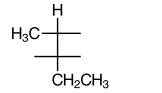
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200 points total

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25 pts Place the necessary groups on the structures below to give 1) the specified compound:



(2R,3S)-2,3-dichloropentane

(R)-bromochlorofluoromethane

30 pts 2) Label each pair of compounds as either identical, structural isomers, enantiomers, or diastereomers:

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20 pts 3) Name the compounds below:.



15 pts 4) Briefly describe the IR spectral characteristics that would allow you to distinguish between the following pairs of compounds:

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25 pts 5) Fill in the table below with the results of the simple chemical tests indicated. Use a + to indicate soluble and a o to indicate insoluble or a + to indicate bubbles with bicarbonate and a 0 to indicate no

bubbles.

	ОН	OH	CH₃ N	0
Water solubility				
H ₂ SO ₄ solubility				
dil aq NaOH solubility				
dil aq HCl solubility				
bubbles with aq HCO ₃ ¹⁻				

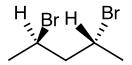
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25 pts 6) Label the asymmetric carbons in the following as R or S. Redraw the bottom one as a Fisher projection:



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20 pts 7) Name the compounds below:

Br
Br
$$H_3C$$
 H_2CH_3
 CH_2CH_3

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40 pts 9)Four points each with three free misses

B) A carbon radicalC) Two chlorine radD) Cl₂ dissociates.	reacts with a chlorine rad reacts with Cl ₂ .		hich of the following	1)
2) For the compound belo	w, the number of 1°, 2° ar	nd 3° hydrogens, respectiv	vely is	2)
A) 1, 6 and 0	B) 3, 6 and 2	C) 3, 6 and 1	D) 1, 3, and 1	
B) The entropy term enthalpy term. C) The entropy term D) The entropy term	makes a greater contribu always makes a more sig makes a greater contribu makes a greater contribu	ribes the contribution of α tion to ΔG° in exothermical graphical contribution to ΔG° at low temperation to ΔG° in endothermition to ΔG° at high temperation to ΔG° a	c reactions. AG° than does the eratures. nic reactions.	3)
4) Given the chlorination (of acetone shown below, o	choose the correct rate law	v.	4)
CH3COCH3 + Cl2 → CH	H3COCH2Cl+HCl			
A) rate = [Cl ₂] B) rate = [CH ₃ COCI C) rate = [CH ₃ COCI D) rate = [CH ₃ COCI E) cannot be determ	H ₃][Cl ₂] ^{1/2} H ₃][Cl ₂]	must be determined expe	erimentally	
5) Rank the following carb		lity. (The most stable is fi	rst.)	5)
→				
1	II	III		
A) $I > II > III$	B) $II > I > III$	C) III > I > II	D) I > III > II	
6) The major monobromin radical bromination is _ A) bromomethane B) a primary bromic C) a quaternary brom D) a secondary brom E) a tertiary bromid	de nide nide	its when ethylcyclohexan	e is subjected to free	6)

Exam 2

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7) If (S)–glyceraldehyde has a specific rotation of -8.7° , what is the specific rotation of	7)
(R)-glyceraldehyde?	
A) +8.7°	
B) 0.0°	
C) -8.7°	
D) cannot be determined from the information given	
8) Which of the following statements is (are) true for the compound (R)-2-butanol?	8)
A) This compound is optically active.	
B) This compound is chiral.	
C) This compound has an enantiomer.	
D) all of the above	
E) none of the above	
9) Which of the following functional groups does \underline{not} have at least one sp^2 hybridized carbon atom	9)
as a constituent of the group?	
A) ether	
B) ester	
C) carboxylic acid	
D) alkene	
E) aldehyde	
10) Which of the class of organic compound below contains a carbonyl group as a part of its	10)
structure?	
A) ester	
B) carboxylic acid	
C) aldehyde	
D) ketone	
E) all of the above	
11) What term describes the structural relationship between <i>cis</i> – 1,2 – dimethylcyclopentane and	11)
trans-1,3-dimethylcyclopentane?	
A) diastereomers	
B) constitutional isomers	
C) enantiomers	
D) not isomers	
E) conformers	
12) Stereoisomers which are not mirror image isomers are 12)	
13) How many asymmetric carbons are present in the compound below?	
3-ethyl-2,2,4-trimethylpentane	
13) How many asymmetric carbons are present in the compound below?	