

Sultan Qaboos University
College of Science, Department of Chemistry

Chem3322
Organic Chemistry I

Fall 2009

Test 1 A

2 November, 2009

Test Duration: 75 minutes

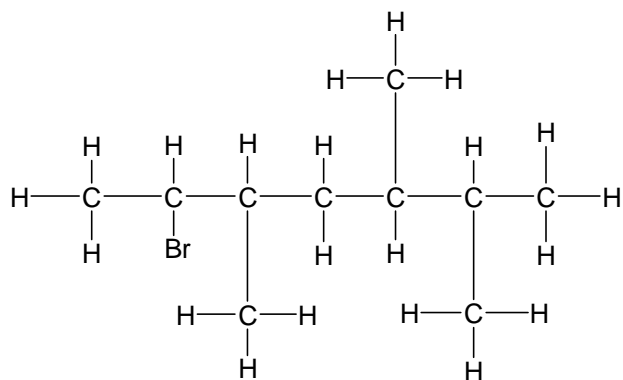
Name: _____ ID: _____

Question	Earned Mark	Maximum Mark
1		24
2		24
3		22
Total		70

Question 1 24 marks

24 marks

a. Consider the following line-bond structure:



- i. Convert the above line-bond structure into a condensed structure
- ii. Convert it to a skeletal drawing
- iii. Draw *one* constitutional isomer of the above structure

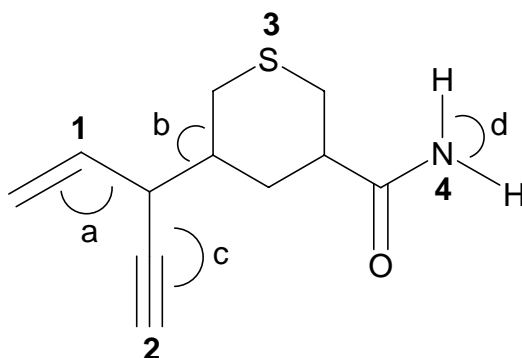
b. Provide structures according to the following descriptions:

i. **Two** constitutional isomers of the formula C_5H_{12}

ii. **One** alcohol and **one** ether of the formula C_3H_8O

iii. **One** carboxylic acid and **one** ester of the formula $C_4H_8O_2$

c. Consider the following structure:



i. Predict angles a, b, c and d

a: _____ b: _____

c: _____ d: _____

ii. What is the hybridization of atoms 1, 2, 3, and 4?

1: _____ 2: _____ 3: _____ 4: _____

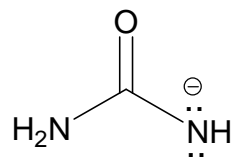
iii. Circle and identify the functional groups present

Question 2

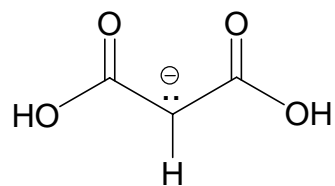
24 marks

a. Draw the required number of resonance structures for the following species. Use curved arrows to indicate electron movement in going from one structure to another

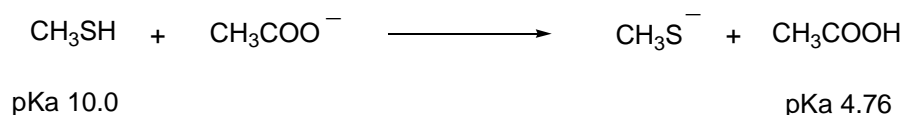
i. (*Two resonance structures*)



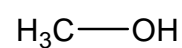
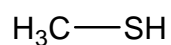
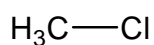
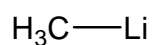
ii. (*Three resonance structures*)



b. Will the following reaction take place as written? Explain your answer briefly.



c. Determine if the indicated bonds in the following compounds are polar covalent or nonpolar covalent bonds. Show the direction of polarity for each polar covalent bond. (Electronegativity values: Li 1.0, C 2.5, Cl 3.0, S 2.5, O 3.5)

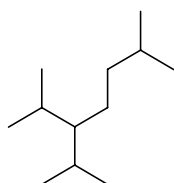


Question 3

22 marks

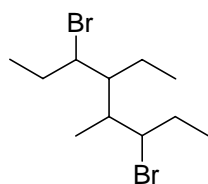
a. Provide IUPAC names for the following structures:

i.



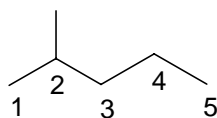
IUPAC name: _____

ii.



IUPAC name: _____

b. Consider 2-methylpentane whose structure is shown below:



- i. Draw **four different** Newman projections by sighting along **C3-C4** bond
- ii. Label the projections as staggered, eclipsed or any other specific descriptions
- iii. Which is the most stable conformation? Which is the least stable? Explain your answer briefly.