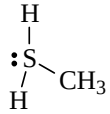
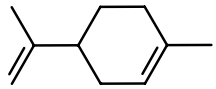
**The University of Jordan  Organic Chemistry 233  November 03, 2013**
**Chemistry Department  First Exam (60 min.)**
**Name…xxxxxxxxxxxxxxx  Registration No.:xxxxxx.. Seat Number xxxxxx**

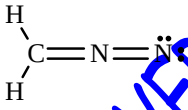
1) Circle the correct answer or fill in the blanks in each of the following:

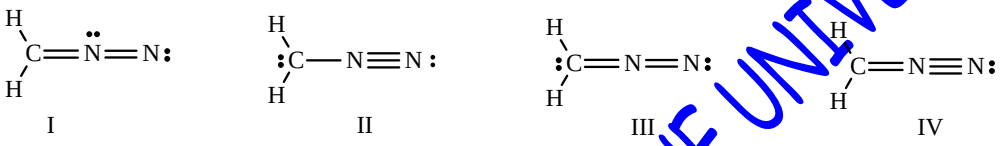
- The formal charge on the sulfur atom in  is: (atomic number of S is 16)

  a) 0  b) +1  c) -1  d) +2  e) -2

- The molecular formula for the compound  is

  a) $C_{10}H_{16}$  b) $C_9H_{18}$  c) $C_{10}H_{22}$  d) $C_6H_{14}$  e) $C_{10}H_{18}$

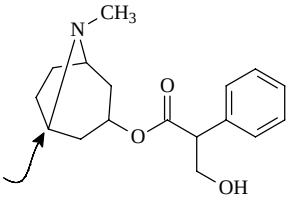
- Which of the following is a resonance structure of 



I  II  III  IV

  a) I only  b) II only  c) III only  d) IV only  e) I and III only

- The following compound is atropine.

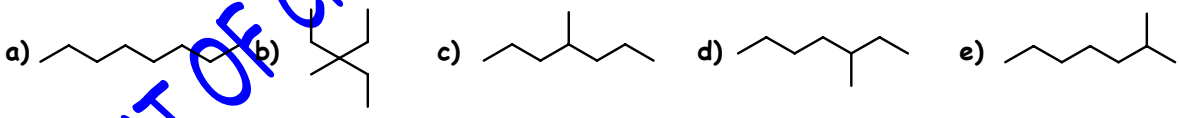


  - Which of the following functional groups is not in atropine?

    a) amine  b) ester  c) alcohol  d) arene  e) ketone

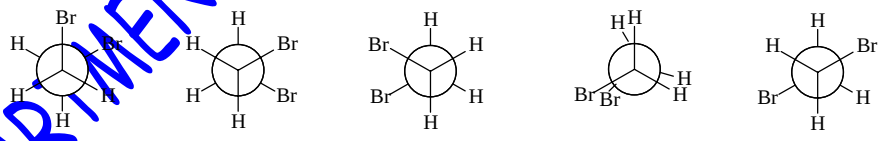
  - What is the hybridization of the indicated carbon ……

- Which of the following alkanes has the lowest boiling point?

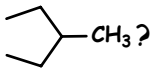


a)  b)  c)  d)  e)

- The most stable conformation of 1,2-Dibromoethane is:



a)  b)  c)  d)  e)

- How many monochloro products can be obtained from the chlorination of  ?

  a) 2  b) 3  c) 4  d) 5  e) 6

- Which of the following compounds can exist as *cis*/*trans* isomerism?

  a) 1-heptene  b) propene  c) 3-ethyl-3-hexene  d) 2-methy-2-butene  e) 2-hexene

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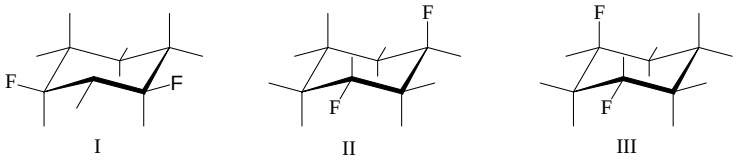
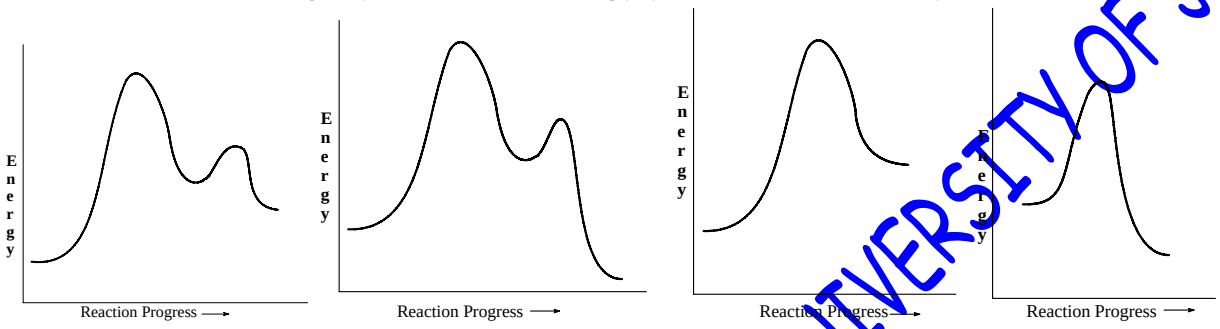
- cis-1,3-diflouroyclohexane is represented by structure(s):




a. III only b. II only c. I only d. I and III only e. II and III only

- Which of the following represents the energy-profile for a two-step endothermic reaction



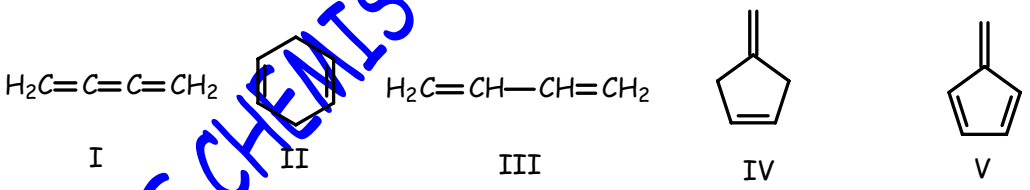

a) b) c) d)

- Which of the following reactions is a chain-terminating step in the chlorination of methane?

a) $Cl{-}Cl \longrightarrow 2Cl^{\bullet}$ b) $Cl^{\bullet} + CH_4 \longrightarrow {}^{\bullet}CH_3 + H{-}Cl$

c) ${}^{\bullet}CH_3 + {}^{\bullet}CH_3 \longrightarrow CH_3{-}CH_3$ d) ${}^{\bullet}CH_3 + Cl{-}Cl \longrightarrow CH_3Cl + Cl^{\bullet}$

- Which compound(s) contain(s) conjugated multiple bonds ?




a) II and IV only b) I only c) III and V only d) III only e) V only

- Which of the following is (are) correct resonance structrure(s) for the intermediate formed in the nitration of bromobenzene?

a) III only b) II only c) I only d) I, III, IV and V e) III, IV and V

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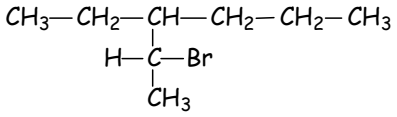
2) Give a correct IUPAC name for each of the following compounds:



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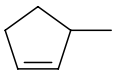

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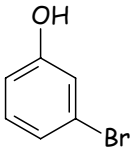

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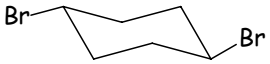

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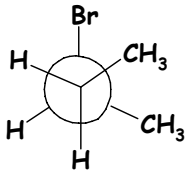
3) Label the following pairs of structures as:
identical, constitutional, configurational (cis-trans), conformational isomers.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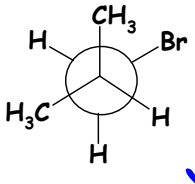

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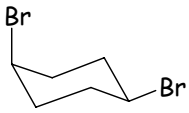
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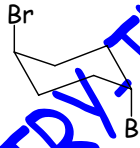

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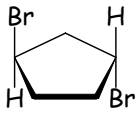
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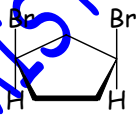

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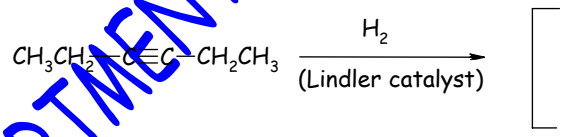
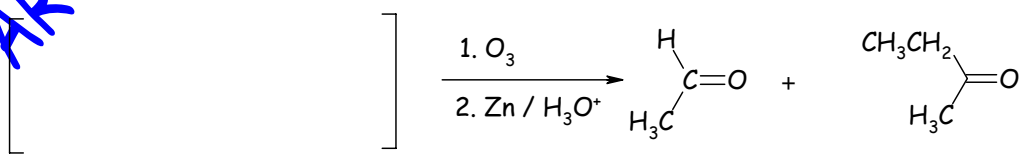
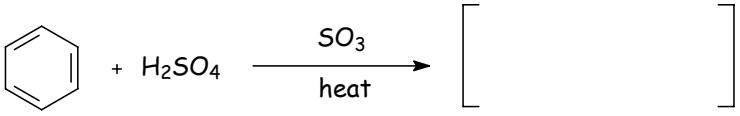
4) Fill in the missing reactant, reagent or Product in the following equations (show stereochemistry for the product in the first equation)







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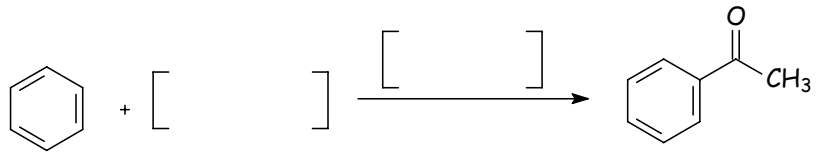

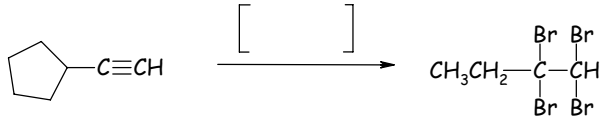

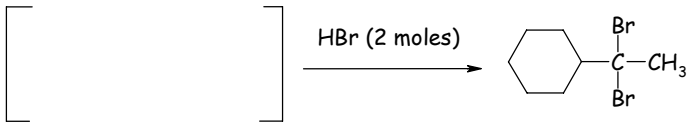

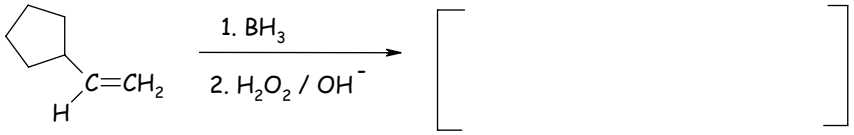

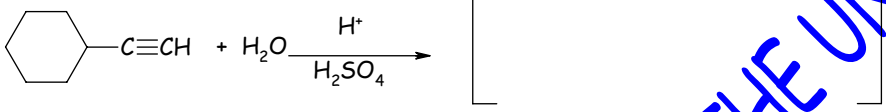

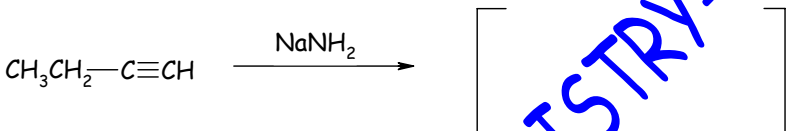

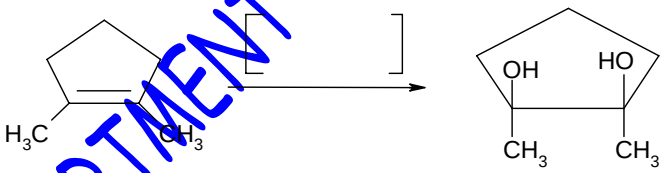

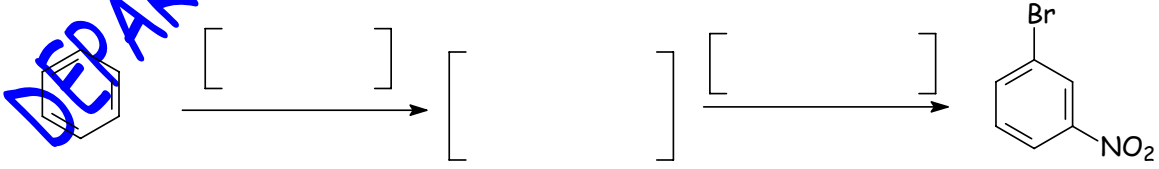

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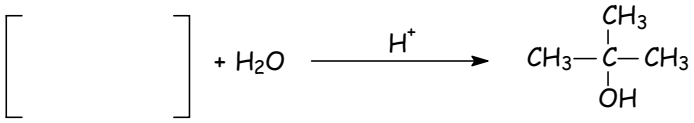
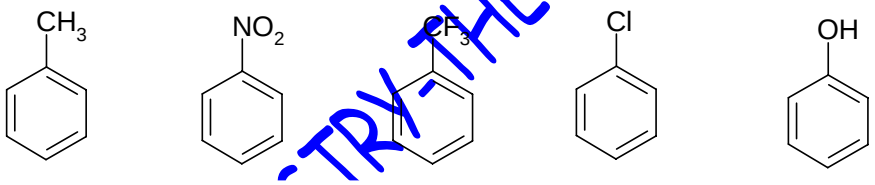
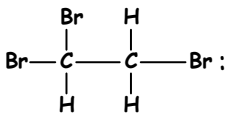
GOOD LUCK



- Which of the following compounds would be most reactive to ring bromination?




a) b) c) d) e)

- View the following structure through $C_1$-$C_2$ bond, draw Newman projection of 

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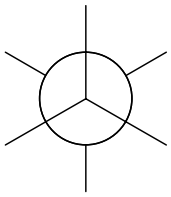
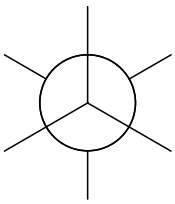
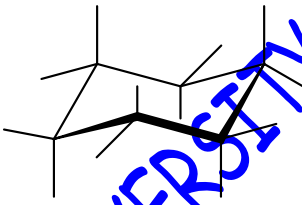


The least stable staggered conformation



The most stable staggered conformation

- Draw the most stable conformation for *cis*-1-Isopropyl-4-methylcyclohexane.



- Draw two constitutional isomers of $C_5H_8$

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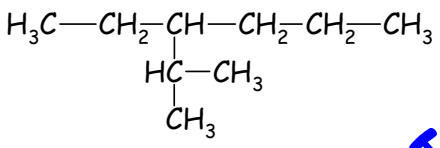
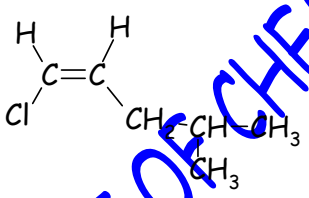
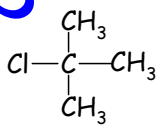
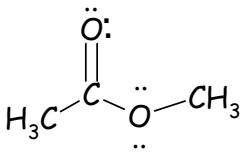
- Give a correct IUPAC name for each of the following compounds:

a)  .....

b)  .....

- The common name for  is .....

- Draw another resonance structure showing all electrons and charges

 ⟷ .....

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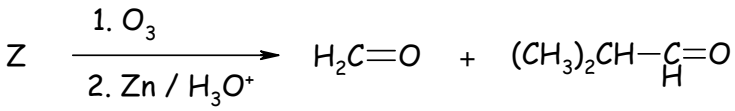
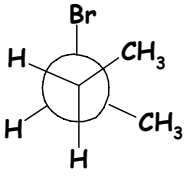
- Consider the following ozonolysis reaction of compound Z:




The structure of Z is:

- Label the following pairs of structures as identical, constitutional, configurational, conformational isomers.

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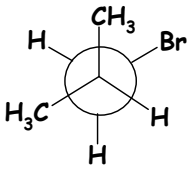


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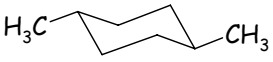


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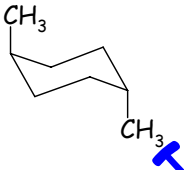


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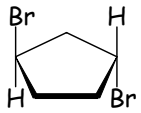


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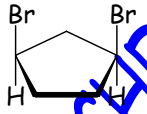


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