Fall 00: Quiz 2. Ch 4-6 **20points**

Name _____

If you do not want your graded quiz placed in the box outside my office, then please tick here_____

(1 and 3-10) are True or False.

1) The mirror image of a chiral molecule is superimposable upon the original molecule.

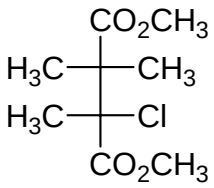
2) Name an everyday object which is chiral (and not a part of your body or an item of clothing).

3) An optically active mixture contains equal amounts of R and S enantiomers.

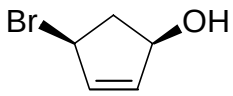
4) A favorable entropy change results from in increase in disorder.

5) The lower the bond dissociation energy of a bond, the easier it is to break.

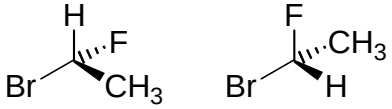
6) This molecule is chiral.



7) This molecule is chiral.



8) These compounds are enantiomers.



9) S_N1 reactions always proceed with total inversion of stereochemistry.

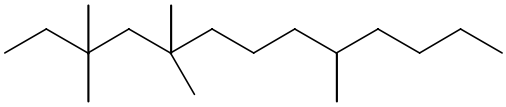
10) A nucleophilic substitution is a reaction where a nucleophilic species replaces another group or atom in a molecule.

11-13) Circle (or draw in) the C-H bond in each molecule that has the lowest bond dissociation energy:

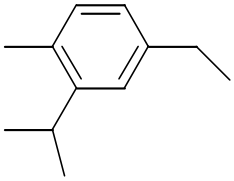
11)

CH_3-CH_2-CH_3

12)



13)

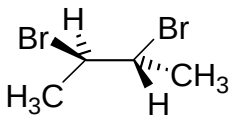


14) State the Saytzeff rule concerning eliminations

15) Give two characteristics of an E2 process.

16) After a carbocation has been formed, four possible things can happen: name two.

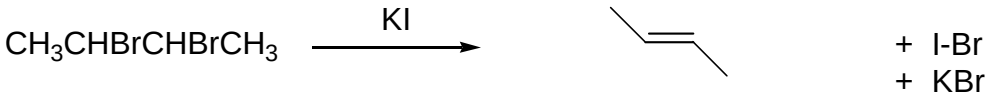
17) Star (asterix, *) and assign the (R) or (S) configuration to any chiral centers in the below molecule.



18) Is this compound the *meso* or *(dl)* diastereomer?

19) Is the compound in (17) chiral or achiral?

20) Is the below reaction an elimination, substitution or neither?



BONUS QUESTION for 1 extra point
State and justify briefly which in your opinion, is the more important concept: “Kinetics”, “Mechanism” or “Thermodynamics”.

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Name AUNTIE ORSYN

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(1-10) are True or False.

F 1) The mirror image of a chiral molecule is superimposable upon the original molecule.

corkscrew 2) Name an everyday object which is chiral (and not a part of your body or an item of clothing).
scissors, spiral staircase, golf club, car,

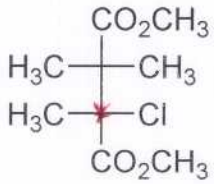
F 3) An optically active mixture contains equal amounts of R and S enantiomers.

T 4) A favorable entropy change results from in increase in disorder.

T 5) The lower the bond dissociation energy of a bond, the easier it is to break.

6) This molecule is chiral.

T

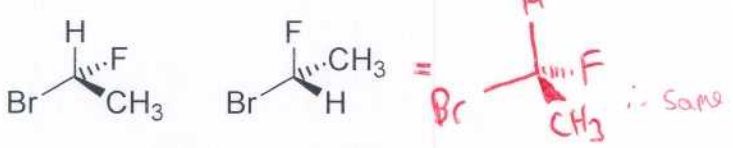


7) This molecule is chiral.

T

8) These compounds are enantiomers.

F



9) S_N1 reactions always proceed with total inversion of stereochemistry.

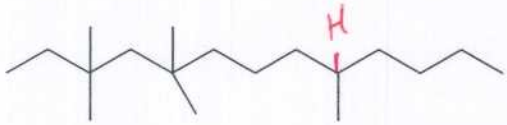
F

10) A nucleophilic substitution is a reaction where a nucleophilic species replaces another group or atom in a molecule.

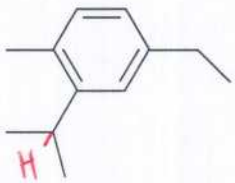
11-13) Circle (or draw in) the C-H bond in each molecule that has the lowest bond dissociation energy: (i.e. gives the most stable radical.)

11)

12)



13)



14) State the Saytzeff rule concerning eliminations

If there is a choice of alkene formation in an elimination, then the major product is the alkene with the highest degree of alkyl group substituents.

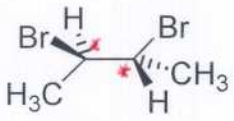
15) Give two characteristics of an E2 process.

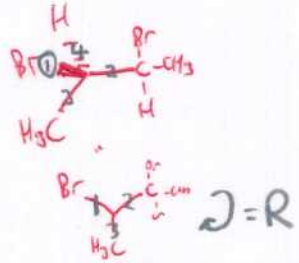
Elimination, anti (or syn) coplanar arrangement required, strong base needed, Bimolecular kinetics, no carbocationic rearrangements.

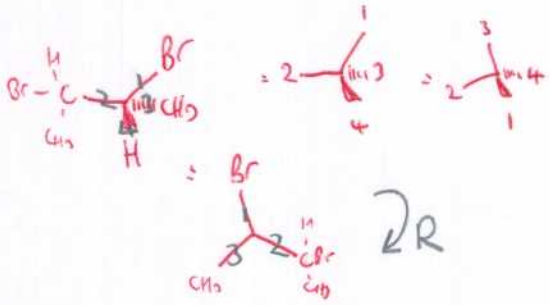
16) After a carbocation has been formed, four possible things can happen: name two.

1) React with leaving group → starting material
2) React with other nucleophile → Product of substitution
3) Lose another group (especially H^+) → Product of Elimination
4) Rearrange to more stable carbocation.

17) Star (asterix, *) and assign the (R) or (S) configuration to any chiral centers in the below molecule.







18) Is this compound the *meso* or *(dl)* diastereomer?

dl

19) Is the compound in (17) chiral or achiral?

Chiral

20) Is the below reaction an elimination, substitution or neither?

BONUS QUESTION for 1 extra point

State and justify briefly which in your opinion, is the more important concept: "Kinetics", "Mechanism" or "Thermodynamics".

Any sensible argument gets 1pt.