

First Letter of Last Name

Write your name above this line

2283g Midterm
 Dr. Brian Pagenkopf
 Friday, March 4, 2011
 6:30 pm – 9:30 pm

Please do not leave the exam room within the first 30 minutes or the last 30 minutes. During the last 30 minutes when you finish do not bring your exam up to the front of the room until the exam time is over. No notes, books, calculators, cell phones, iPods, computers or electronics of any sort allowed. Please turn off the ringer on your phone now.

Be sure you have all of the exam pages.

PERIODIC TABLE OF THE ELEMENTS

Atomic masses are based on ¹²C. Atomic masses in parentheses are for the most stable isotope.

6 C 12.011																		2 He 4.00260																	
1 H 1.0079																		10 Ne 20.179																	
3 Li 6.941		4 Be 9.01218																		5 B 10.81		6 C 12.011		7 N 14.0067		8 O 15.9994		9 F 18.998403							
11 Na 22.98977		12 Mg 24.305																		13 Al 26.98154		14 Si 28.0855		15 P 30.97376		16 S 32.06		17 Cl 35.453		18 Ar 39.948					
19 K 39.0983		20 Ca 40.08		21 Sc 44.9559		22 Ti 47.90		23 V 50.9415		24 Cr 51.996		25 Mn 54.9380		26 Fe 55.847		27 Co 58.9332		28 Ni 58.70		29 Cu 63.546		30 Zn 65.38		31 Ga 69.72		32 Ge 72.59		33 As 74.9216		34 Se 78.96		35 Br 79.904		36 Kr 83.80	
37 Rb 85.4678		38 Sr 87.62		39 Y 88.9059		40 Zr 91.22		41 Nb 92.9064		42 Mo 95.94		43 Tc (98)		44 Ru 101.07		45 Rh 102.9055		46 Pd 106.4		47 Ag 107.868		48 Cd 112.41		49 In 114.82		50 Sn 118.69		51 Sb 121.75		52 Te 127.60		53 I 126.9045		54 Xe 131.30	
55 Cs 132.9054		56 Ba 137.33		57 La 138.9055		72 Hf 178.49		73 Ta 180.9479		74 W 183.85		75 Re 186.207		76 Os 190.2		77 Ir 192.22		78 Pt 195.09		79 Au 196.9665		80 Hg 200.59		81 Tl 204.37		82 Pb 207.2		83 Bi 208.9804		84 Po (209)		85 At (210)		86 Rn (222)	
87 Fr (223)		88 Ra (226.0254)		89 Ac (227.0278)		104 Unq (261)		105 Unp (262)		106 Unh (263)																									

*Lanthanide series

58 Ce 140.12	59 Pr 140.9077	60 Nd 144.24	61 Pm (145)	62 Sm 150.4	63 Eu 151.96	64 Gd 157.25	65 Tb 158.9254	66 Dy 162.50	67 Ho 164.9304	68 Er 167.26	69 Tm 168.9342	70 Yb 173.04	71 Lu 174.967
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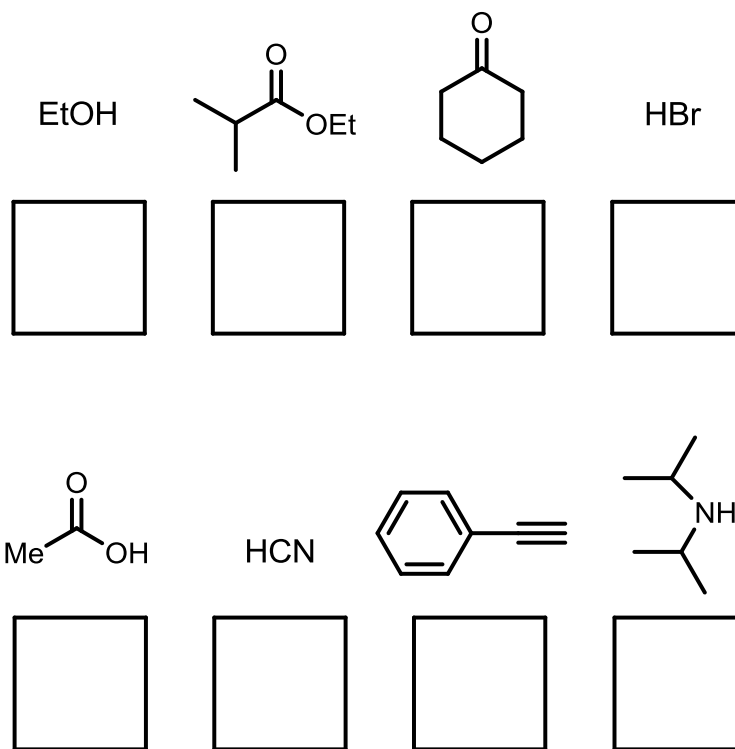
† Actinide series

90 Th 232.0381	91 Pa 231.0359	92 U 238.029	93 Np 237.0482	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (260)
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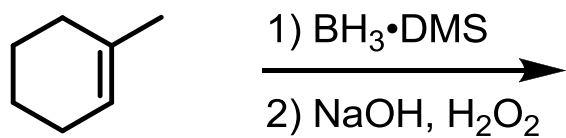
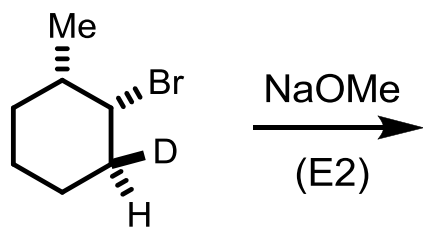
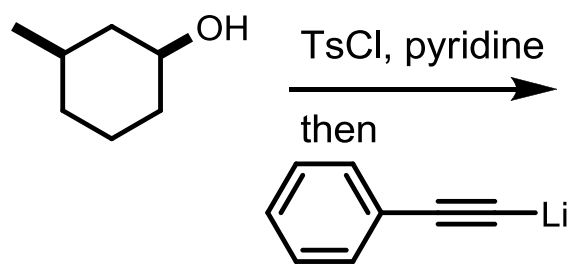
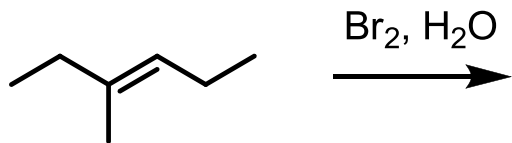
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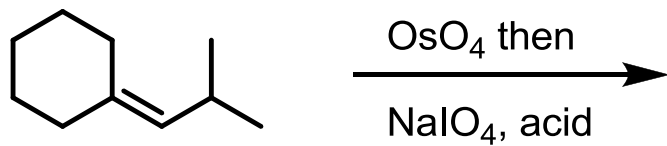
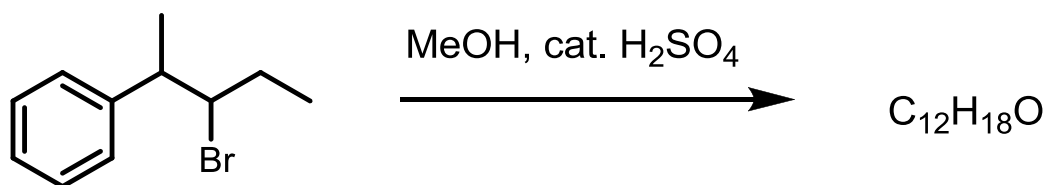
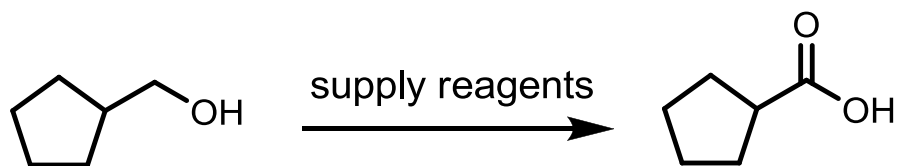
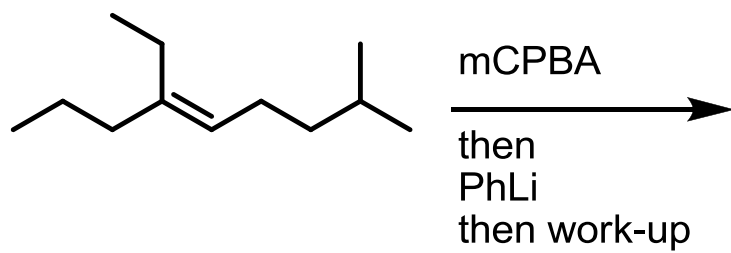
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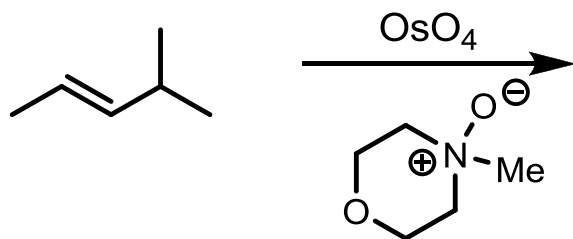
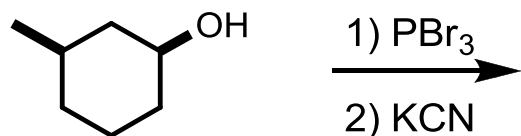
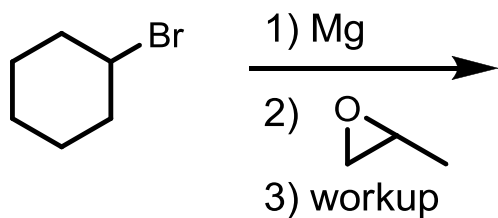
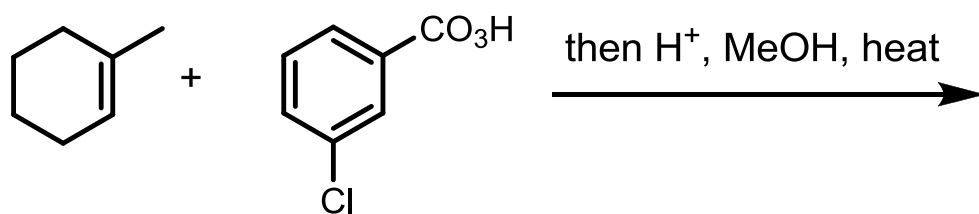
Rank the following molecules in order of increasing acidity (which is the same as decreasing pKa). Write an 8 in the box for the least acidic, a 1 in the box under the most acidic, and so on.



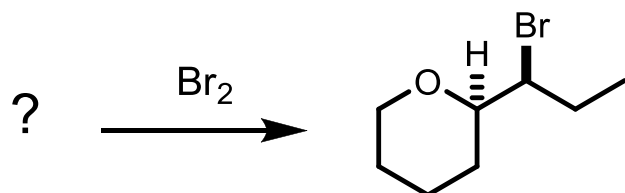
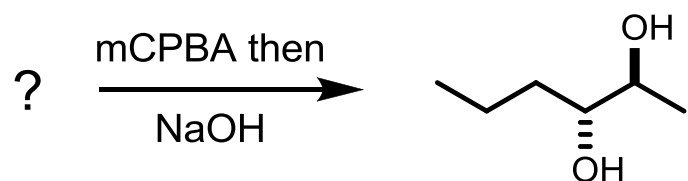
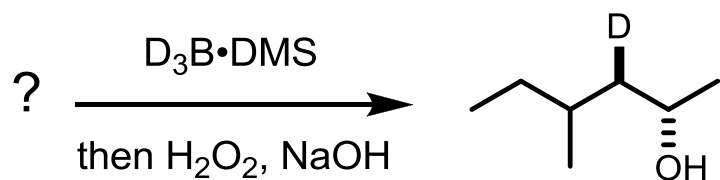
Show products for the following reactions. For some questions stereochemistry is a critical part of the answer for full marks.



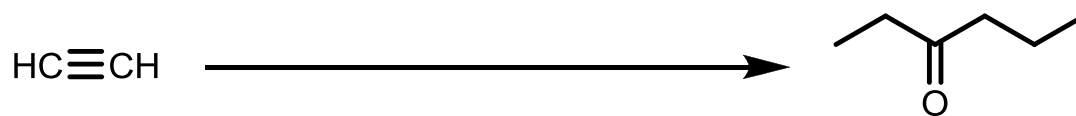
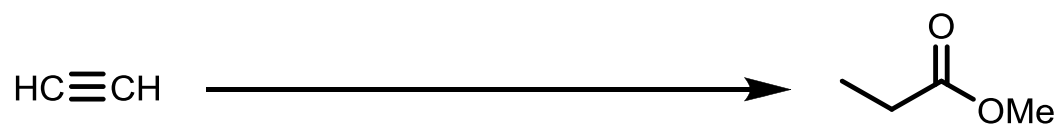




Identify an appropriate alkene starting material, being careful in regard to cis//trans geometry of the alkene. You may need to do some bond rotations.



Provide reagents to effect the following transformations. More than one step may be required.



Provide a plausible mechanism for the following transformation.

