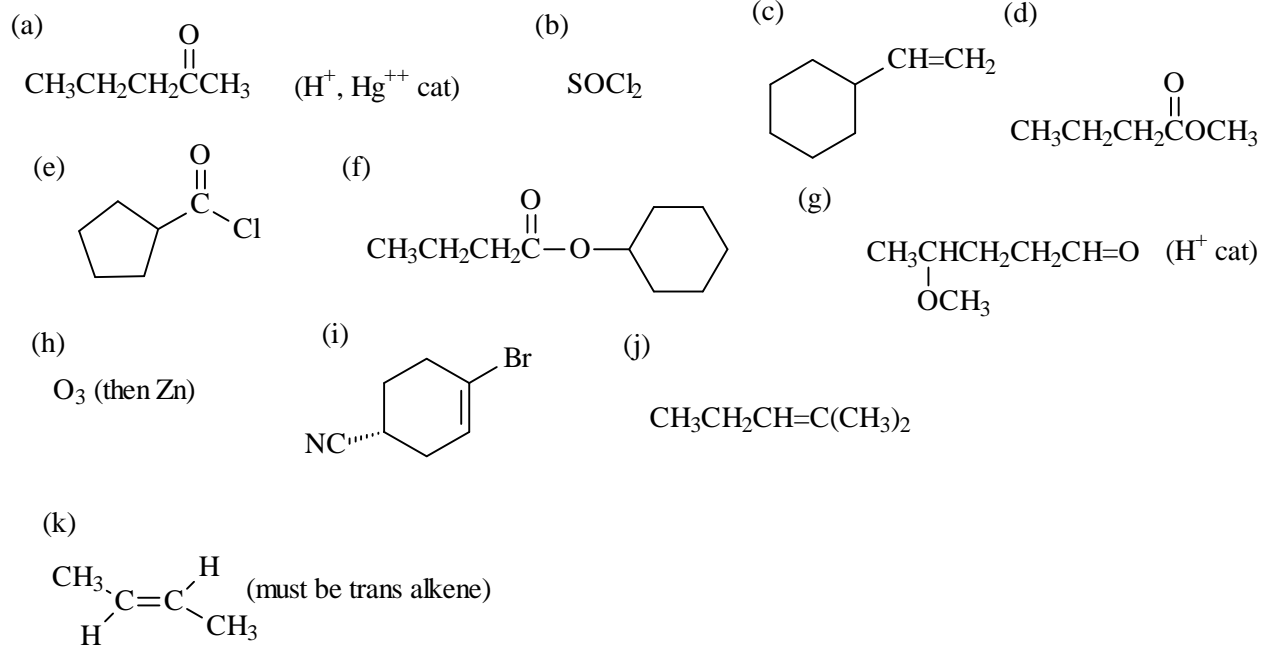
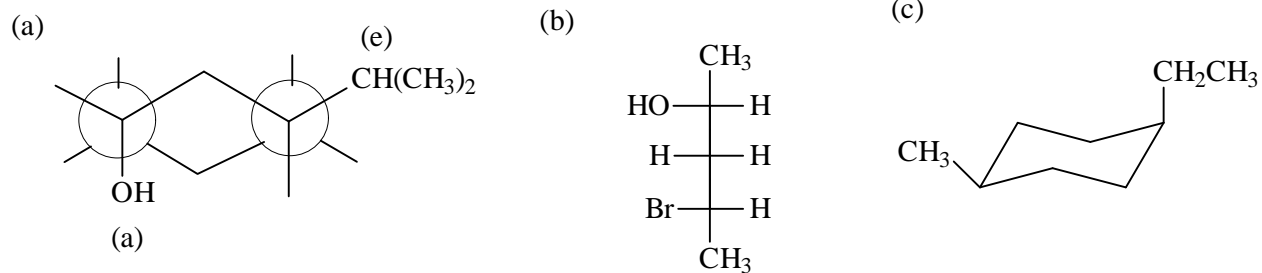


# Final Examination, 59-135 Intercession 1992

1.



2.

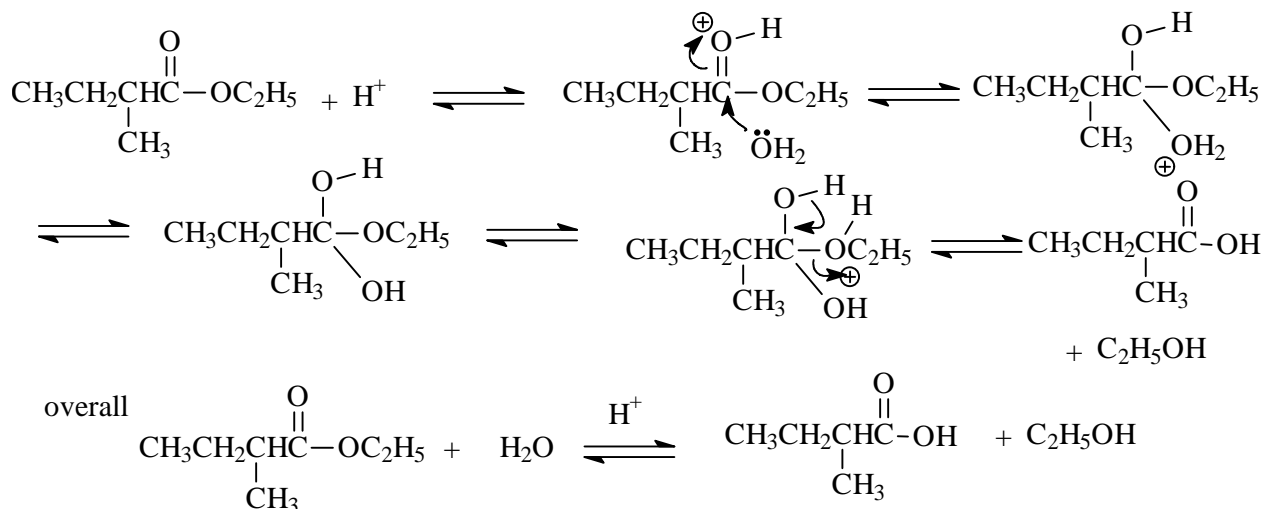


(d) (i) enantiomers; (ii) enantiomers; (iii) identical

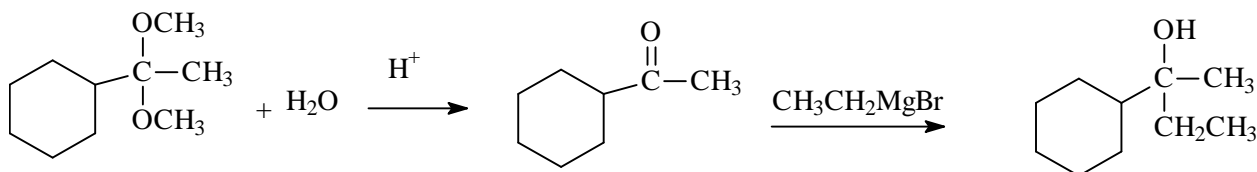
(e) The two drawings in part (iii) represent one meso form.

(f) The top carbon is R and the bottom carbon is also R. [Note that the priorities for the top carbon are  $\text{Br} > \text{C-Cl} > \text{COOH} > \text{H}$ ]

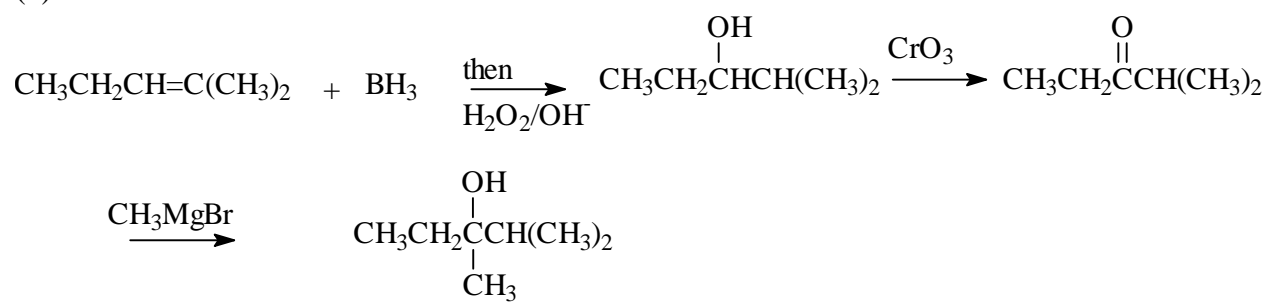
3.



4.
  - (a) The second reaction has a better nucleophile and this favours S<sub>N</sub>2 reactions.
  - (b) Low dielectric constant. A S<sub>N</sub>2 reaction with a negative nucleophile.
  - (c) The second reaction is less likely to give a racemic product via a S<sub>N</sub>1 mechanism and is therefore more likely to give an optically active product.
5. No, the organic product will NOT contain the <sup>18</sup>O. The product is a ketal and the mechanism of its formation dictates that the oxygen atom which was originally part of the cyclohexanone will end up in a water molecule.
6. THERE ARE SEVERAL POSSIBLE ANSWERS TO EACH. ONE VALID ANSWER IS:
  - (a) add Na (sodium) to both. The one which evolves a gas (H<sub>2</sub>) is the alcohol (3-penten-2-ol)
  - (b) Test the material with litmus paper. The one which turns the paper red is the acid.
  - (c) Lucas test. Add a sample of each to conc. HCl. The sample which gives the cloudiness or precipitate fastest is the tertiary alcohol [3-methyl-3-hexanol]
7. (a)



(b)



(c)

