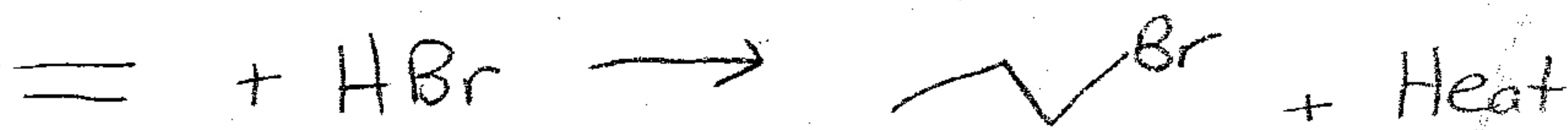


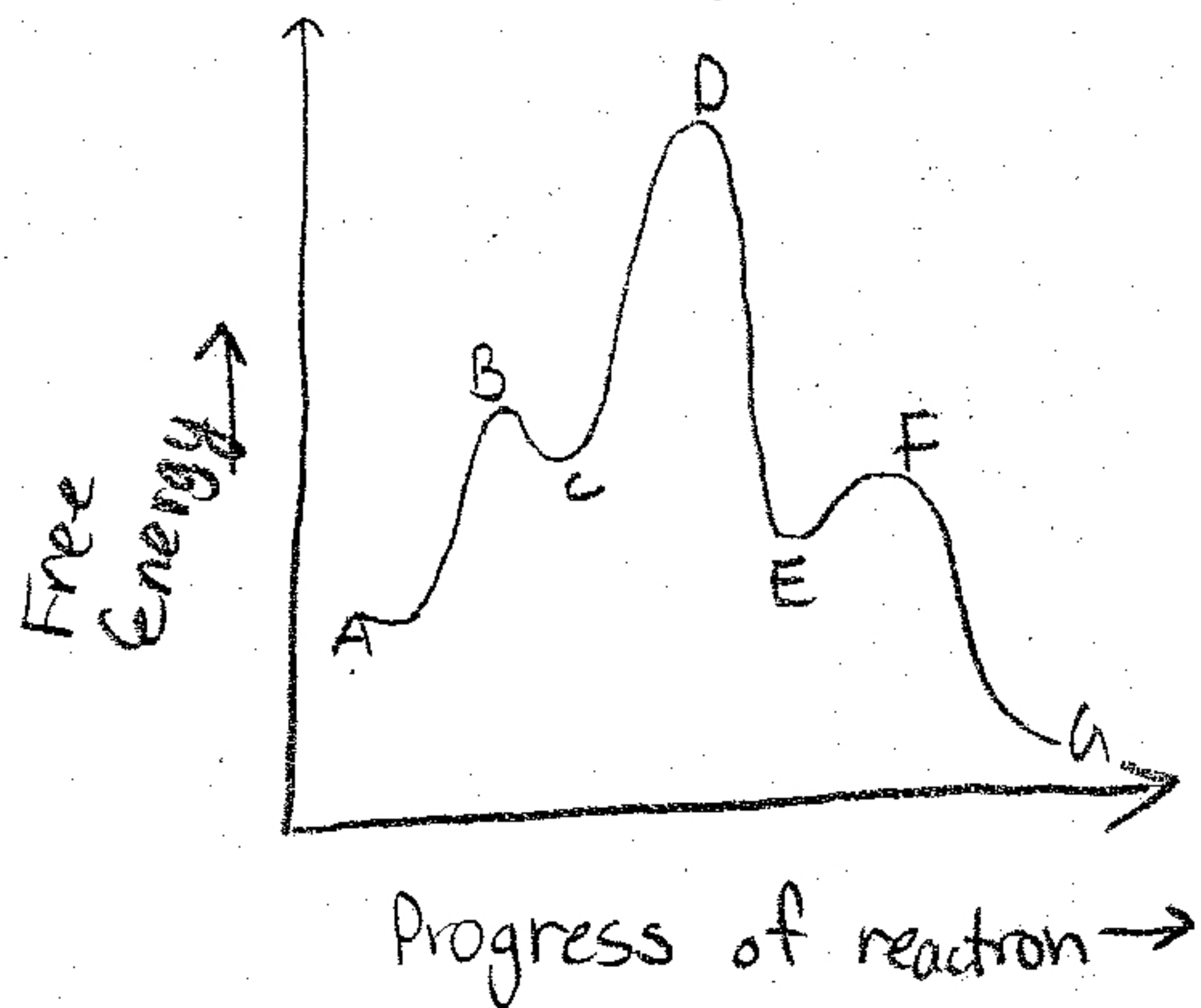
October 30, 2006

1) Which of the following describes the reaction shown?



- a) $\Delta H^\circ > 0$, $\Delta S^\circ > 0$
- b) $\Delta H^\circ > 0$, $\Delta S^\circ < 0$
- c) $\Delta H^\circ < 0$, $\Delta S^\circ > 0$
- d) $\Delta H^\circ < 0$, $\Delta S^\circ < 0$

2) Which step has the greatest Activation Energy according to the diagram below?

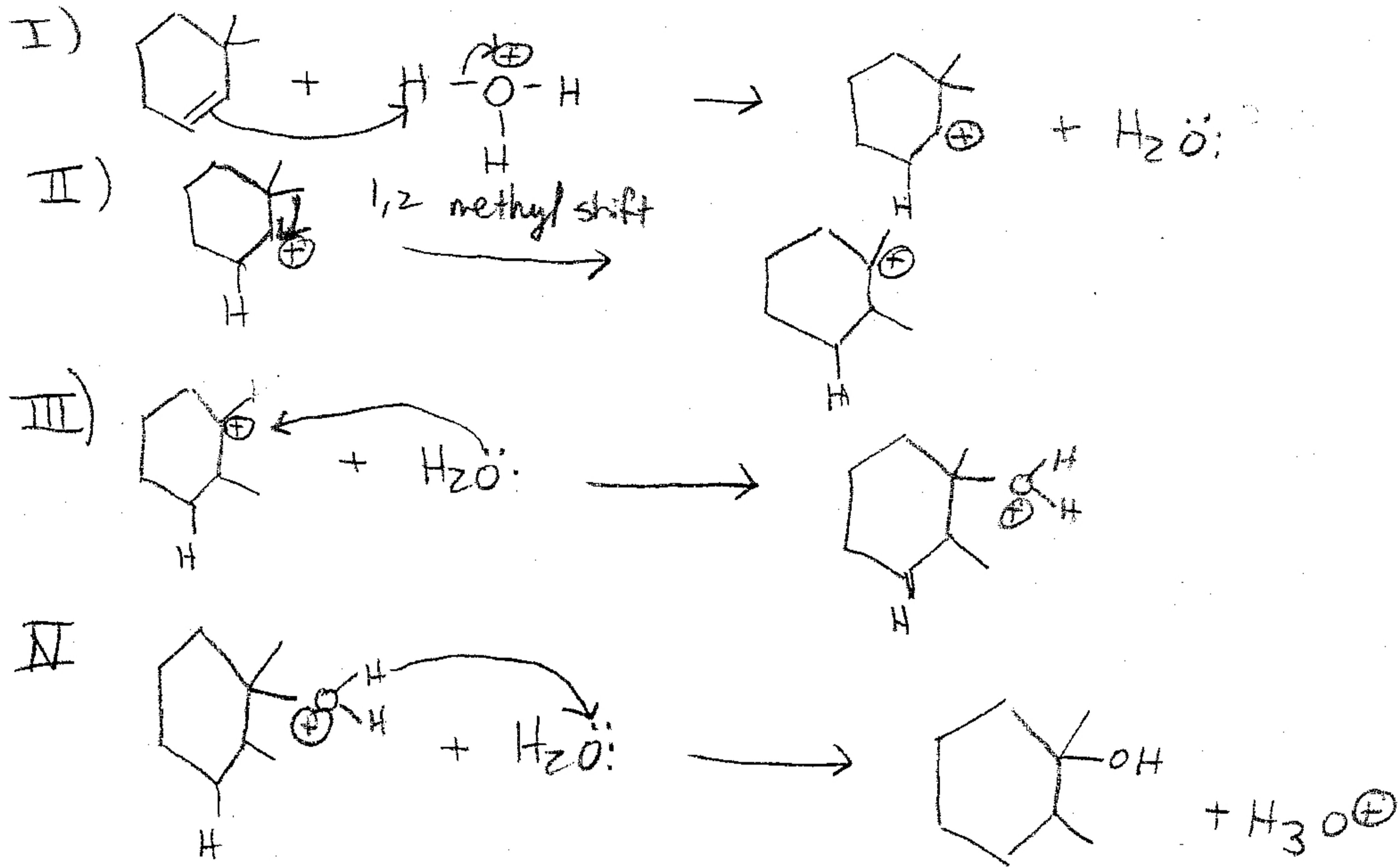
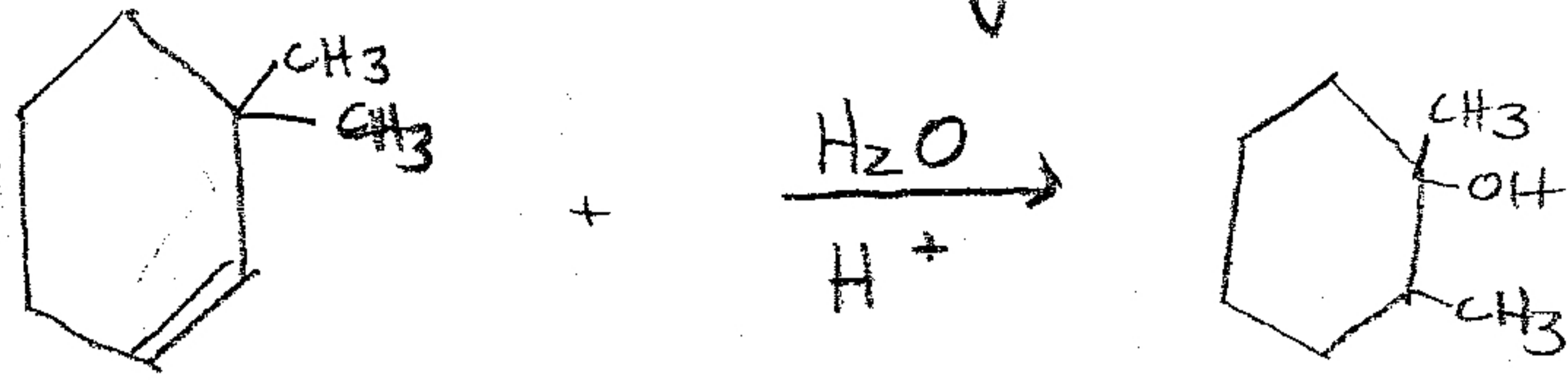


- a) A to C
- b) C to E
- c) E to G
- d) E to C
- e) C to A

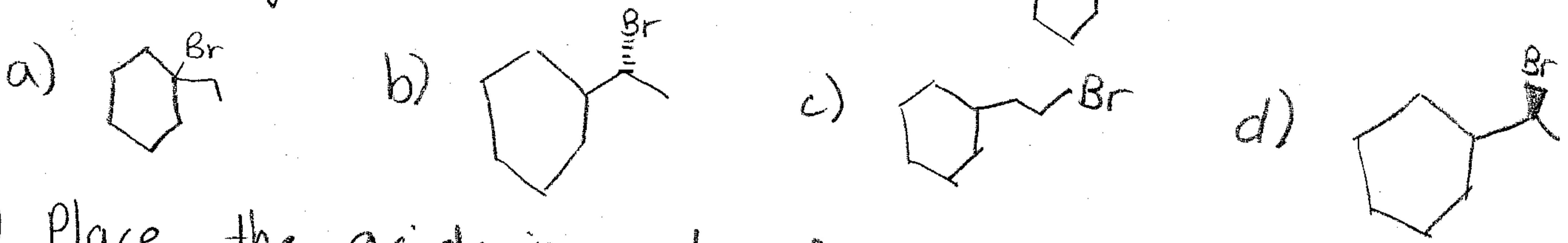
3) Which of the following is not a nucleophile?

- a) FeBr_3
- b) Br^\ominus
- c) NH_3
- d) CH_3COCH_3
- e) CH_2CH_2

which of the following is not a step in the reaction below



5) Which of the following is not a significant product in the reaction of vinylcyclohexane with HBr?

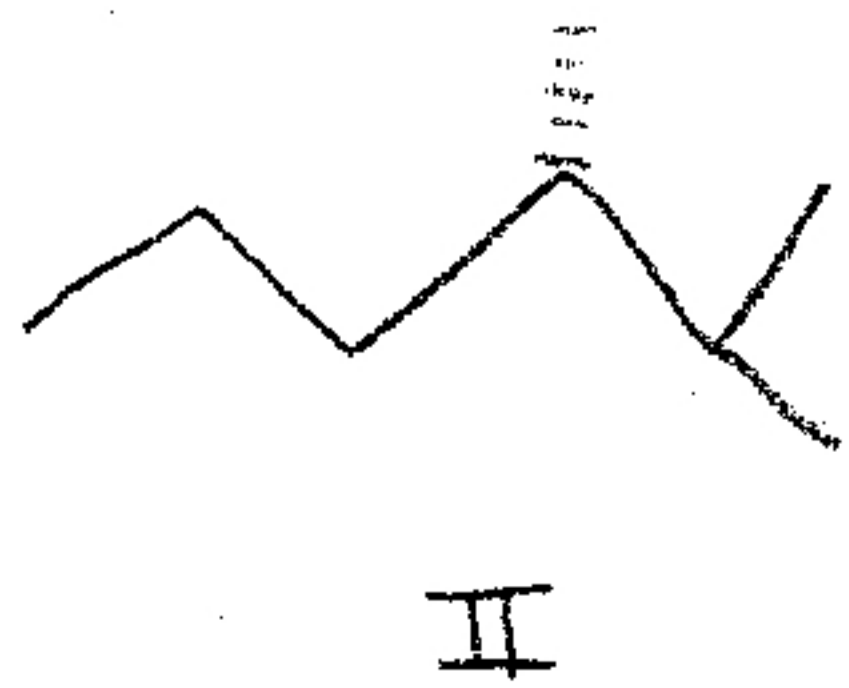
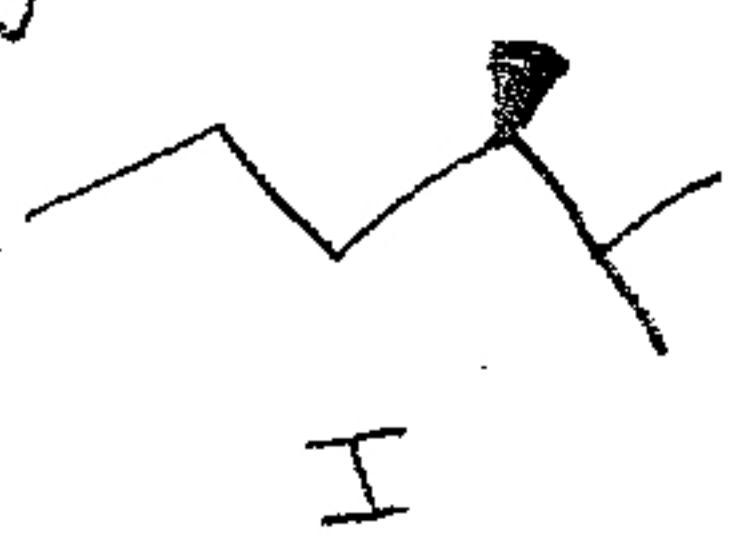


b) Place the acids in order of decreasing acidity

$\text{CH}_2=\text{CH}_2$ $\text{HC}\equiv\text{CH}$ H_2O NH_3

- a) $\text{CH}_2=\text{CH}_2 > \text{HC}\equiv\text{CH} > \text{NH}_3 > \text{H}_2\text{O}$
- b) $\text{HC}\equiv\text{CH} > \text{NH}_3 > \text{CH}_2=\text{CH}_2 > \text{H}_2\text{O}$
- c) $\text{H}_2\text{O} > \text{HC}\equiv\text{CH} > \text{NH}_3 > \text{CH}_2=\text{CH}_2$
- d) $\text{NH}_3 > \text{H}_2\text{O} > \text{HC}\equiv\text{CH} > \text{CH}_2=\text{CH}_2$

7) Which of the following is formed when 2,3-dimethyl-3-hexene is hydrogenated?

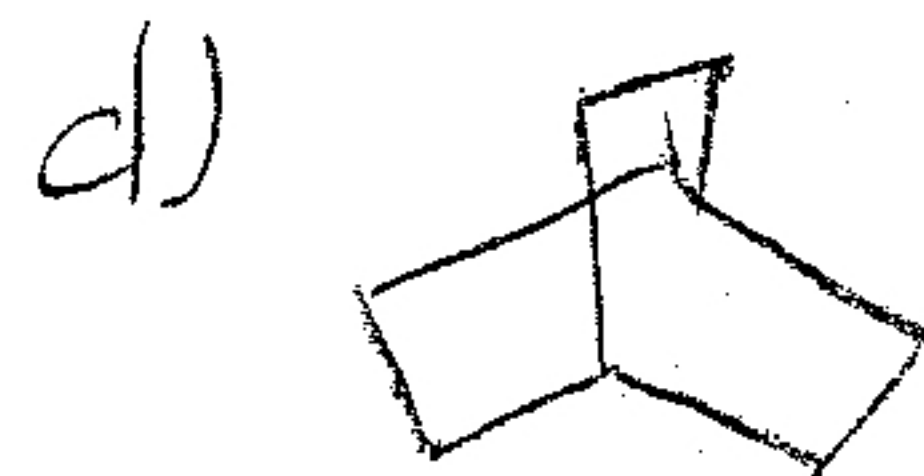
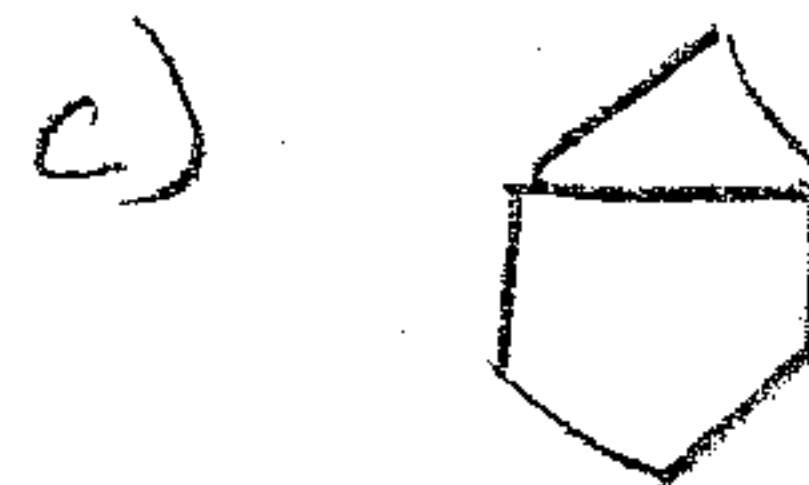
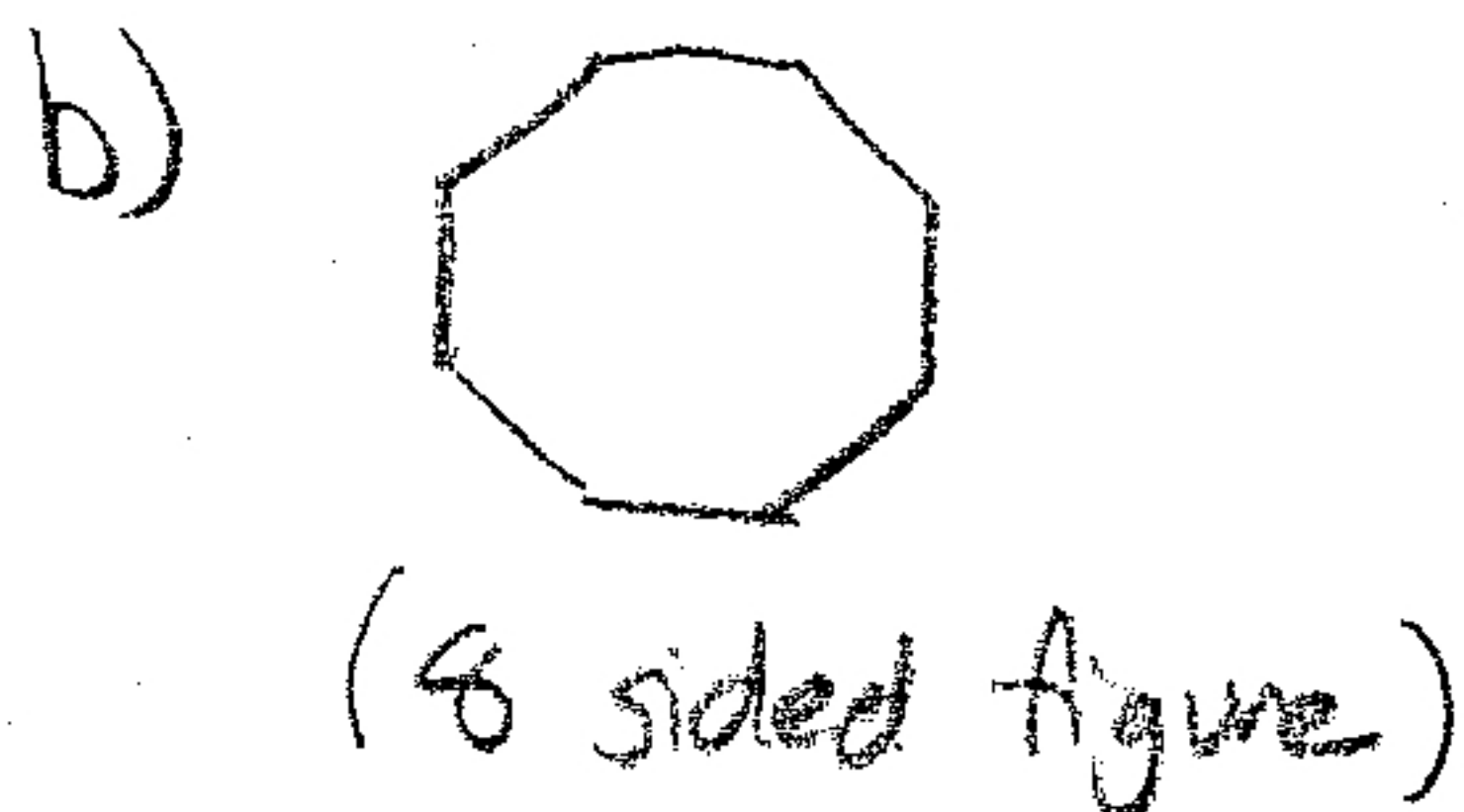
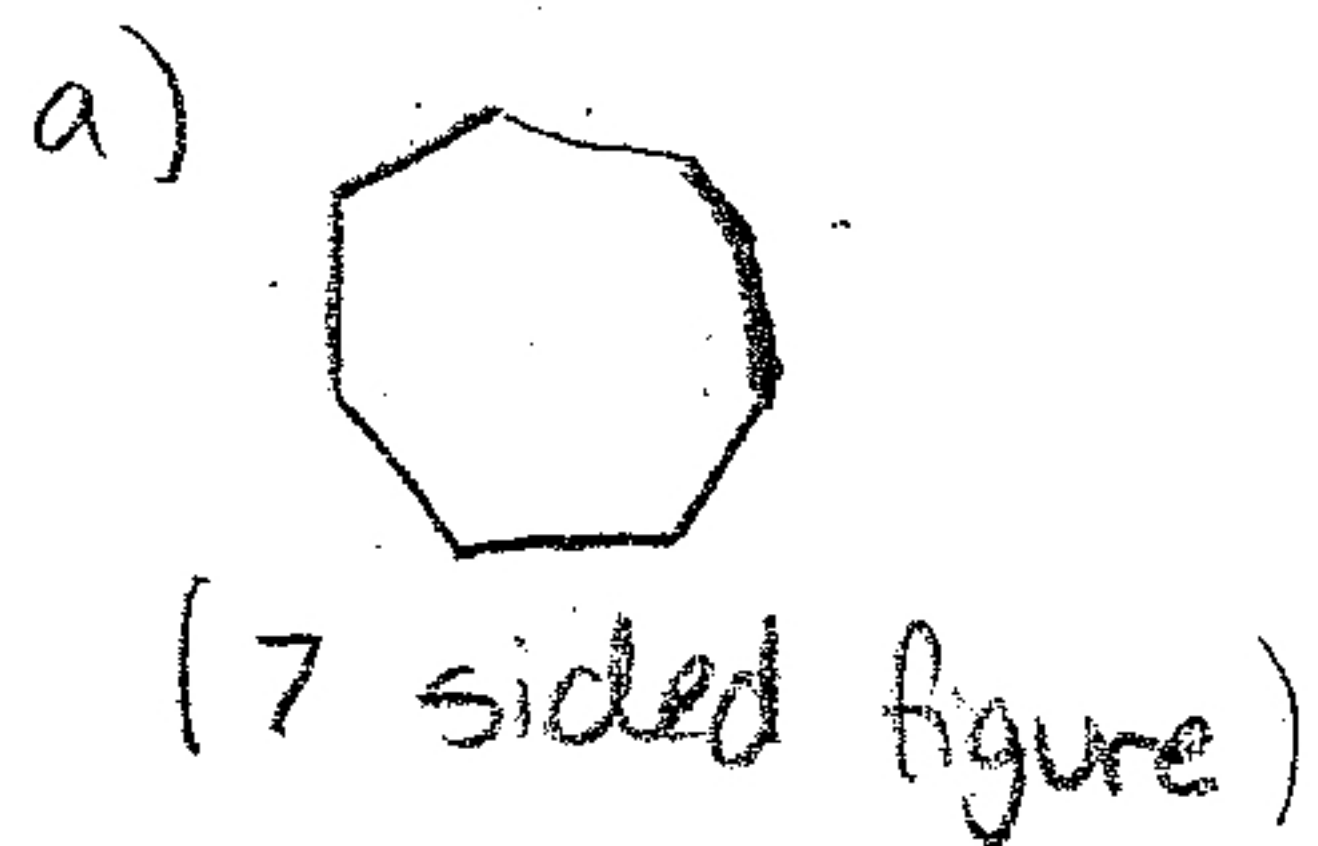


- a) I b) II c) I and II d) I and III

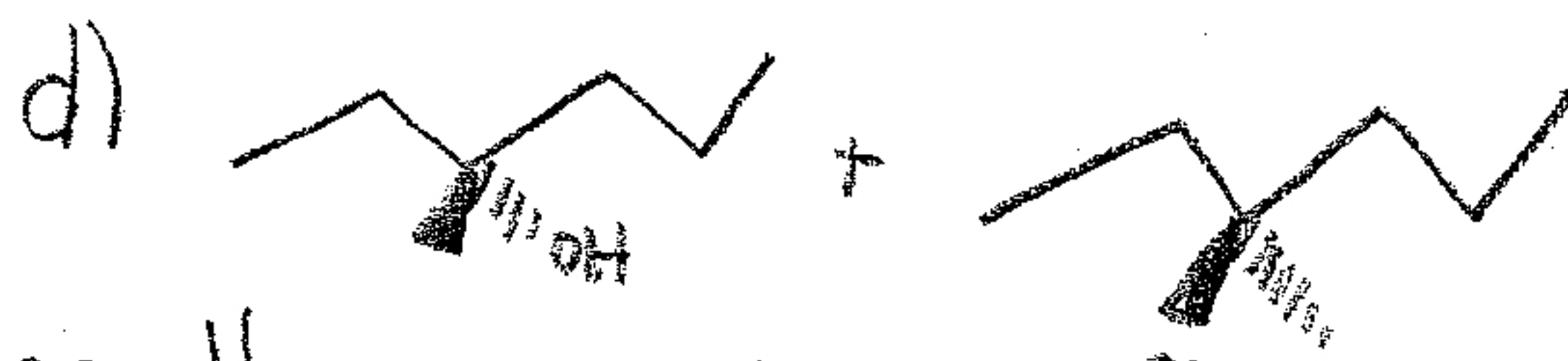
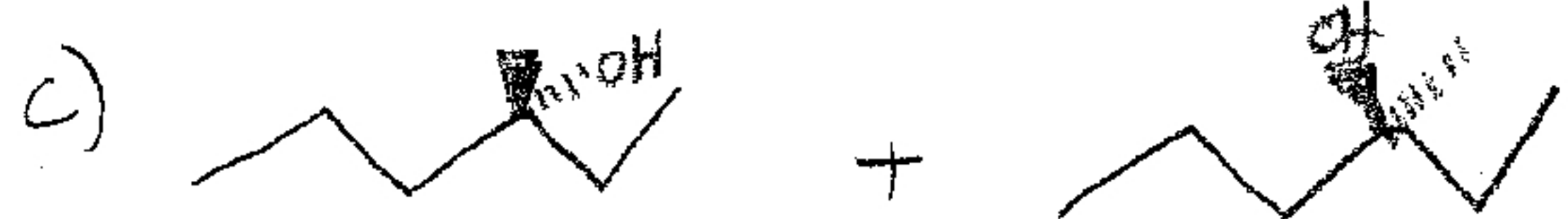
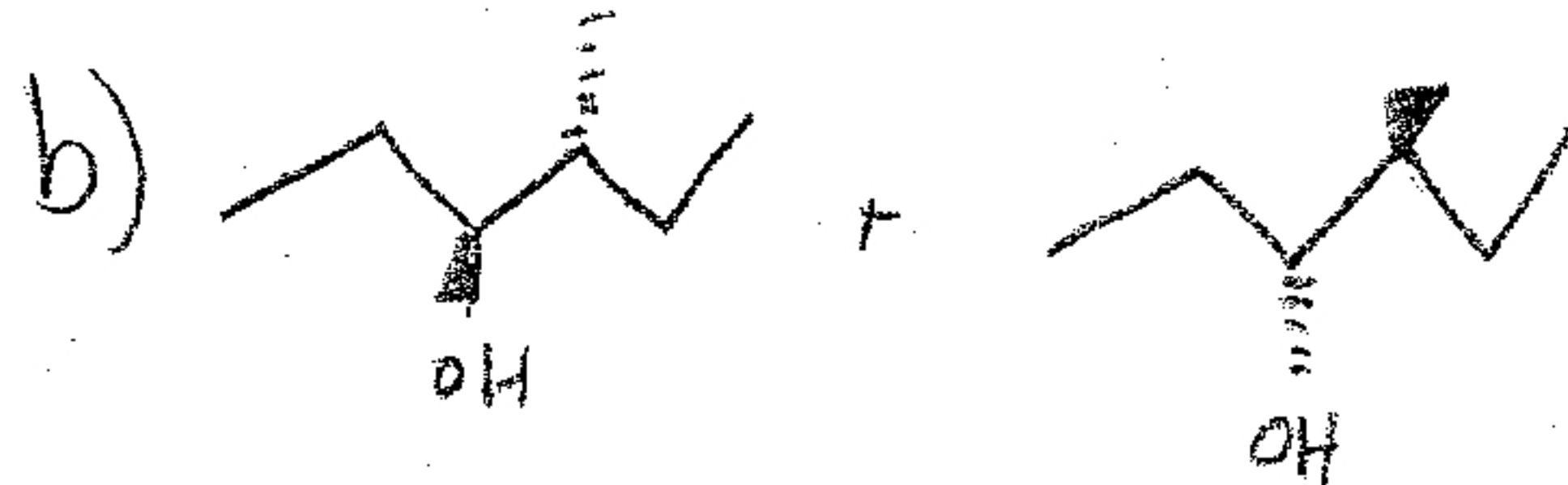
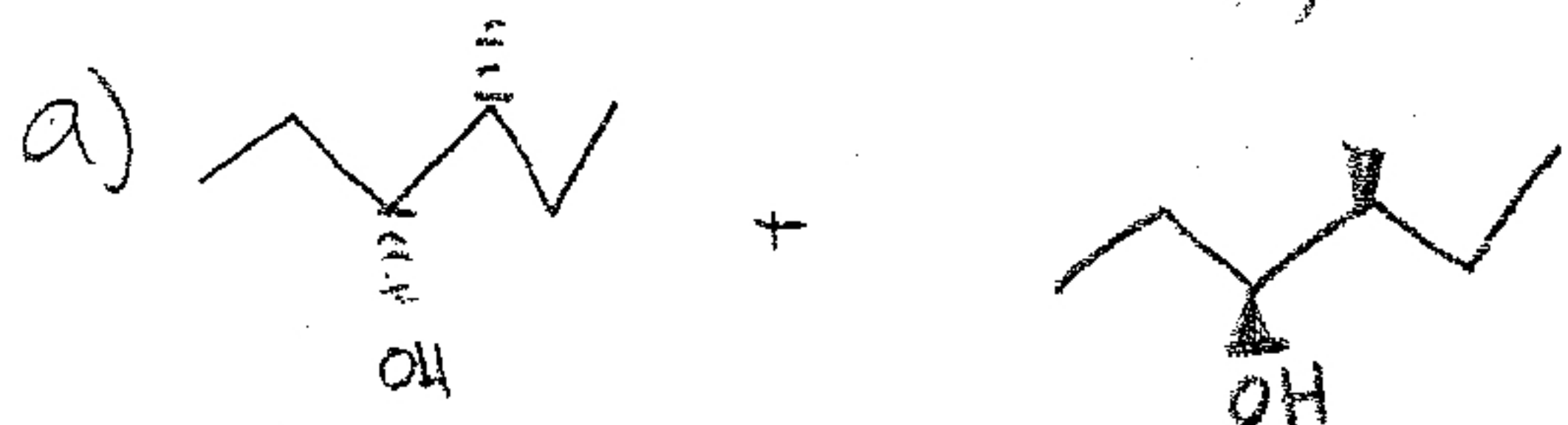
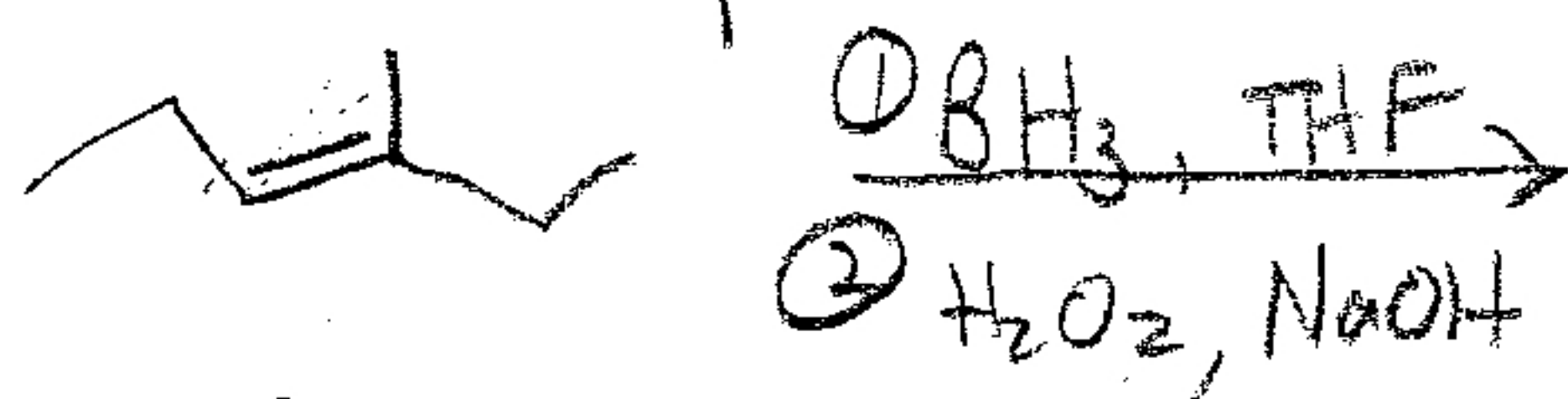
8) what is the product of the following synthesis?

acetylene

- ① NaNH_2 , mineral oil, heat
- ② 1 eq. $\text{CH}_2\text{Br}(\text{CH}_2)_4\text{CH}_2\text{Br}$
- ③ NaNH_2 , mineral oil, heat
- ④ H_2 , Pd

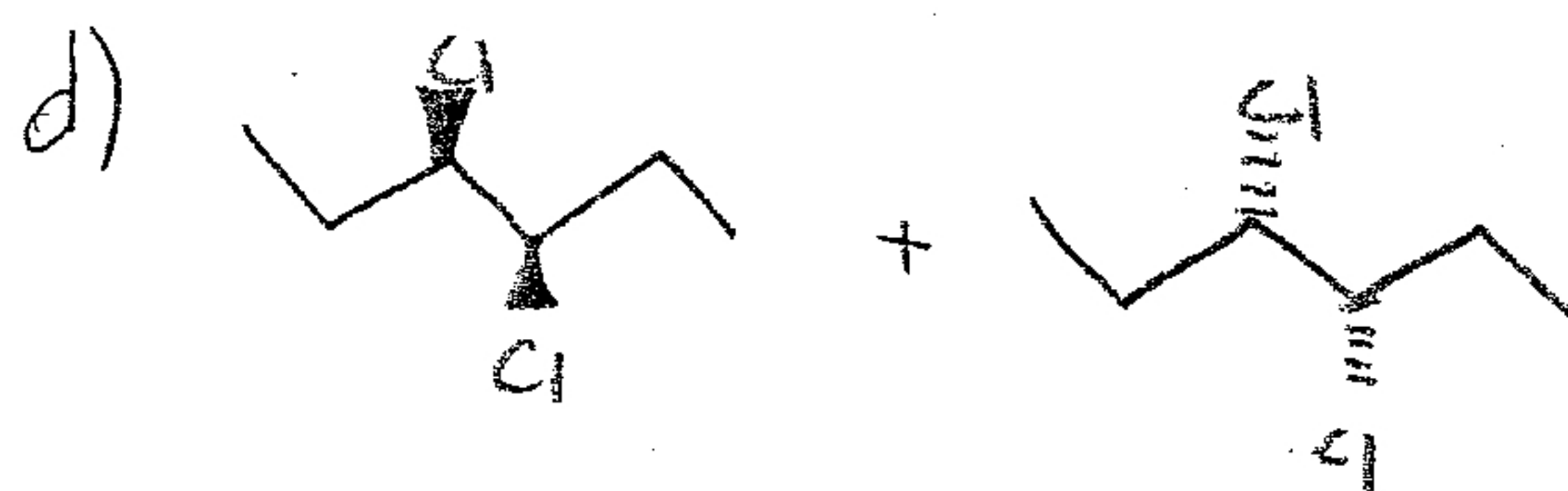
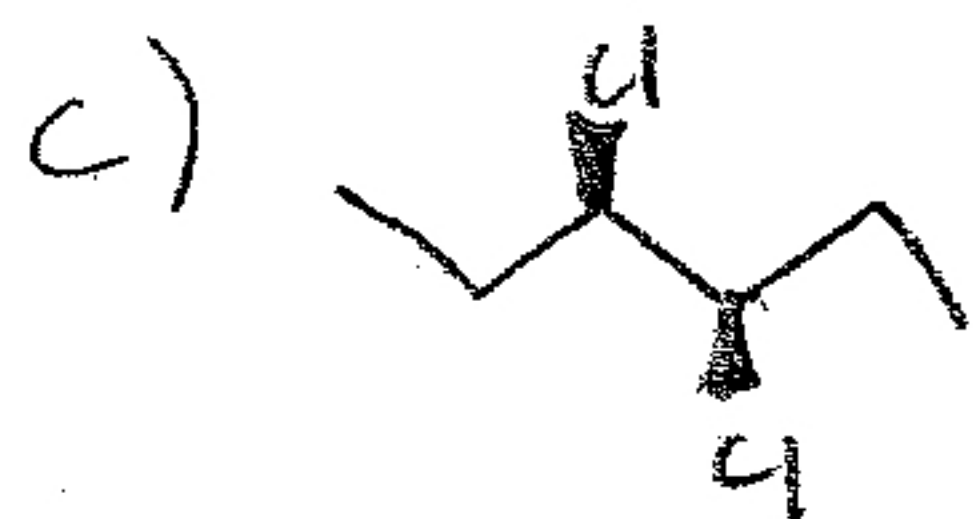
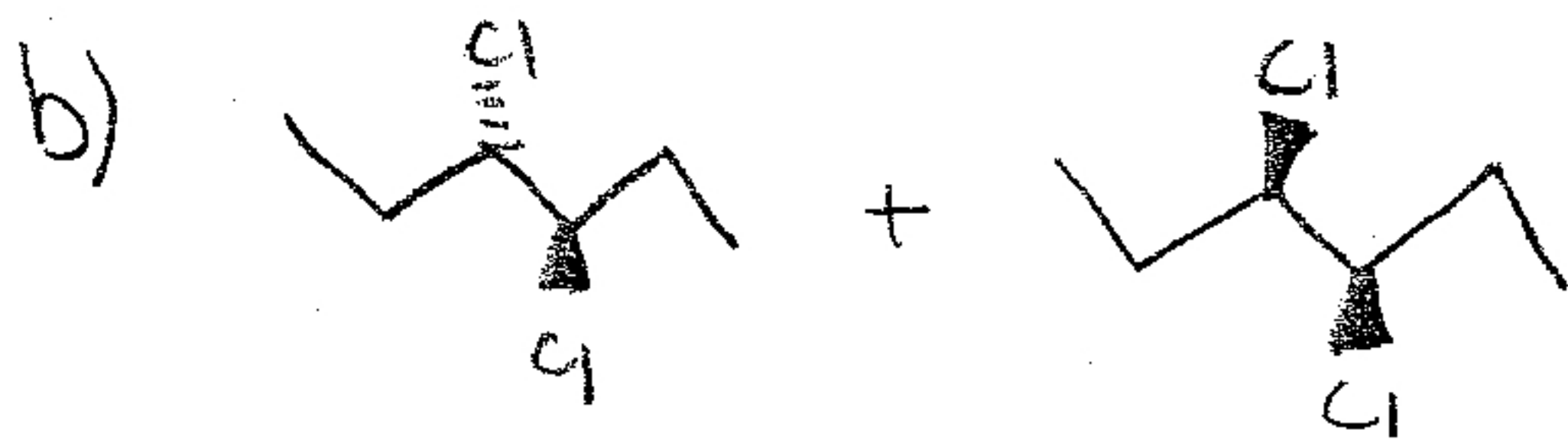
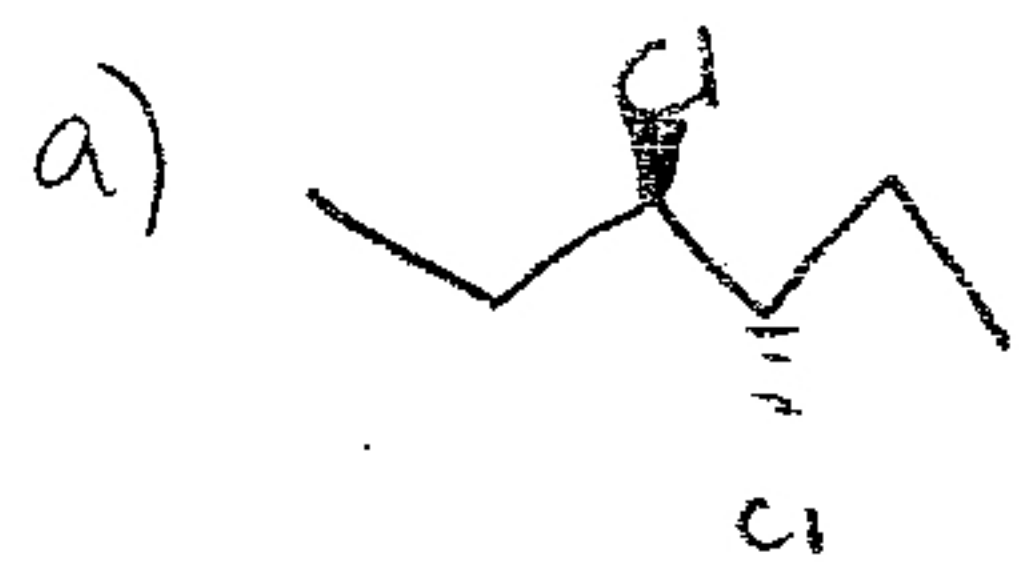


9) Predict the products of the reaction below:

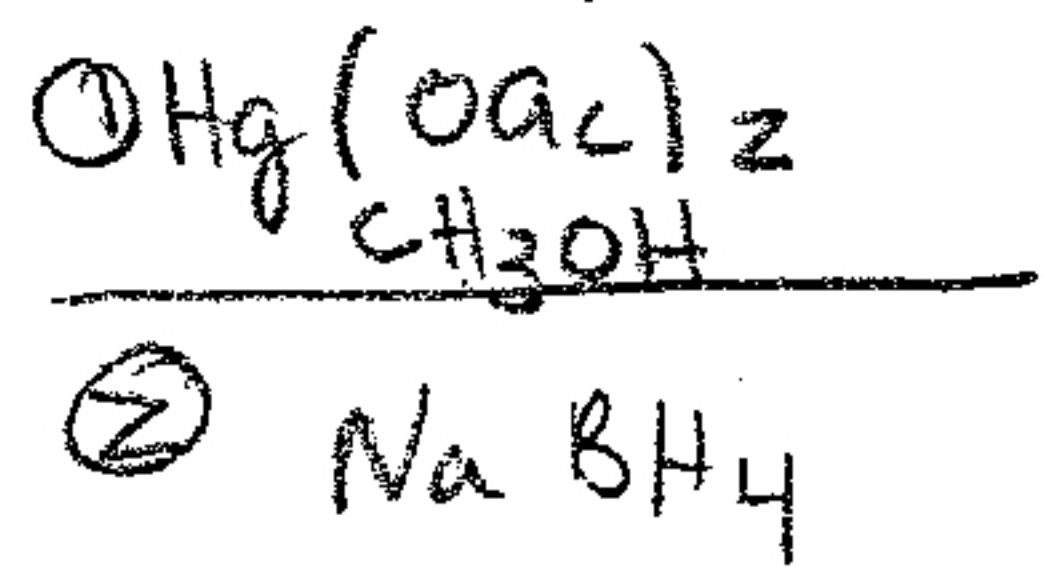


10) What are the major products from the reaction of an alkene with Cl_2 in carbon tetrachloride?

alkene given:



11) What is the expected product for the reaction below?



12) What is the product of 1-methylcyclohexene and Br_2 in H_2O ?

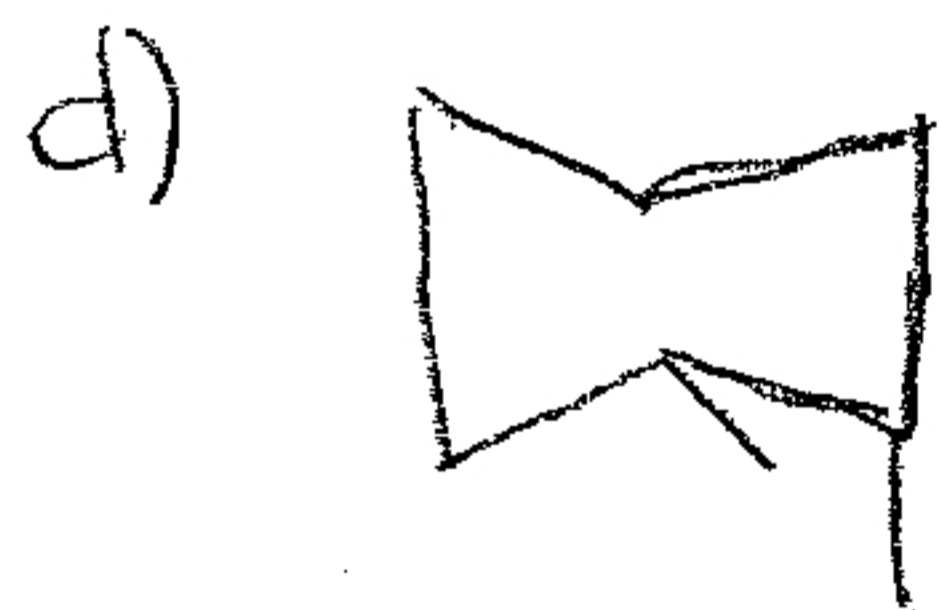
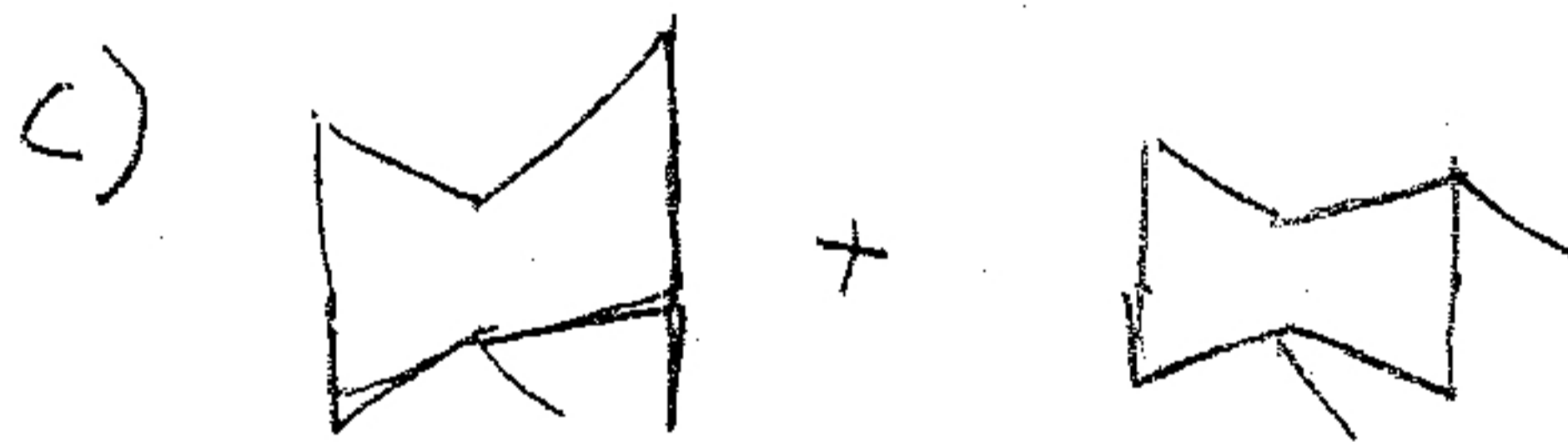
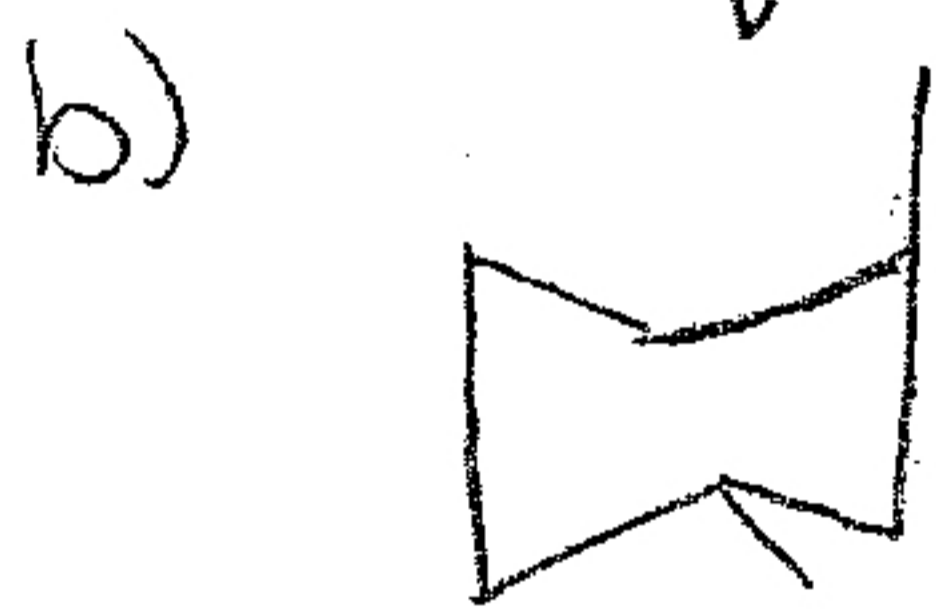
a) (1S, 2S) - 2-bromo-1-methylcyclohexanol

b) (1S, 2R) - 2-bromo-1-methylcyclohexane

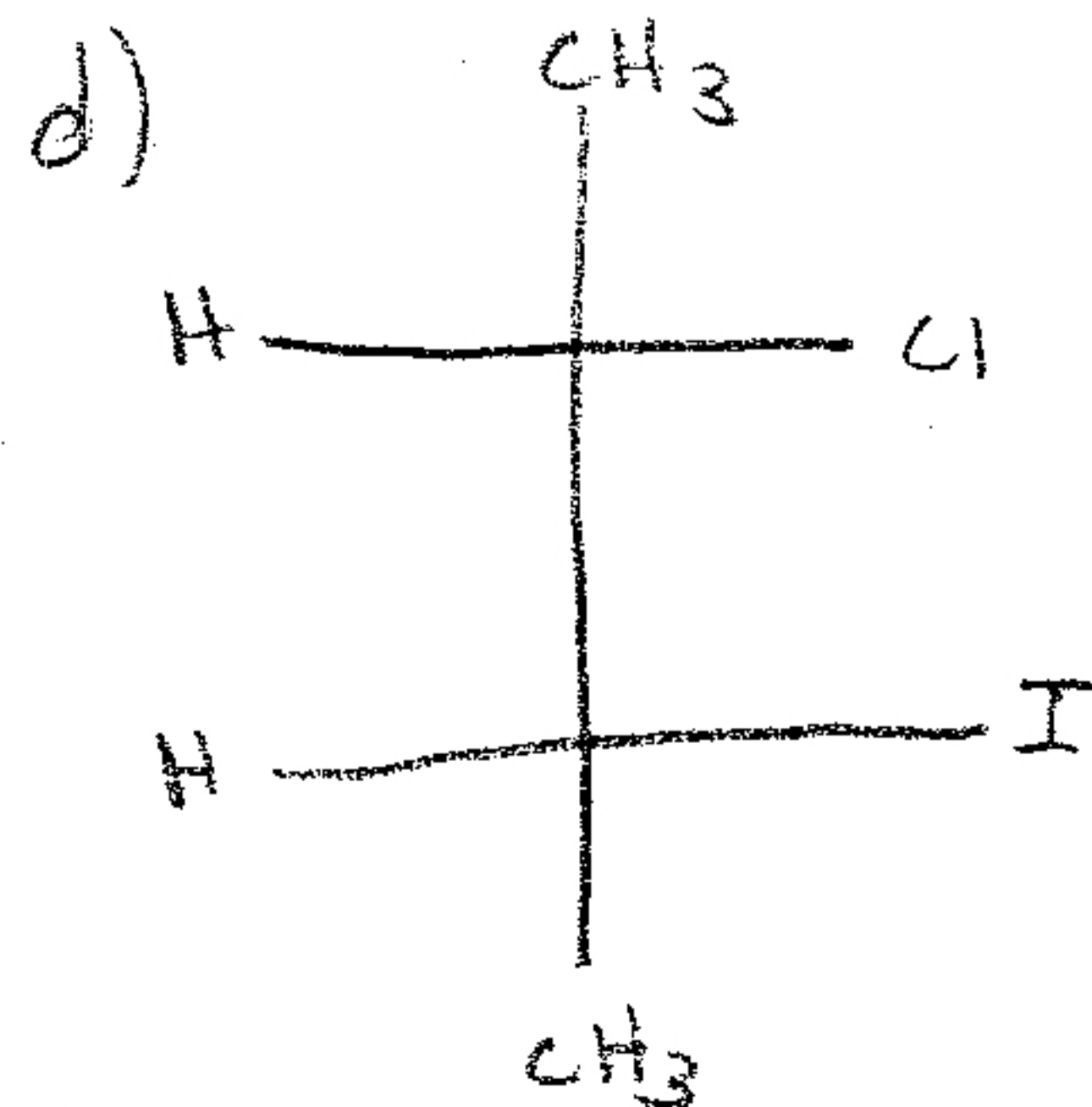
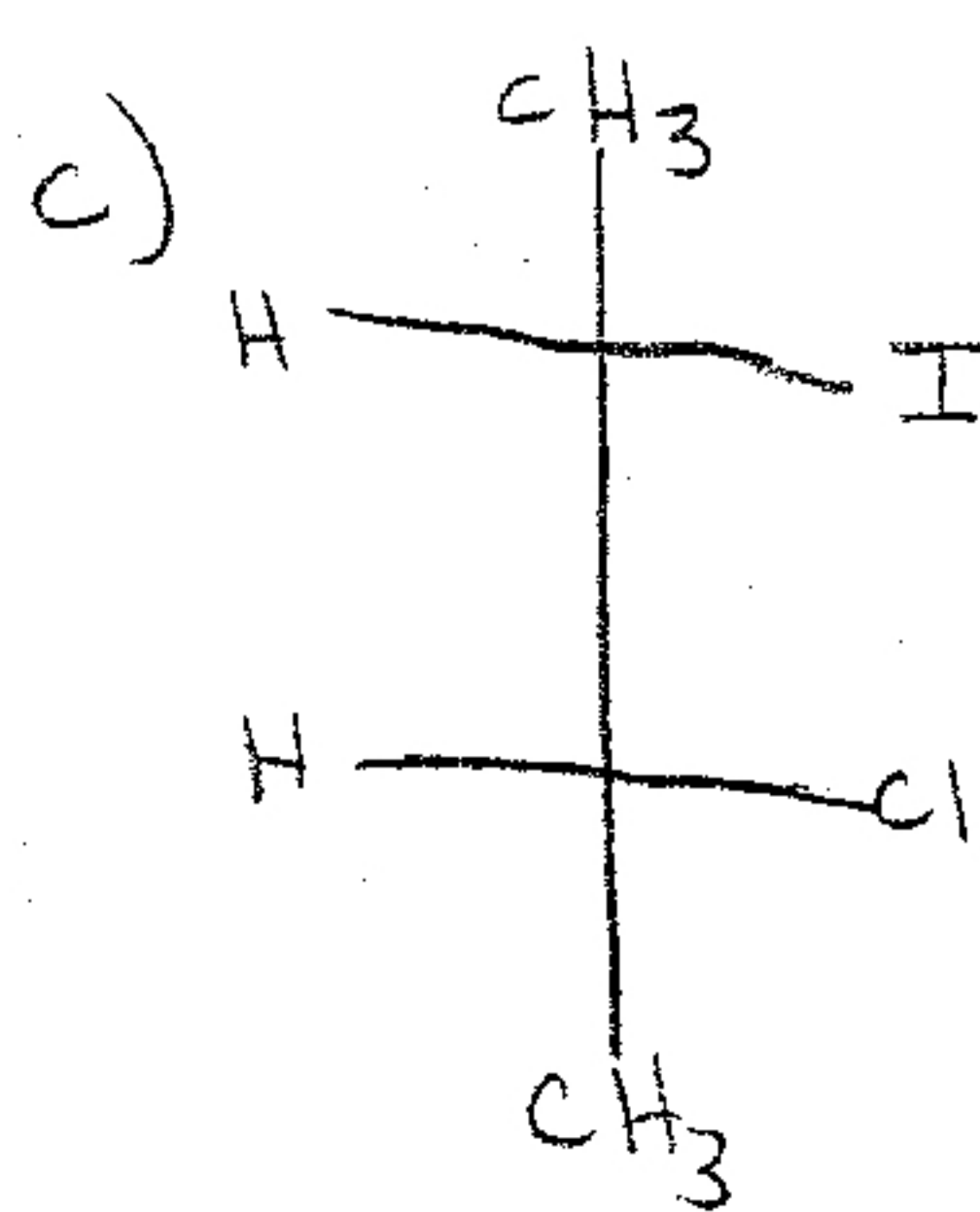
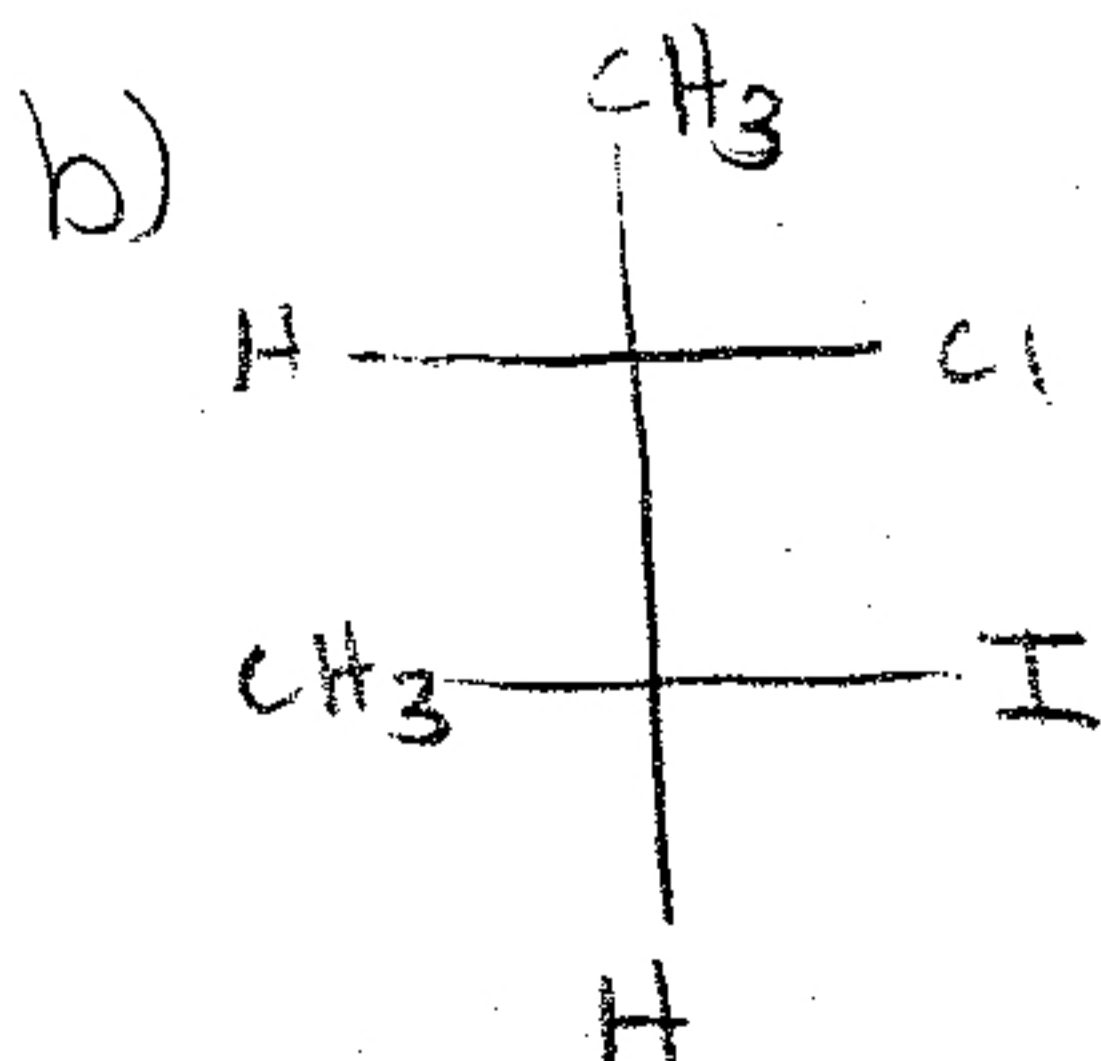
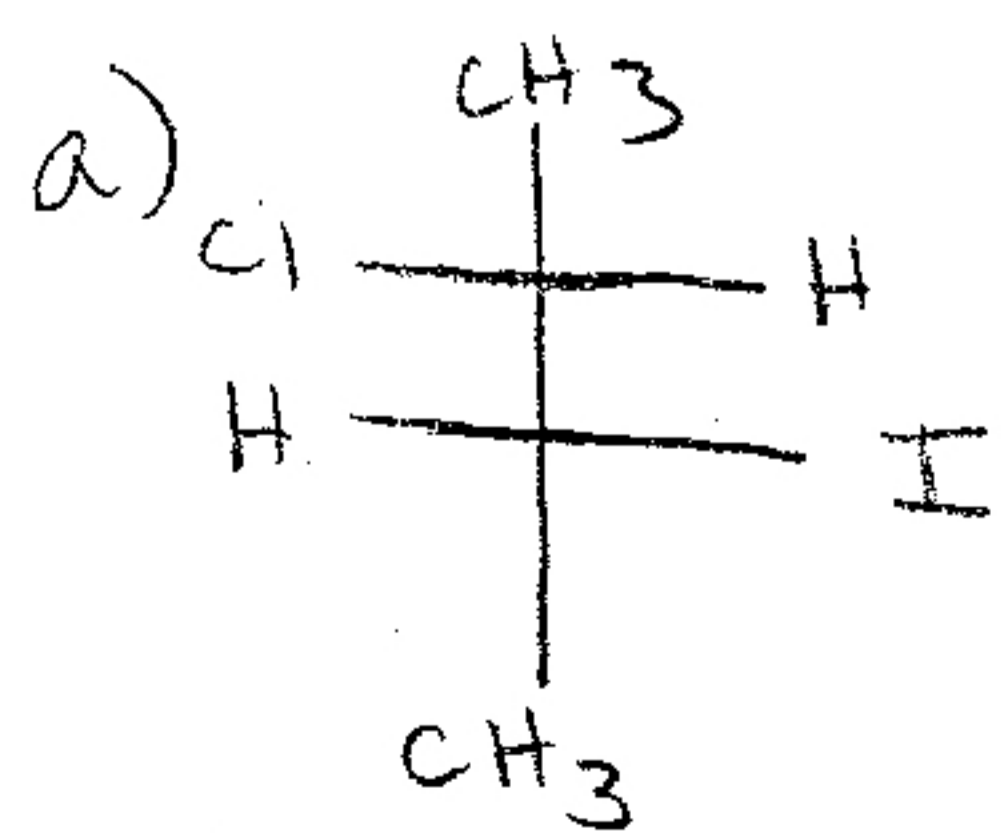
c) (1S, 2S) - 1,2-dibromo-1-methylcyclohexane

d) (1S, 2R) - 1-bromo-2-methylcyclohexanol

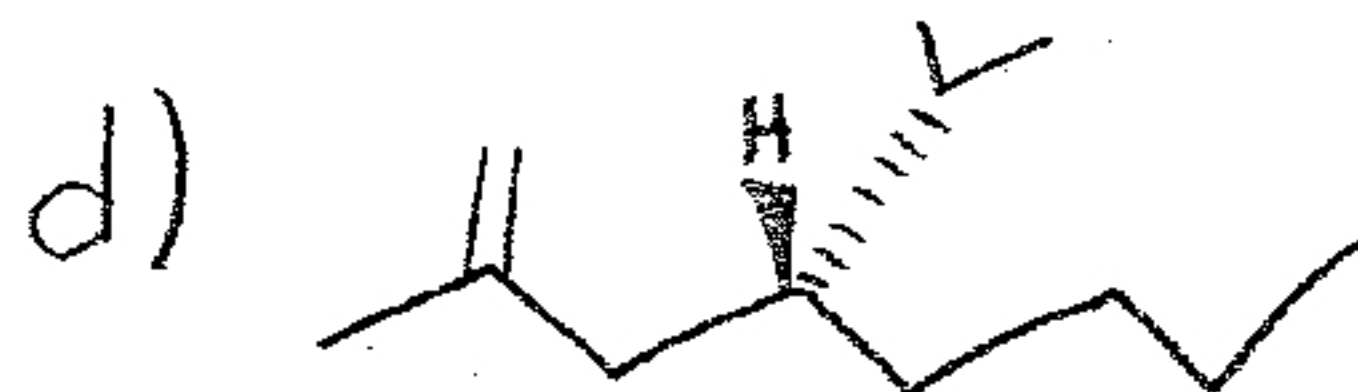
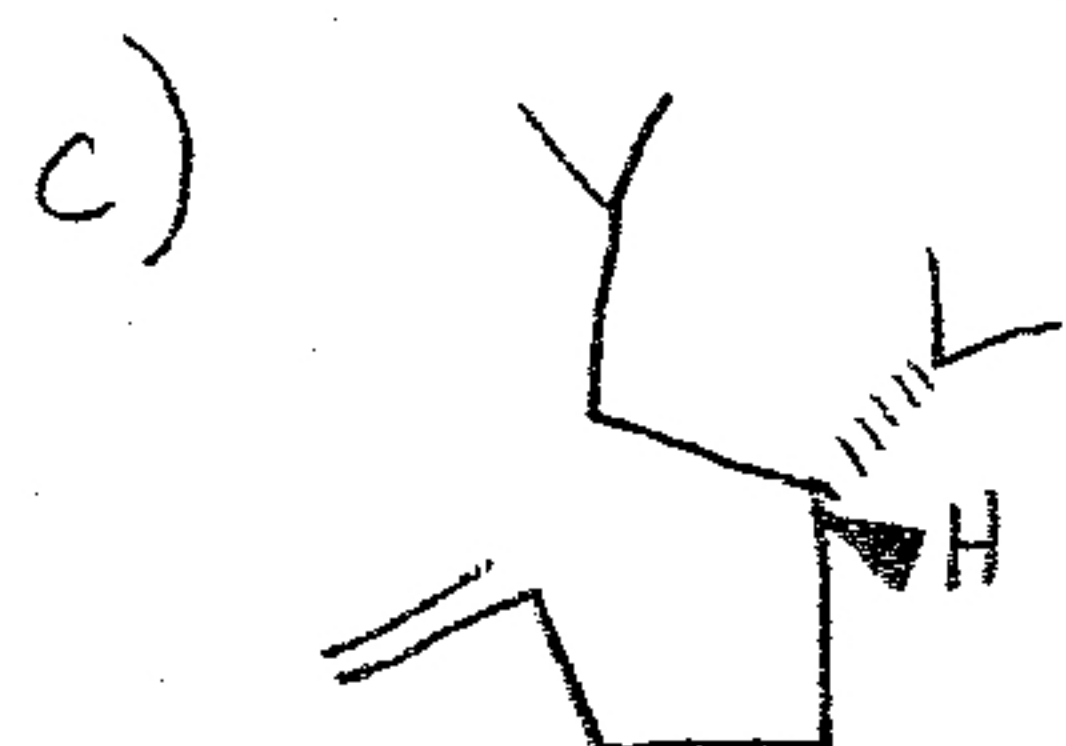
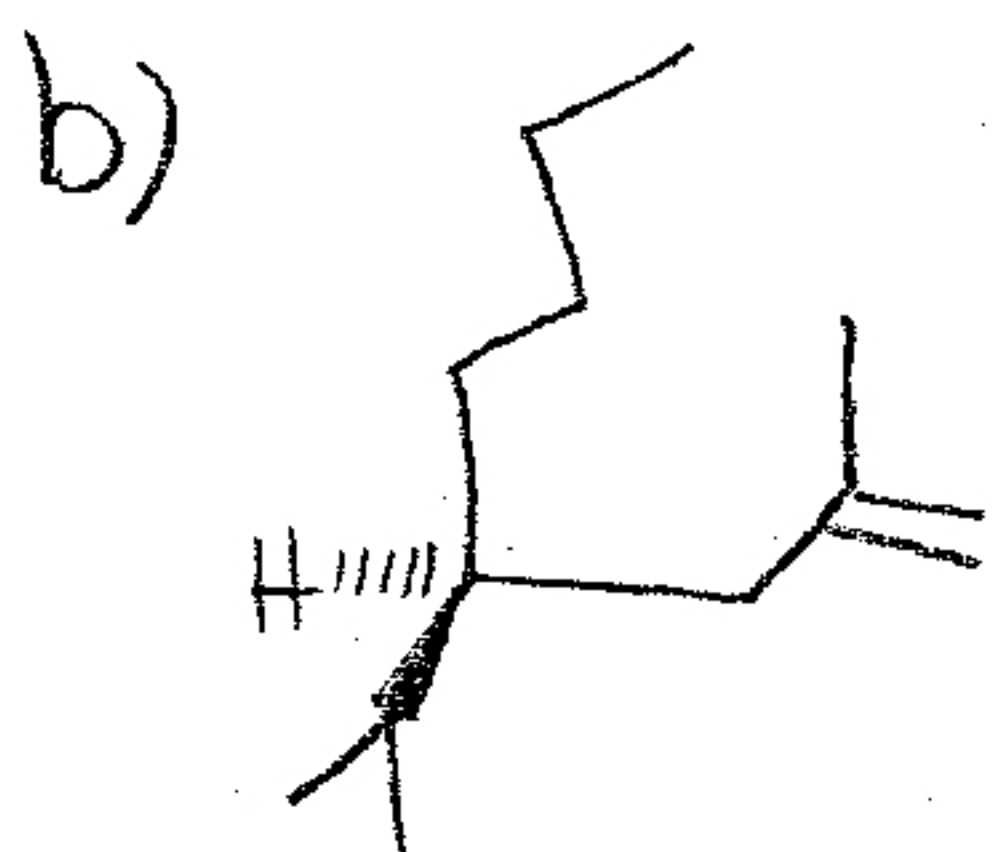
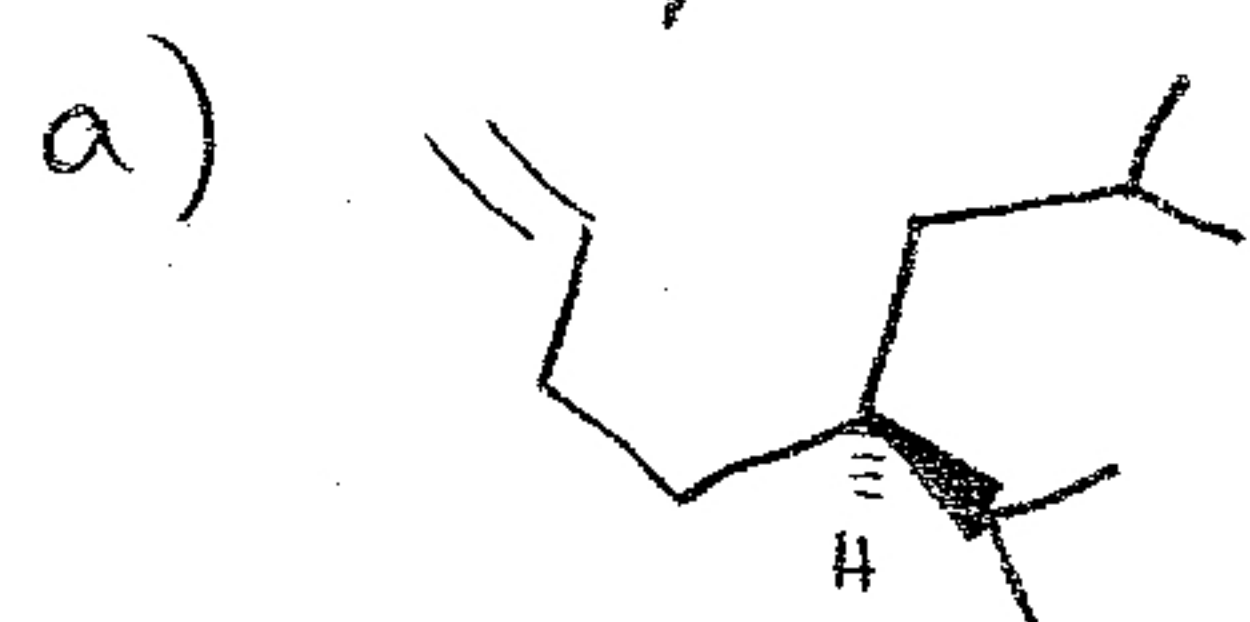
13) Which of the following compounds is Meso?



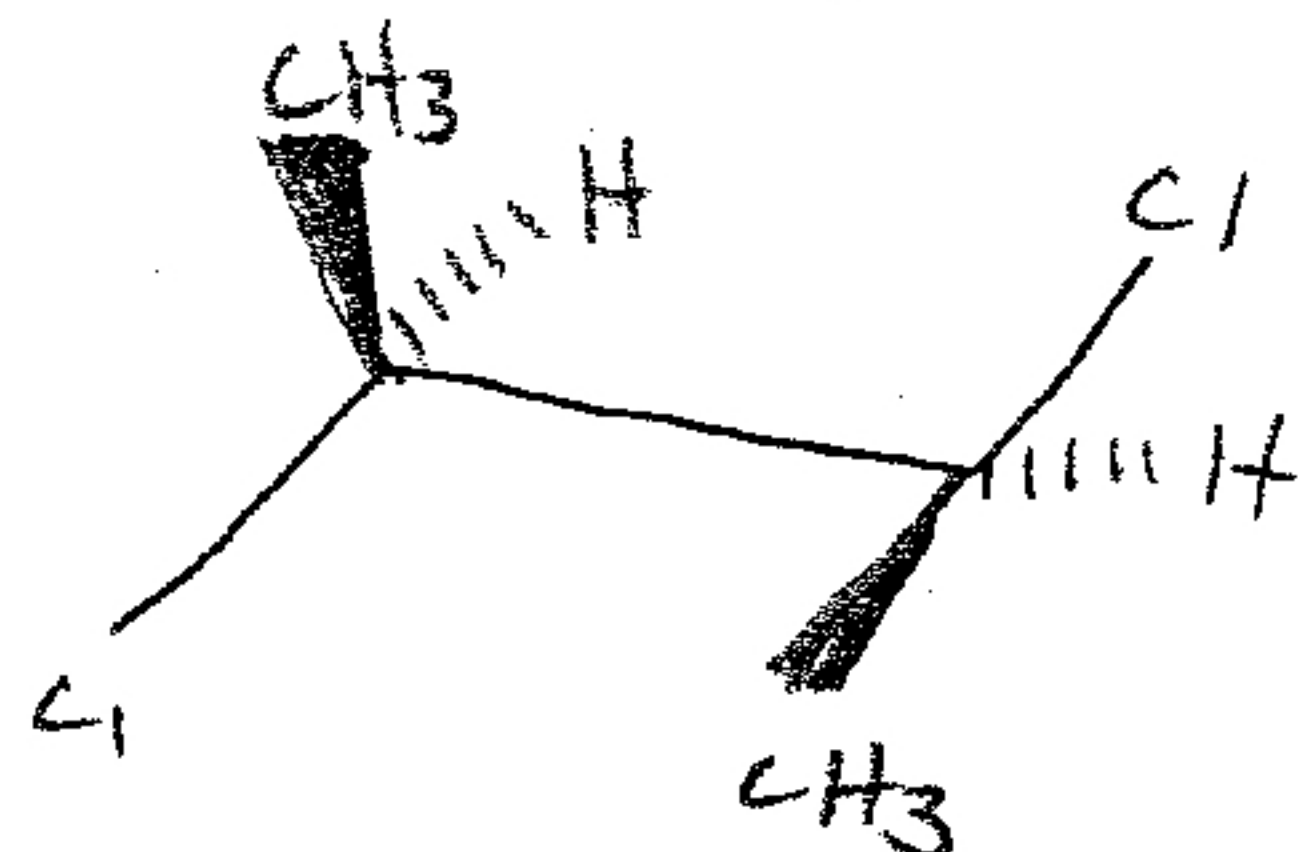
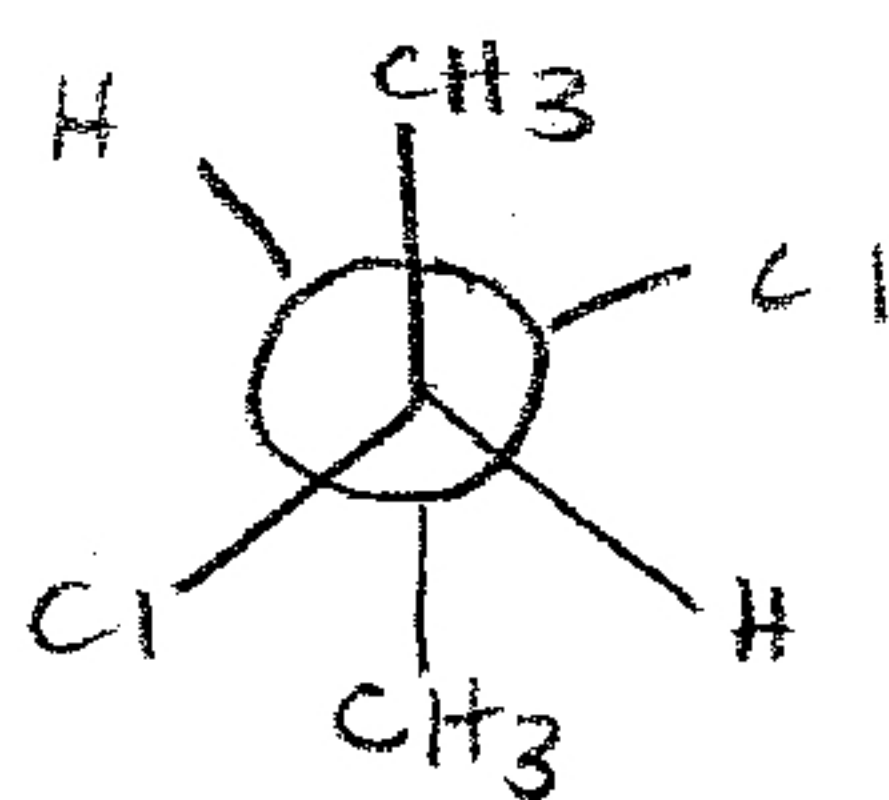
14) What is the Fischer structure for (2S, 3R) - 2-chloro-3-iodobutane?



15) I identify the correct structure for (R)-4-isopropyl-2-methyl-1-octene.



16) What is the relationship between the two structures below?

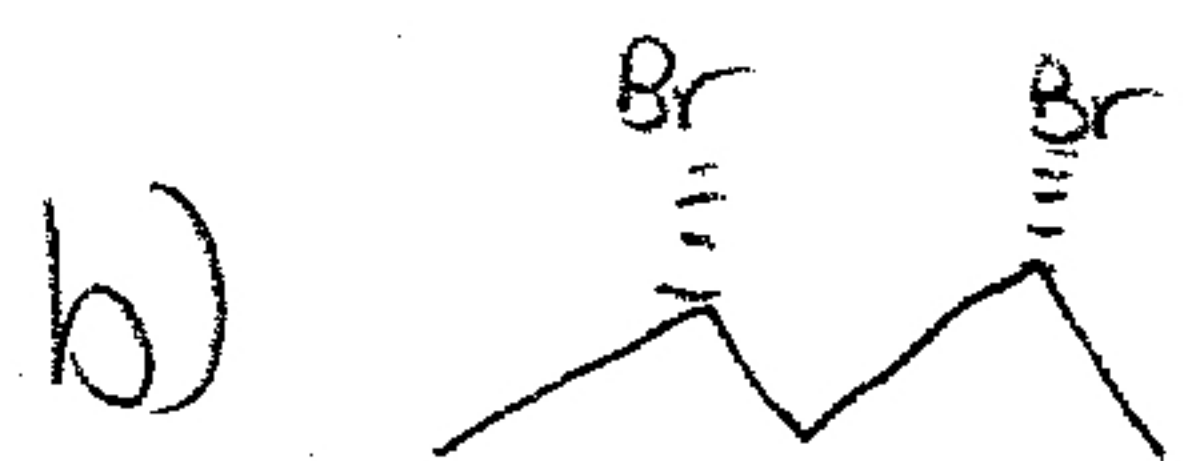
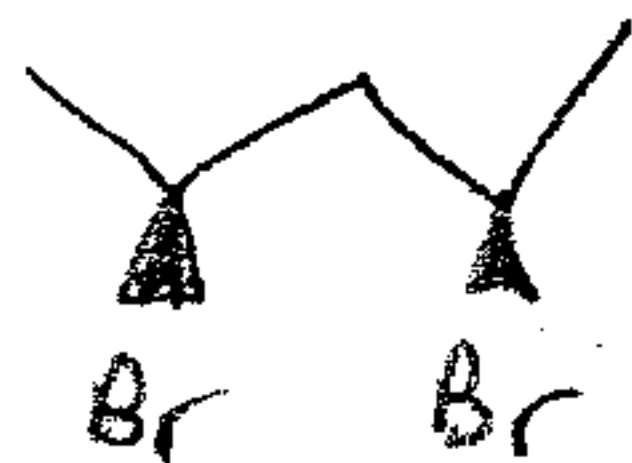


- a) identical
- b) enantiomers
- c) diastereomers
- d) constitutional isomers

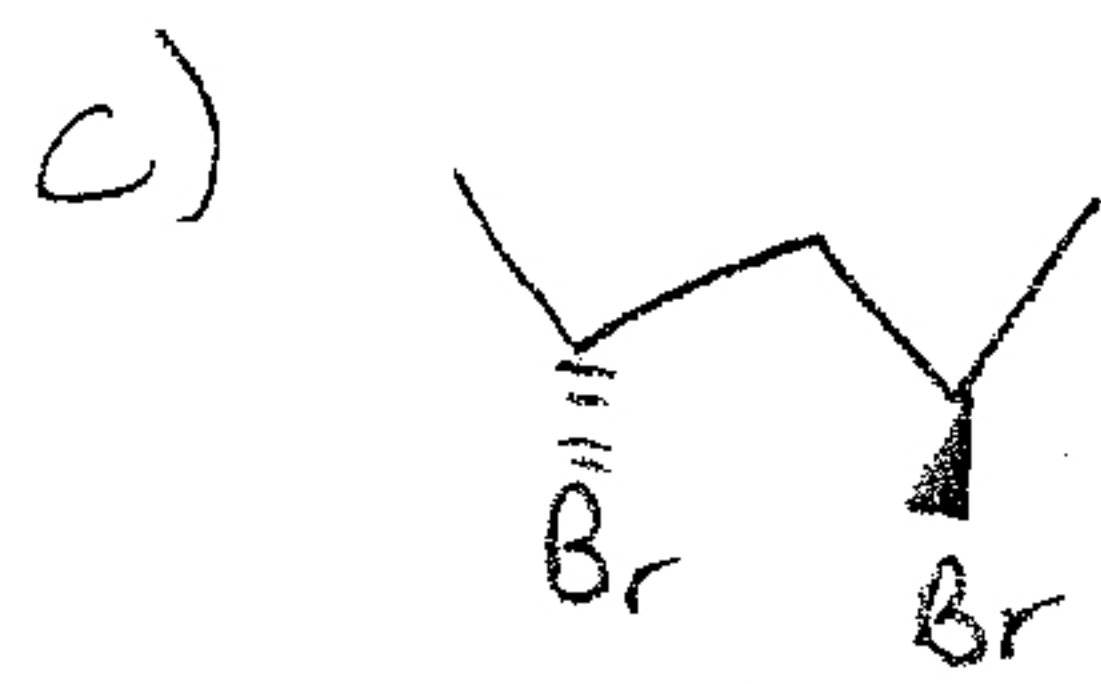
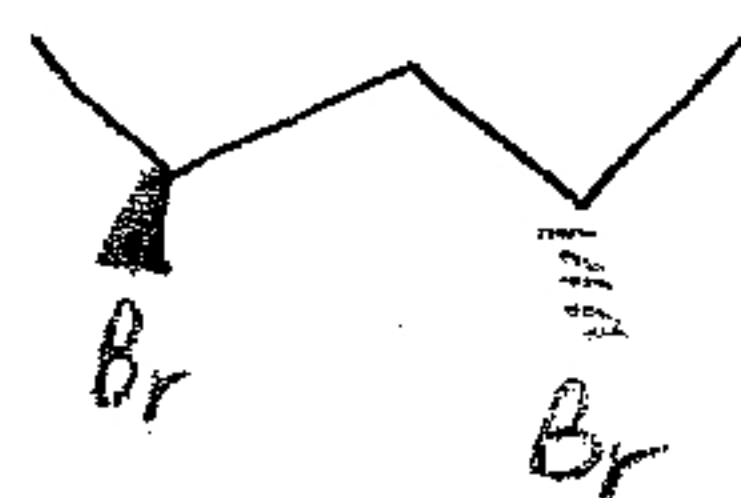
17) Which of the following represent diastereomers?



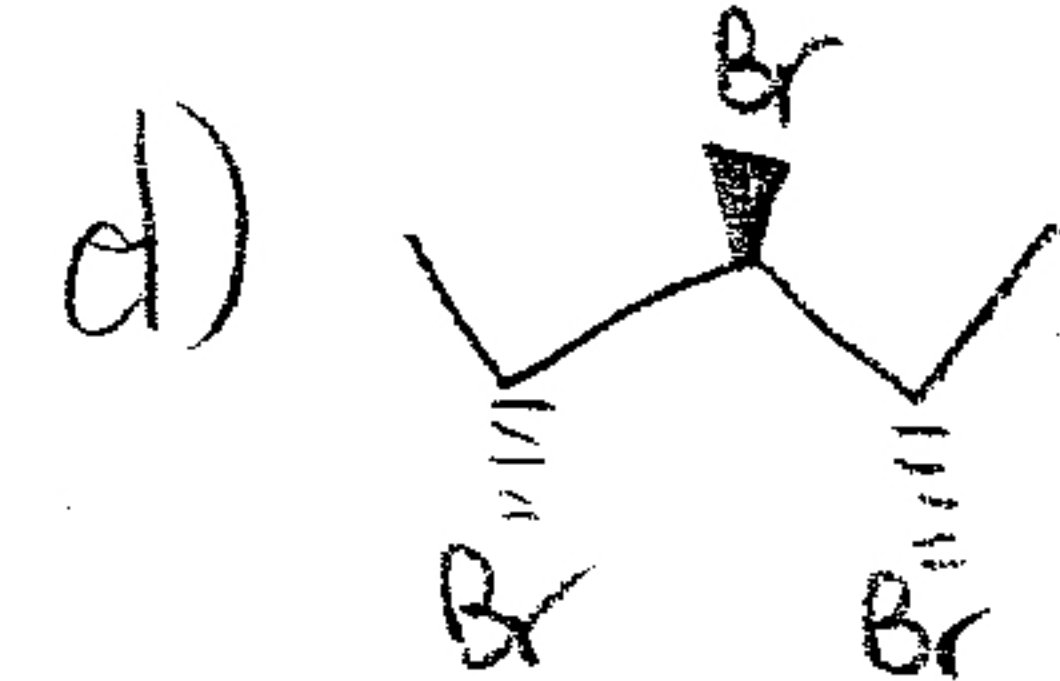
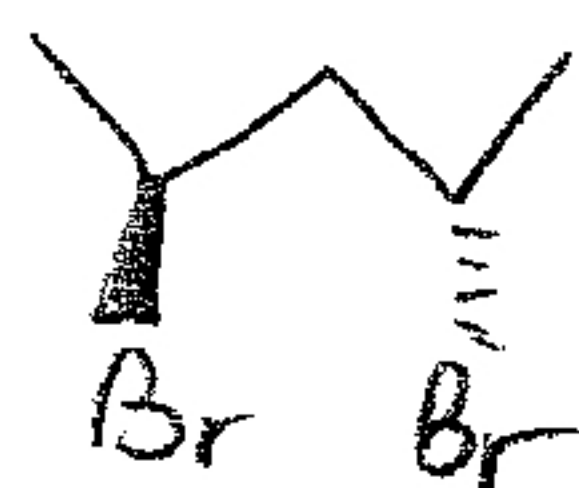
and



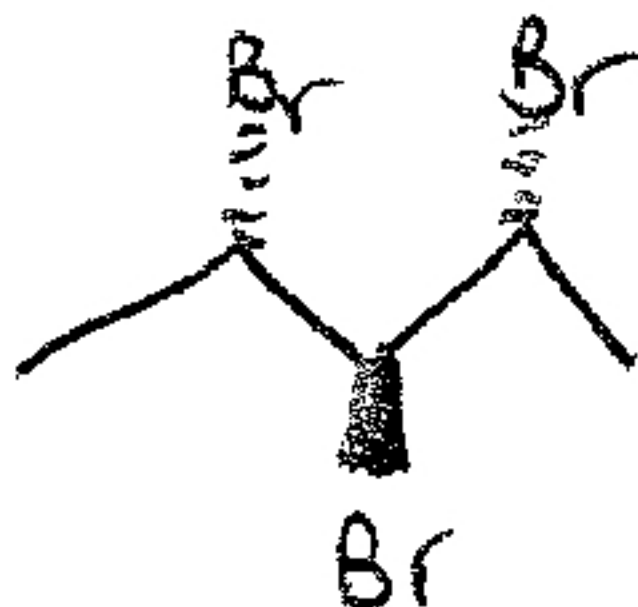
and



and



and

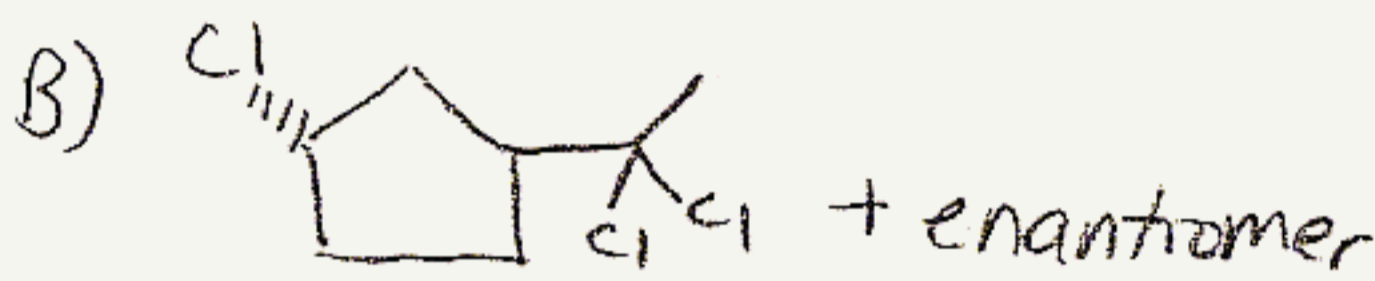
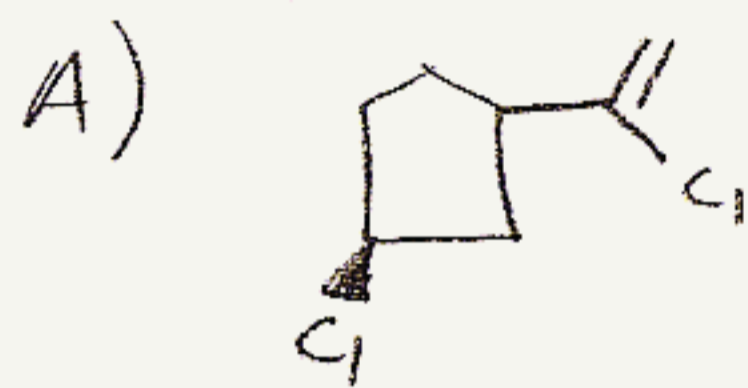
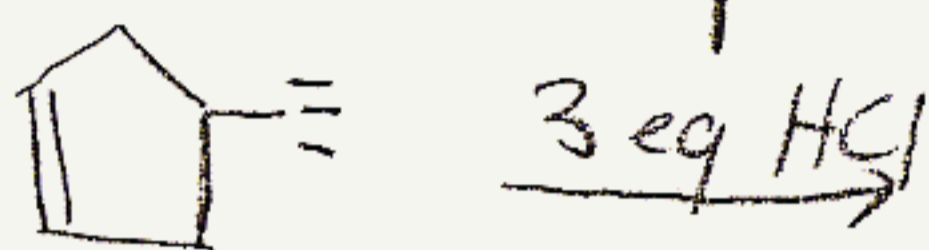


Skipped, no answer. But this is correct:

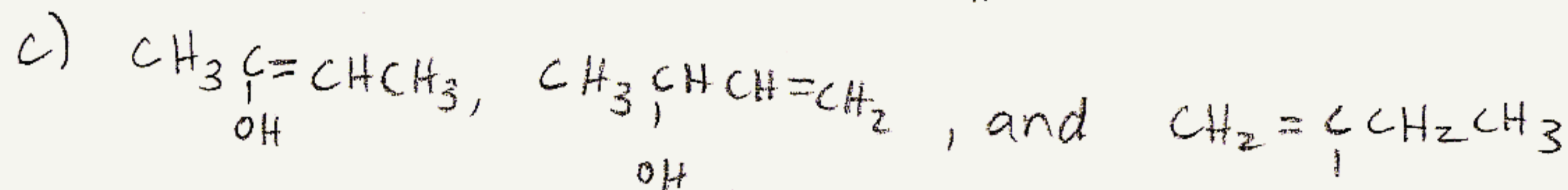
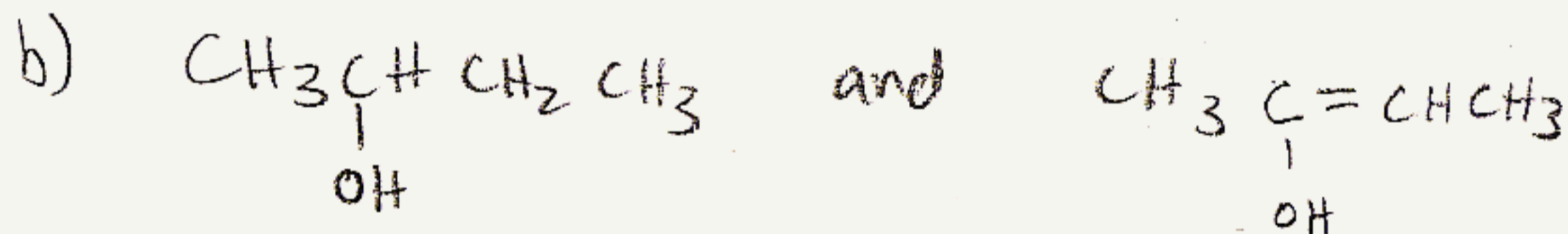
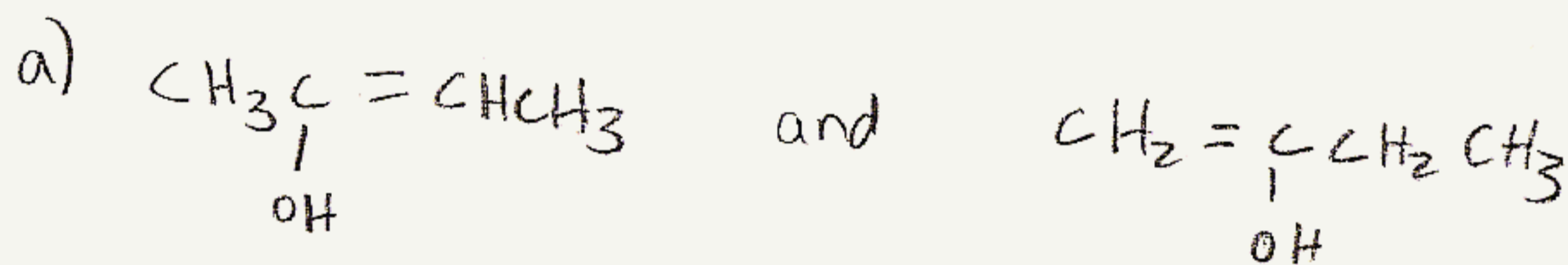
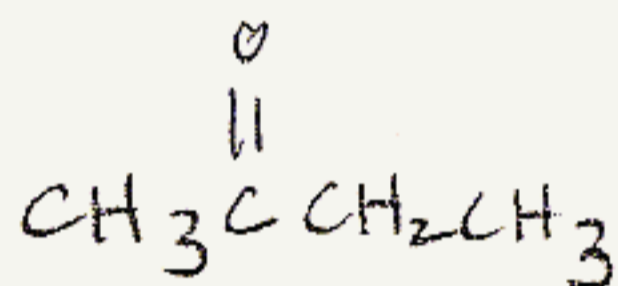
Starting with 1-propyne, what sequence of reagents would be needed to form (2R)(3S)-2,3-dibromopentane?

Answer: NaNH_2 ; $\text{CH}_3\text{CH}_2\text{I}$; Na, NH_3 ; $\text{Br}_2, \text{CCl}_4$

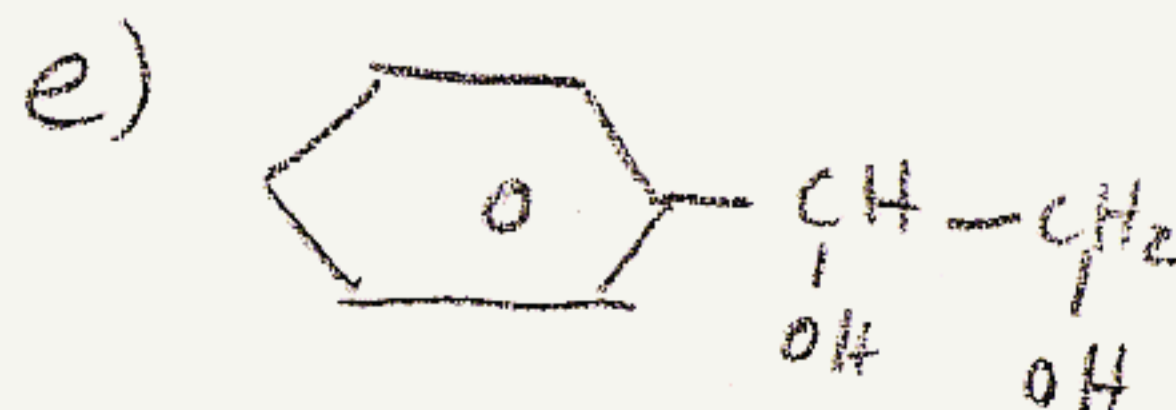
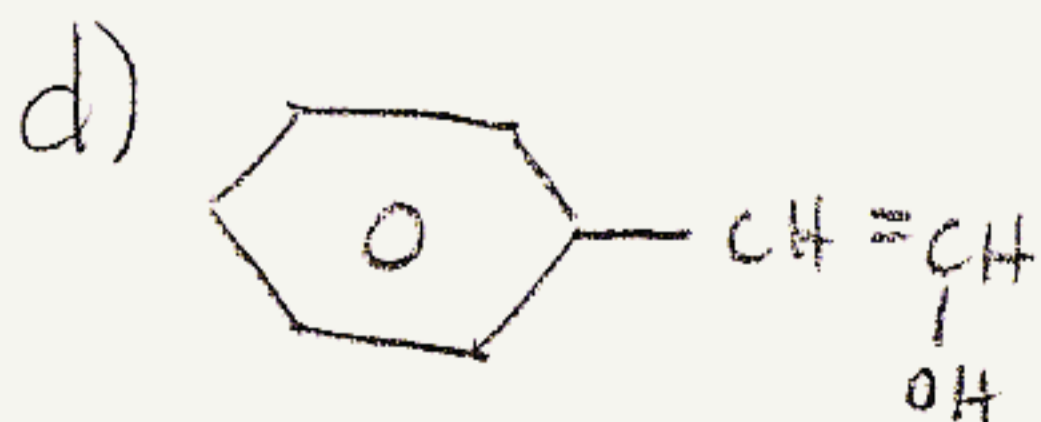
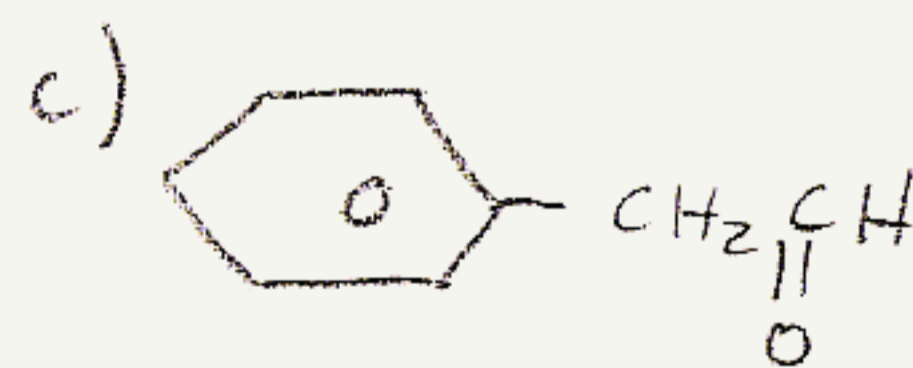
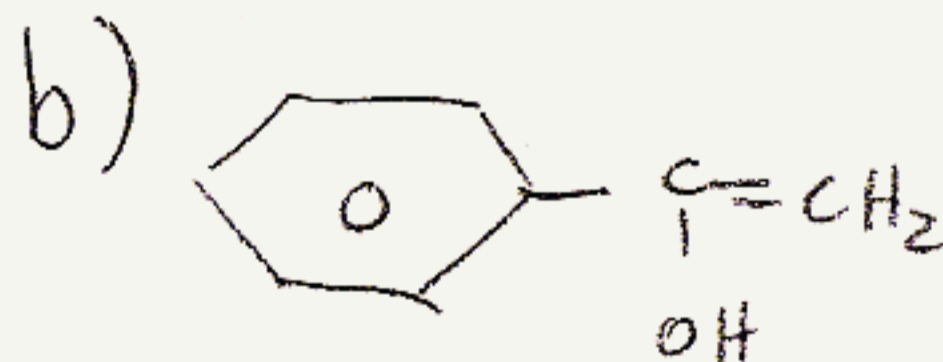
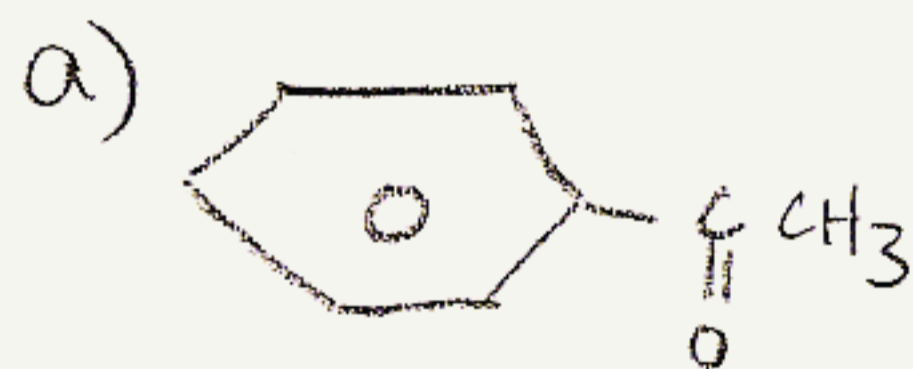
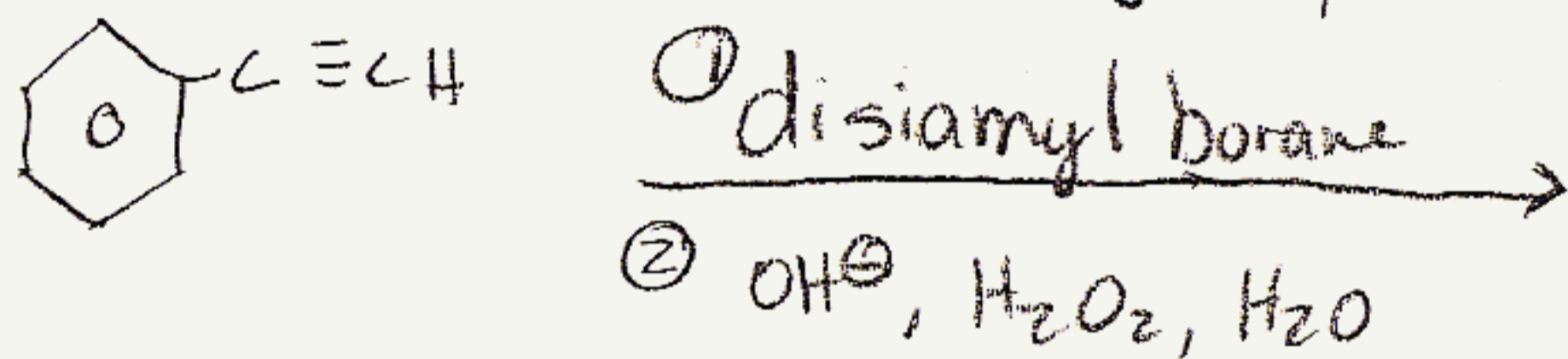
19) what are the products of the following reaction:



20) which of the following enols form 2-butanone:



21) what are the final and major products of this reaction:



Answer Key

Colonna Test 2
Oct. 30, 2006

1) d

2) d

3) a

4) IV

5) c

6) c

7) c (I and III are same)

8) b

9) b

10) d (draw eclipsed config.)

11) b

12) a

13) c

14) d

15) d

16) c

17) b

18) skipped

19) b

20) a

21) c