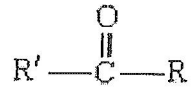
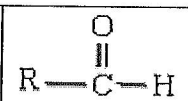
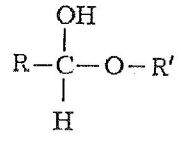
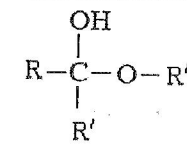
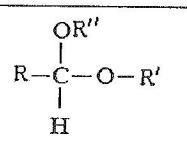
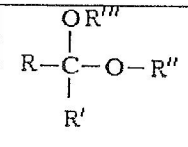
HOMEWORK #5

CHEM 121, section 1 **Printed Name:** Key

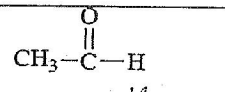
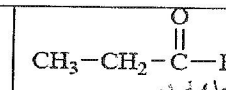
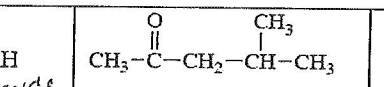
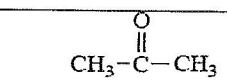
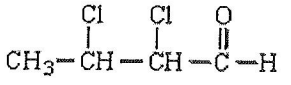
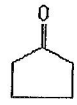
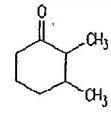
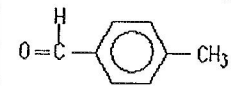
Background and Chp. 15. Introduction to aldehyde and Ketones

Homework Due **Group Name:**

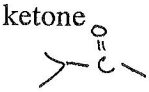
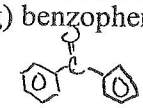
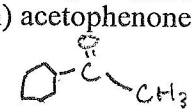
1) (2 pts) Assign the type of organc compound with following general condensed formula.

 a) carboxylic acid	 b) aldehyde	 c) ketone	 d) aldehyde
 e) hemiacetal	 f) hemiketal	 g) acetal	 h) hemiacetal

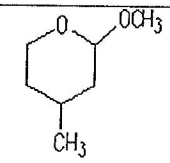
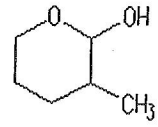
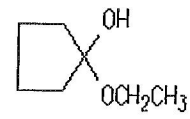
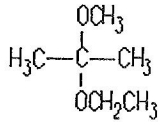
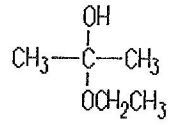
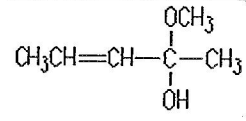
2) (2 pts) Names (common/IUPAC)of following aldehydes and ketones

 a) acetaldehyde / ethanal	 b) propanaldehyde / propanal	 c) 4-methyl 2-pentanone	 d) acetone / propanone
 e) 3,2-dichloro butanal	 f) cyclopentanol	 g) 2,3 dimethyl cyclohexanol	 h) 4 methyl benzaldehyde

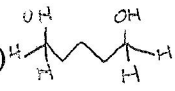
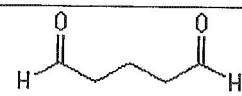
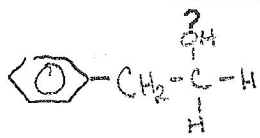
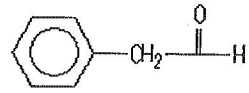
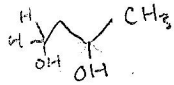
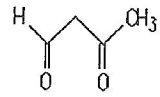
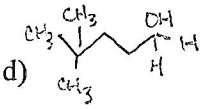
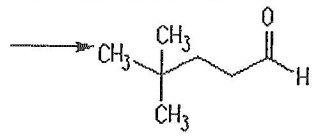
3) (2 pts) Draw the condensed formula of following aldehydes and ketones

a) acetaldehyde/ethanal CH_3CHO	b) ethyl methyl ketone $CH_3CH_2\overset{O}{\overset{\|}{C}}CH_3$	c) 3-methyl-2-pentanone $CH_3\overset{O}{\overset{\|}{C}}CH_2CH_2CH_3$	d) isopropyl methyl ketone 
e) 2-methylbutanal $CH_3CH_2\underset{\|}{\underset{CH_3}{CH}}CHO$	f) 5-methyl-3-hexanone $CH_3CH_2\overset{O}{\overset{\|}{C}}\underset{\|}{CH}CH_2\underset{CH_3}{\underset{\|}{CH}}CH_3$	g) benzophenone 	h) acetophenone 

4) (2 pts) Identify each of the following compounds as a hemiacetal, hemiketal, acetal, or ketal:

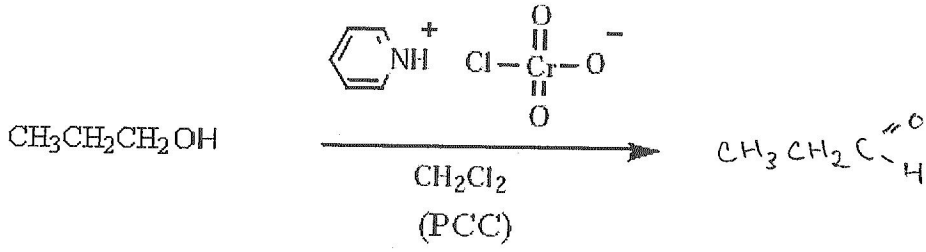
 a) acetal	 b) hemiacetal	 c) hemiketal
 d) ketal	 e) hemiketal	 f) hemiketal

5) (2 pts) Which alcohol would you oxidize to produce each of the following compounds?

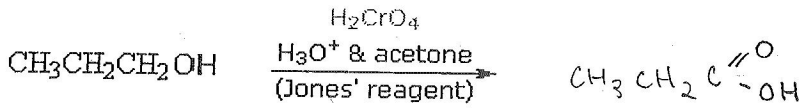
a)		PCC	
b)		PCC	
c)		PCC	
d)			

6) (3 pts) Preparation of adehydes and ketones

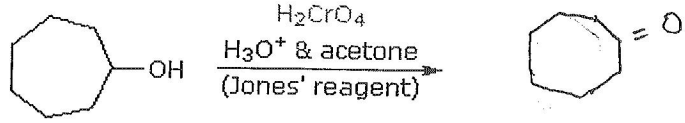
a) Control oxidation of 1ry alcohol



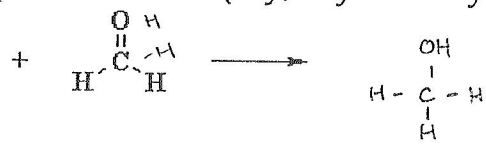
b) Complete oxidation of 1ry alcohol



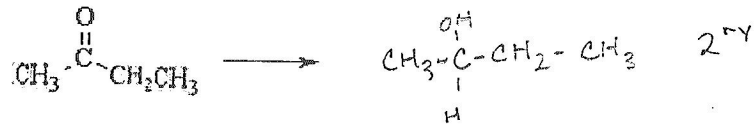
c) Oxidation of 2ry alcohol



7) (2 pts) Complete the following reductions of aldehyde and ketones and identify the type of alcohols (1ry, 2ry and 3ry) produced.

a) 

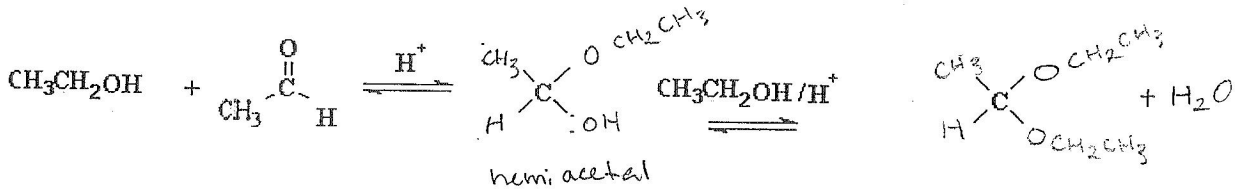
b) 

c) 

d) 

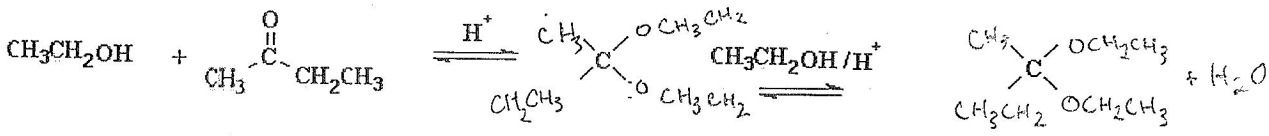
8) (2 pts) Complete the following formation reactions hemiacetal, hemiketal, acetal, or ketal:

a)



hemiacetal

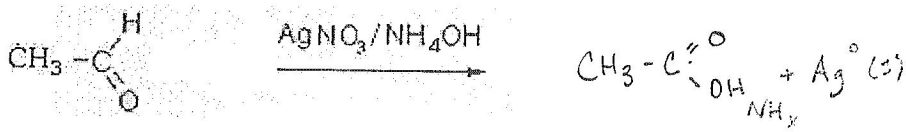
b)



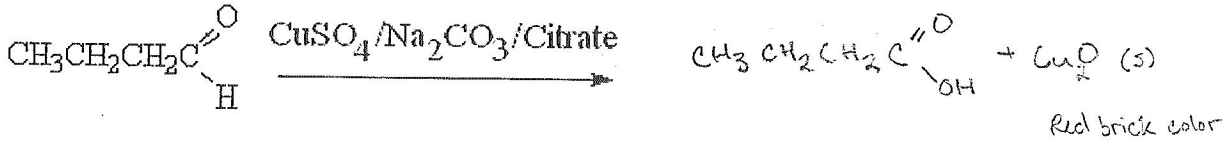
hemiketal

9) (3 pts) Complete reactions of following aldehydes and ketones

a) Tollen's Reagent: Silver mirror test:



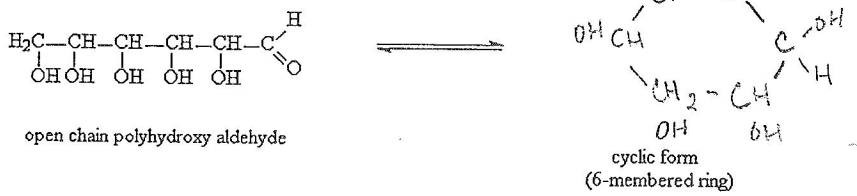
b) Benedict's test:



Red brick color

c) Oxidation of aldehyde

d) Cyclic hemiacetal formation



open chain polyhydroxy aldehyde

cyclic form
(6-membered ring)