

EXAM 4

Scoring

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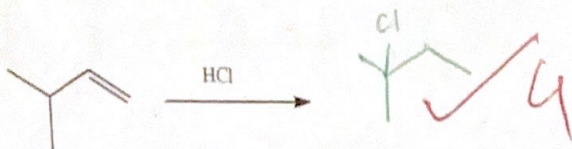
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SUM 91 / 100

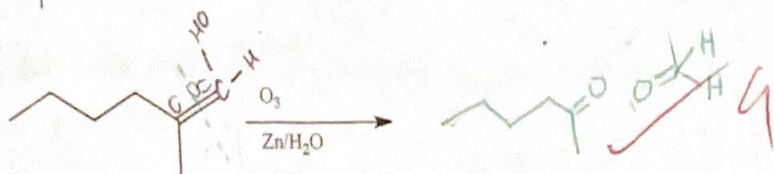
68
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Complete the following reactions by drawing the **major product** formed in each reaction. Be sure to include stereochemistry if necessary. Write NO REACTION if you expect no reaction to occur. (4 points each)

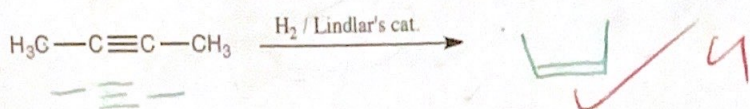
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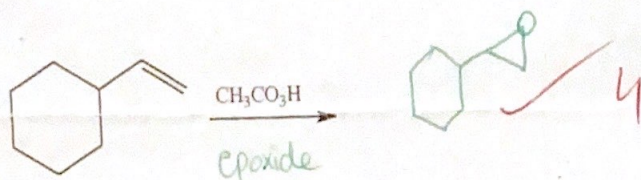
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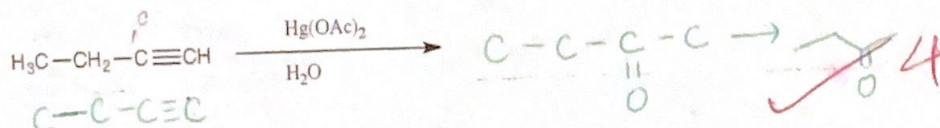
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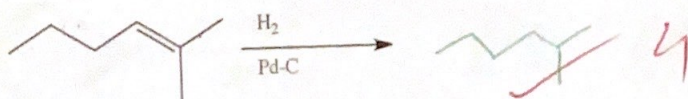
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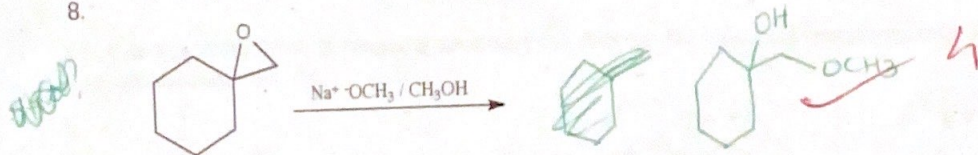
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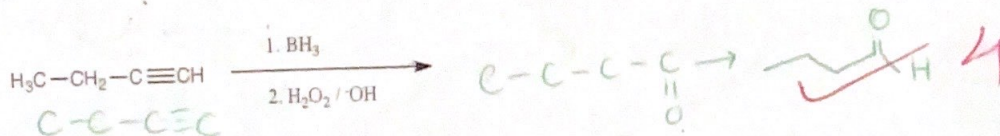
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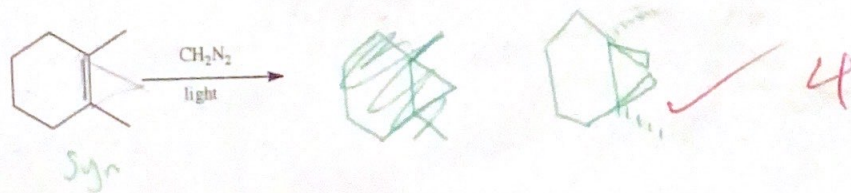
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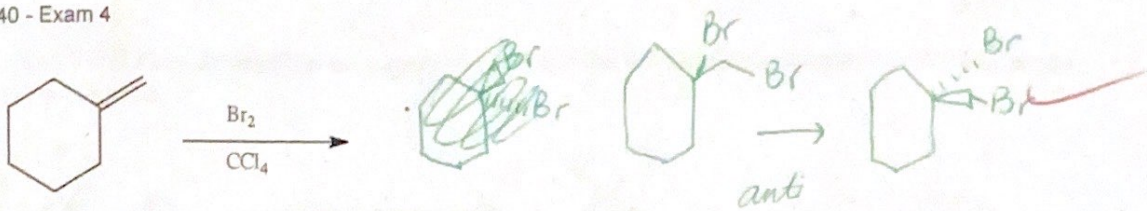
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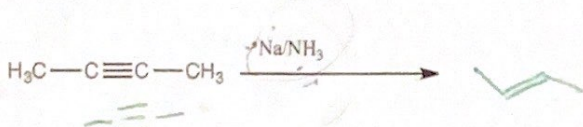
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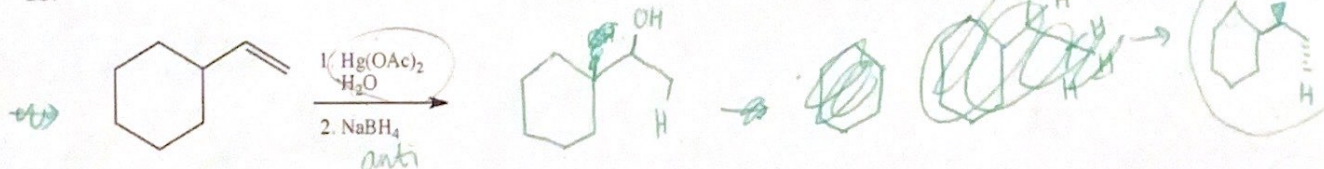
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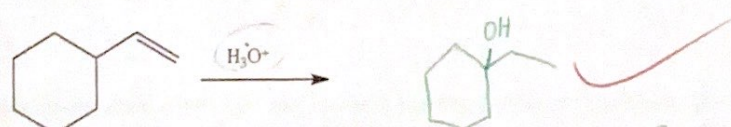
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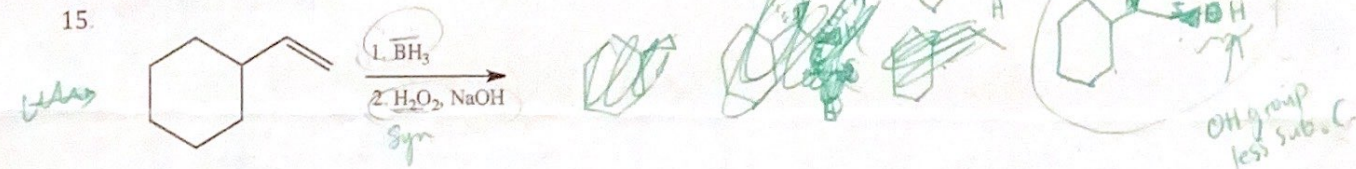
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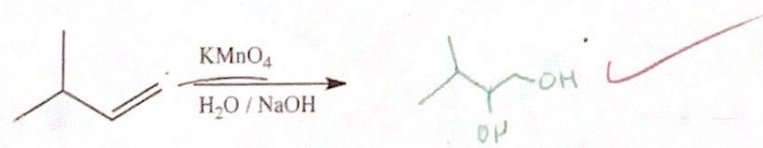
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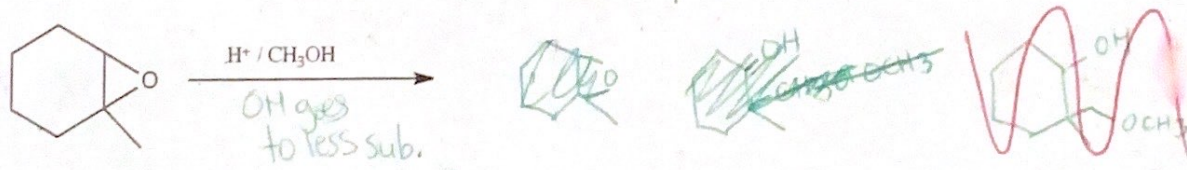
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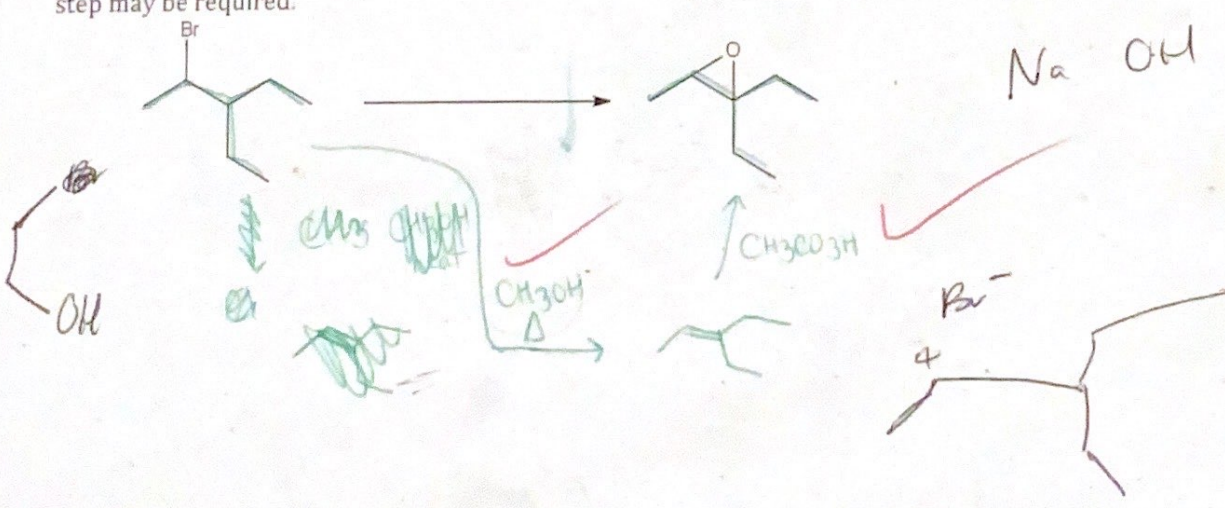
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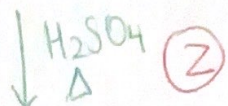
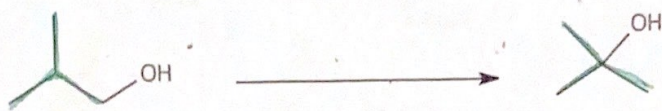
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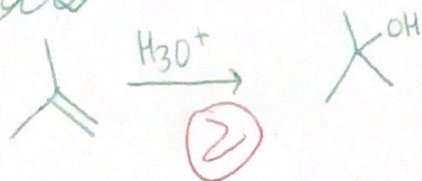
18. (4 points each) Provide reagents necessary to carry out the following transformation. More than one step may be required.



19. (4 points each) Provide reagents necessary to carry out the following transformation. More than one step may be required.

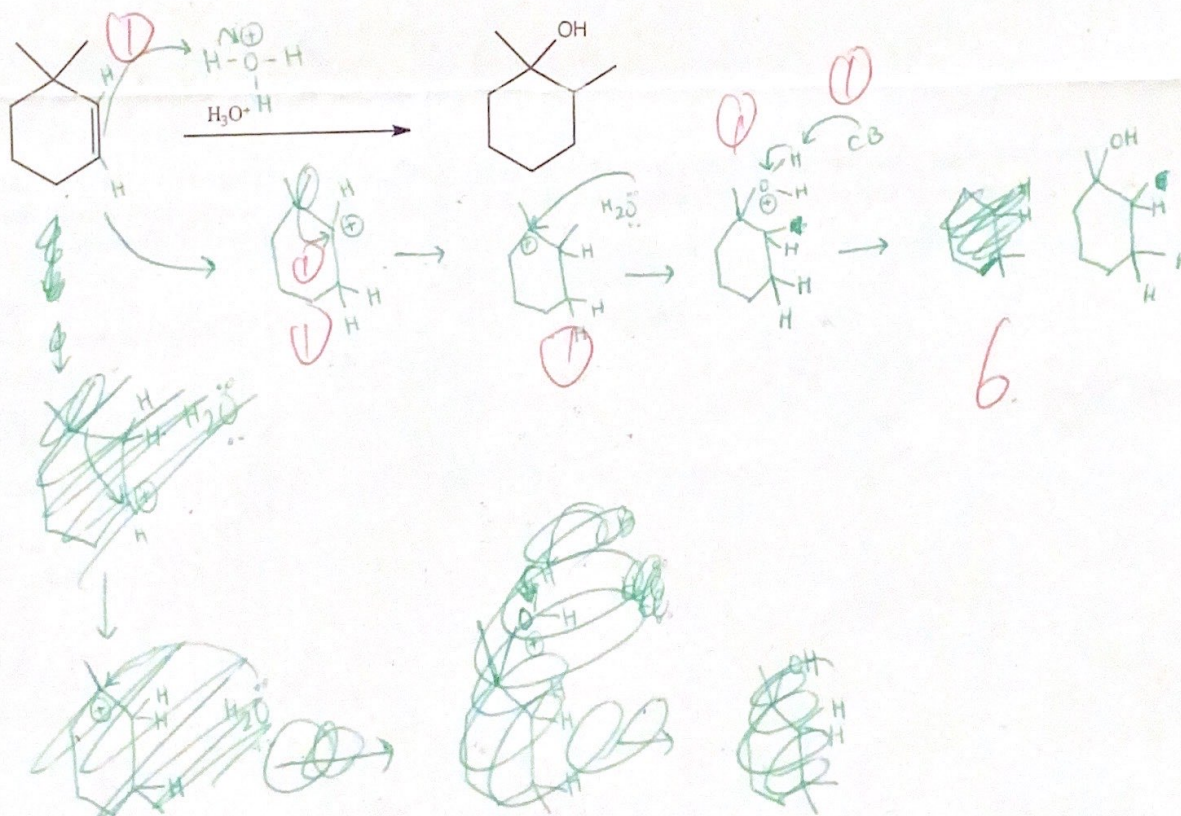


~~Acid~~



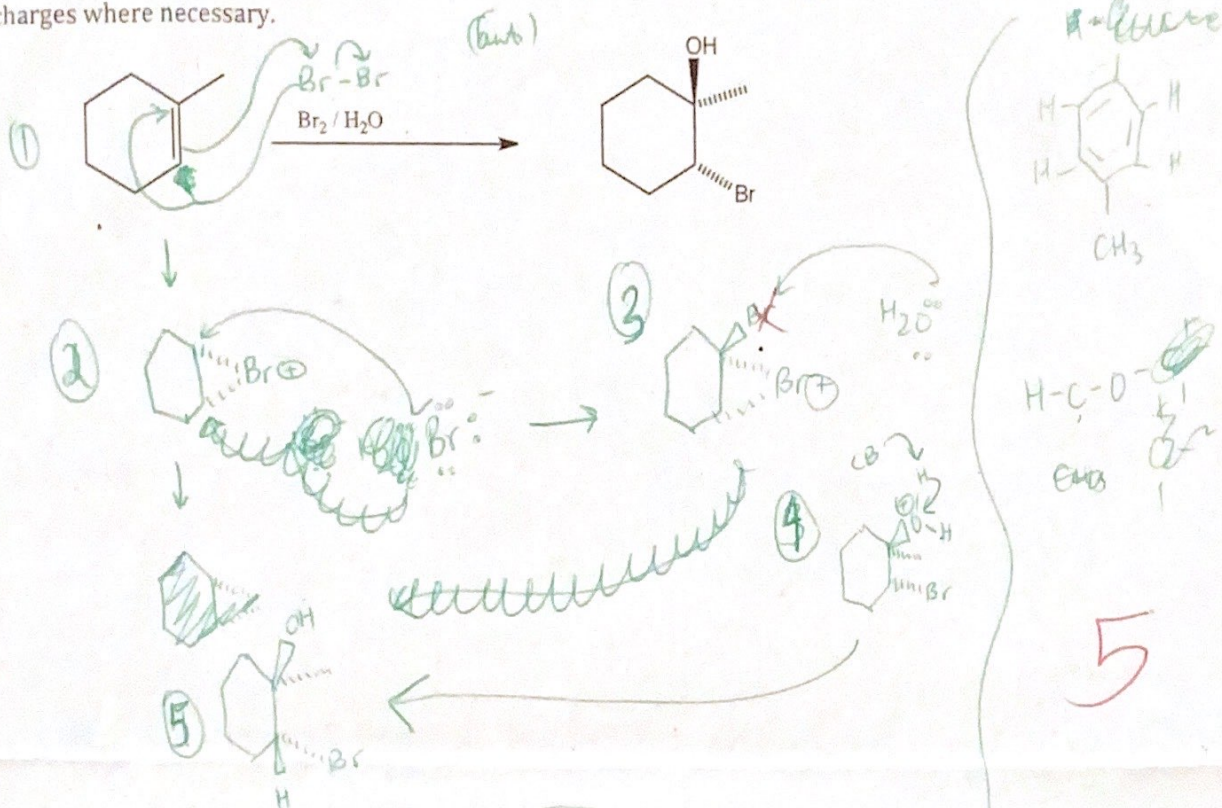
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20. (6 pts) Indicate a plausible mechanism for the following reaction. Be sure to show bond making and bond breaking as well as all electron movement. Every arrow counts. Be precise! Don't forget to show charges where necessary.



6.

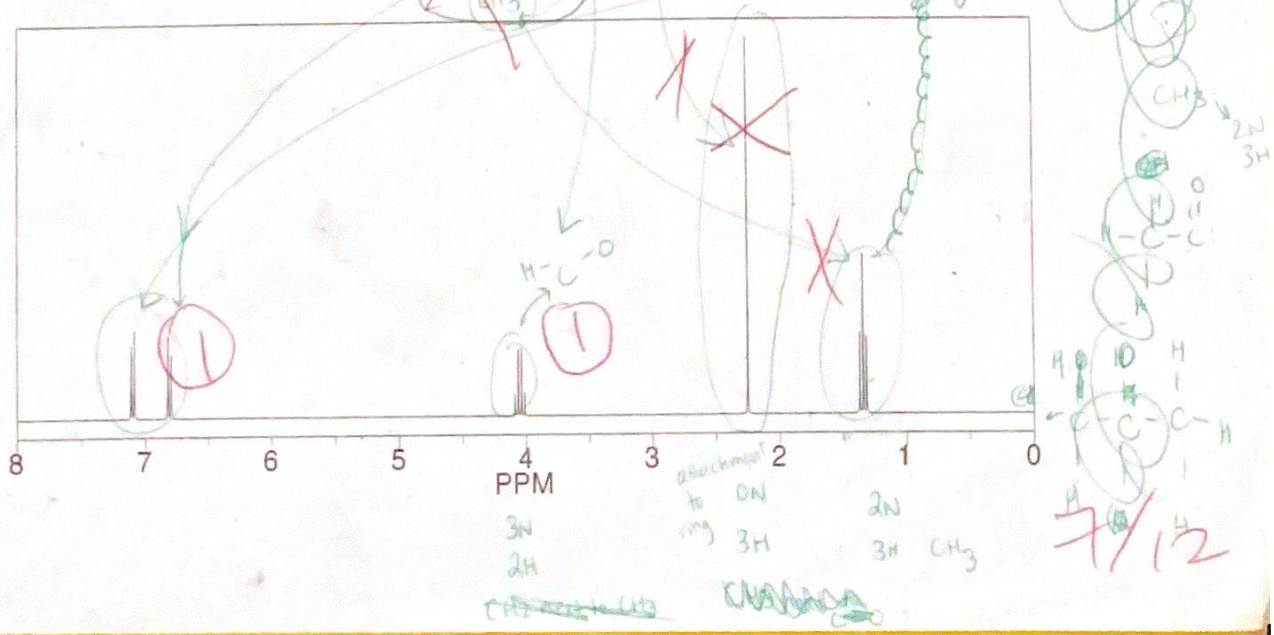
21. (6 pts) Indicate a plausible mechanism for the following reaction. Be sure to show bond making and bond breaking as well as all electron movement. Every arrow counts. Be precise! Don't forget to show charges where necessary.



22. (6 pts) Provide a structure for the compound $C_9H_{12}O$ which corresponds to the following NMR (Proton) spectrum. Justify your answer. You may draw arrows from the structure to the part of the spectrum that justifies your answer. No credit for a guess.

1H NMR:

- δ 7.1-6.8 ppm, doublet of doublets, 4H
- δ 4.05 ppm, q, 2H
- δ 2.25 ppm, s, 3H
- δ 1.34 ppm, t, 3H



$$IHD = \frac{10 - \frac{1}{2}(12)}{2} = \frac{10 - 6}{2} = 2$$