

**Chemistry 2521**  
**Fall Semester 2001; Midterm 2 Exam**

**November 7, Wednesday, 1:00 to 1:50 pm**

This exam has 5 problems (100 pts) on 6 pages. Make sure your copy is complete and correct.

Printed Name (Last, First) \_\_\_\_\_

Your grades will be available Friday, November 9, morning before class.

Good Luck!

**Chemistry 2521**  
**Fall 2001; Midterm 2 Exam**

This exam has 5 problems on 6 pages. Make sure your copy is complete and correct.

Printed Name (Last, First) \_\_\_\_\_

Scores:

1. \_\_\_\_\_

2. \_\_\_\_\_

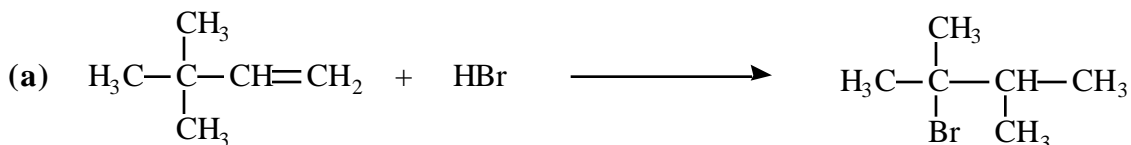
3. \_\_\_\_\_

4. \_\_\_\_\_

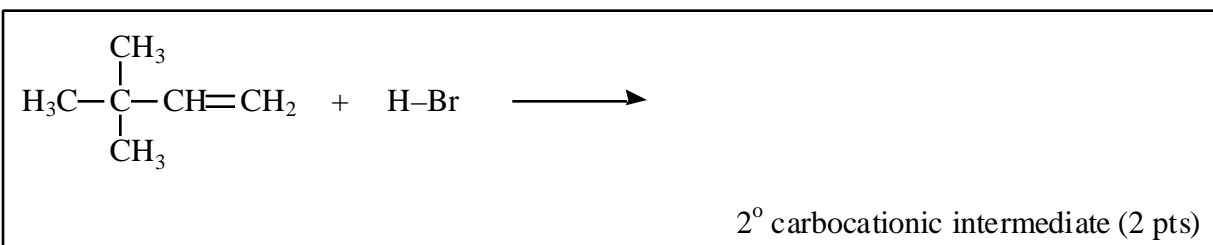
5. \_\_\_\_\_

Total: \_\_\_\_\_

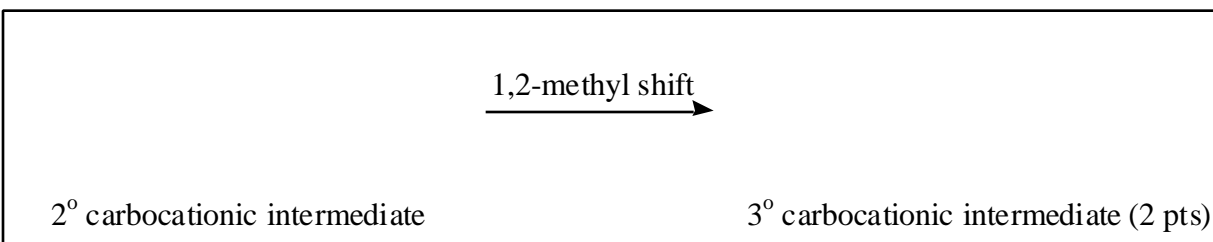
1. (24) Using provided boxes, answer the questions on **mechanisms** of the following reactions (12 pts each):



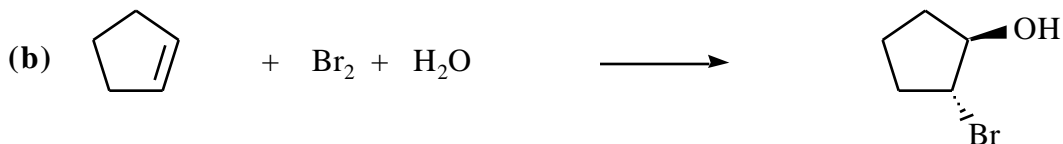
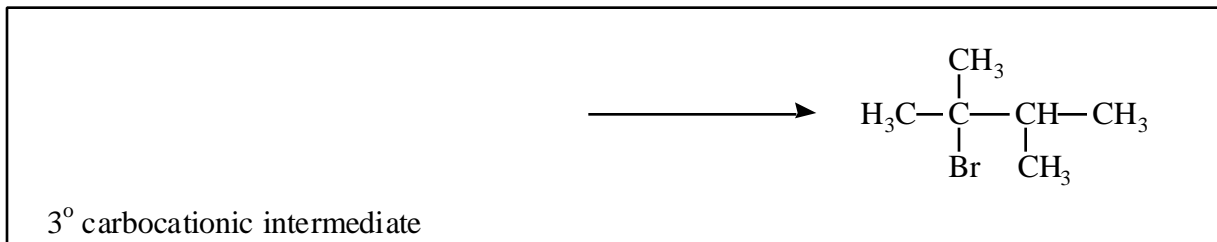
Using curved arrows (2 pts) and showing the structure of the intermediate (2 pts), write the **first step** in the reaction mechanism:



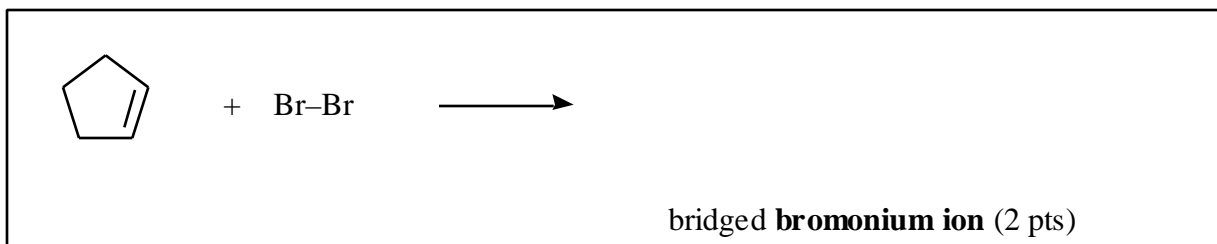
Using curved arrow (2 pts) and showing the structure of the intermediate (2 pts), write the **rearrangement** step (1,2-methyl shift) in the reaction mechanism:



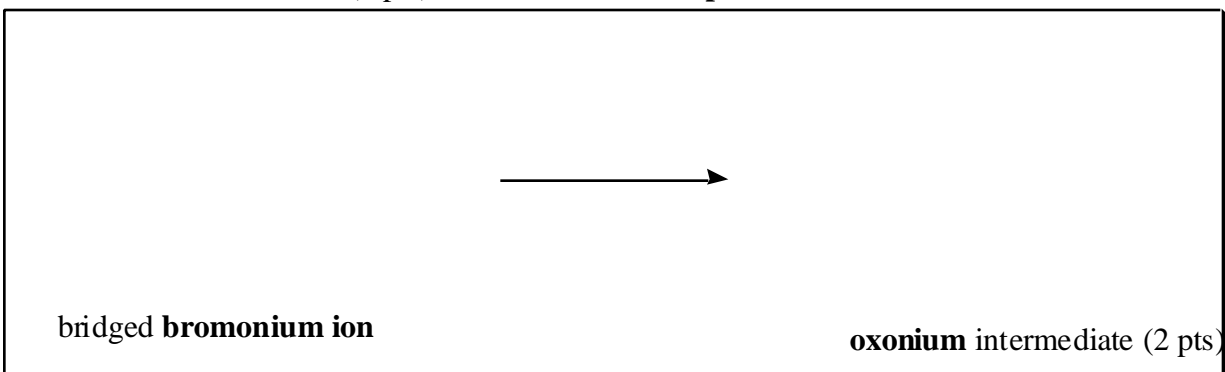
Using curved arrow (2 pts) and other essential species (2 pts), write the **final step** in the reaction mechanism:



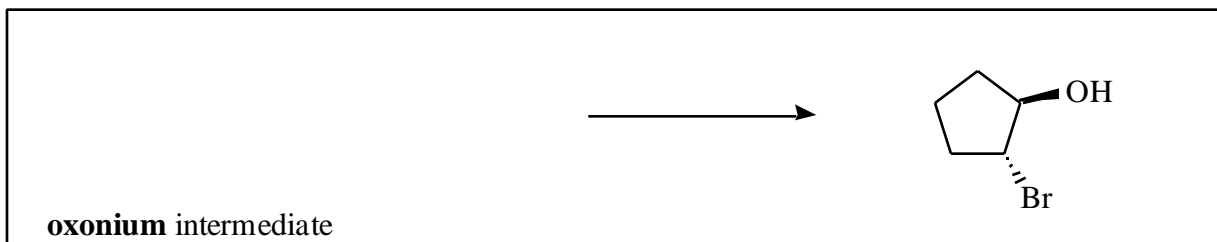
Using curved arrows (2 pts) and showing the structure of the intermediate (in the form of the bridged **bromonium ion**) (2 pts), write the **first step** in the reaction mechanism:



Using curved arrows (2 pts) and other essential species (1 pts), and showing the structure of the **oxonium** intermediate (2 pts), write the **second step** in the reaction mechanism:

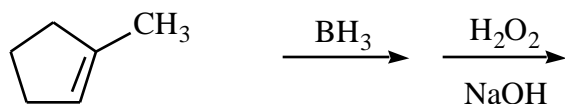
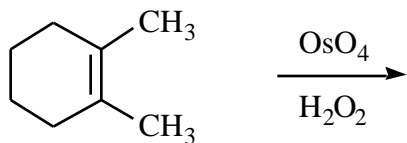
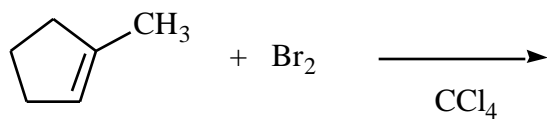
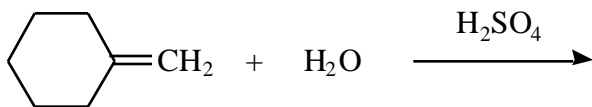
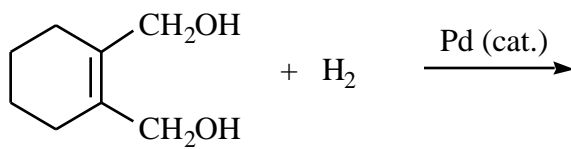
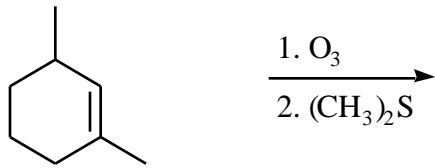


Using curved arrow (2 pts) and other essential species (1 pts), write the **final step** (proton transfer) in the reaction mechanism:



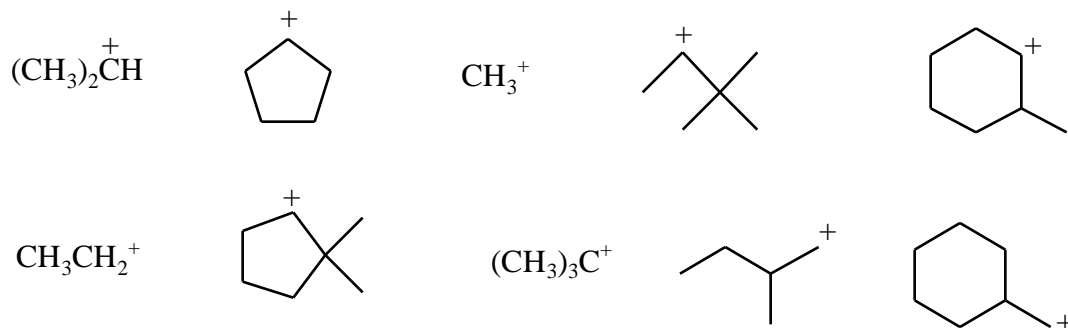


4. (30; 5 pts each) Complete the following equations, showing the **stereochemistry** of the product when appropriate.

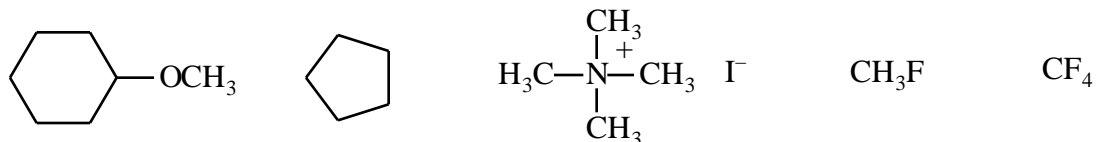
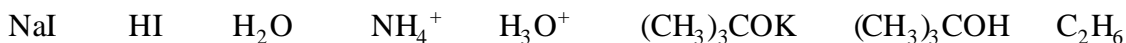


5. (20, 5 pts each) For each of the following questions (a)-(d) **circle** the item that is the correct answer.

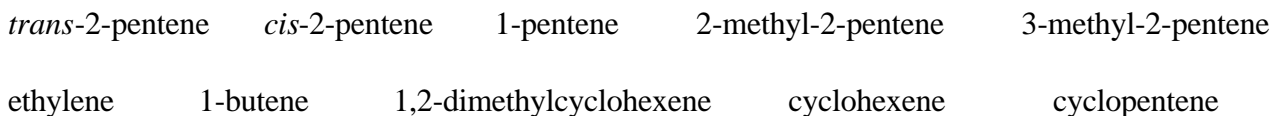
(a) Which one of the following carbocations is the **most stable**?



(b) Which one of the following compounds is the **strongest base**?



(c) Circle the molecule of the **most stable alkene**:



(d) Which one of the following compounds has the most **acidic C-H bonds**?

