15A. Name mono, di, and poly substituted benzenes. Know the common roots: toluene, phenol, aniline, and benzoic acid. Know phenyl and benzyl substituents.

15A.1 Name the following structures.

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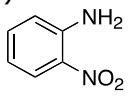

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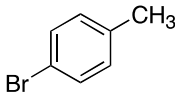

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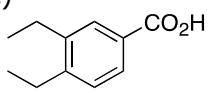

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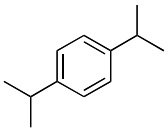

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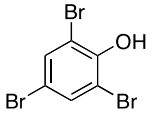

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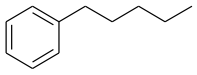

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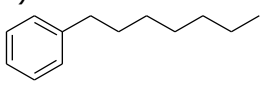

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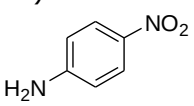

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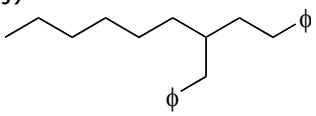

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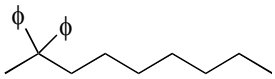

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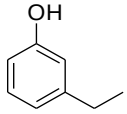

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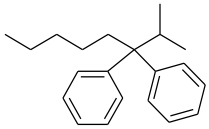

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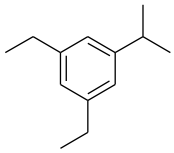

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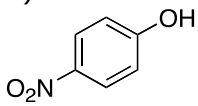

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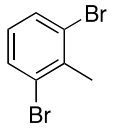

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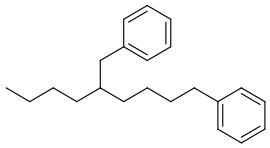

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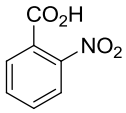

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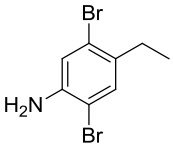

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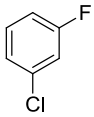

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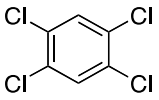

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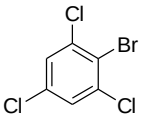


15A.2 Draw the structure of the following molecules.

a) *o*-iodo aniline

b) 2,3,6-trichloro benzoic acid

c) 3,5-dibenzyl octane

d) *m*-nitro phenol

e) triphenylmethane

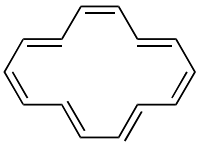
f) *p*-diisobutyl benzene

15A.3 Why is it impossible to have a 2-benzyl substituent on a chain?

15B. Determine if a given structure is aromatic, anti-aromatic or non-aromatic.

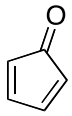
15B.1 Determine if the following molecules are aromatic, anti-aromatic, or non-aromatic. If non-aromatic state why.

a)



b)

c)



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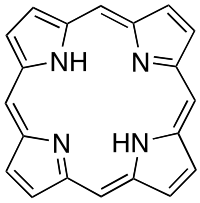

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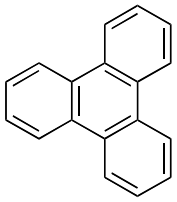

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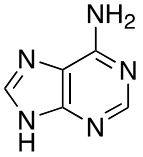

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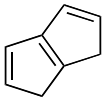

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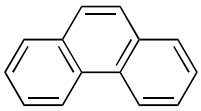

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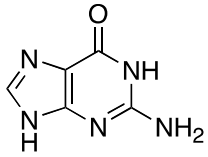

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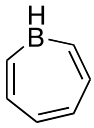

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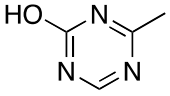

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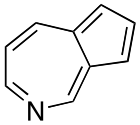

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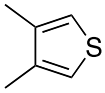

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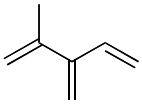

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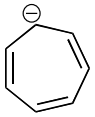

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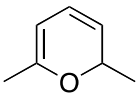

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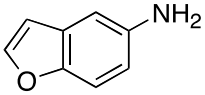

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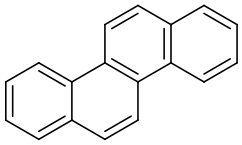

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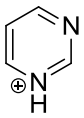

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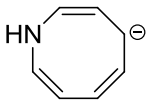

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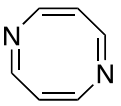

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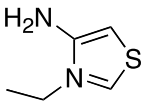

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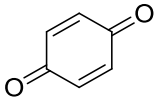

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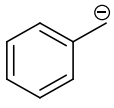

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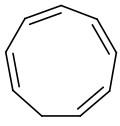

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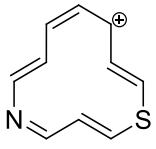

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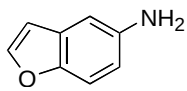
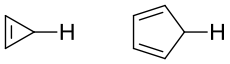


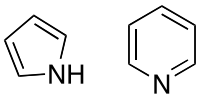
15C Use principles of aromaticity to predict properties of molecules.

15C.1 Which indicated hydrogen on the molecules below is more acidic? Draw the conjugate base of each and explain your answer.



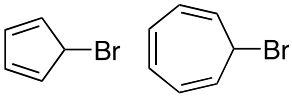
A **B**

15C.2. Draw the conjugate acids of the following compounds. Which is more basic? Explain your answer



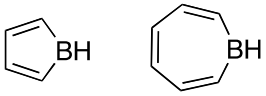
A B

15C.3.Which of the following molecules reacts faster under S_N1 conditions? Explain your answer.



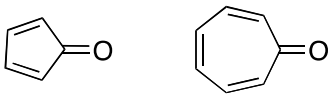
A B

15C.4. Which compound would you expect to be a stronger Lewis acid? Explain your answer.



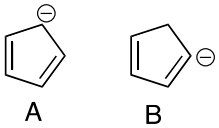
A B

15C.5 Compound B is more polar than A. Explain. (Hint – draw resonance structures)



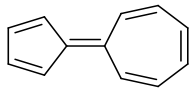
A B

15C.6 Which compound do you expect to be a stronger base? Explain your answer.



A B

15C.7 The compound below possesses a significant dipole even though it is a hydrocarbon. Draw the direction of the dipole on the structure given and draw a resonance structure that explains this effect.



15C.8 The compound below is aromatic even though it has 16π electrons. Explain.