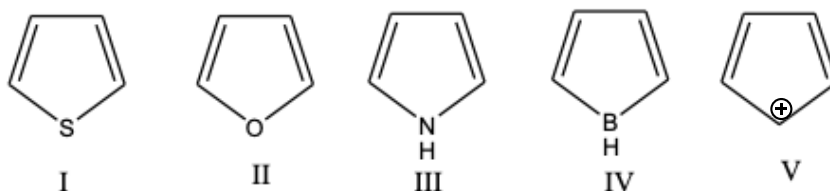
3. Which of the following compound are **aromatic** (may be more than one answer)?



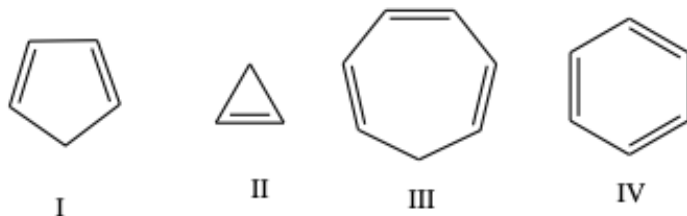
4. Is the following molecule aromatic? Confirm your answer including the use of a Huckel pi molecular orbital diagram.



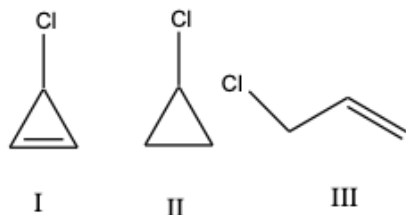
5. Which of the following compound are **antiaromatic** (may be more than one answer)?



6. Which of the compounds below is expected to be unusually acidic (may be more than one answer):

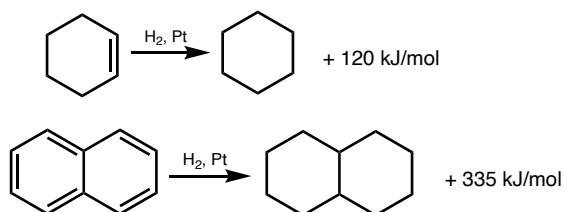


7. Which of the following correctly ranks the order in which the compounds below will undergo an SN1 reaction (from fastest to slowest):



- A. I > II > III
- B. I > III > II
- C. II > I > III
- D. II > III > I
- E. III > I > II
- F. III > II > I

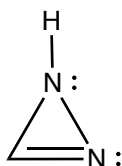
8. Prove that naphthalene is aromatic using the heat of hydrogenation data below (experimental values provided) by comparing predicted and actual data (HINT: for prediction purposes, treat all of the C=C bonds in naphthalene as if they are the same kind of bond as in cyclohexene).



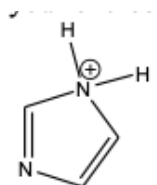
9. Jimmy wakes up 45 minutes into class, raises his hand, and says that the compound below is aromatic because it has 6 pi electrons. Is Jimmy correct? Briefly explain your answer.



Jimmy



10. To which class of compounds does the following belong?



- A. aromatic
- B. anti-aromatic
- C. nonaromatic
- D. not sure, but probably one of the above