

Last Name	First Name	MI
Student ID Number:		Total Score
Circle the name of your TA: HEATHER / SUSAN / LINH		
Discussion Section – Day:	Time:	

Chem 30A Spring 2005

QUIZ #3 (15 Min)

Weds Jun 8th

***INTERPRETATION OF THE QUESTIONS IS PART
OF THE EXAM – DO NOT ASK FOR THE
QUESTIONS TO BE EXPLAINED TO YOU***

******DO NOT OPEN THIS EXAM UNTIL INSTRUCTED TO DO SO******

***ONLY ONE QUESTION ON THIS EXAM WILL BE GRADED
BY PLACING AN 'X' IN THE APPROPRIATE BOX BELOW, INDICATE
WHICH QUESTION YOU WOULD LIKE US TO GRADE***

Q1	
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Q2	
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***(IF NO BOX IS MARKED, WE WILL GRADE Q1)
(IF BOTH BOXES ARE MARKED, WE WILL GRADE Q1)
(IF IT IS AMBIGUOUS WHICH BOX IS MARKED, WE WILL GRADE Q1)***

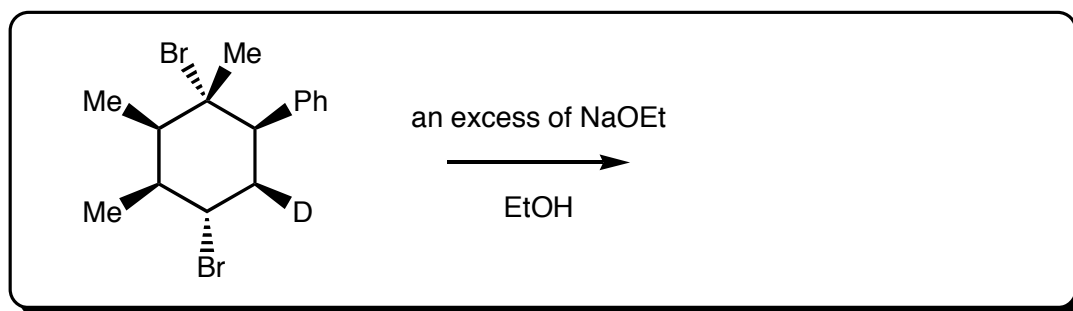
***I can't believe it! Reading and writing actually paid off!
- Homer Simpson***

Q1: Answer the questions below by circling either **True** or **False** (2 points each) –

- | | | |
|---|-------------|--------------|
| a. Tertiary alkyl halides do not undergo S_N2 reactions. | True | False |
| b. A carbon-iodine bond is stronger than a carbon-fluorine bond | True | False |
| c. E2 and S_N1 reactions share a common carbocation intermediate | True | False |
| d. Doubling both the concentration of the nucleophile and the electrophile in an S_N2 reaction doubles the rate of the reaction. | True | False |
| e. The methyl thiolate anion (MeS^-) is more nucleophilic than dimethyl sulfide (Me_2S). | True | False |
| f. The E1 elimination reaction requires an antiperiplanar relationship between the leaving group and the beta-H atom. | True | False |
| g. Skeletal rearrangements are sometimes observed in S_N1 and E1 reactions. | True | False |
| h. <i>tert</i> -Butyl chloride undergoes S_N1 solvolysis in aqueous ethanol more rapidly than it does in water. | True | False |
| i. (<i>R</i>)-2-Iodopentane reacts with potassium acetate in dimethylformamide to give (<i>R</i>)-2-acetoxy-pentane as the major product. | True | False |
| j. <i>n</i> -Propyl fluoride ($\text{CH}_3\text{CH}_2\text{CH}_2\text{F}$) has a higher boiling point than propane ($\text{CH}_3\text{CH}_2\text{CH}_3$). | True | False |
| k. 2-Bromopropane reacts with sodium ethoxide in ethanol to give 2-ethoxypropane as the major product. | True | False |
| l. The Hofmann elimination observed with some quaternary trimethylammonium salts ($\text{R-N}(\text{CH}_3)_3^+$) proceeds with syn stereospecificity. | True | False |
| m. S_N1 reactions are often favored over E1 reactions at higher reaction temperatures. | True | False |
| n. Methyl halides undergo E2 reactions when treated with very strong bases. | True | False |
| o. S_N2 reactions of secondary alkyl bromides with NaI proceed slower in water than in acetone. | True | False |

BONUS QUESTION

Draw the major product of the E2 elimination reaction shown below (5 points) –



Q2

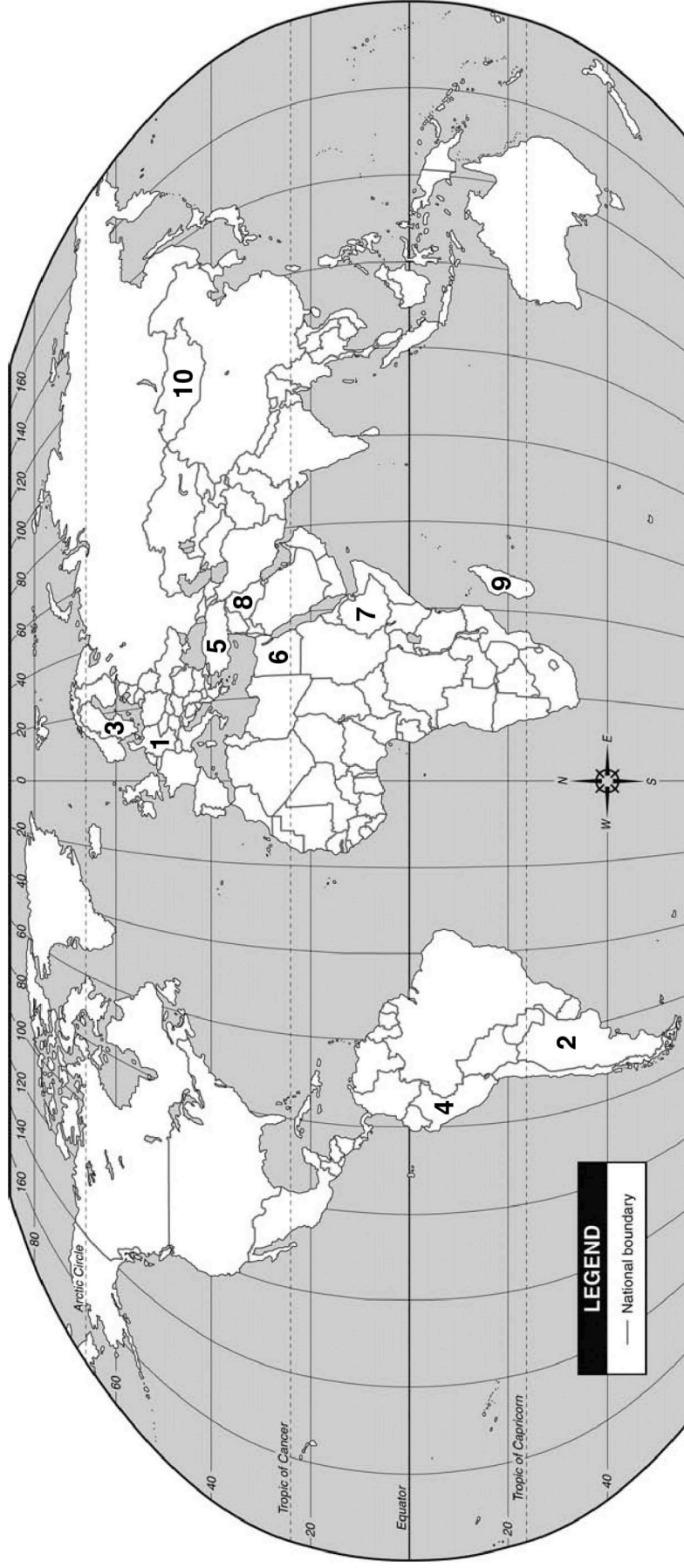
Afghanistan
Egypt
Brazil
Poland
Finland

China
Germany
Iran
Peru
Argentina

Madagascar
Syria
Columbia
France
Sweden

Ethiopia
Turkey
Somalia
Bolivia
Swaziland

Spain
Iraq
Mongolia
Tanzania
Norway



Name the countries labelled 1–10 (they are 10 of the 25 countries listed at the top of the page) 3 pts each –

1 _____ 2 _____ 3 _____ 4 _____ 5 _____

6 _____ 7 _____ 8 _____ 9 _____ 10 _____

BONUS – name five countries (without using any of the 25 listed above) through which the equator passes (1 pt each):

A _____ B _____ C _____ D _____ E _____

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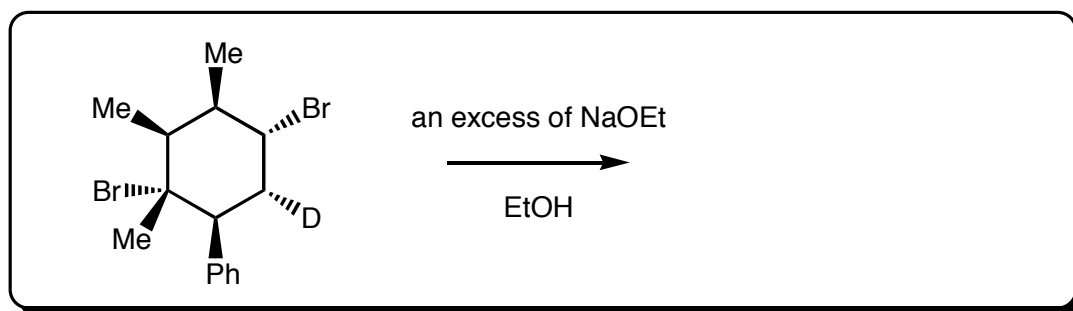
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Q1: Answer the questions below by circling either **True** or **False** (2 points each) –

- | | | |
|--|-------------|--------------|
| a. Tertiary alkyl halides sometimes undergo S_N2 reactions. | True | False |
| b. A carbon-iodine bond is weaker than a carbon-fluorine bond | True | False |
| c. $E1$ and S_N1 reactions share a common carbocation intermediate | True | False |
| d. Doubling both the concentration of the nucleophile and the electrophile in an S_N1 reaction doubles the rate of the reaction. | True | False |
| e. The methyl thiolate anion (MeS^-) is less nucleophilic than dimethyl sulfide (Me_2S). | True | False |
| f. The $E1$ elimination reaction does not require an antiperiplanar relationship between the leaving group and the beta-H atom. | True | False |
| g. Skeletal rearrangements are never observed in S_N1 and $E1$ reactions. | True | False |
| h. <i>tert</i> -Butyl chloride undergoes S_N1 solvolysis in aqueous ethanol less rapidly than it does in water. | True | False |
| i. (<i>R</i>)-2-Iodopentane reacts with potassium acetate in dimethylformamide to give (<i>S</i>)-2-acetoxy-pentane as the major product. | True | False |
| j. <i>n</i> -Propyl fluoride ($\text{CH}_3\text{CH}_2\text{CH}_2\text{F}$) has a lower boiling point than propane ($\text{CH}_3\text{CH}_2\text{CH}_3$). | True | False |
| k. 2-Bromopropane reacts with sodium ethoxide in ethanol to give 2-ethoxypropane as the minor product. | True | False |
| l. The Hofmann elimination observed with some quaternary trimethylammonium salts ($\text{R-N}(\text{CH}_3)_3^+$) proceeds with anti stereospecificity. | True | False |
| m. S_N1 reactions are often favored over $E1$ reactions at lower reaction temperatures. | True | False |
| n. Methyl halides never undergo $E2$ reactions. | True | False |
| o. S_N2 reactions of secondary alkyl bromides with NaI proceed faster in water than in acetone. | True | False |

BONUS QUESTION

Draw the major product of the $E2$ elimination reaction shown below (5 points) –



Q2

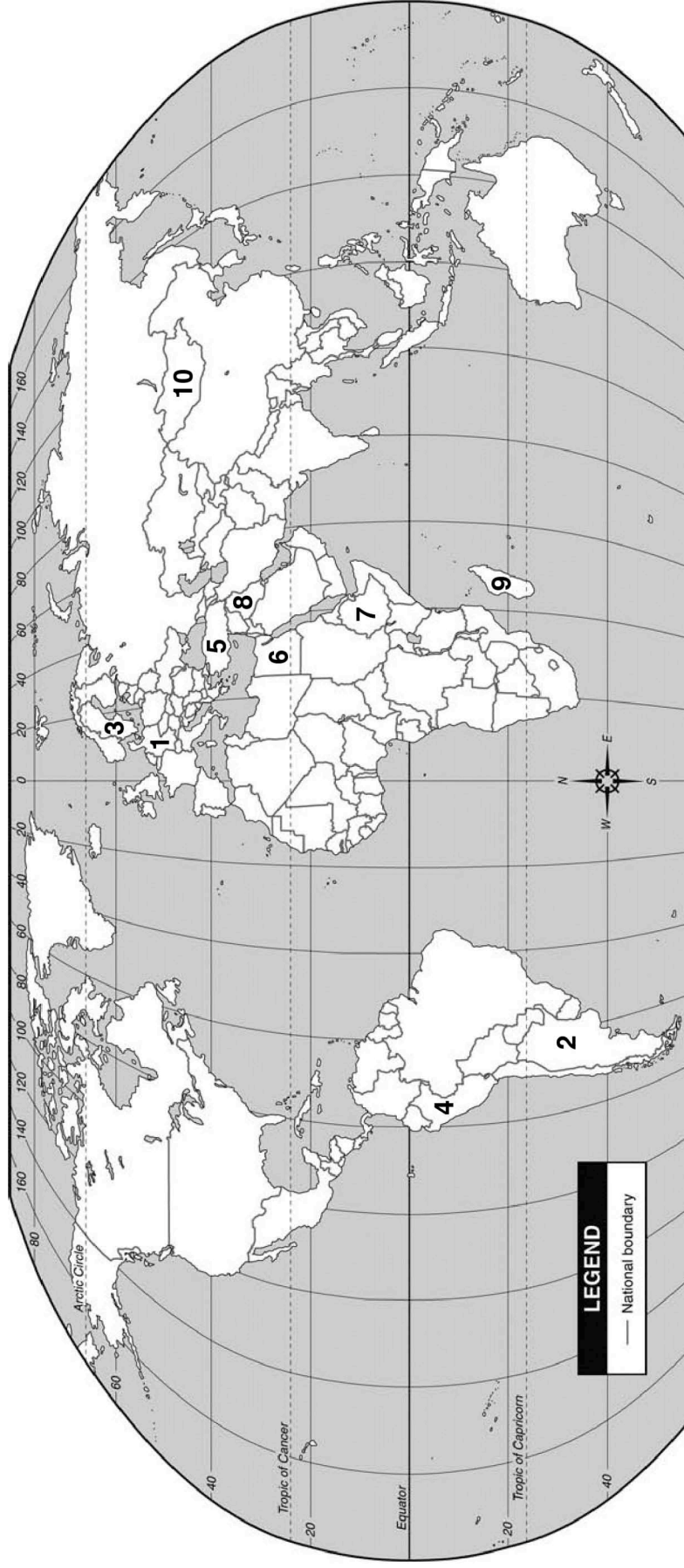
Afghanistan
Egypt
Brazil
Poland
Finland

China
Germany
Iran
Peru
Argentina

Madagascar
Syria
Columbia
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Sweden

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Turkey
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Bolivia
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