

1. a. (6 pts.) Draw 2-pentanone

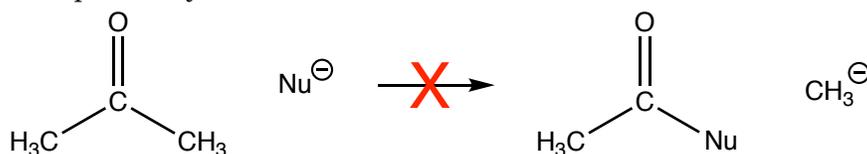
b. (6 pts.) Draw 2-methylbutanal

1. _____

2. _____

3. _____

2. (8 pts.) Ketones, like acetone, do not undergo nucleophilic acyl substitution reactions (a theoretical example is drawn below) like acid chlorides do. Explain why acetone will not undergo nucleophilic acyl substitution.



5. _____

6. _____

7. _____

8. _____

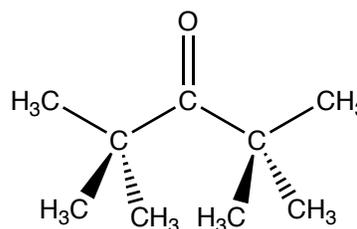
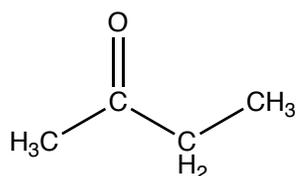
3. (6 pts.) Which are more reactive to nucleophilic addition, aldehydes or ketones?

9. _____

10. _____

4. (6 pts.) Two ketones are drawn below, which ketone would be more reaction toward nucleophilic addition.

11. _____



12. _____

13. _____

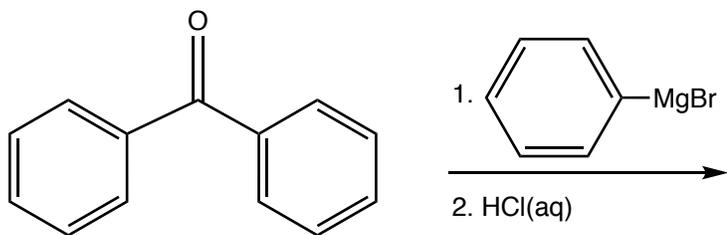
14. _____

5. (6 pts.) Three reducing agents are listed below. Rank them in order of decreasing reactivity; that is, number them "1", "2", and "3" with the "1" next to the most reactive and the "3" next to the least reactive.

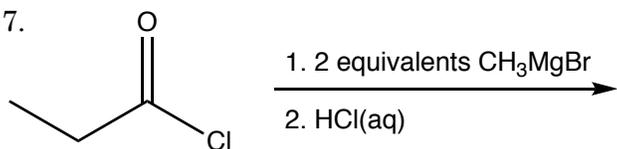


For questions 6 – 8 (6 pts. each) predict the organic products for the following reactions.

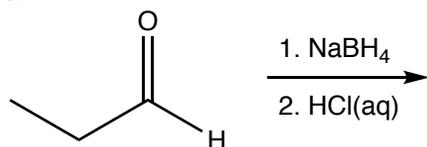
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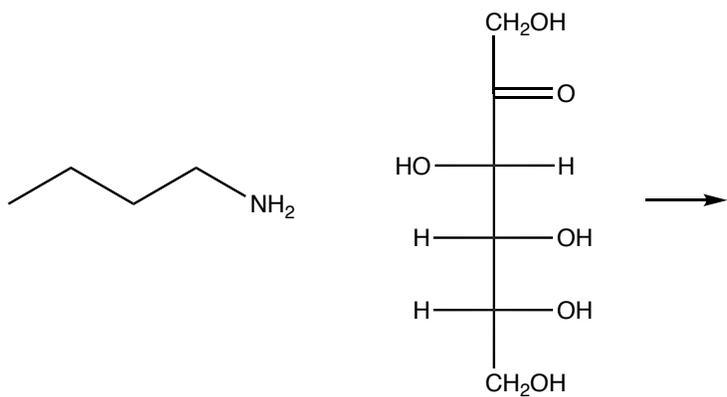
7.



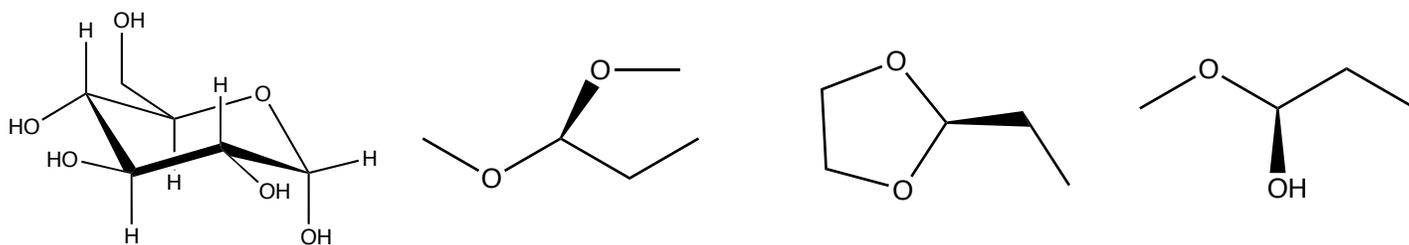
8.



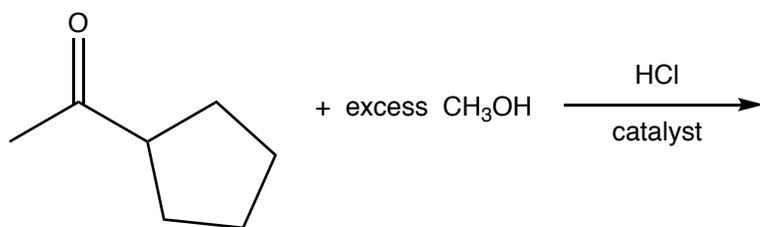
9. (10 pts.) Aldehydes and ketones react with amines to form Schiff bases. Draw the product of the reaction of a butan-1-amine with D-fructose



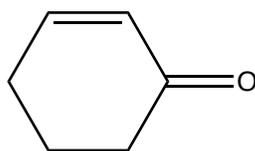
10. (8 pts.) Aldehydes and ketones react with alcohols to make hemiacetals(hemiketals) and acetals(ketals). Label the follow as hemiacetals or acetals.



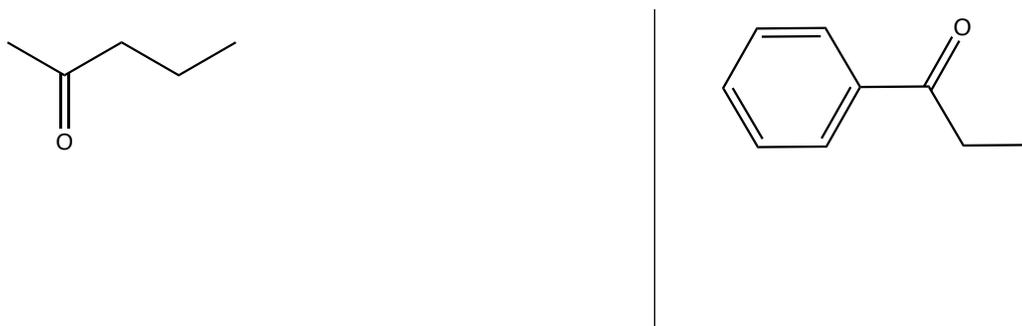
11. (6 pts.) predict the organic products for the following reactions..



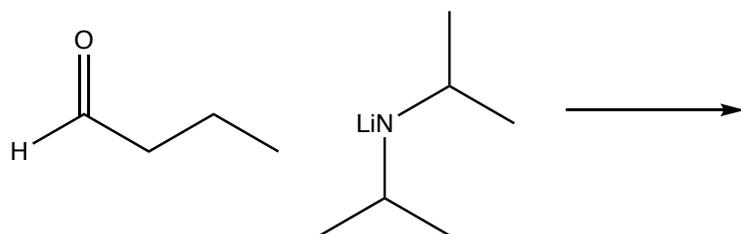
12. (8 pts.) An α,β unsaturated ketone is drawn below. Circle the electrophilic C atoms.



13. (10 pts.) Draw all possible enol tautomers for each of the following ketones.



14. (10 pts.) Lithium diisopropyl amide (LDA) is capable of deprotonating carbonyl compounds. Draw the product of the reaction of LDA with the following carbonyl compound.



1	H 1.0079											2	He 4.0026					
3	Li 6.941	Be 9.012											10	Ne 20.1797				
11	Na 22.989	Mg 24.305											17	Cl 35.453				
19	K	Ca	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
			Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
37	Cs	Sr	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
			Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
55	Rb	Ba	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
			La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
87	Fr	Ra	89	104	105	106	107	108	109	110	111	112	114					
			Ac	Rf	Db	Sg	Bh	Hs	Mt									

58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb	71	Lu
90	Th	91	Pa	92	U	93	Np	94	Pu	95	Am	96	Cm	97	Bk	98	Cf	99	Es	100	Fm	101	Md	102	No	103	Lr