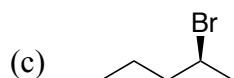
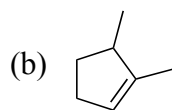
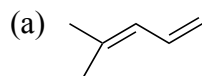




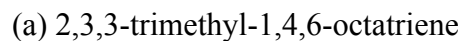
1. Calculate the unsaturation number for each of the following formulas (6 pts).



2. A) Give IUPAC names for the following compounds (6 pts).



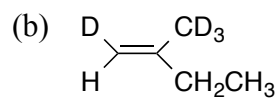
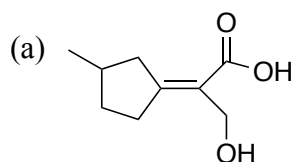
B) Draw structures corresponding to the following IUPAC names (6 pts).



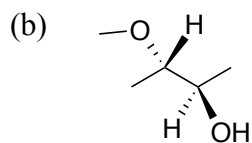
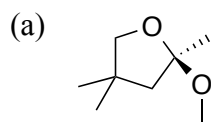
(b) (*S*)-1,2-butanediol

(c) (*E*)-4-allyl-1,5-octadiene

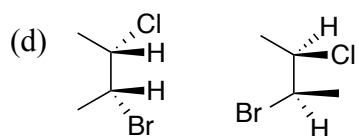
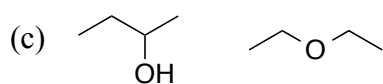
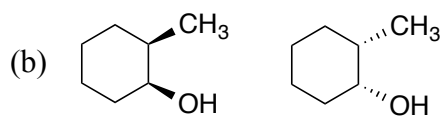
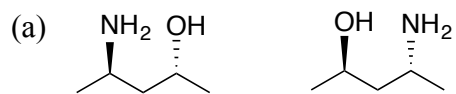
C) Assign *E* or *Z* configuration to the following alkenes (4 pts).



D) Assign *S* or *R* configuration to the following asymmetric carbons (6 pts).

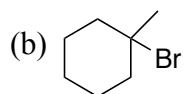
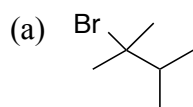


E) Describe the relationship between each pair of isomers (12 pts).



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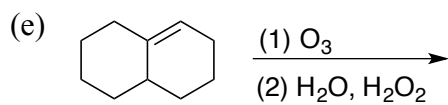
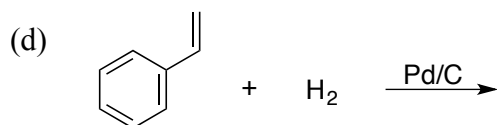
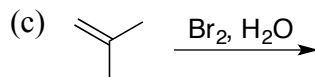
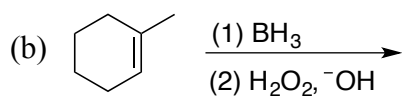
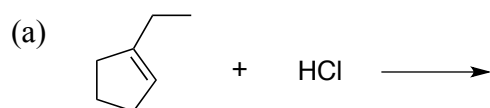
3. A) In each case, give TWO different alkene starting materials that would react with HBr to give the compound shown as the major (or only) addition product (8 pts).

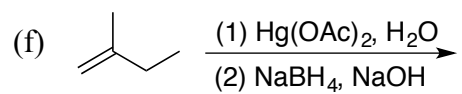


B) Give the missing reactant(s) in each of the following equations (4 pts).



C) Predict the major products of the following reactions (18 pts).





4. Using the curved arrow notation, suggest a mechanism for each of the following reactions (30 pts).

