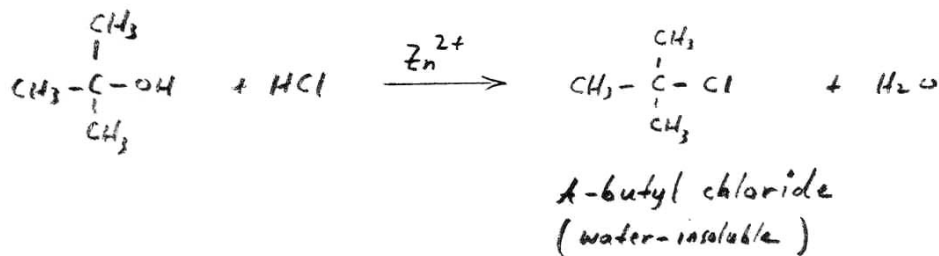


CHEM 2425- Answers to Practice Problems

Chapters 17-19

- 1.
- | | |
|--------------------------|------------------------------|
| ethyl isopropyl ether | 7-methyl-3-octanone |
| 2,2-dimethylcyclohexanol | 5-methyl-1-phenyl-1-heptanol |
| 1,3-propanediol | 2-butenal |
| 3-methylbutanal | benzaldehyde |
| dicyclohexyl ether | 4-hexyn-2-one |

2. Order of reactivity of alcohols with Lucas reagent: $3^\circ > 2^\circ > 1^\circ$.
t-butyl alcohol (the third choice) will react immediately:



3. Most acidic: $\text{CH}_3\text{CF}_2\text{OH}$
Least acidic: $\text{CH}_3\text{C}(\text{CH}_3)_2\text{OH}$

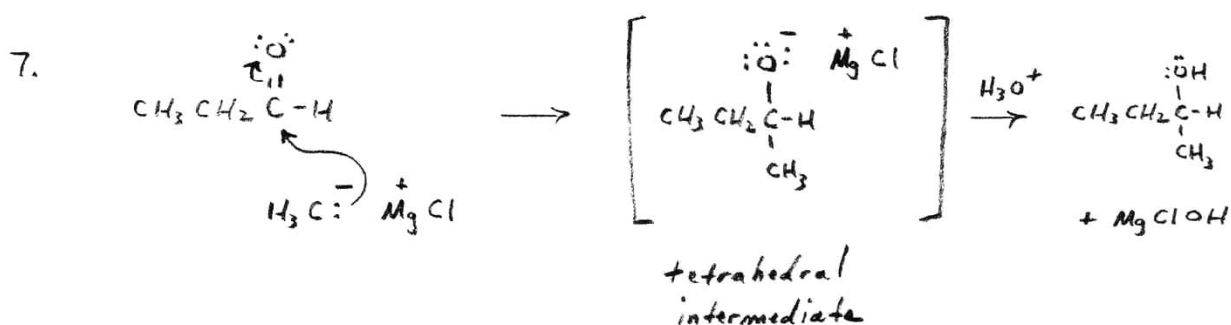
4. Most oxidized: 
Most reduced: 

5. Highest boiling point: $\text{CH}_3\text{CH}_2\text{OH}$ (hydrogen bonding)
Lowest boiling point: $\text{CH}_3\text{CH}_2\text{CH}_3$ (non-polar - no hydrogen bonding or dipolar interactions)

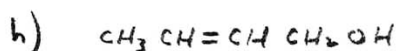
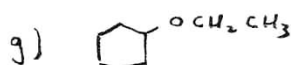
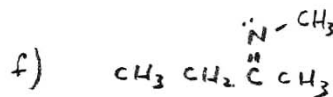
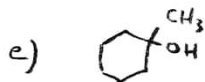
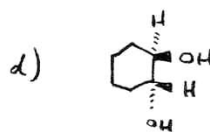
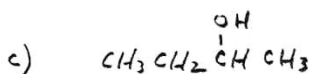
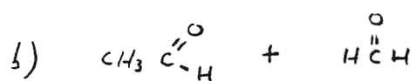
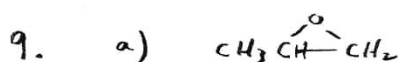
6. Most reactive toward Nu^- is 3-pentanone .

Two reasons: a) The carbonyl carbon in 3-pentanone is less sterically hindered towards the approach of the nucleophile Nu^- .

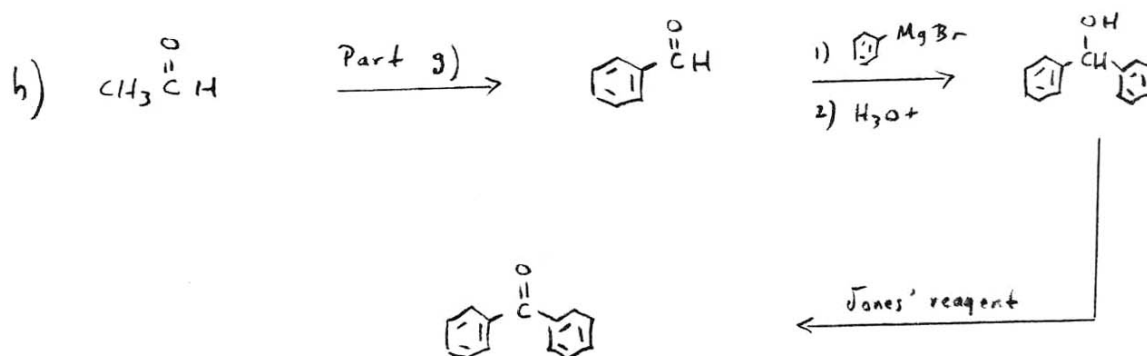
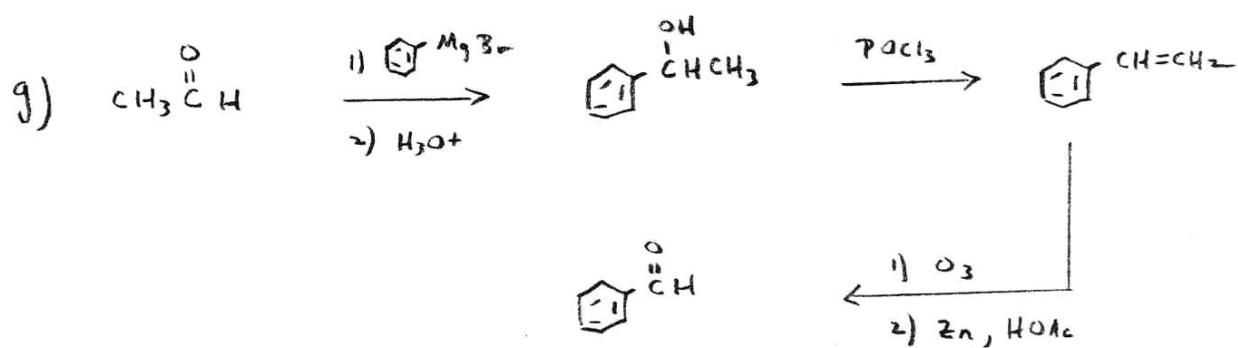
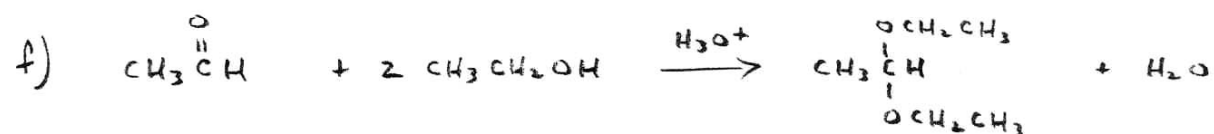
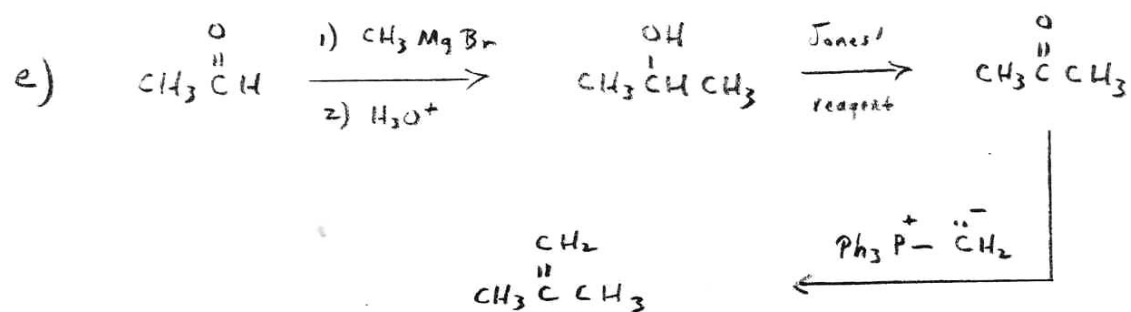
b) The additional electron-donating methyl groups in 2,4-dimethyl-3-pentanone reduce the partial positive charge on the carbonyl carbon, making it less reactive towards nucleophiles.



8. Water (and other protic solvents) react with the Grignard reagent:



10. cont.



9. cont.

