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The University of Jordan

Chemistry Department

May, 3, 2010

Organic Chemistry 233

Second Exam (60 min.)

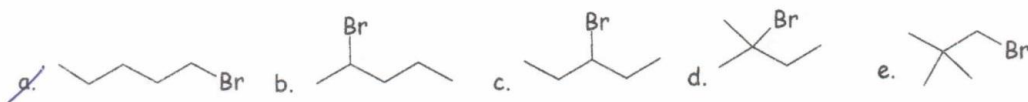
Name: \_\_\_\_\_

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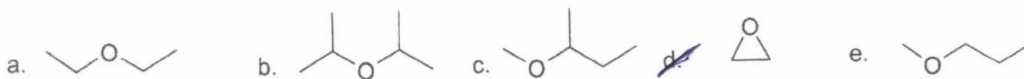
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Q1: Circle the correct answer in each of the following (12 pts)

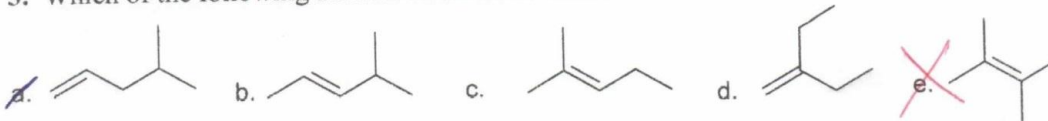
1. Which one of the following alkyl halides reacts fastest with  $\text{CH}_3\text{SNa}^+$ ? <sup>SN2</sup>



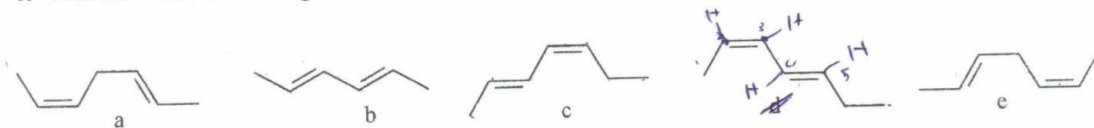
2. Which one of the following ethers reacts with  $\text{CH}_3\text{OH} / \text{H}^+$ ?



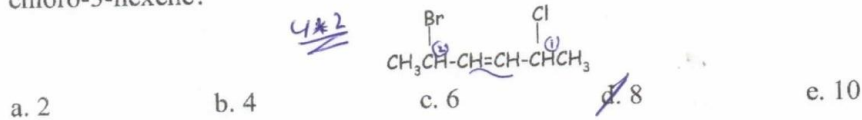
3. Which of the following alkenes is the most stable?



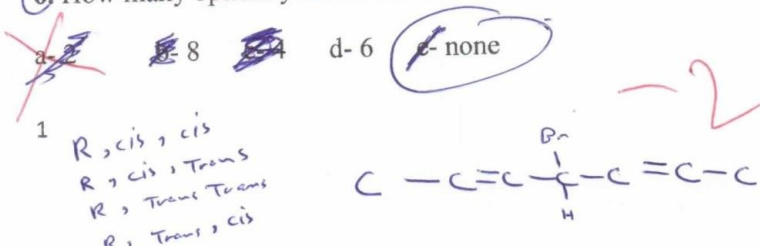
4. Which of the following molecules is correct structure for (2Z,4E)-2,4-heptadiene?



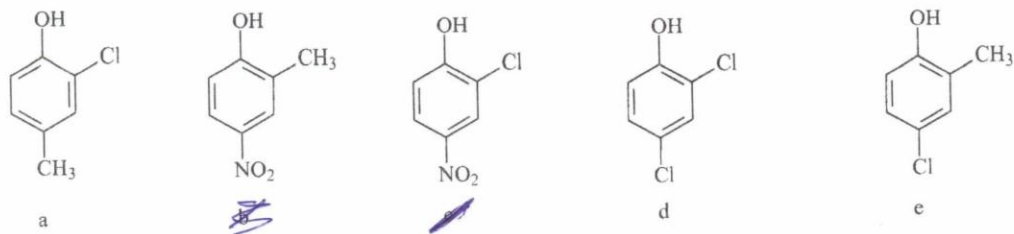
5. What is the total number of stereoisomers that can exist for the molecule 2-bromo-5-chloro-3-hexene?



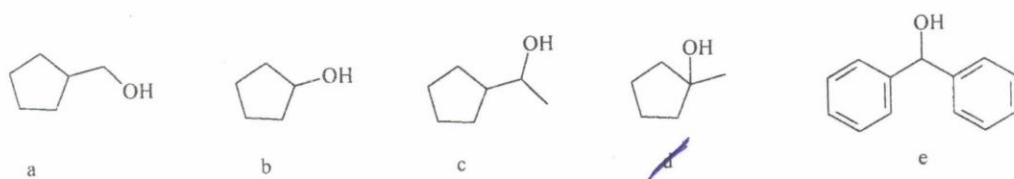
6. How many optically active isomers are there for 4-bromo-2,5-heptadiene



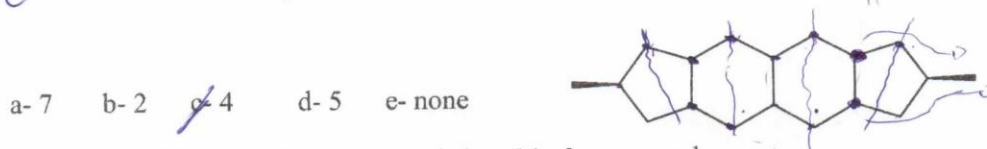
7. Which of the following phenols has the **lowest pKa value?** <sup>most acidic</sup>



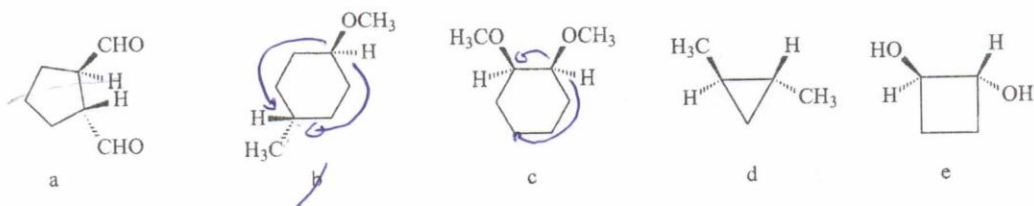
8. Which of the following alcohols is the **most reactive** toward dehydration with 30%  $H_2SO_4$ / heat.



9. The number of stereogenic centers in the compound below is:



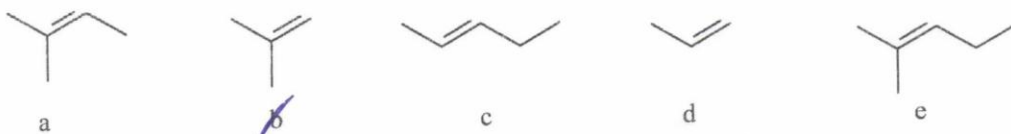
10. Which of the following compounds is **achiral** compound



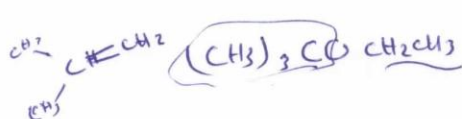
11. Which of the following is the **strongest nucleophile**



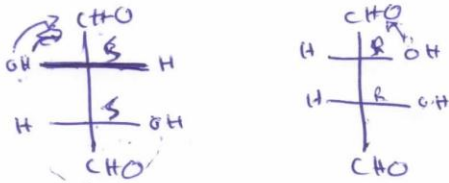
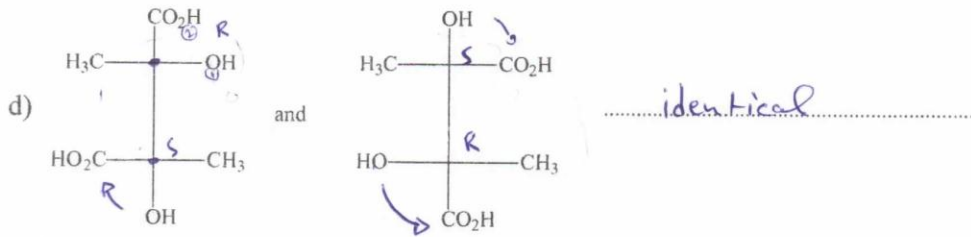
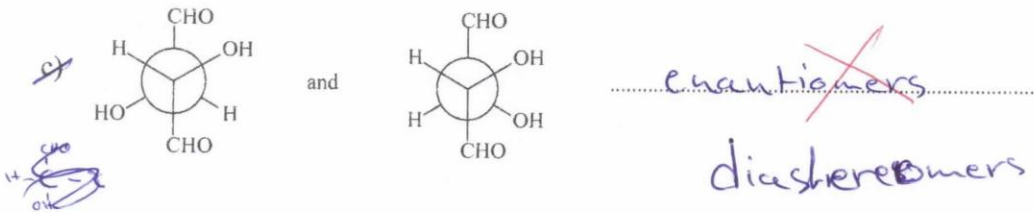
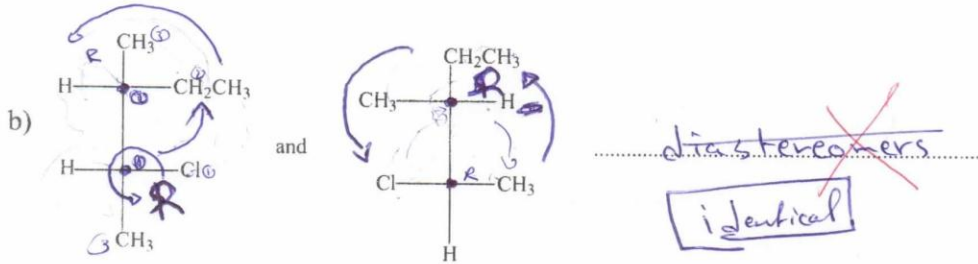
12. Which alkene reacts with ethanol under acid-catalyzed conditions to give tert-butylethylether?



2



Q2: Classify the following pairs of structures as enantiomers, diastereomers, meso-forms or identical. (8 pts)



**Q4: In each the following reactions, draw the structure of the needed reactant or the major product and write the name of the mechanism (S<sub>N</sub>1, S<sub>N</sub>2, E<sub>1</sub> and E<sub>2</sub>) (Considering the stereochemistry when it necessary) (18 pts)**

Number	Reaction	Major product	Mechanism
1			
2			
3			
4			
5			
6			
7			
8			

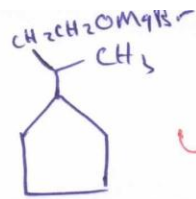


-1/2

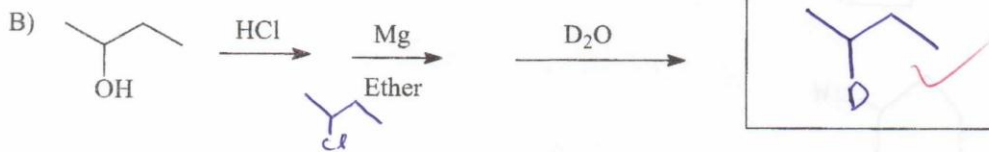
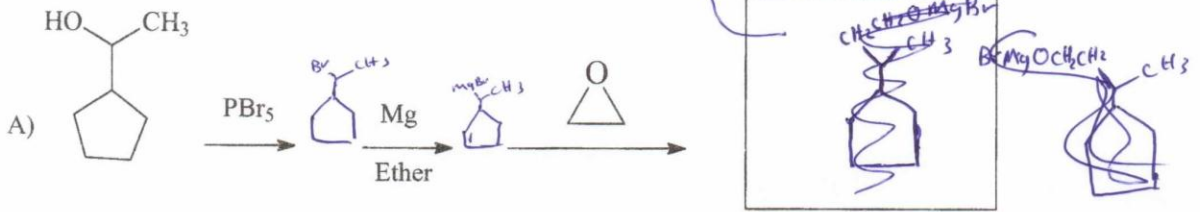
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-2  
SN2

X -1/2



Q5: What is the final product in each of the following reactions sequence?(6 pts)



Q6: With the help of equations, outline the steps required for the synthesis of the following compounds from the indicated starting materials. Use any needed reagents and write all the possible reactants and products (No mechanism). (6 pts)

