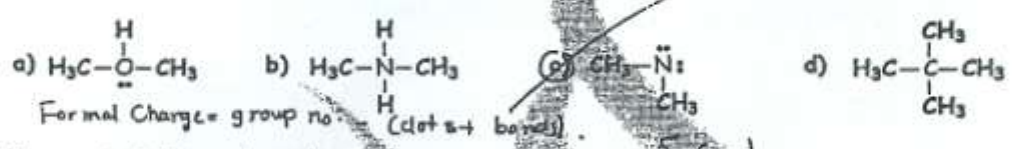


20/25

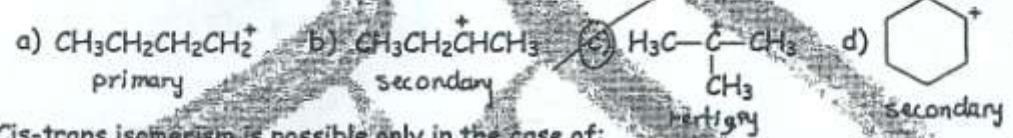
THE UNIVERSITY OF JORDAN	FIRST EXAM	NAME: <u>Amr Al-Sayid</u>
DEPARTMENT OF CHEMISTRY	MARCH 24, 2007	REGISTRATION No.: <u>0068765</u>
CHEMISTRY 233	TIME: 60 MIN.	SECTION: <u>10</u> SEAT No.: <u>47</u>

I. Circle the correct answer in each of the following:

> In which of these structures, does the central atom have formal charge = -1



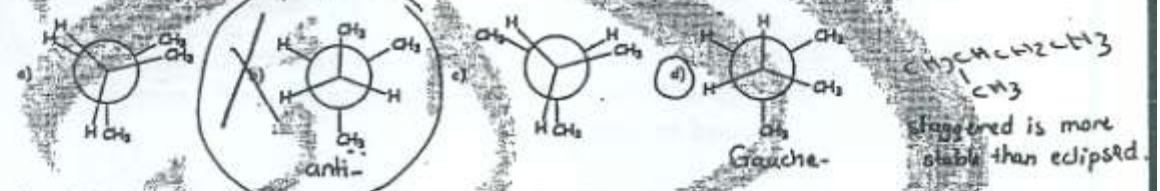
> The most stable carbocation



> Cis-trans isomerism is possible only in the case of:



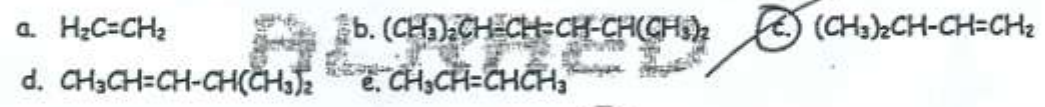
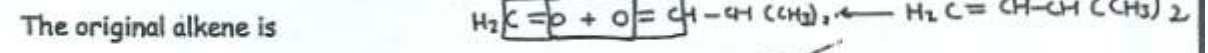
> The most stable conformation of 2-methylbutane is:



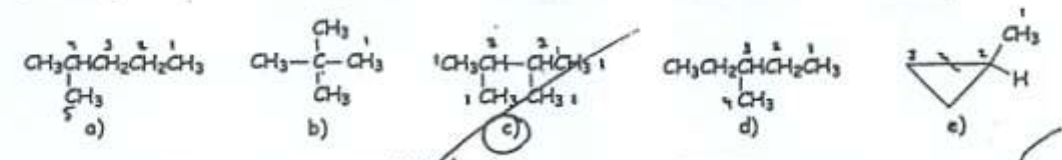
> Which of the following alkanes has the highest boiling point?



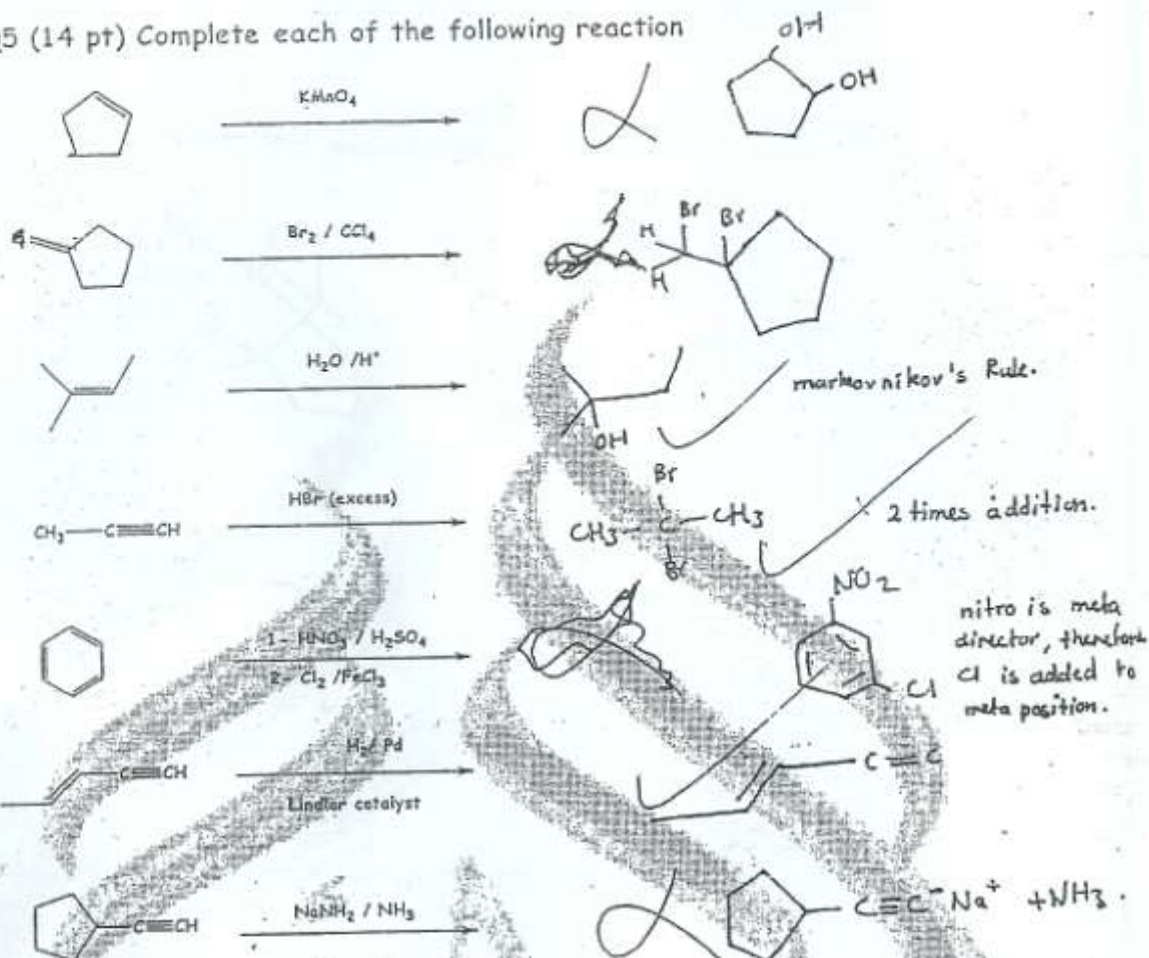
> Given the products of ozonolysis are $\text{H}_2\text{C}=\text{O}$ and $(\text{CH}_3)_2\text{CH}-\text{CH}=\text{O}$



> Which compound among the following will give two monochloro products upon reaction with Cl_2 / UV light?

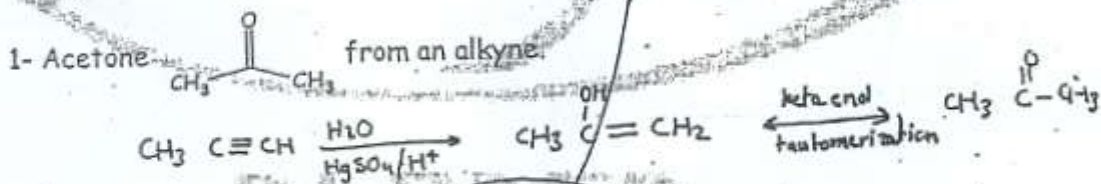


Q5 (14 pt) Complete each of the following reaction

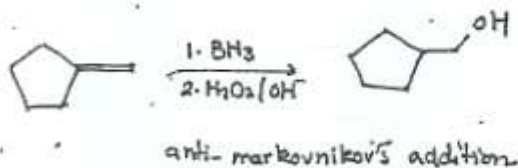


Bonus question: (4 pt)

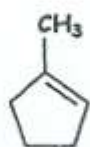
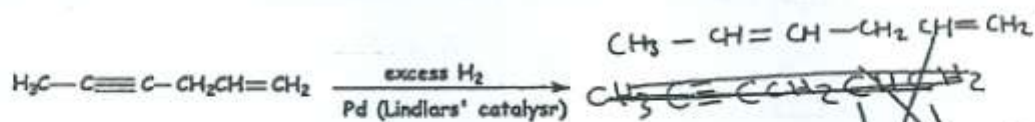
Show how you can synthesize each of the following compounds? Indicate any needed reagents.



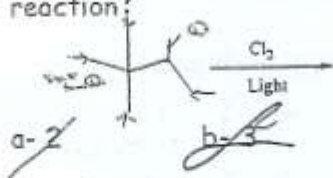
2- OC1CCCC1 from an alkene.



IV. Complete the following reactions by writing the structure of the major product



7- What is the number of monochlorinated product(s) of the following reaction:



a- 2

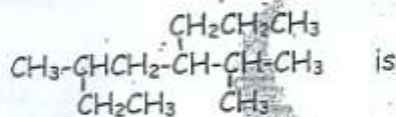
b- 3

c- 4

d- 5

e- 6

8- The correct IUPAC name for the following compound:



is

a- 3-isopropyl-5-methyloctane

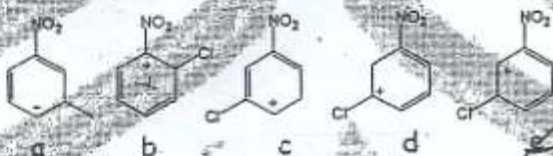
c- 4-isopropyl-6-methyloctane

e- non of the above

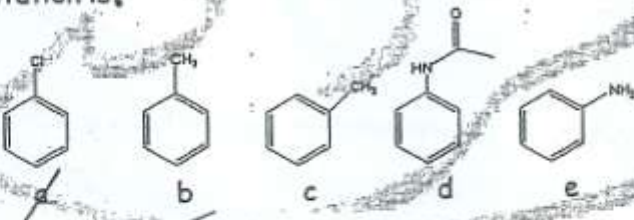
b- 5-isopropyl-3-methyloctane

d- 2-methyl-3-propyl-5-ethylheptane

9- The intermediate obtained upon reaction of $\text{Cl}_2/\text{FeCl}_3$ with nitrobenzene is:



10- The least reactive aromatic compound in electrophilic aromatic substitution is:



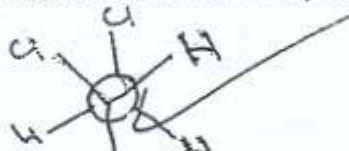
ALRAED

3

2

Q2 (14 pt) Draw the structure of each of the following:

1- The most stable Newman projection of 1,1,2-trichloroethane.



2- The most stable (chair) conformation of *cis*-1-isopropyl-2-methylcyclohexane.



3- The structure of *m*-chloroacetophenone.



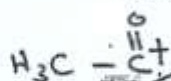
4- The cycloalkane C_5H_{10} that shows *cis*-*trans* isomerism.



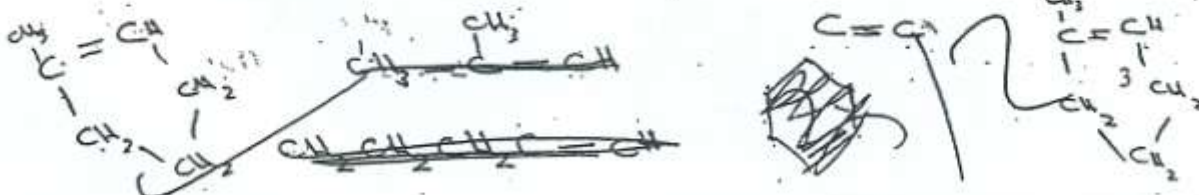
5- A resonance structure of $CH_3-C(=O)-S^+(CH_3)_2$ (indicate the formal charge)



6- The structure of the electrophile formed upon reaction of benzene with $H_3C-CO-Cl$ in the presence of $AlCl_3$



7- The alkene that gives $CH_3-C(=O)-CH_2CH_2CH_2-CHO$ upon ozonolysis.



Q3 (8 pt) Give the IUPAC Name of each of the following compounds:

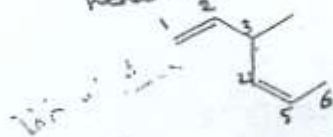


1, 3, 5
1, 3, 5-tribromo Benzene

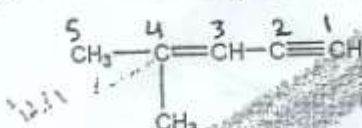


Phenyl Bromide

1-bromo-1,4-cyclohexene



3-methyl-2-hexanone



4-methyl-1-pentyne

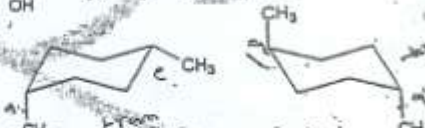
Q4 (8 pt) Classify each of the following pairs of structures as: structural isomers, configurational isomers, conformations or the same:



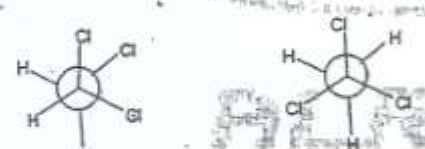
the same



structural isomers



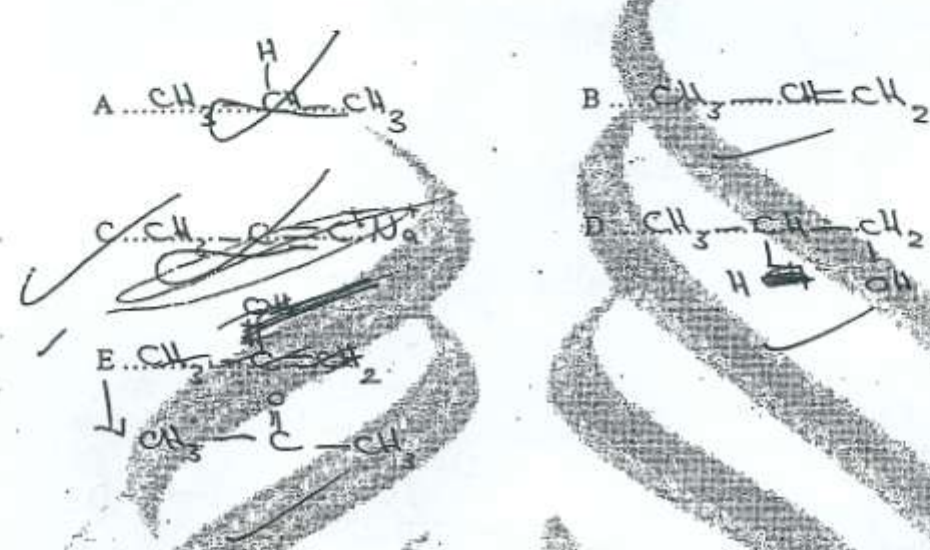
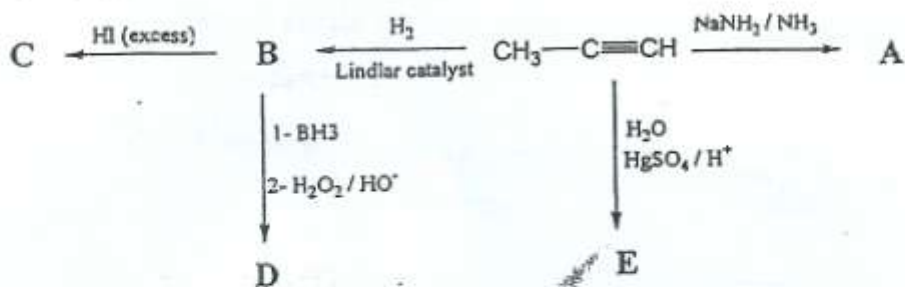
conformations



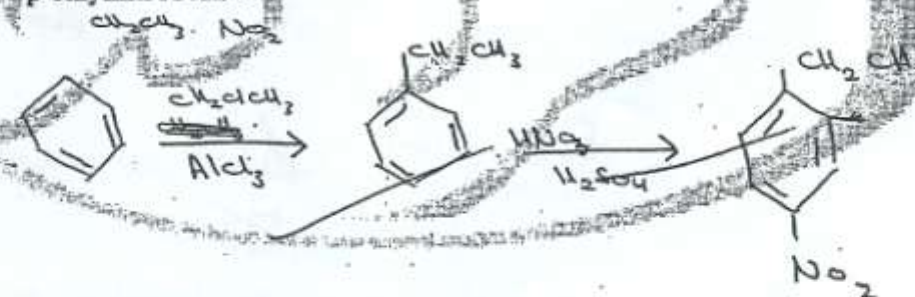
structural isomers

4

Q5 (10 pt) Draw the missing structure (A-G)



Q7 (Bonus 4pt) Starting from benzene show how you can synthesize p-ethylnitrobenzene?

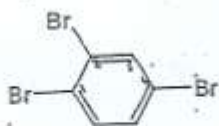


ALRAED

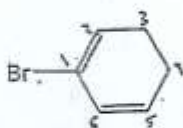
10

5

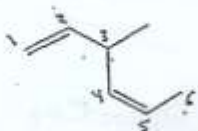
Q3 (8 pt) Give the IUPAC Name of each of the following compounds:



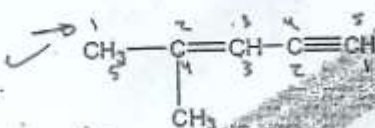
1,2,4-tribromocyclohexene



1-bromo-1,5-cyclohexadiene



3-methyl-1,4-hexadiene

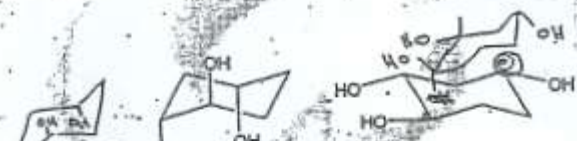


2-methyl-2-pentene-4-yne

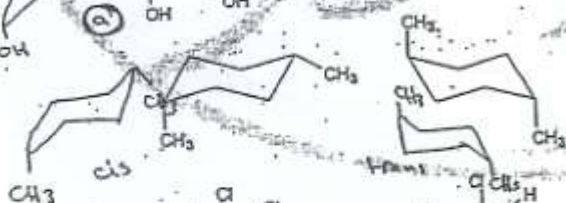
Q4 (8 pt) Classify each of the following pairs of structures as: structural isomers, configurational isomers, conformations or the same:



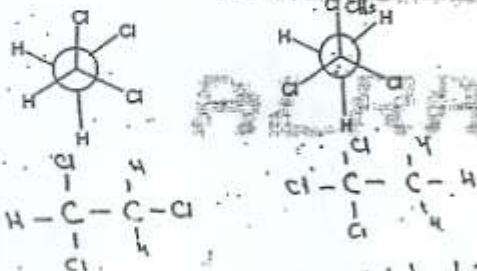
Conformations



Conformations



Configurational isomers (cis-trans)



Structural isomers

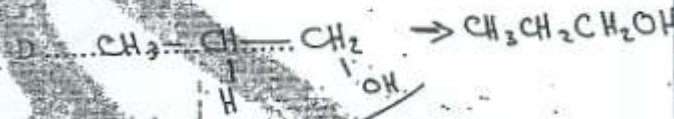
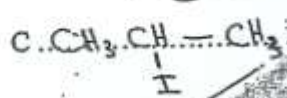
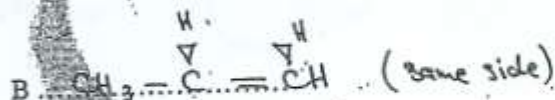
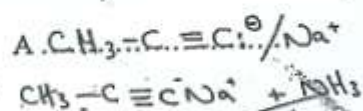
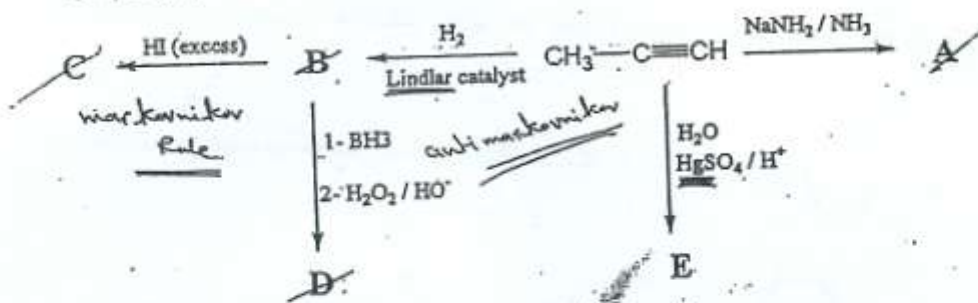
1,3-Cl₂

1,2-Cl₂

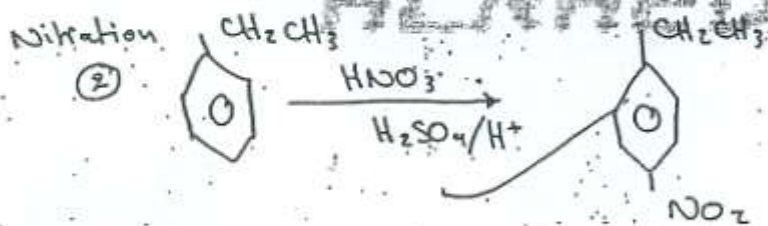
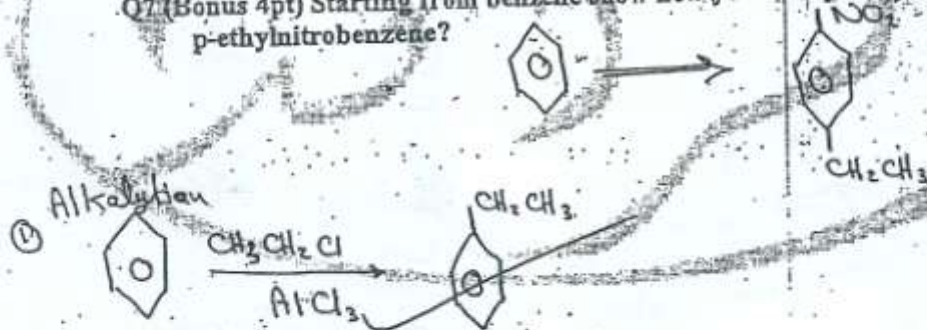
10

4

Q5 (10 pt) Draw the missing structure (A-G)



Q7 (Bonus 4pt) Starting from benzene show how you can synthesize p-ethylnitrobenzene?



4.5