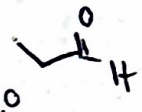
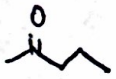
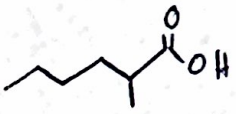
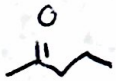
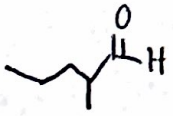
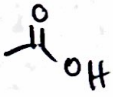
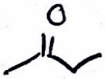
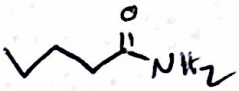
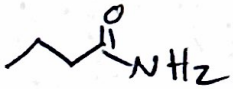
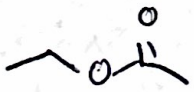
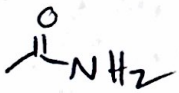
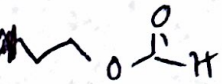
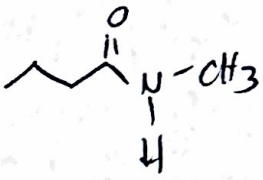
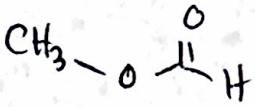
Chapter 16

9. a)  b)  c)  d)  e) 

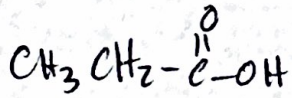
f)  g)  h)  i)  j) 

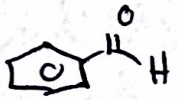
k)  l)  m)  n) 

o) 

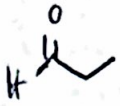
10. a) cyclohexanone b) 4-methylpentanal c) 2-methylpentanoic acid
d) 3-hexanone e) N-methylpropanamide f) Phenylpropionate

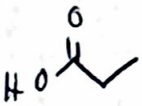
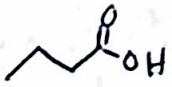
11. a) aldehyde b) carboxylic acid c) ketone d) amide
e) ester

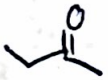
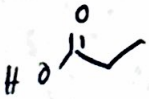
12. a) 

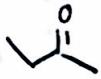
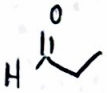
b) 

Chapter 16

13. a)  b)  c) NO REACTION d) NO REACTION

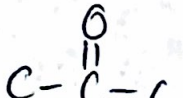
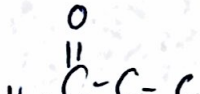
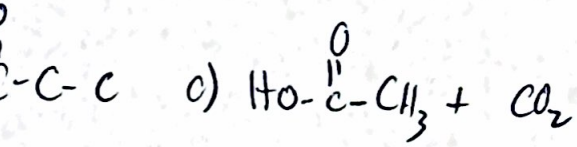
e) NO REACTION f)  g)  h) 

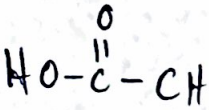
i) NO REACTION j) NO REACTION k)  l) 

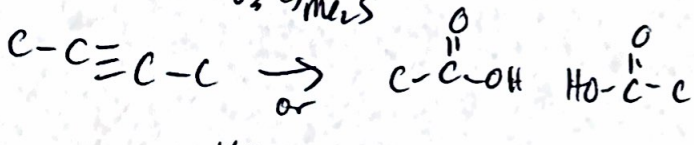
m)  n)  o) NO REACTION p) NO REACTION

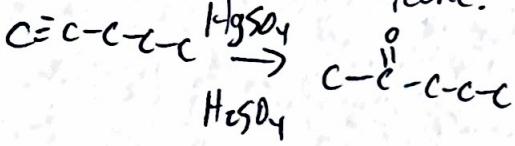
14. a) $Na_2Cr_2O_7, H_2SO_4$ b) PCC c) $Na_2Cr_2O_7/H_2SO_4$

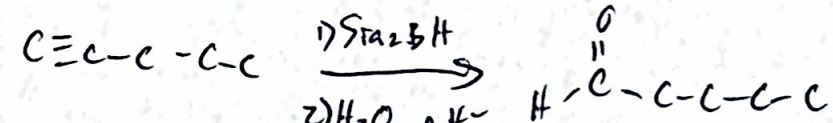
d) PCC e) $Na_2Cr_2O_7/H_2SO_4$ f) PCC

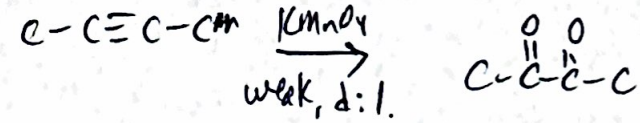
15. a)  b)  c) 

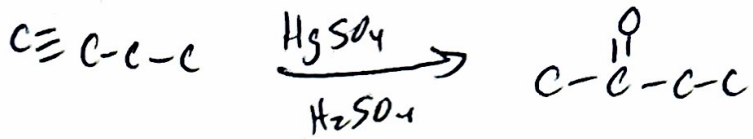
d) 

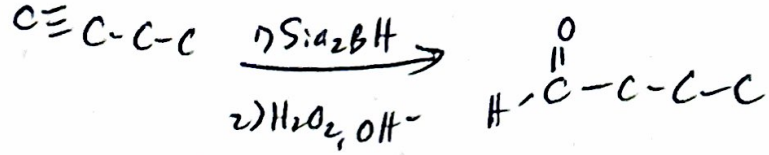
16. a) 

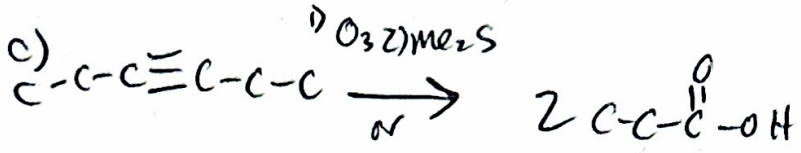
b) 

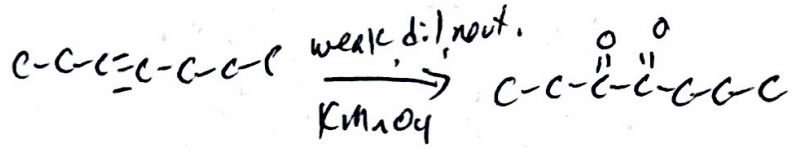
c) 

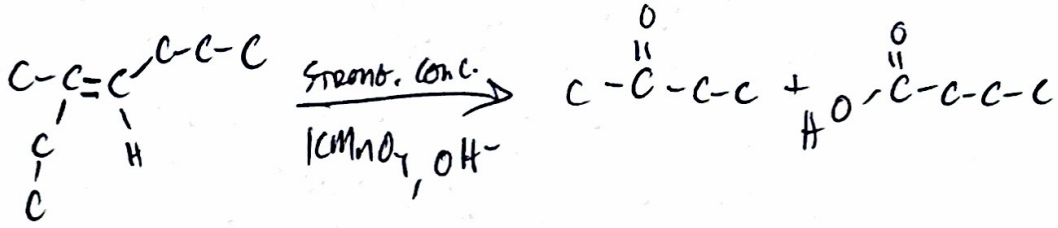
d) 

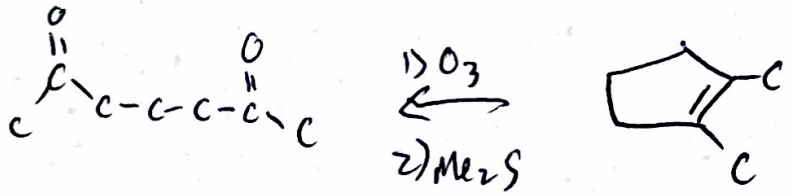
17. a) 
HgSO4
H2SO4

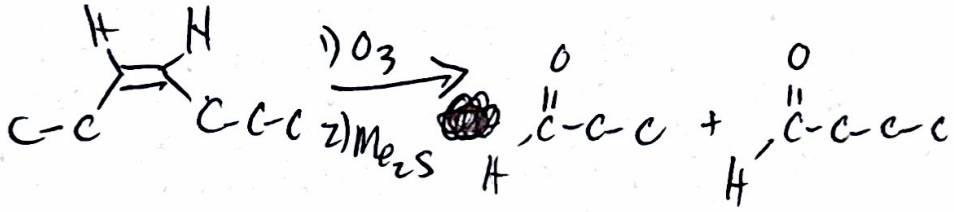
b) 
1) Sia2BH
2) H2O2, OH-

c) 
1) O3 2) Me2S
or
Strong, conc
KMnO4, OH-

d) 
weak, dil, neut.
KMnO4

e) 
Strong, conc.
KMnO4, OH-

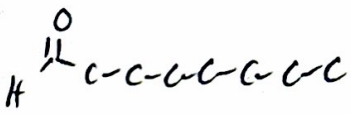
f) 
1) O3
2) Me2S

g) 
1) O3
2) Me2S

18.

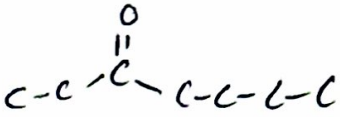
a) 

1) BuLi
2) Br-C-C-C-C-C-C
3) $HgCl_2$, H^+, H_2O



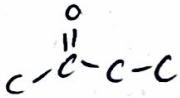
b) 

1) BuLi
2) C-C-Br
3) BuLi
4) C-C-C-C-Br
5) $HgCl_2$, H^+, H_2O



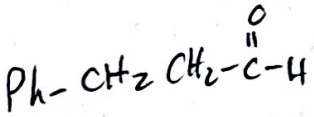
c) 

1) BuLi
2) CH_3Br
3) BuLi
4) ~Br
5) $HgCl_2$, H^+, H_2O

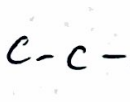


d) 

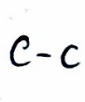
1) BuLi
2) Br-CH_2CH_2Ph
3) $HgCl_2$, H^+, H_2O



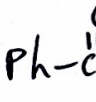
19.

a) 

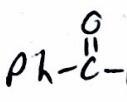
1) 2 CH_3Li
2) H_2O

b) 

1) 2 CH_3CH_2Li
2) H_2O

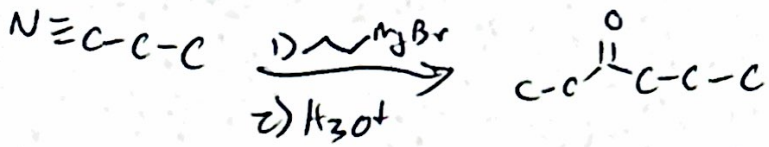
c) 

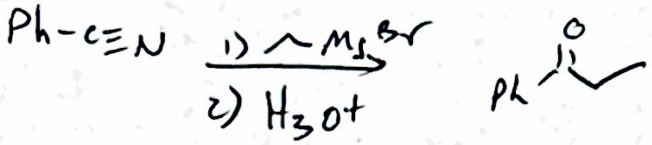
1) 2 CH_3CH_2Li
2) H_2O

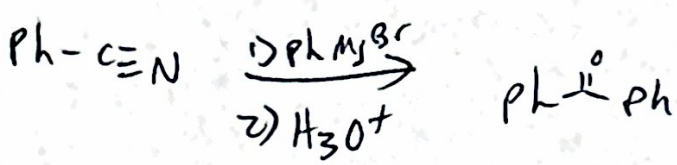
d) 

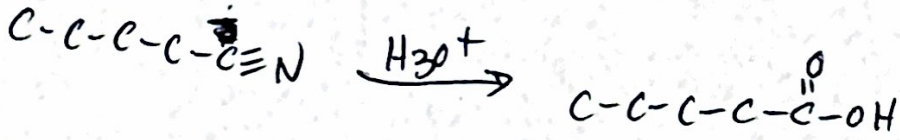
1) 2 PhLi
2) H_2O

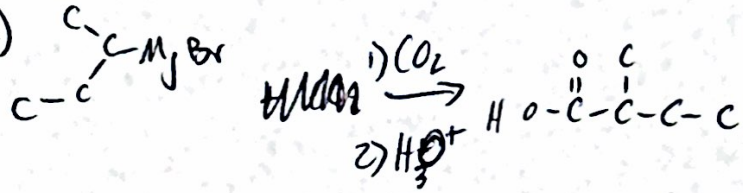
20. a) 

b) 

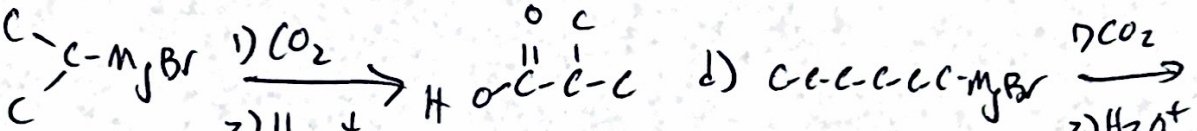
c) 

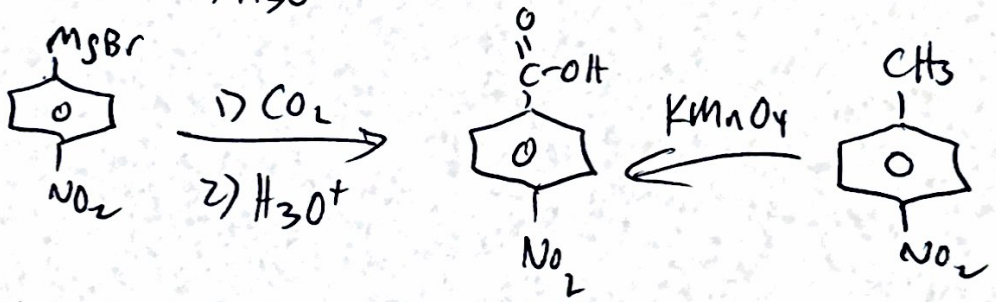
d) 

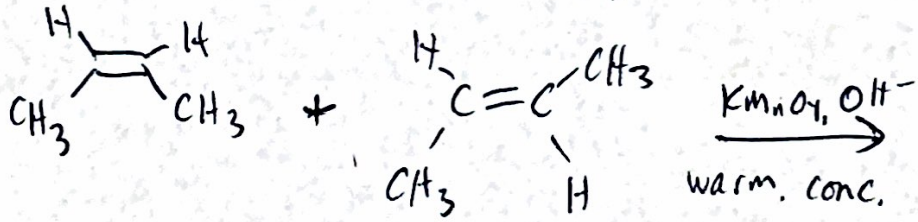
e) 

21. a) 

b) 

c) 

e) 

22) 

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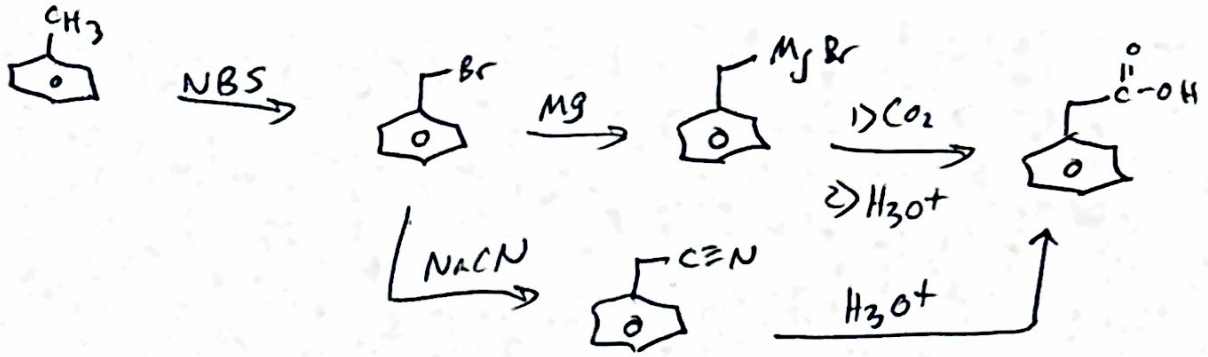

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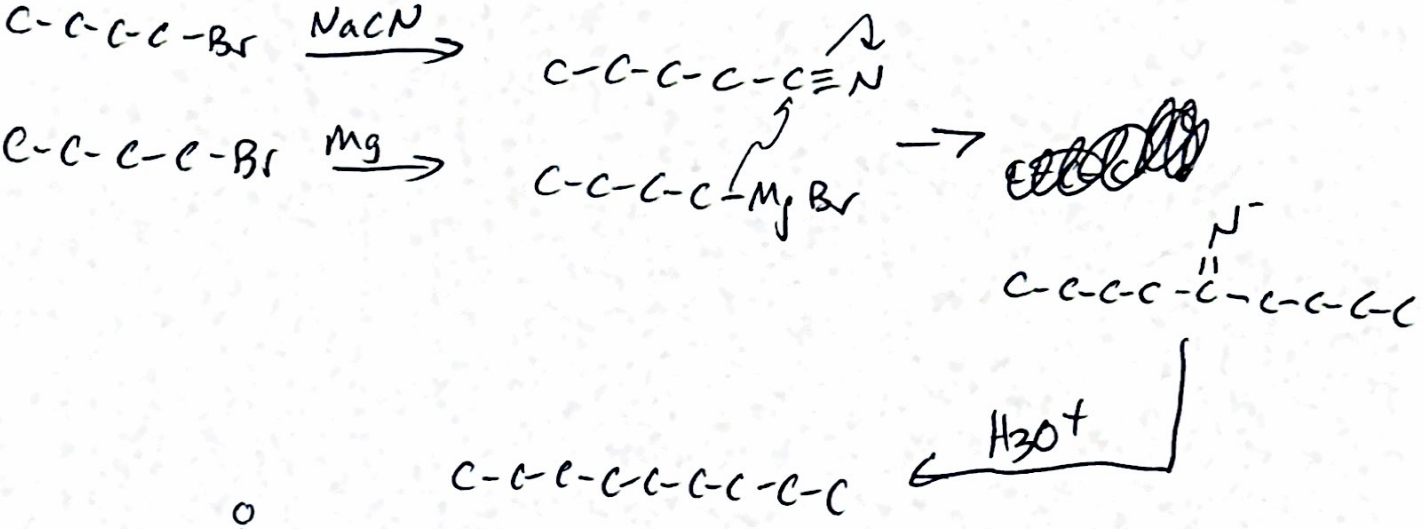

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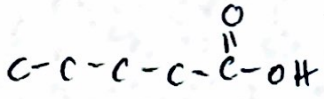
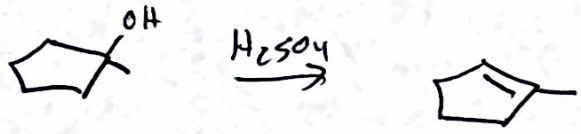
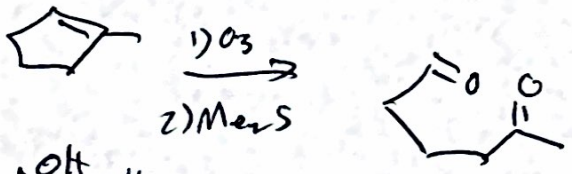


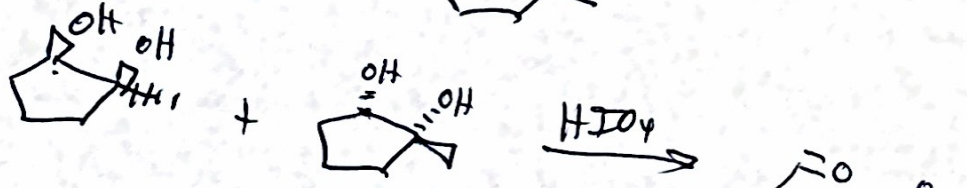
25. a)



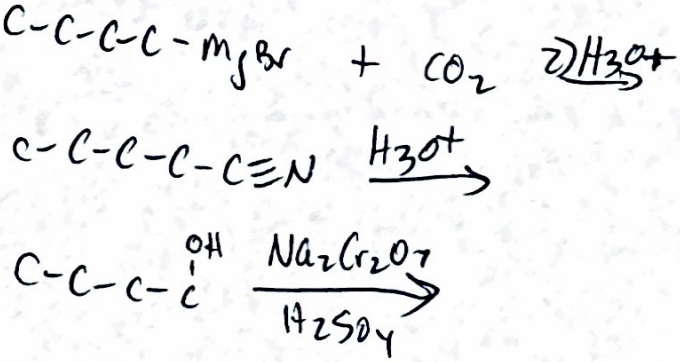
b)

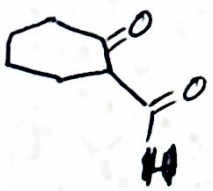


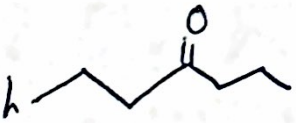
c)



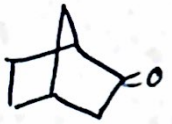
26.

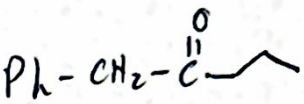


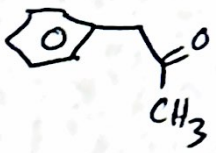
27. a) 

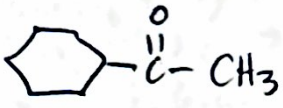
b) 

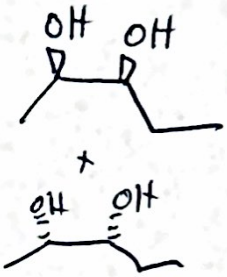
c) 

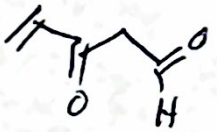
d) 

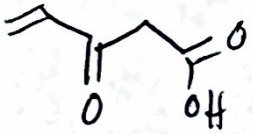
e) 

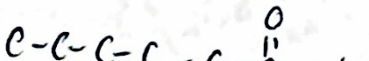
f) 

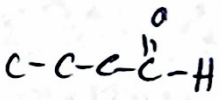
g) 

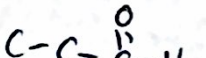
h) 

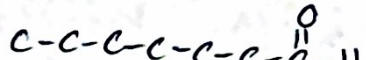
i) 

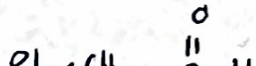
j) 

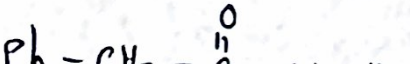
k) 

l) 

m) 

n) 

o) 

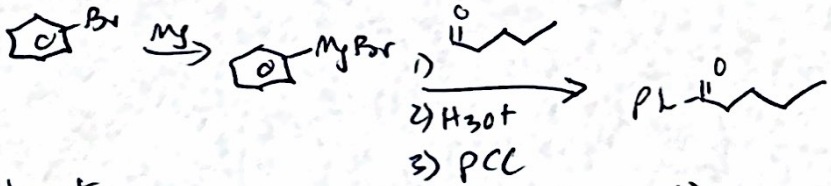
p) 

28. a) 

b) 1) $SOCl_2$
2) $LiAlH(O^tBu)_3$

or

1) CH_3OH, H^+
2) DIBAL-H

29. a) 

b) H_3O^+

c) 1) $PhCH_2MgBr$ 2) H_3O^+

d) 1) 2 $LiCH_2Ph$ 2) H_3O^+

e) 1) $Ph-CH_2-MgBr$ 2) H_3O^+ 3) PCC

f) DIBAL-H

G) 1) Mg 2) CO_2 3) H_3O^+

h) $Na_2Cr_2O_7$, H_2SO_4

i) $KMnO_4$

j) [redacted] 1) PBr_3 2) Mg
3) CO_2 4) H_3O^+

k) 1) O_3 2) Me_2S

l) $KMnO_4$, OH^- warm, conc.

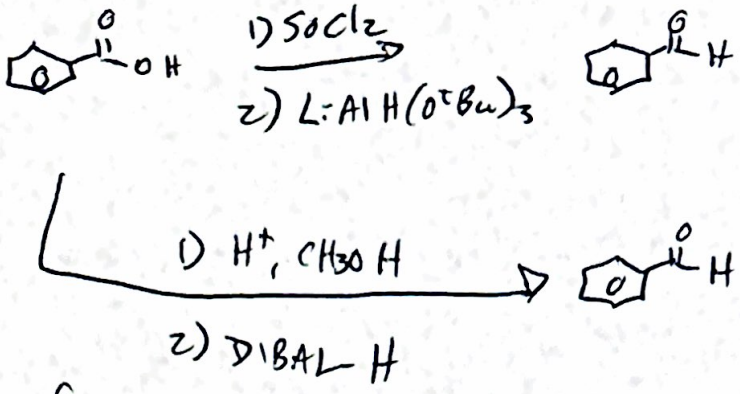
m) 1) Mg 2) CO_2 3) H_3O^+

n) $Na_2Cr_2O_7$/H_2SO_4

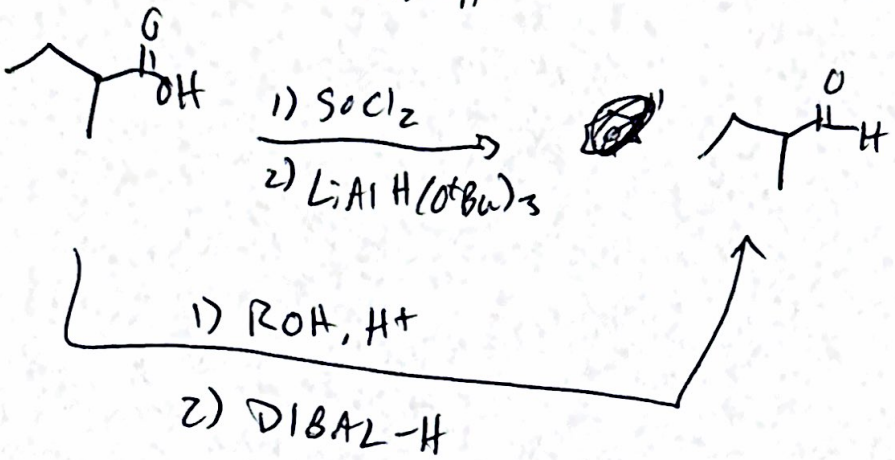
o) 1) $SOCl_2$ 2) $LiAlH(O^tBu)_3$

30.

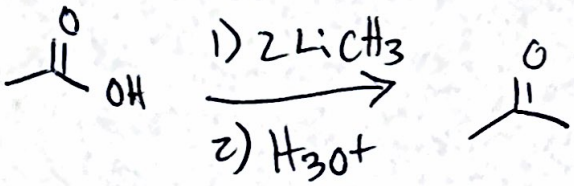
a)


1) SOCl2
2) L:AlH(OtBu)3
1) H+, CH3OH
2) DIBAL-H

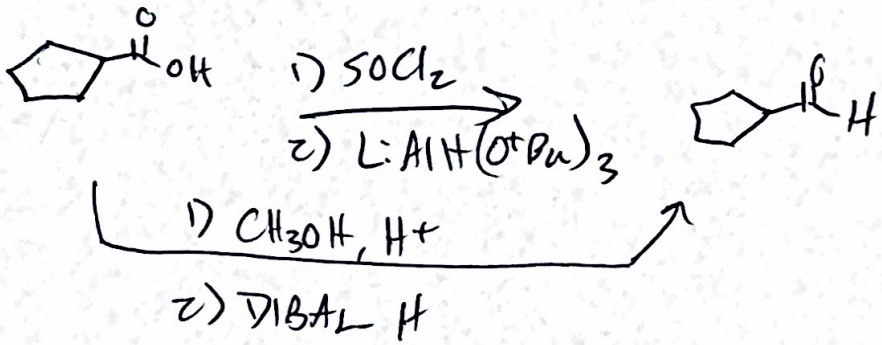
b)


1) SOCl2
2) LiAlH(OtBu)3
1) ROH, H+
2) DIBAL-H

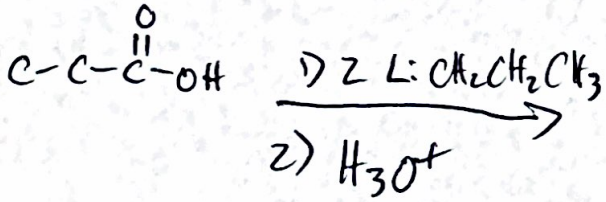
c)


1) 2 LiCH3
2) H3O+

d)


1) SOCl2
2) L:AlH(OtBu)3
1) CH3OH, H+
2) DIBAL-H

e)


1) 2 Li:CH2CH2CH3
2) H3O+