Autoevaluation TEST Nº2 *(Topics 6-8)*

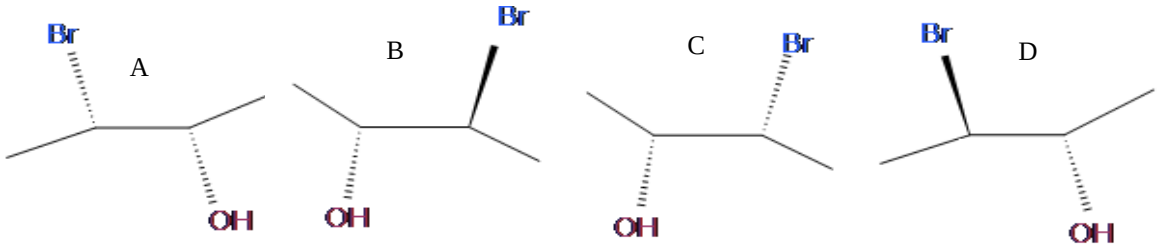
Family name and name_____

Important: Write your name before beginning the test. No additional material will be provided. Books, class notes are not allowed. Calculators are allowed. Use margins for drafts or calculus. **Mark with a cross the correct answer in the box at your left when you are completely sure. No crossings out and no additional comments are allowed. Correct answers mark as +1. Errors mark -0.1. Blanks mark as 0. The final score can not be less than 0**. There is only one correct answer in each question.

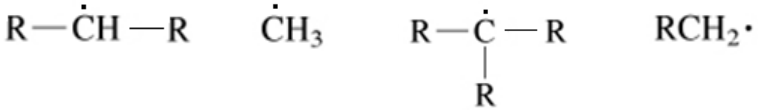
1) Assuming a molecularity value of 2 for the appearance of HCl in the following reaction, propose a kinetic equation for the rate of appearance of HCl and for the time variation of [HCl].

$$\frac{1}{2}H_2 + \frac{1}{2}Cl_2 \rightarrow HCl$$

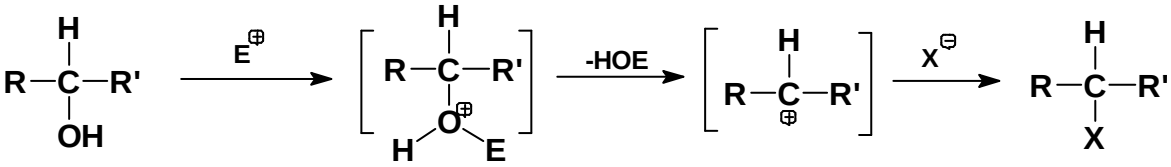
2) Unlike enantiomers which are mirror images of each other and non-superimposable, diastereomers are not mirror images of each other and non-superimposable. Here you have some stereoisomers of 3-bromo-2-butanol. Assign their SS, RR, SR, RS configurations and show which are enantiomers and which diasteromers



3) Sort by increasing stability the following radicals. Explain the answer



4) To which kind of reactions does the following mechanism belong? Give two examples for EX.



5) Give examples of three oxidation reactions and three reduction reactions. Use different functional groups

a) Oxidation of alkenes with $KMnO_4$ to give glycols
b) Oxidation of secondary alcohols with $KMnO_4$ to give ketones
c) Oxidation of methyl ketones with NaOH / I_2 to acids (the haloform reaction)
d) Reduction of nitriles or amides with $AlLiH_4$ to give amines
e) Reduction of esters with $AlLiH_4$ to give aldehydes
f) Reduction of carboxylic acids with H_2 and a catalyst to give alkanes