

Page # **Points**

2

3

4

5

6

7

8

9

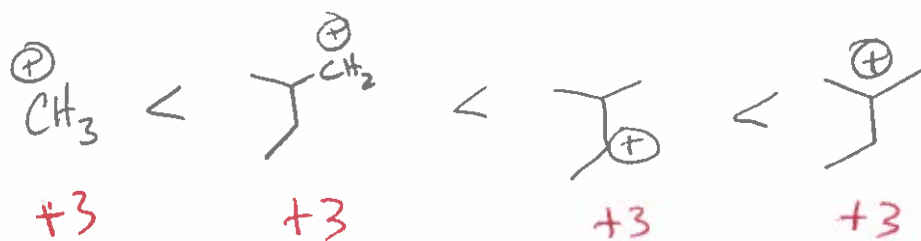
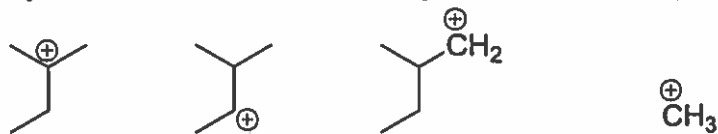
Total pts

KEY

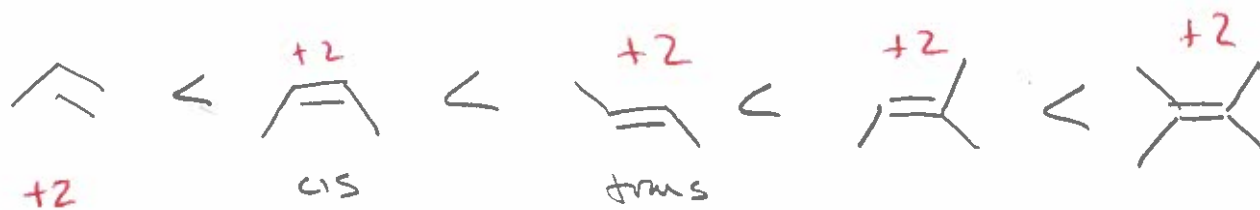
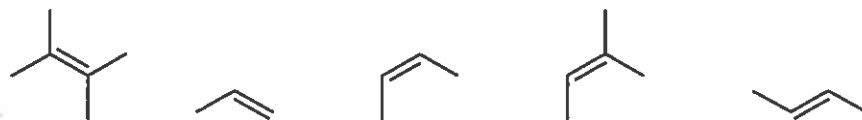
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Printed Name:

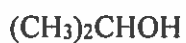
1) Rank the following carbocations in order of increasing stability. List by lowest stability first, then intermediate stability, then most stable. (12 pts)



2) Rank the following alkenes in order of increasing stability. List by lowest stability first, then intermediate stability, then most stable. (10 pts)



3) Classify each solvent as protic or aprotic. (10 pts)



protic

aprotic

protic

aprotic

aprotic

+2

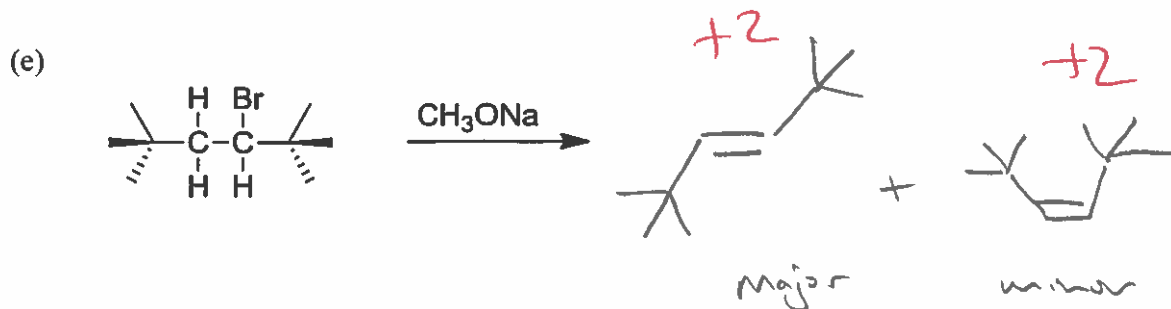
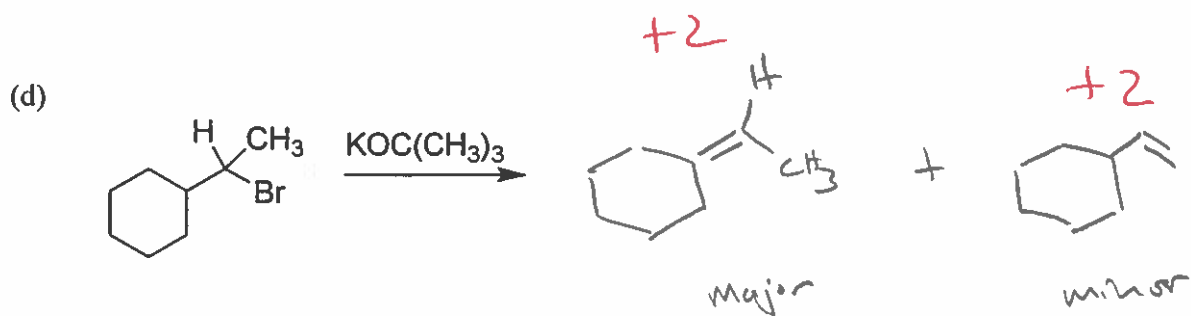
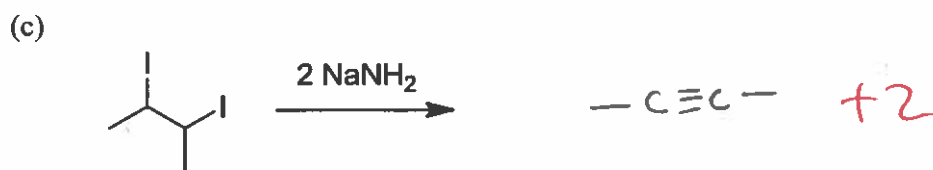
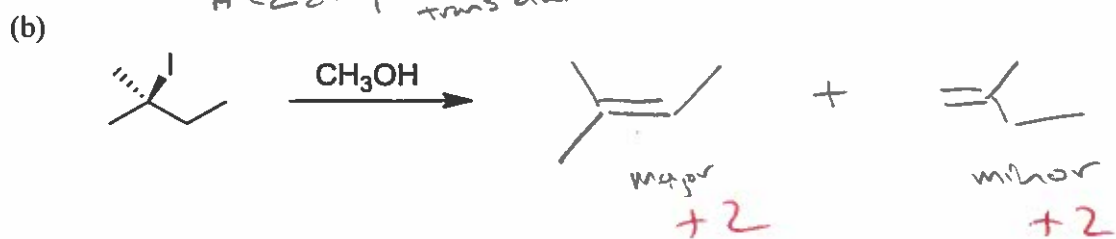
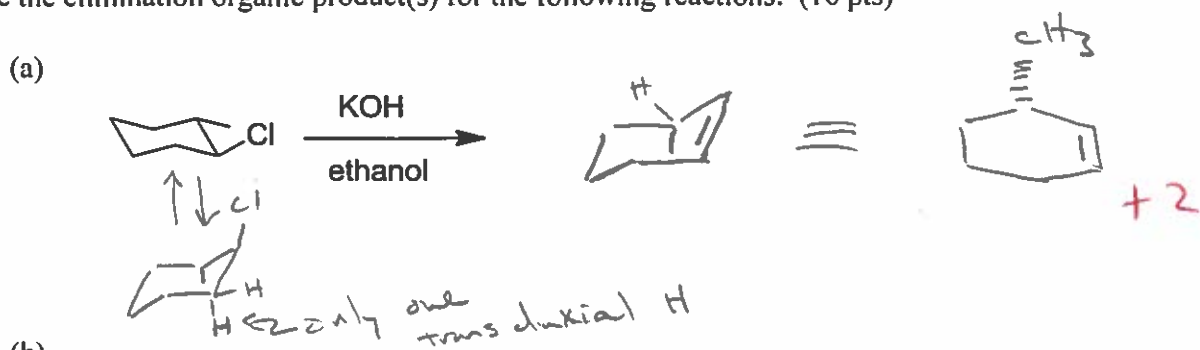
+2

+2

+2

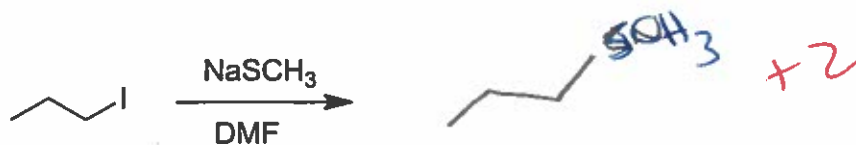
+2

4) Give the elimination organic product(s) for the following reactions. (16 pts)



5) Give the substitution organic product(s) for the following reactions. (10 pts)

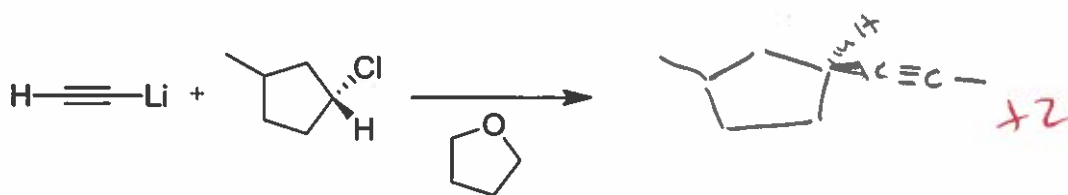
(a)



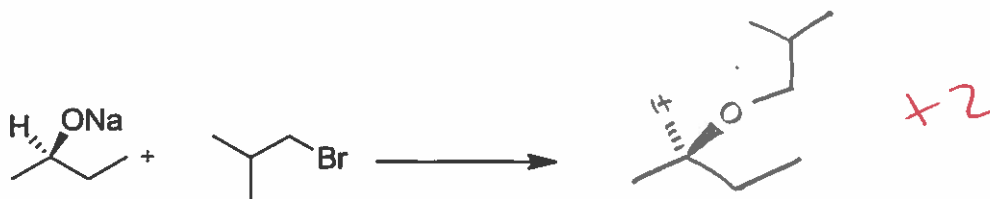
(b)



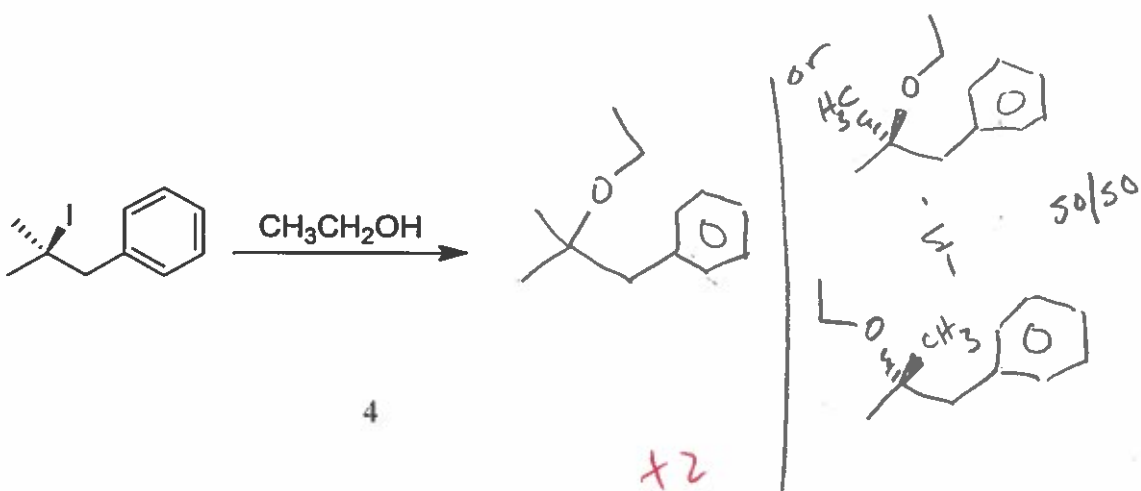
(c)



(d)

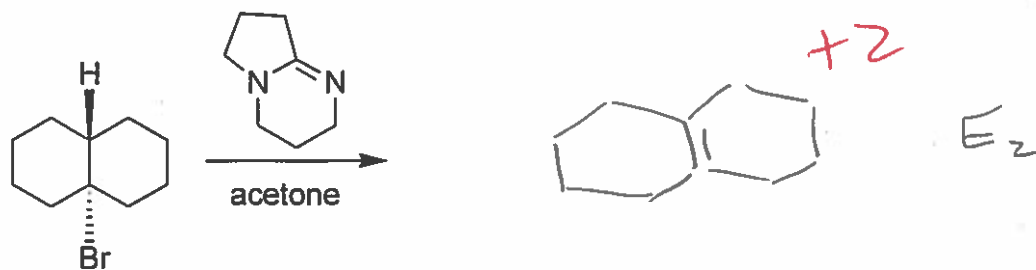


(e)

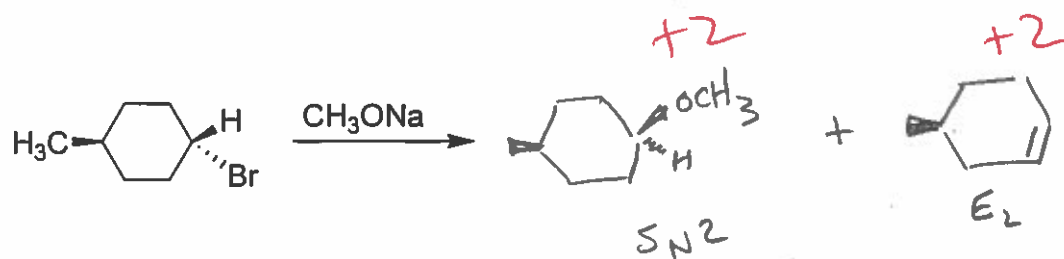


6) Give the organic product(s) for the following reactions. (16 pts)

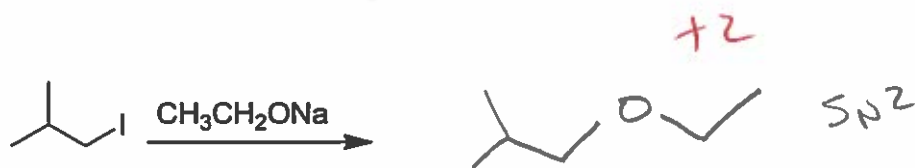
(a)



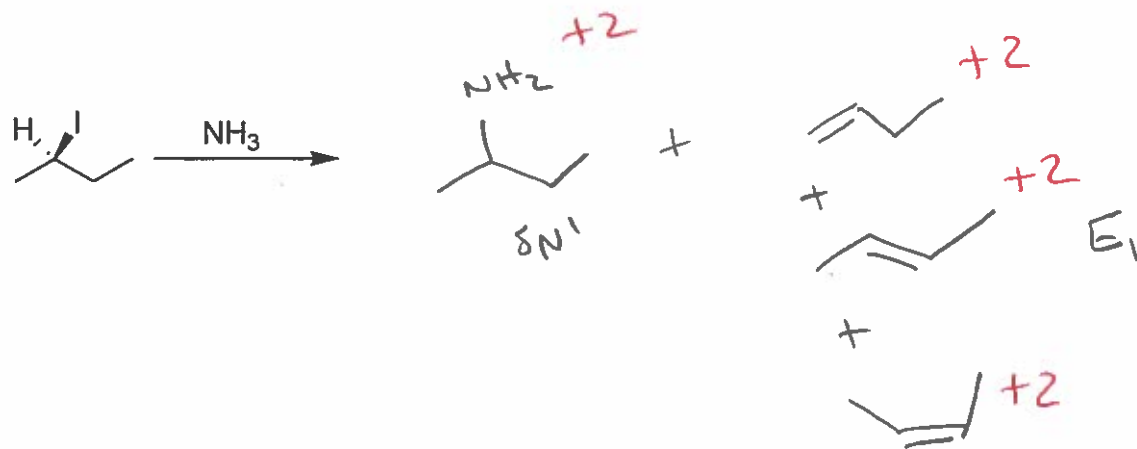
(b)



(c)



(d)

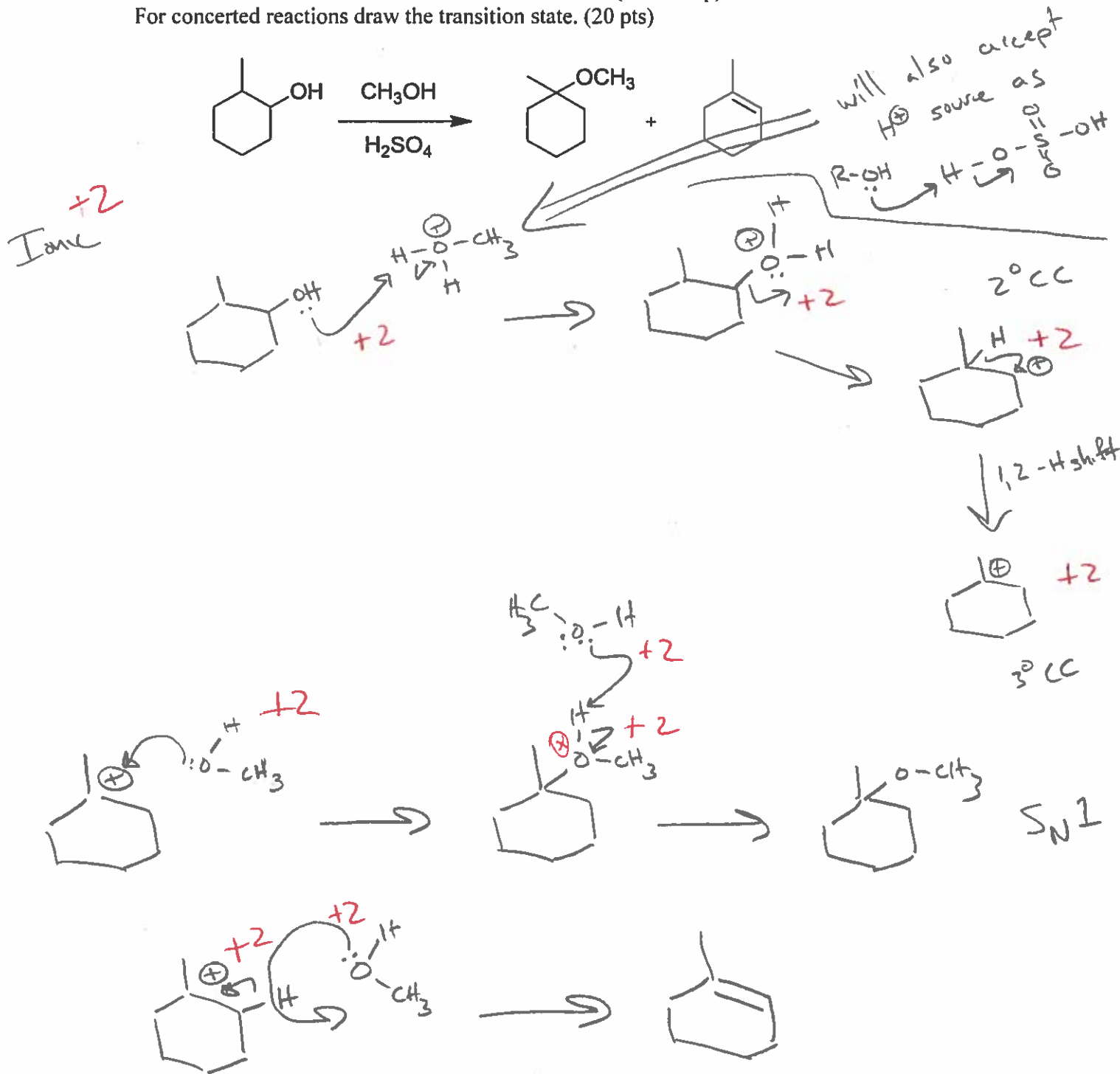


7) Mechanisms for twenty, please.

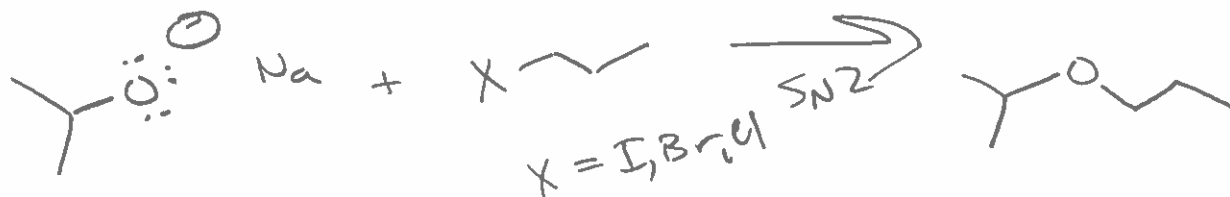
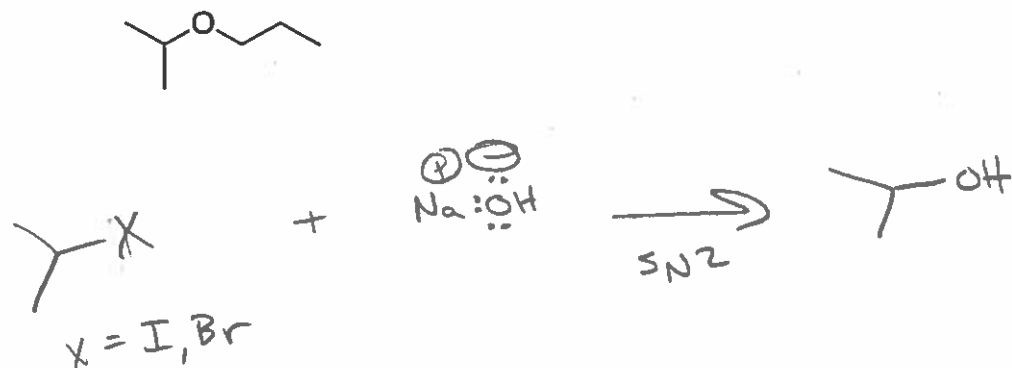
Give a reasonable mechanism for the following reaction. A mechanism, as we know, is the step by step description of a reaction. Use curved arrows, orbitals, etc., as needed.

Label whether the reaction is concerted, or ionic (multi-step).

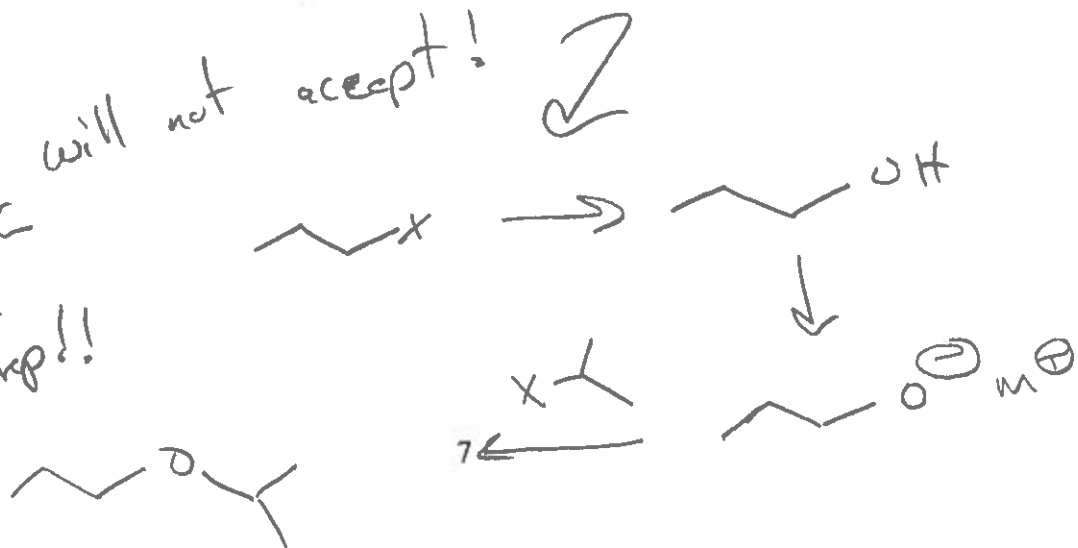
For concerted reactions draw the transition state. (20 pts)



8) Devise a synthesis for the compound below from alkyl halide(s) using any other organic or inorganic reagents. (6 pts)

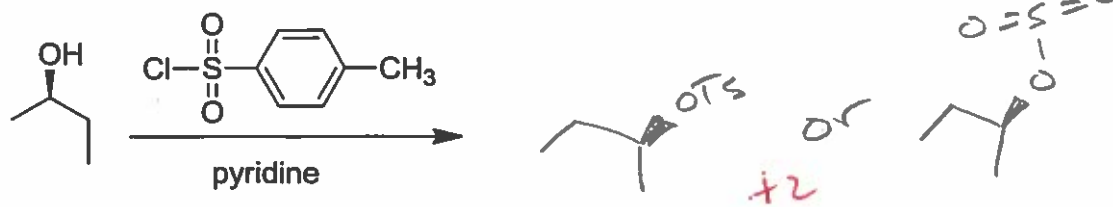


E_2 elimination will not accept!
 possible in final step!!



9) Give the major organic products for the following reactions. (10 pts)

(a)



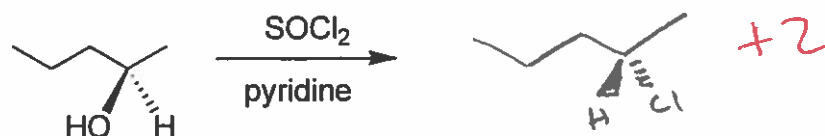
(b)



(c)



(d)



(b)



10) Mechanisms for ten, please.

Give a reasonable mechanism for the following reaction. A mechanism, as we know, is the step by step description of a reaction. Use curved arrows, orbitals, etc., as needed. (10 pts)

(a)

