

2 hrs.

Chem. 208
Final Exam

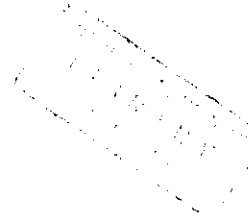
Feb. 2, 1999
Mrs. Deeb
Mrs. Saber

Family Name: _____

First Name: _____

I.D. #: _____

Section: _____



Grading:

I. _____ / 30

II. _____ / 30

III. _____ / 50

IV. _____ / 30

V. _____ / 20

VI. _____ / 40

Total _____ / 200



GOOD LUCK

1 (30%) Give the structure of each of the following:

- a- An aldohexose that yields an optically inactive product when treated with NaBH_4 .

- b- Methyl- β -D-fructofuranoside.

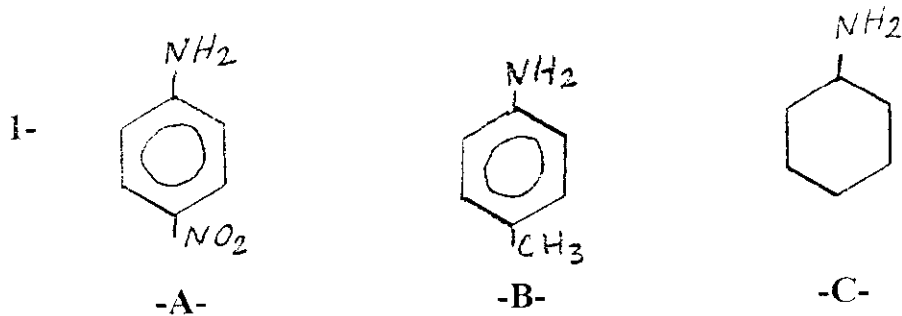
- c- A disaccharide that cannot react with Fehling's or Benedict's solutions and name it.

- d- A disaccharide that can show mutarotation and name it.

- e- An aldotetrose that yields an optically active product when treated with HNO_3 .

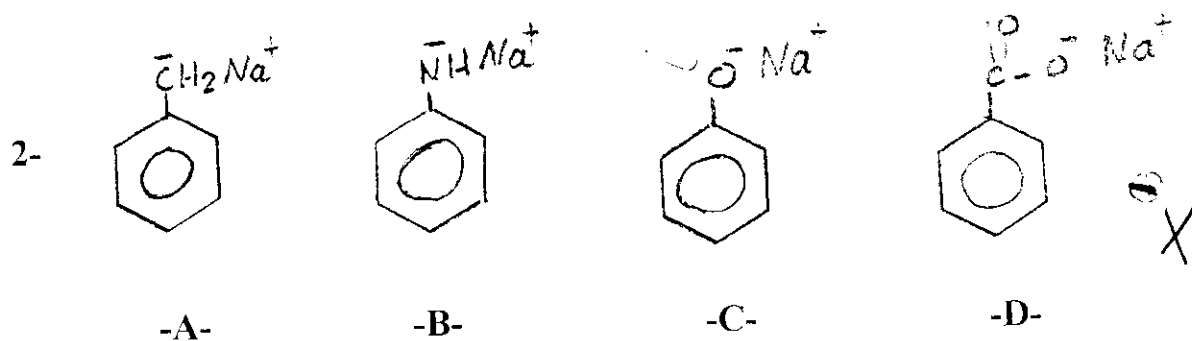
- f- The Haworth projection formula for D-(+)-galactose which is an epimer of D-(+)-glucose at (C-4).

II (30%) Fill in the blanks for each of the following questions after careful examination of the structures.



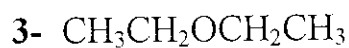
Compound _____ is the strongest base.

Compound _____ is the weakest base.

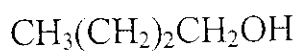


Compound _____ is the most reactive toward nucleophilic addition.

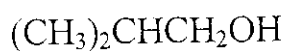
Compound _____ is the least reactive toward nucleophilic addition.



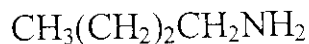
-A-



-B-



-C-

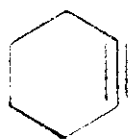


-D-

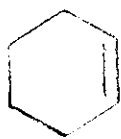
Compound _____ has the highest boiling point.

Compound _____ has the lowest boiling point.

+



-A-



-B-

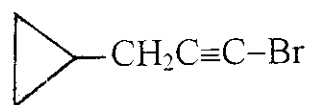


-C-

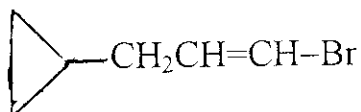
Compound _____ is the most stable.

Compound _____ is the least stable.

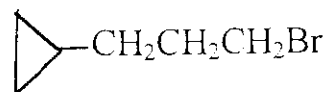
5-



-A-



-B-

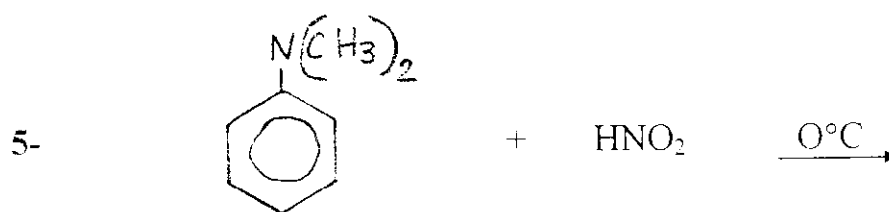
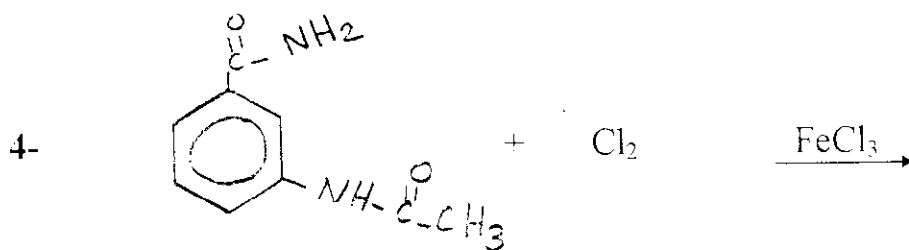
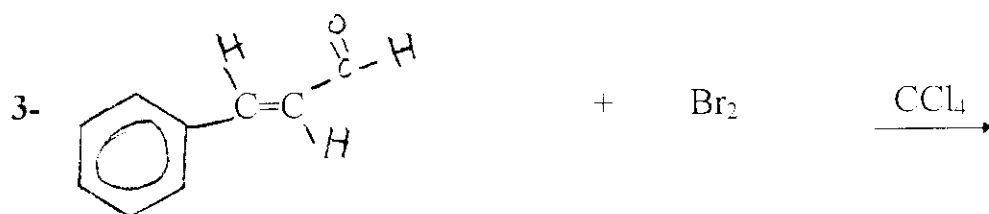
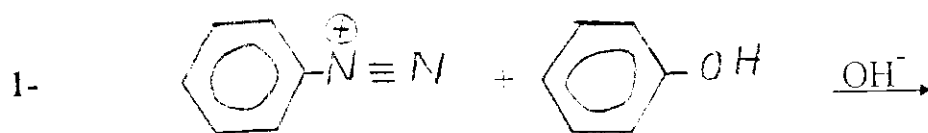


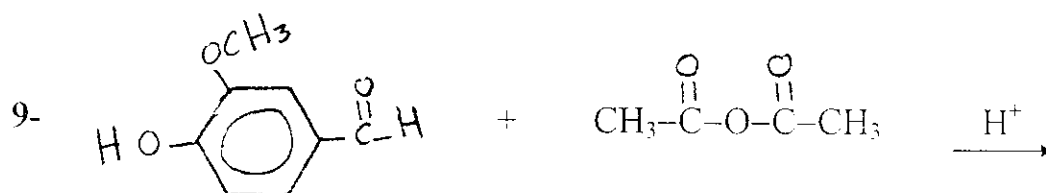
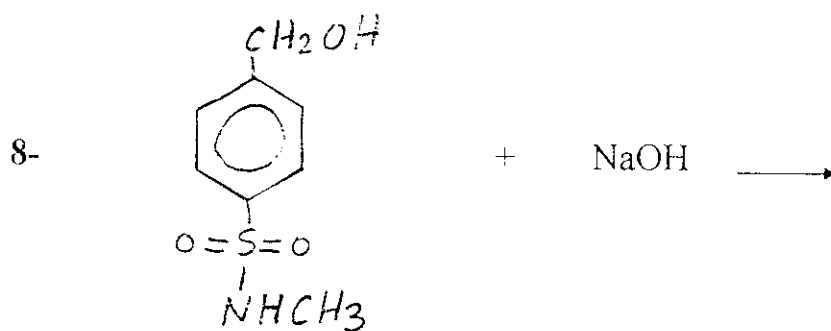
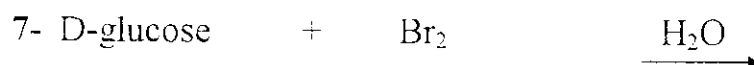
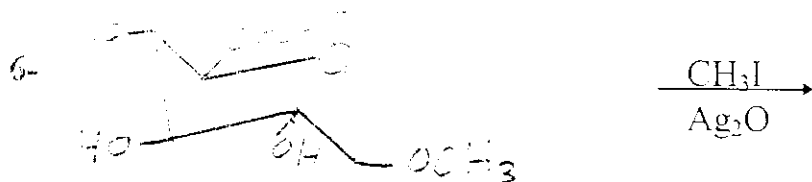
-C-

Compound _____ has the longest C-Br bond.

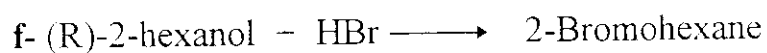
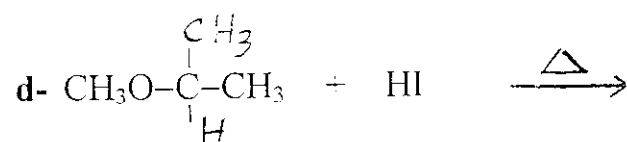
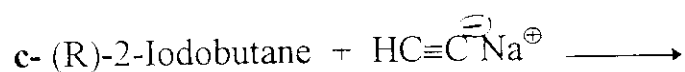
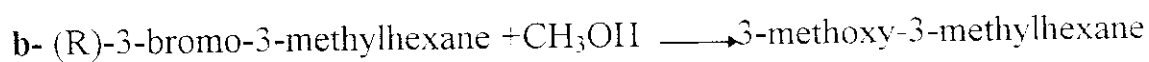
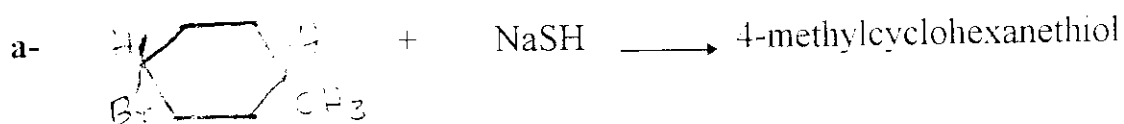
Compound _____ has the shortest C-Br bond.

11 (50%) Give the structure of the major organic product(s) of each of the following reactions.





IV (30%) Consider the following reactions and answer each of the below related questions. Note: Stereochemistry (where applicable) of the product(s) is not shown.



1- Predict the structure of the products in reaction c and d. Show stereochemistry if applicable.

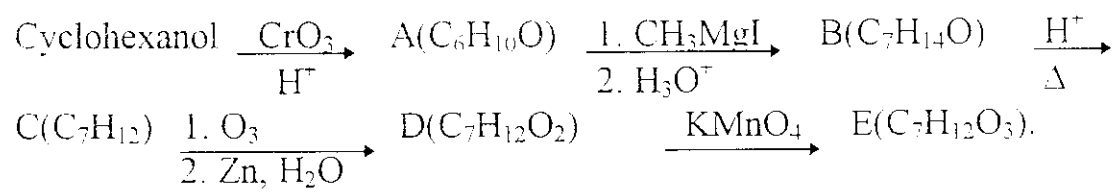
2- Which of the above reaction(s) proceed(s) with inversion of configuration.

3- Which of the above reaction(s) proceed(s) through a carbocation mechanism.

4- Which of the above reaction(s) gives a racemic mixture as a product.

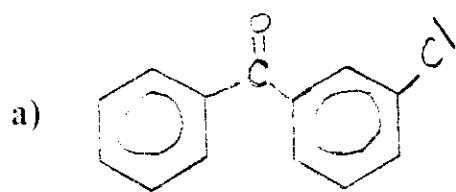
5- What would be the product of reaction(a) if sodium t-butoxide is used instead of NaSH.

V (20%) Given the following reaction sequence.

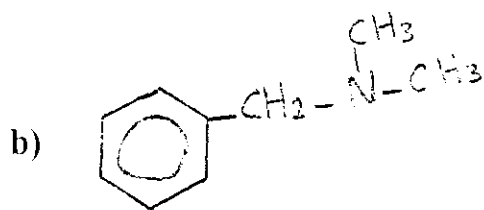


Deduce the structure of compounds A \longrightarrow E.

VI(40%) Outline all steps involved in the synthesis of each of the following compounds from the indicated starting material and any other needed reagents.

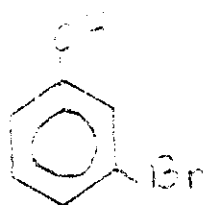


from benzene and benzoic acid as the only organic compounds.

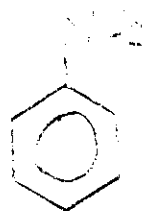


from benzylalcohol and NH_3

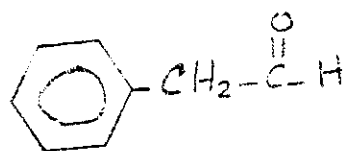
c)



from



d)



from

