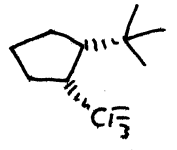
Chem 21 HW set 7 key

1. row 1 : chiral, achiral, ch., ach., ach., ch.
   row 2 : ch., ach., ach., ach., ch ("allene-type" asymmetry)
   row 3 : ch., ach., ach. (inv. center), ach. (inv. center)
   row 4 : ach., chiral (regardless of sc stereochem — all 4 must be chiral!), ch., ch., ch.

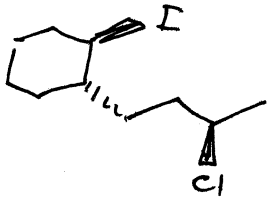
2. My approach is to focus on connectivity first, guess the stereochem, assign configs R vs S, then fix the boo-boos.

(a) 

(c) 

(e) This is really tough to draw — you can't even do it clearly in the conventional "flat ring" orientation

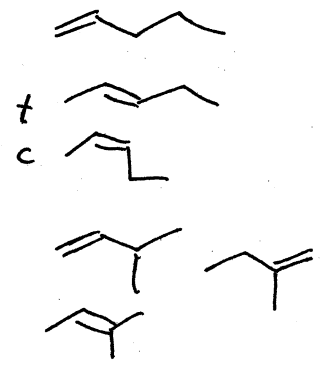
bad problem!

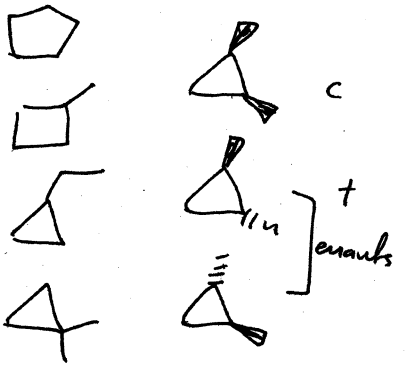
(f) 

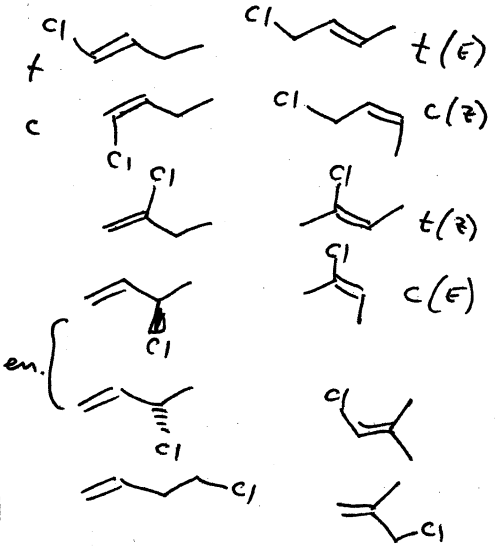
3. Don't skip this! It's important.

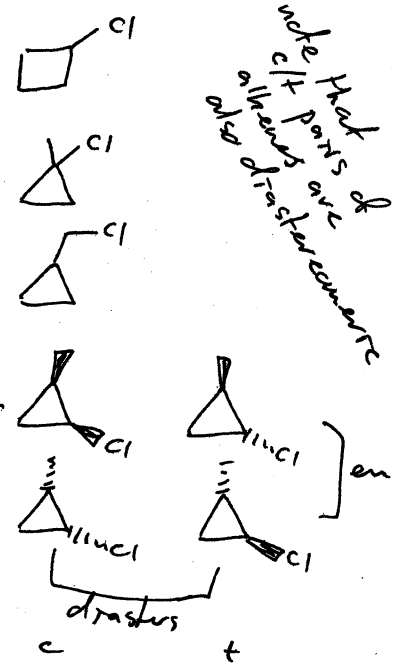
4. (a)

fun fun fun!









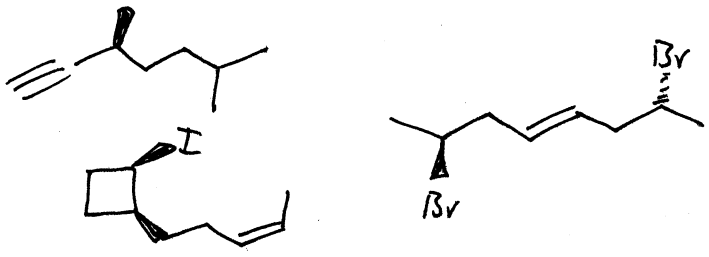
note that C=C parts of allenes are also diastereomeric

5. 1st cmpd has 3 sc s and one double bond that can be E or Z
so $2^4 = 16$ max
There's no possibility of an achiral stereoisomer, so 16 it is.

2nd cmpd has 4 sc s, so again, $2^4 = 16$ max but bilateral symmetry raises the possibility. That same of the 16 are repeats - the RRSS + SSRR are identical & the RSRS + SRSR are identical - these two are achiral ("meso") cmpds. So 14 in all - 12 chiral, 2 achiral
draw 'em out!

Graded part -

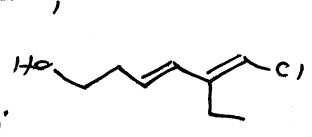
1.

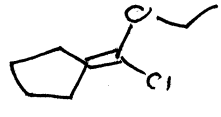


2. Row 1: ch, ach, ch, ch ; Row 2: ach, ch, ach, ch

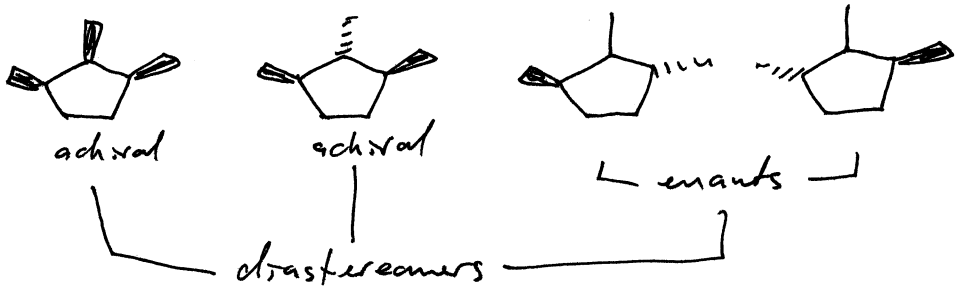
3. Ring C is R, d.b. is Z, sc on chain is S.
Check that you drew the enantiomer correctly by reflecting through a different plane - the original structure
Be sure you didn't accidentally reflect it twice, which is equiv. to rolling it over!

(c) same, diastereomer, enantiomer

(d) Many possibilities! e.g. 



etc.

4. 

note that wedge/dash on the central C doesn't matter for these two - same both ways