

Last Name Answer

Seat No. _____

First Name Key
(Please print your name)

Circle your recitation number and time:

- (1) Fri. 12:10 PM, (2) Fri. 2:10 PM, (3) Fri. 3:10 PM,
(4) Mon. 12:10 PM, (5) Mon. 1:10 PM (6) Mon. 4:10 PM
(7) Tues. 9:00 AM (8) Tues. 12:10 PM (9) Tues. 1:10 PM
(10) Fri. 9:00 AM (11) Fri. 11:00 AM (12) Mon. 11:00 AM
(13) Mon. 2:10 PM (14) Tues. 10:00 AM

There are 7 pages to this exam. Check to make sure you have a complete exam.

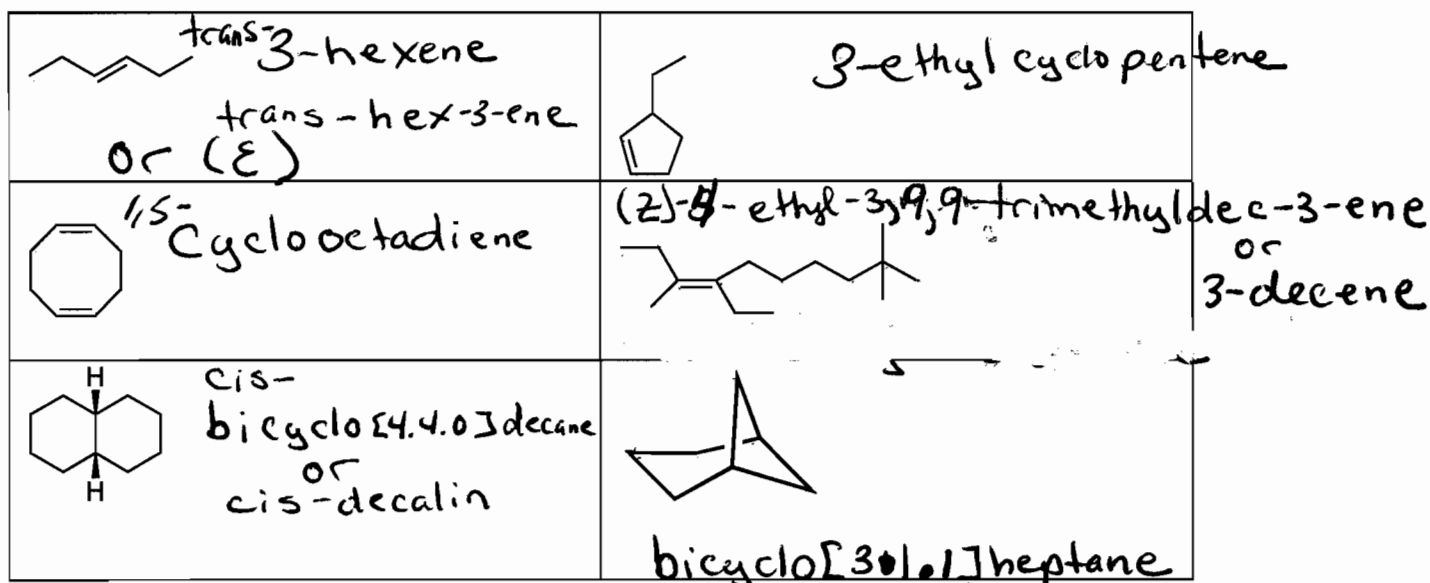
CHEMISTRY 331

EXAM II

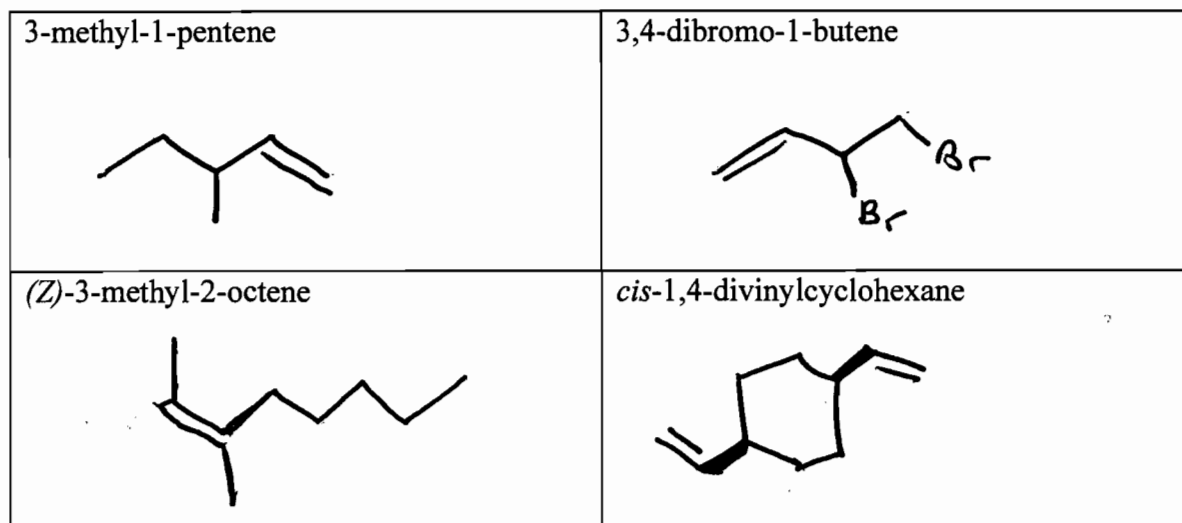
Tuesday, October 2, 2007

I. (30 points)	<u>30</u>
II. (26 points)	<u>26</u>
III. (18 points)	<u>18</u>
IV. (14 points)	<u>14</u>
V. (12 points)	<u>12</u>
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TOTAL (100 points)	<u>100</u>

Ia. Give the proper name for each including stereochemical designation when required. (18 pts)



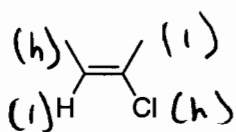
b. Write the structure for each of the following. (12pts)



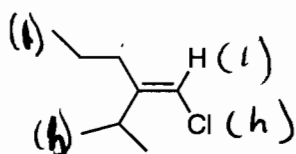
-1 pt for stereochemistry

1A 1	2A 2											3A 13	4A 14	5A 15	6A 16	7A 17	8A 18		
1 H 1.01	2 He 4.00											5 B 10.8	6 C 12.0	7 N 14.0	8 O 16.0	9 F 19.0	10 Ne 20.2		
3 Li 6.94	4 Be 9.01											11 Na 23.0	12 Mg 24.3	88			18 Ar 39.9	19 K 39.1	
11 Na 23.0	12 Mg 24.3	38 3	48 4	58 5	68 6	78 7	8 8	9 9	10 10	11 11	12 12	18 18	28 28	31 Al 27.0	32 Si 28.1	33 P 31.0	34 S 32.1	35 Cl 35.4	17 Ar 39.9
19 K 39.1	20 Ca 40.1	21 Sc 45.0	22 Ti 47.9	23 V 50.9	24 Cr 52.0	25 Mn 54.9	26 Fe 55.8	27 Co 58.9	28 Ni 58.7	29 Cu 63.5	30 Zn 65.4	31 Ga 69.7	32 Ge 72.6	33 As 74.9	34 Se 79.0	35 Br 79.9	36 Kr 83.8	18 Ar 39.9	19 K 39.1
37 Rb 85.5	38 Sr 87.6	39 Y 88.9	40 Zr 91.2	41 Nb 92.9	42 Mo 95.9	43 Tc (98)	44 Ru 101	45 Rh 103	46 Pd 106	47 Ag 108	48 Cd 112	49 In 115	50 Sn 119	51 Sb 122	52 Te 128	53 I 127	54 Xe 131	18 Ar 39.9	19 K 39.1
55 Cs 133	56 Ba 137	57 La 139	72 Hf 178	73 Ta 181	74 W 184	75 Re 186	76 Os 190	77 Ir 192	78 Pt 195	79 Au 197	80 Hg 201	81 Tl 204	82 Pb 207	83 Bi 209	84 Po (209)	85 At (210)	86 Rn (222)	18 Ar 39.9	19 K 39.1
87 Fr (223)	88 Ra 226	89 Ac 227	104 Rf (261)	105 Ha (262)	106 Unh (263)	107 Uns (262)	108 Uno (265)	109 Uue (266)											

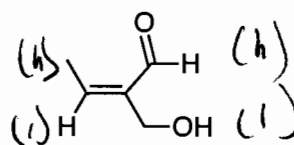
IIa. Designate the following compounds as E or Z. It is not necessary to write out the complete name. (6pts)



E

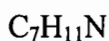


Z

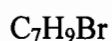


Z

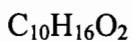
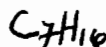
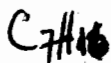
b. Calculate the number of degrees of unsaturation for each molecular formula. (8 pts)



3



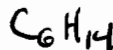
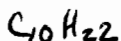
3



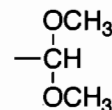
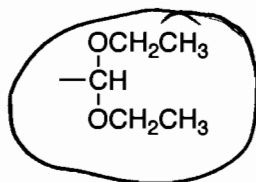
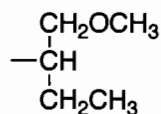
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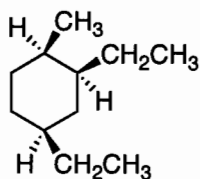
4



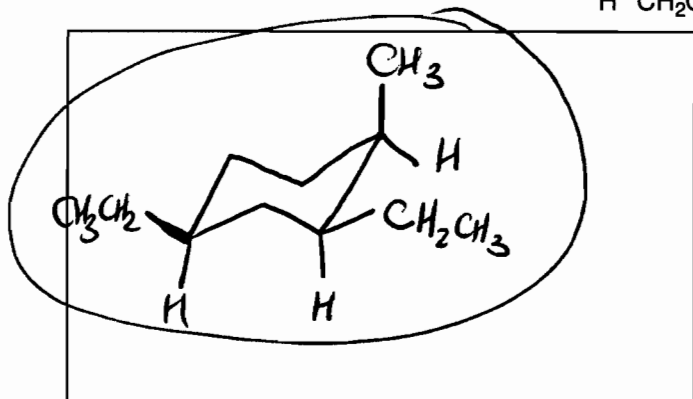
c. Circle the with the highest priority according to the Cahn-Ingold-Prelog rules? (3pts)



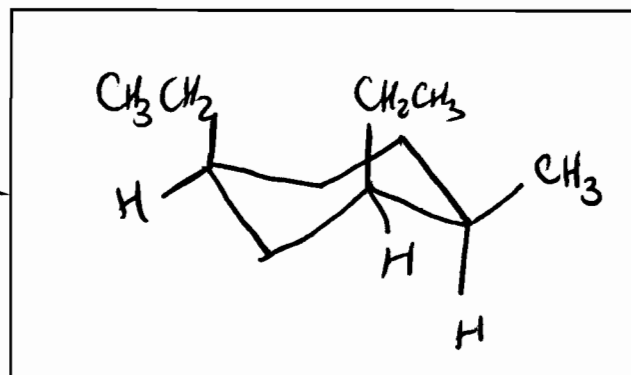
d. Draw the two chair conformations of the following molecules and circle the more stable one. (9pts)



1 pt each for chair




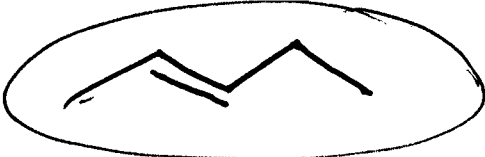
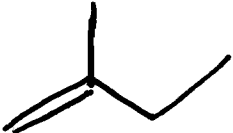
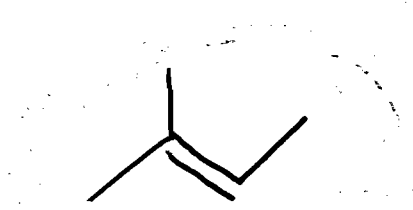
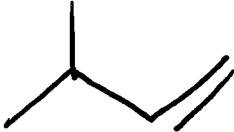
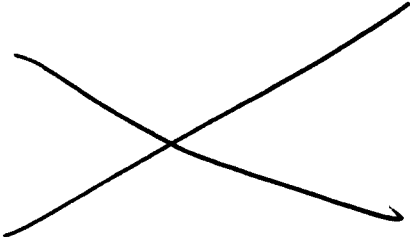
flip



III. (18pts)

a. Draw all of the constitutional isomers with the molecular formula C_5H_{10} which contain a carbon-carbon double bond. There are no more than 6 constitutional isomers and there may be fewer. Cross out any boxes that are not used. Points will be deducted for duplicate or incorrect structures.

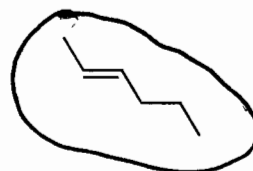
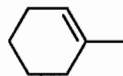
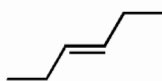
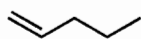
15 pts

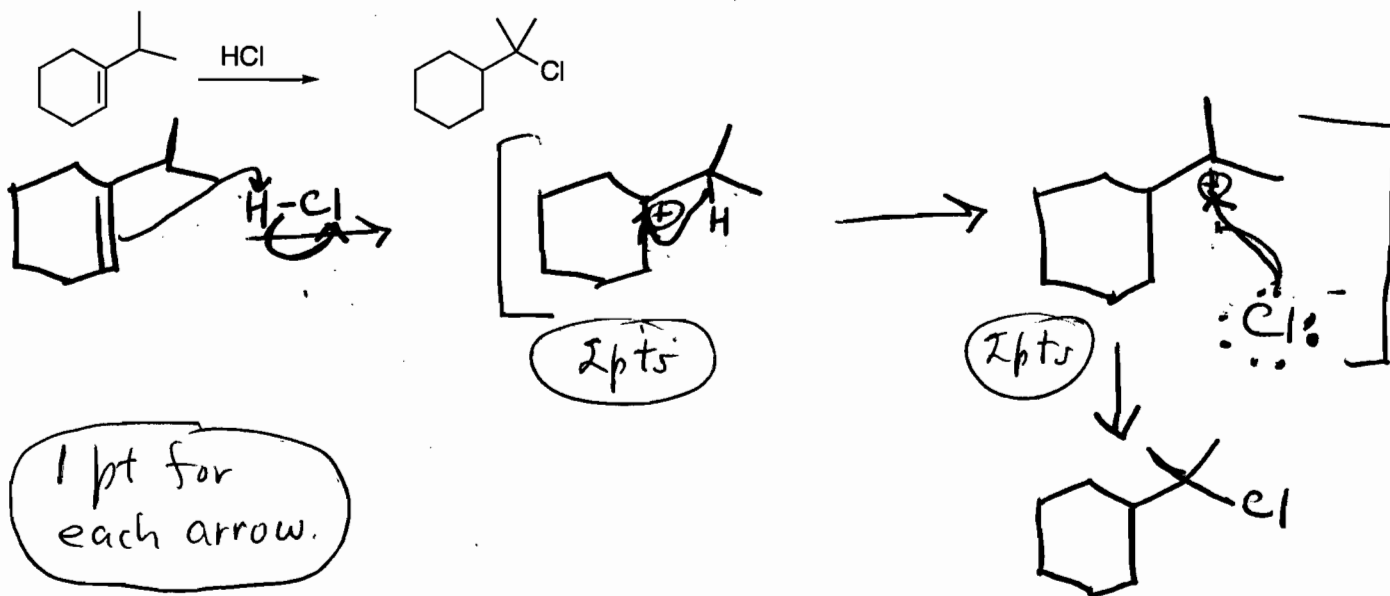
b. Circle all isomers that can exist as a pair of cis-trans isomers.

3 pts

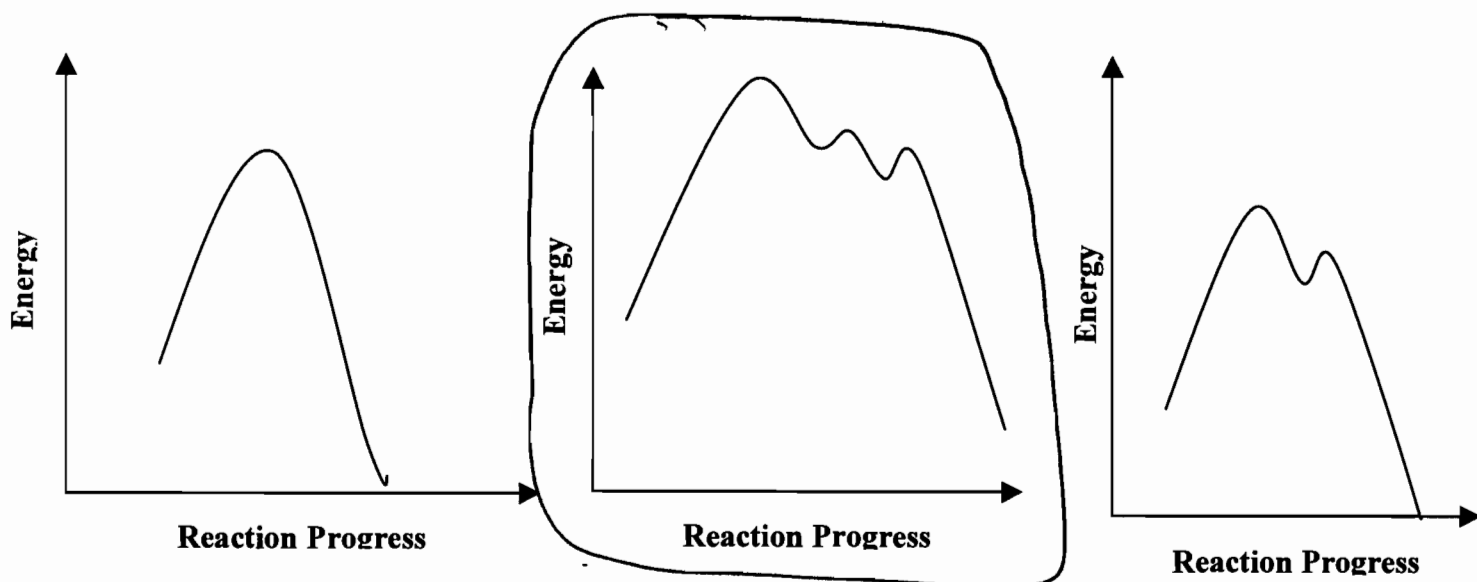
IVa. Circle the alkene which should give two constitutionally isomeric products when allowed to react with HBr? (3pts)



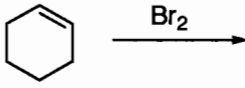
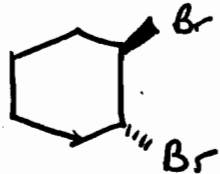
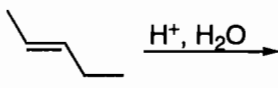
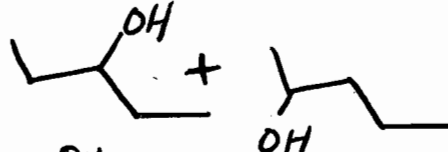
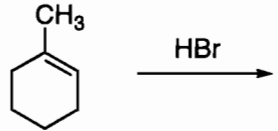
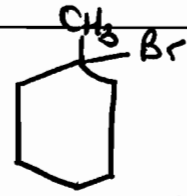
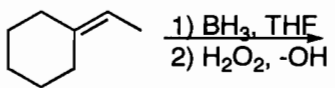
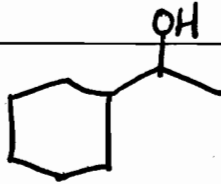
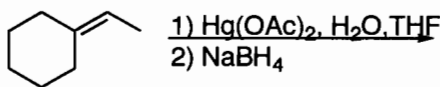
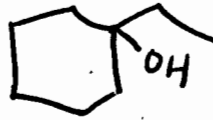
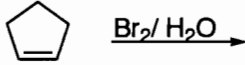
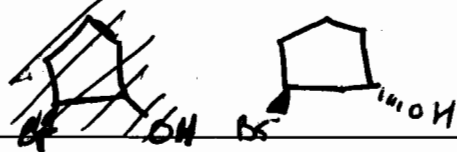
b. The addition of HCl to 1-isopropylcyclohexene yields a rearranged product. Propose a mechanism, showing the structures of the intermediates and using curved arrows to indicate electron flow in each step. (8pts)



c. Circle the appropriate reaction energy diagram for the above reaction. (3pts).



V. Write the product(s) for any 4 of the following 8 reactions. Mark an X in the box of any omitted questions. Show the stereochemistry where required. If you answer all questions only the first 4 will be graded. (12 pts)

		<p>-1 for wrong stereochemistry</p>
		<p>-1 if only 1 product</p>
		
		
		
		<p>-1 for wrong stereochemistry</p>
