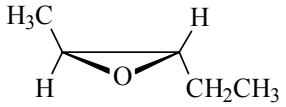
Chemistry 211 Name: _____
Chapter 16 quiz #2

1. The IUPAC name of the following epoxide is:



1) *cis*-2-ethyl-3-methyloxirane
2) *trans*-2-ethyl-3-methyloxirane
3) *trans*-1ethyl-2-methyloxycyclopropane
4) *trans*-1-ethyl-2-methylethane epoxide

2. Consider the three compounds below.

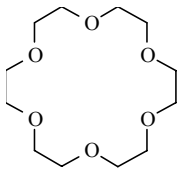
A. $CH_3CH_2OCH_2CH_3$
B. $CH_3CH_2CH_2CH_2CH_3$
C. $CH_3CH_2CH_2CH_2OH$

The two most similar in boiling point are _____ and the two most similar in solubility in water are _____.

1) A and C, B and C
2) A and B, A and C
3) B and C, A and B
4) A and C, A and C

3. The role of 18-crown-6 in the reaction shown below is to:

$$CH_3CH_2CH_2CH_2Br + KF \xrightarrow[C_6H_6,\ heat]{18\text{-crown-6}} CH_3CH_2CH_2CH_2F + KBr$$



18-crown-6

1) complex F^- by ion-dipole attraction and make it more nucleophilic.
2) remove Br^- by ion-dipole attraction and shift the equilibrium to the products.
3) complex K^+ by ion-dipole attraction increasing the solubility of KF and the nucleophilicity of F^-.
4) stabilize the carbocation in the substitution reaction.

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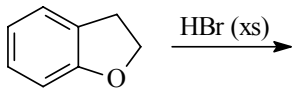
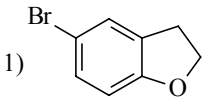
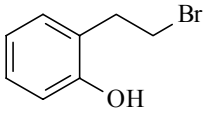
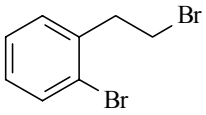
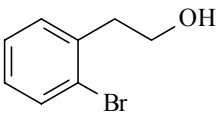
4. What is the product of the following reaction?



1) 

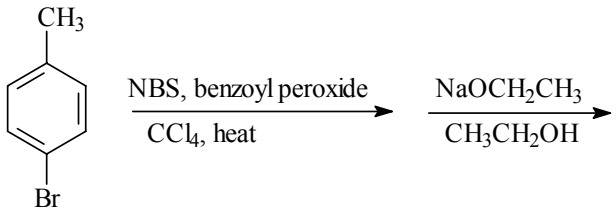
3) 

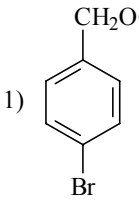
2) 

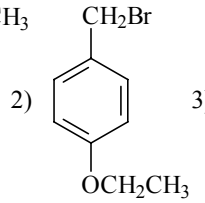
4) 

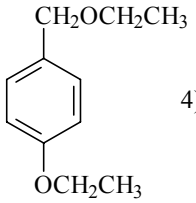
1) 1 2) 2 3) 3 4) 4

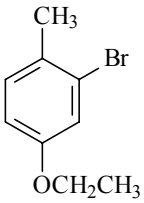
5. What is the major product of the following reaction?



1) 

2) 

3) 

4) 

1) 1 2) 2 3) 3 4) 4

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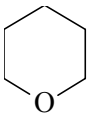
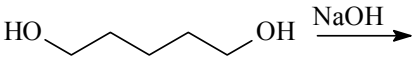
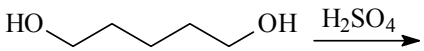
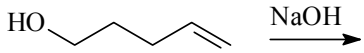
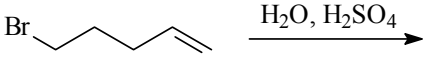
6. Which one of the following reactions makes the cyclic ether shown below?



1) 

2) 

3) 

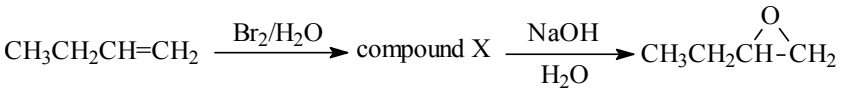
4) 

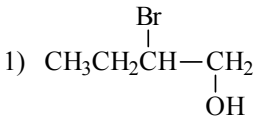
1) 1 2) 2 3) 3 4) 4

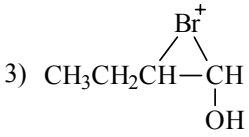
7. How many constitutionally isomeric ethers are there with a formula of $C_4H_{10}O$?

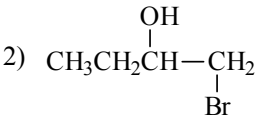
1) only one 2) two 3) three 4) four

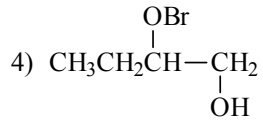
8. Which of the following is compound X of the synthesis shown below?



1) 

3) 

2) 

4) 

1) 1 2) 2 3) 3 4) 4

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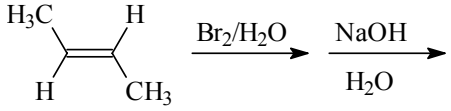
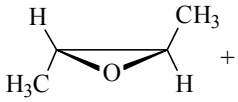
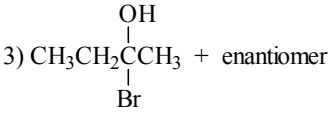
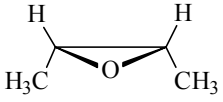
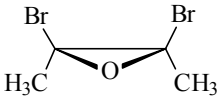
9. What is the product of the following sequence of reactions?



1)  + enantiomer

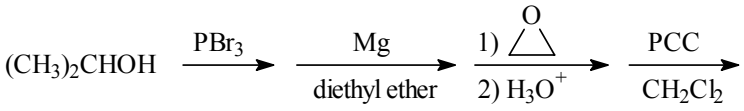
3)  + enantiomer

2) 

4) 

1) 1 2) 2 3) 3 4) 4

10. What is the final product of the following sequence of reactions?



1) $(CH_3)_2CHOCH_2CH_2OH$

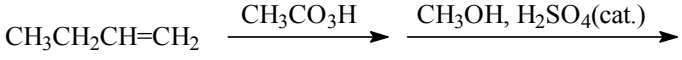
3) $(CH_3)_2CHCH_2CHO$

2) $(CH_3)_2CHCCH_3$ (O double-bonded)

4) $(CH_3)_2CHCH_2CO_2H$

1) 1 2) 2 3) 3 4) 4

11. What is the product of the reactions below?



1) $CH_3CH_2CH(OH)CH_2OCH_3$

3) $CH_3CH_2CH(OH)CH_2OH$

2) $CH_3CH_2CH(OCH_3)CH_2OH$

4) $CH_3CH_2CH(CH_3)CH_2OH$

1) 1 2) 2 3) 3 4) 4

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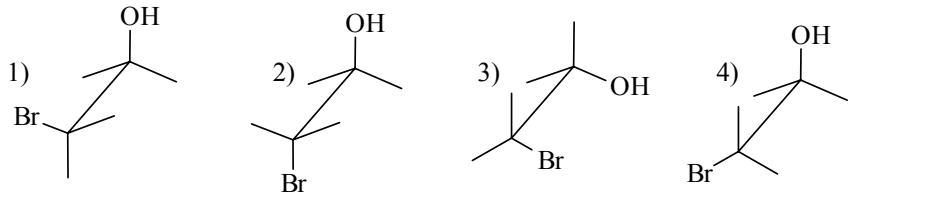
12. What reagents and/or reaction sequence below would convert *cis*-3-hexene to *meso*-3,4-hexanediol?

1) OsO_4, $(CH_3)_3COOH$, $(CH_3)_3COH$, NaOH
2) B_2H_6/diglyme followed by H_2O_2/NaOH
3) O_3 followed by Zn/H_2O
4) CH_3CO_3H followed by $NaOH/H_2O$

13. Which reagent(s) below converts cyclohexene to *trans*-1,2-cyclohexanediol?

1) OsO_4, $(CH_3)_3COOH$, $(CH_3)_3COH$, NaOH
2) O_3 followed by Zn/H_2O
3) CH_3COOH followed by $NaOH/H_2O$
4) HIO_4

14. Which of the following is the preferred conformation for epoxide ring formation? (assume a base is provided)



1) 1 2) 2 3) 3 4) 4

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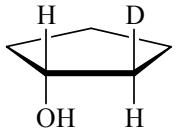
15. Which synthetic pathway below gives a racemic mixture of the following deuterated compound with little or no isomeric impurities?



+ enantiomer

1) cyclopentene $\xrightarrow[]{CH_3\overset{O}{\overset{\|}{C}}OOH}$ $\xrightarrow[2)\ H_2O]{1)\ LiAlD_4}$

2) cyclopentene $\xrightarrow[2)\ H_2O_2,\ NaOH]{1)\ BD_3/THF}$

3) cyclopentene $\xrightarrow{D_2/Pt}$ $\xrightarrow[CCl_4]{Br_2,\ h\nu}$ $\xrightarrow[H_2O]{NaOH}$

4) cyclopentene $\xrightarrow{DCl}$ $\xrightarrow[heat]{H_2O,\ CH_3OH}$

1) 1 2) 2 3) 3 4) 4

Answer Key for Test "211c16q2.tst", 2/23/2004

No. in Q-Bank		No. on Test	Correct Answer
16	2	1	2
16	4	2	2
16	6	3	3
16	8	4	3
16	10	5	1
16	12	6	2
16	14	7	3
16	16	8	2
16	18	9	1
16	20	10	3
16	22	11	2
16	24	12	1
16	26	13	3
16	28	14	2
16	30	15	1