

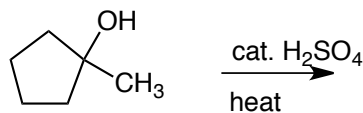
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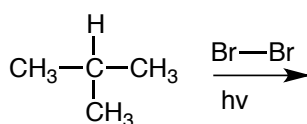
Chem. 121, Sect 008, Quiz 2

Fall, 2011, 50 points

1. Give the product of the following reaction, showing all of the steps by which it is formed. (10 pts)



2. Give the product of the following radical reaction, showing all of the steps of the mechanism and calculate  $\Delta H$  for the overall reaction. (15 pts)



BDE'S	$\Delta H$ KJ/mol
$(\text{CH}_3)_3\text{C}-\text{H}$	400
$\text{CH}_3-\text{H}$	439
$\text{Br}-\text{Br}$	193
$\text{Br}-\text{H}$	366
$(\text{CH}_3)_3\text{C}-\text{Br}$	292
$\text{CH}_3-\text{Br}$	293

3. In the preparation of cyclohexene (MW 82.15 g/mol, density = 0.811 g/mL) from 10 mL cyclohexanol (MW 100.16 g/mol, density = 0.96 g/mL) and 10 drops of sulfuric acid (MW 98.08 g/mol, density = 1.84 g/mL), one student isolated 5.3 g of cyclohexene. Calculate her percent yield. ( 5 pts)

4. In the preparation of cyclohexene from cyclohexanol, (a) explain the purpose of adding the sodium chloride to the initial distillate. (b) How could you tell that you had added the correct amount of sodium chloride? (6 pts)

5. In the separation of the unknown mixture using the fractionating column in experiment 4, explain the purpose of the copper wool in fractionating column. (4 pts)

6. In the preparation of *t*-butyl chloride (2-chloro-2-methylpropane) from *t*-butanol (2-methyl-2-propanol) using concentrated hydrochloric acid (a) show the overall reaction that occurred, giving all of the steps. (b) Explain the purpose of adding calcium chloride to the product before doing the final distillation. (c) How can you tell that you have added enough calcium chloride? (10 pts)