Second Exam

Date 08/ 05/2011

Name (in Arabic):.....

Section.....10 — 11

Registration Number:

...Time: 60 min

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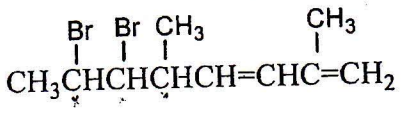
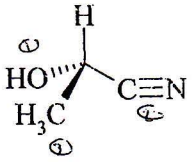
Q1.(12 pts) Choose the correct answer in each of the following:

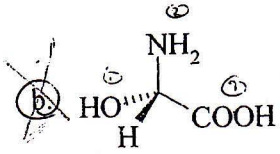
1. What is the total number of stereoisomers that can exist for the following molecule?

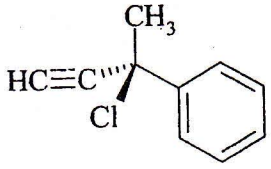


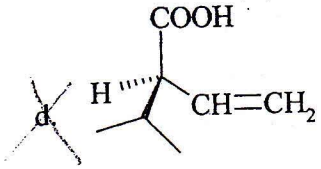
a. 2 b. 4 c. 8 d. 16

2. Which compound has R configuration?

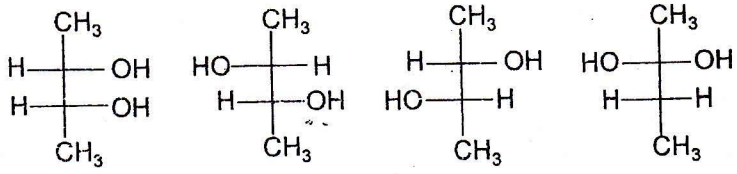
a. 

b. 

c. 

d. 

3. Consider the Fischer projection of the following compounds:

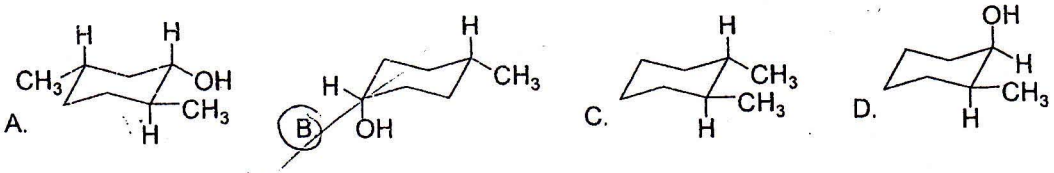


A B C D

Which are enantiomers?

a. A & B b. A & C c. B & C d. C & D

4. Which compound is optically inactive?

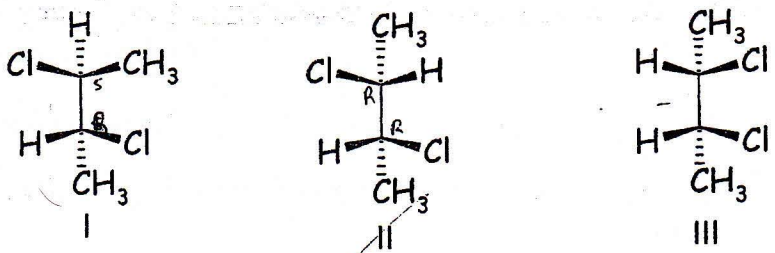


A. B C. D.

5. If a solution of a compound (30.0 g/100 mL of solution) has a measured rotation of +15° in a 2 dm tube, the specific rotation is:

a. +50° b. +25° c. +15° d. +7.5°

6. Which of the following structures represents a meso-compound?



a. I & II b. I & III c. II & III d. III Only e. II Only

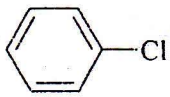
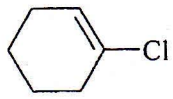
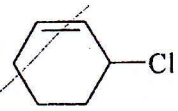
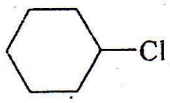
7. The strongest nuceophile among the following is:

a. C_2H_5SNa b. C_2H_5SH c. H_2S d. C_2H_5ONa

8. The best solvent for the following reaction is :

a. Water b. Hexane c. Acetone d. Ethanol

9. The most reavtive substrate towards S_N1 is:

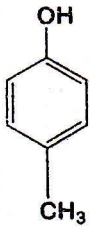
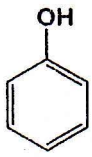
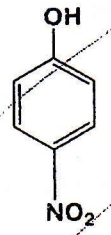
a. 
b. 
c. 
d. 

NaOH

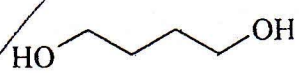
10. Which of the following will react with sodium hydroxide?

a. $CH_3CH_2CH_2$-OH b.  c.  d. $CH_3CH_2CH_2$-SH

11. The strongest acid is:

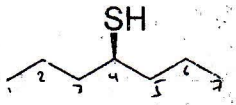
a. 
b. 
c. 
d. 

12. The compound with the highset boiling point is:

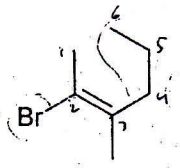

b. 
c. 
d. 

7

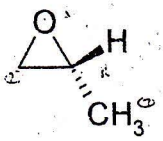
Q2.(8 pts) Give the name for each of the follwoing structures, assign the congfiguration as Z , E , R or S where needed:

a. 

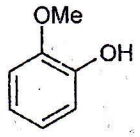
4-heptanethiol

b. 

(E)-2-bromo-3-methyl-2-hexene

c. 

(R)-2-methyl oxirane

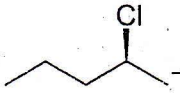
d. 

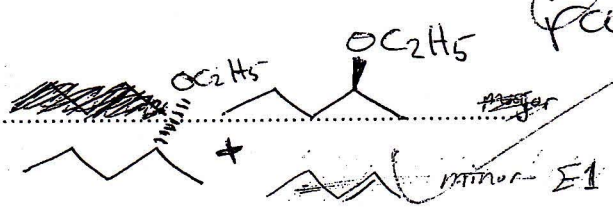
o-methoxyphenol

8

Q3.(18 pts) Complete the following reactions by writing the structures of the major product(s). Indicate the stereochemistry where appropriate, and give the name of the mechanism between the brackets for the first five.

18

1. 

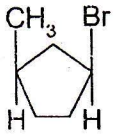
C_2H_5OH → 

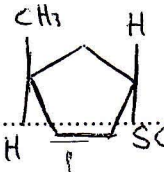
(Racemization SN1 ~~E2~~)

2.

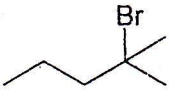
+ OK / Δ → 

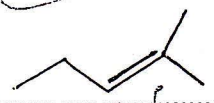
(E2)

3. 

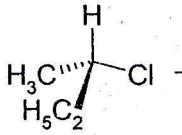
CH_3S Na, DMSO → 

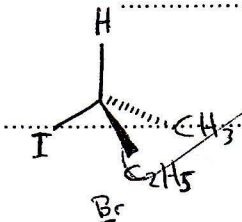
(SN2)

4. 

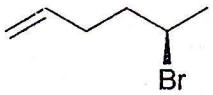
C_2H_5ONa, C_2H_5OH → 

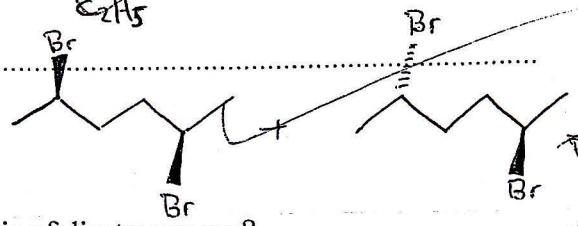
(E2)

5. 

NaI, DMF → 

(SN2)

6. 

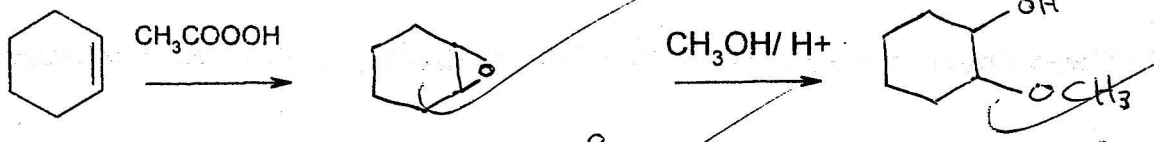
HBr → 

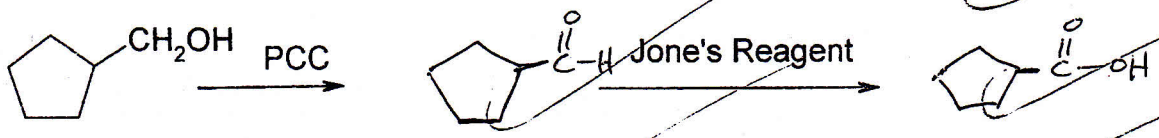
Major

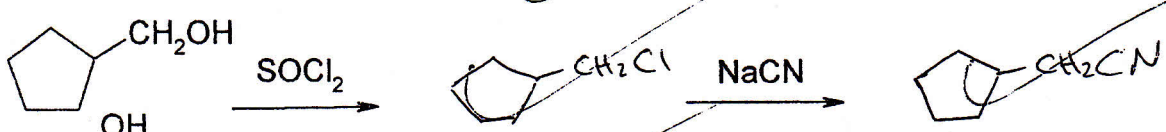
Which of the above reactions will give a pair of diastereomers? reaction 6

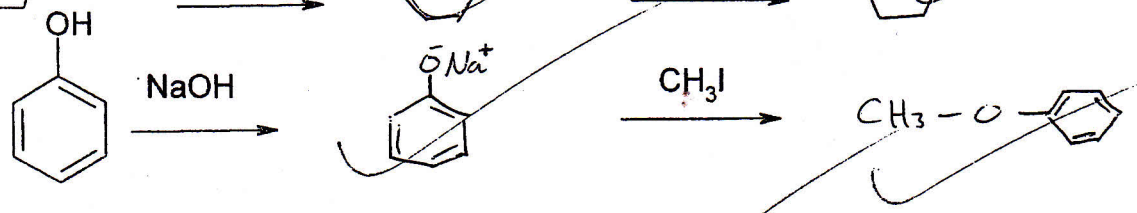
26

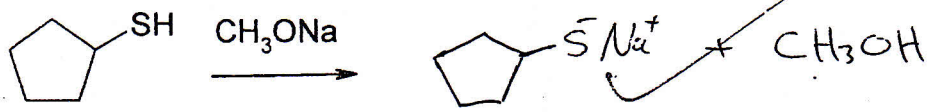
Q4.(10 pts) Complete the following reactions:

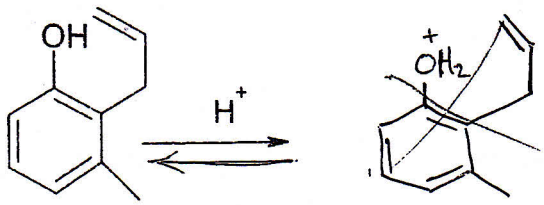
1. 

2. 

3. 

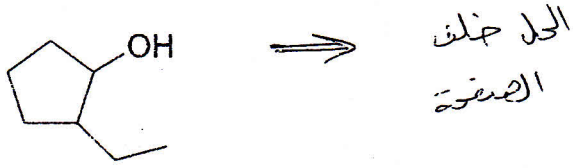
4. 

5. 

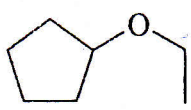
6. 

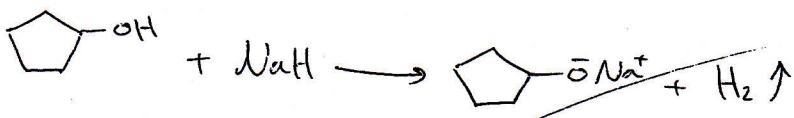
(1)

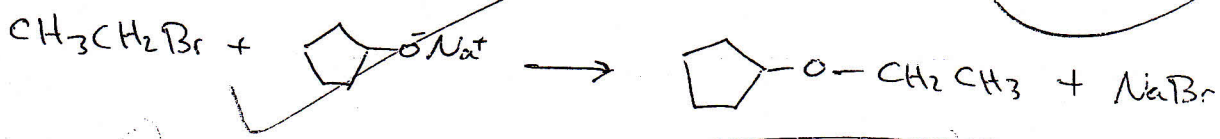
Q5. (5 pts) Show how you can synthesize each of the following, starting from cyclopentanol and bromoethane.

1. 

الحل خلف
الصفحة

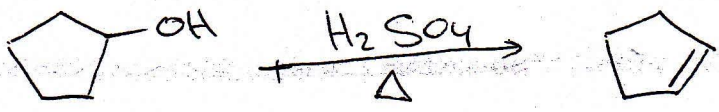
2, 

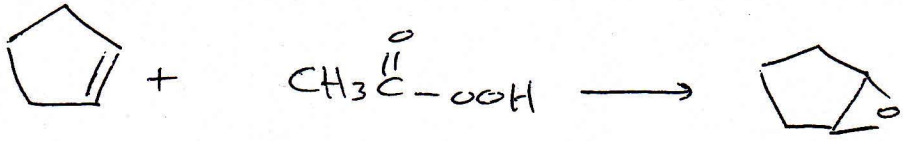


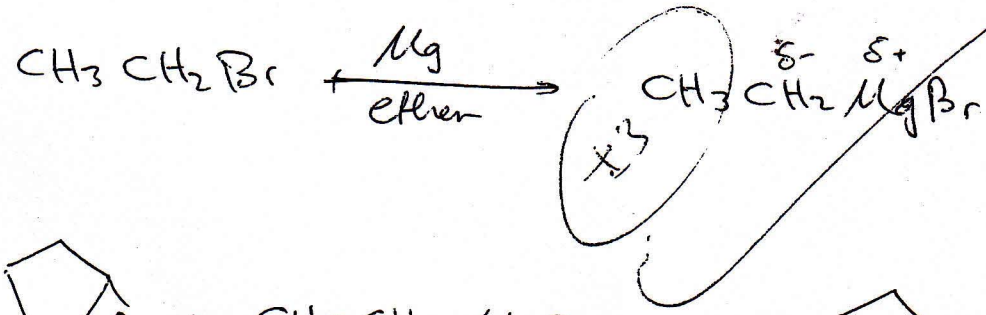


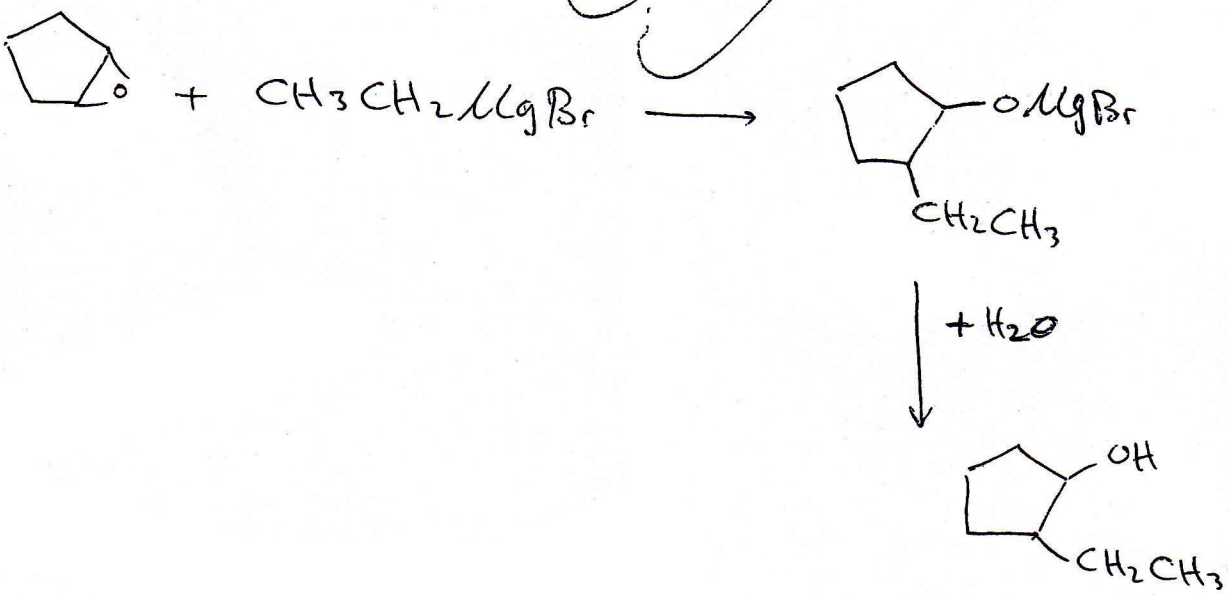
(2)

14

1. 
OH
H_2SO_4
Δ

2. 
+
$CH_3\overset{O}{\overset{\|}{C}}-OOH$
O

3. 
CH_3CH_2Br
Mg
ether
$CH_3\overset{\delta-}{C}H_2\overset{\delta+}{M}gBr$
sp^3

4. 
O
+ CH_3CH_2MgBr
OMgBr
CH_2CH_3
+ H_2O
OH
CH_2CH_3