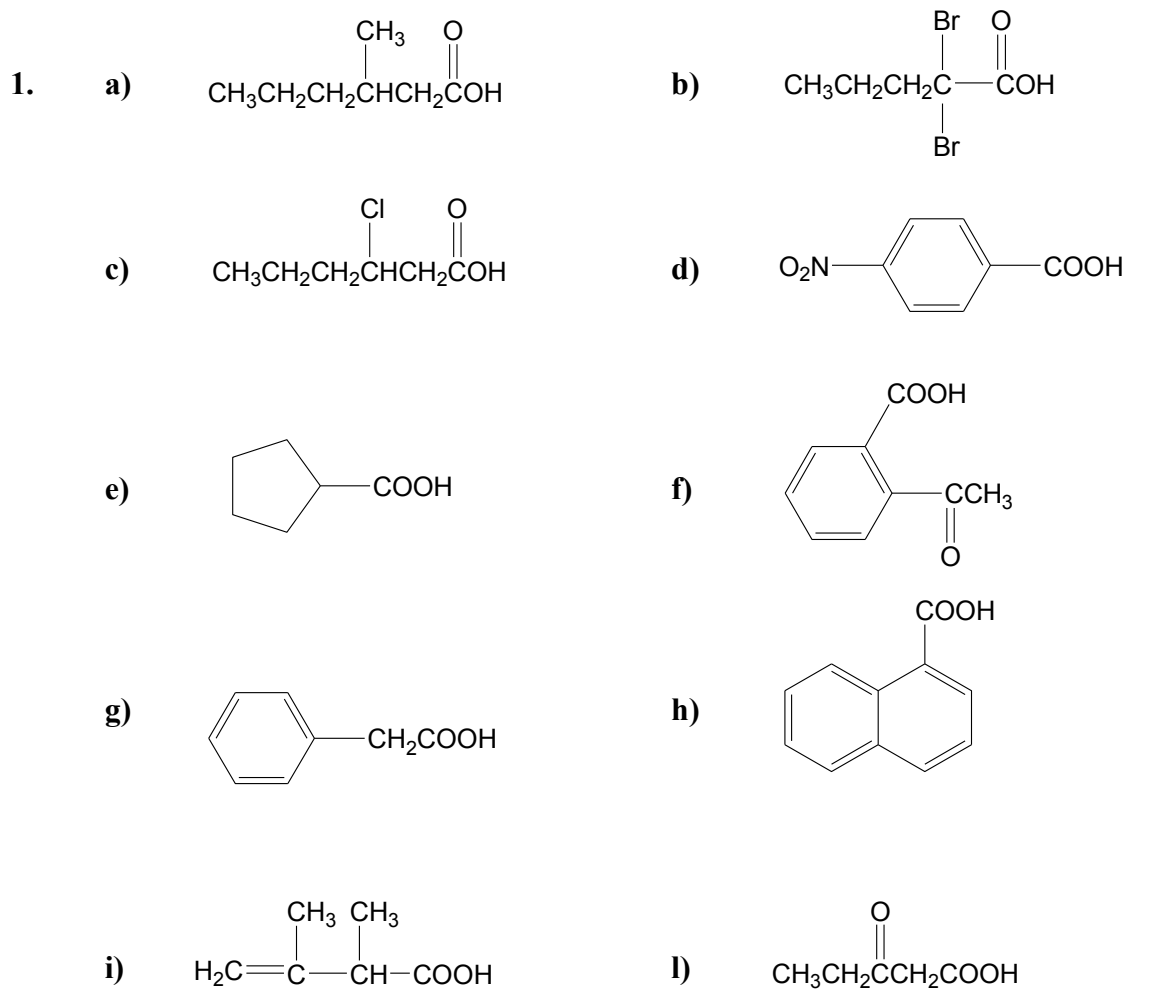


**CAPITOLO 10**

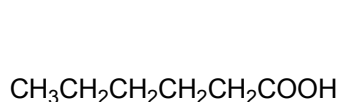


2. a) **acido 2,5-dimetilesandioico**      b) **acido 2,2,-dimetilpropanoico**
- c) **acido 3-propilesanoico**      d) **acido *p*-nitrobenzoico**
- e) **acido ciclodec-1-ene carbossilico**

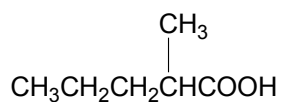
3. **L'acido acetico ha un punto di ebollizione più alto di quello dell'acetato di etile grazie alla possibilità di formare legami idrogeno relativamente forti. Per l'acetato di etile, che non ha l'idrogeno legato all'ossigeno, non c'è possibilità di formare legami idrogeno.**

## Percorsi di chimica organica - Soluzioni degli esercizi del testo

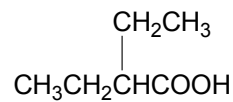
4.



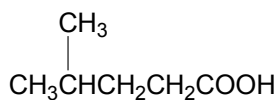
acido esanoico



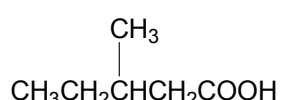
acido 2-metilpentanoico  
(chirale)



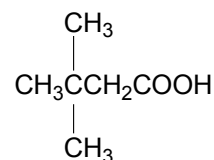
acido 2-etilbutanoico



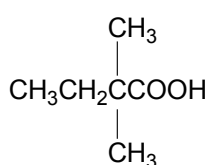
acido 4-metilpentanoico



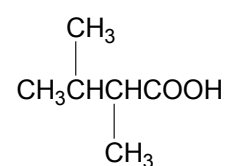
acido 3-metilpentanoico  
(chirale)



acido 3,3-dimetilbutanoico



acido 2,2-dimetilbutanoico

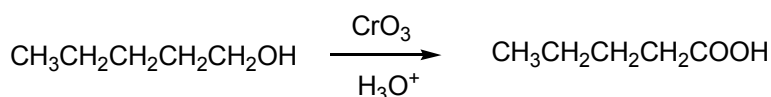


acido 2,3-dimetilbutanoico  
(chirale)

5. **L'acido tartarico.**

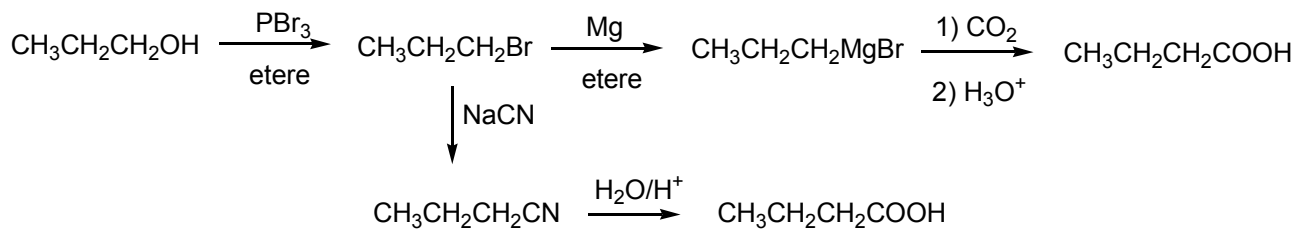
6. a)  $\text{ClCH}_2\text{COOH}$  perché il cloro è più elettronegativo del bromo (maggiore effetto di attrazione elettronica).
- b)  $o\text{-BrC}_6\text{H}_4\text{COOH}$  perché la posizione orto è più vicina al centro di reazione e l'effetto induttivo elettron-attrattore del bromo si risente di più che in posizione meta.
- c)  $\text{CF}_3\text{COOH}$  perché il fluoro è più elettronegativo del cloro (maggiore effetto di attrazione elettronica).
- d)  $\text{C}_6\text{H}_5\text{COOH}$  perché nel composto  $p\text{-CH}_3\text{OC}_6\text{H}_4\text{COOH}$  il gruppo sostituito  $\text{CH}_3\text{O}$  ha effetto elettron-donatore che destabilizza la carica negativa della base coniugata.
- e)  $\text{CH}_3\text{CHClCOOH}$  perché il cloro è più vicino al centro di reazione.

7. a)

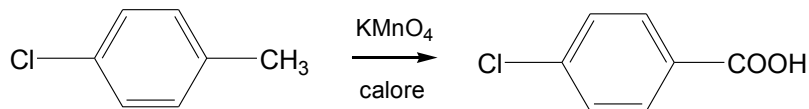


Percorsi di chimica organica - Soluzioni degli esercizi del testo

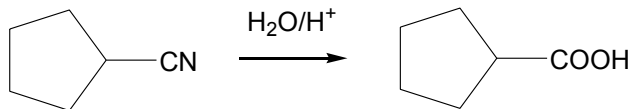
b)



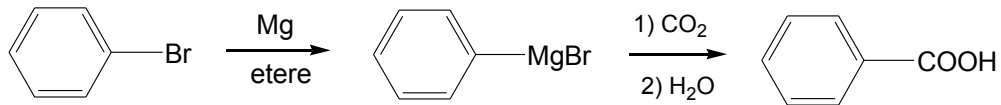
c)



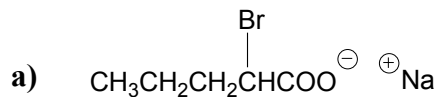
d)



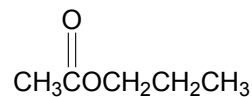
e)



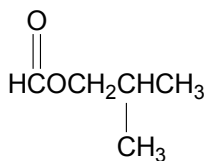
8.



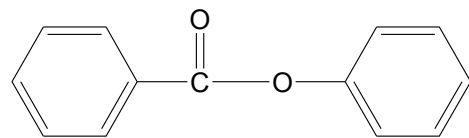
b)



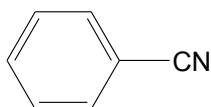
c)



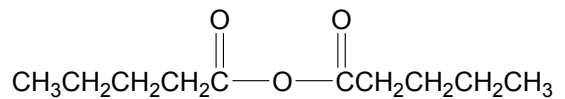
d)



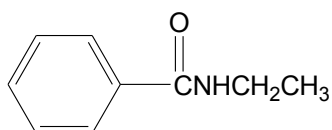
e)



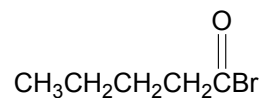
f)



g)



h)



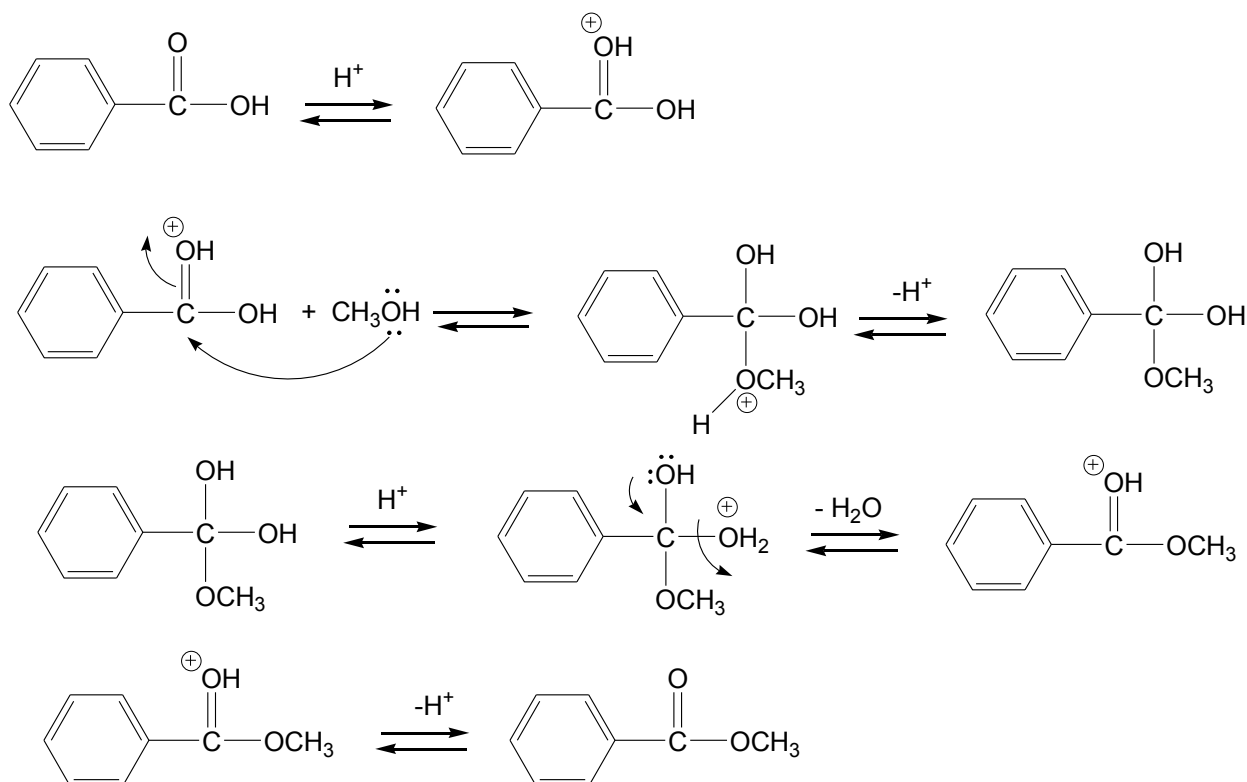
9.

a) *p*-bromobenzoato di ammonio

b) butanoato di calcio

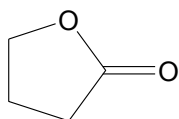
- c) **isobutirrato di fenile**
- d) **trifluoroacetato di metile**
- e) **formammide**
- f) **anidride butanoica**

10.



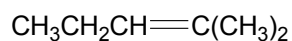
**Il nucleofilo è il metanolo; il gruppo uscente è l'acqua.**

11.

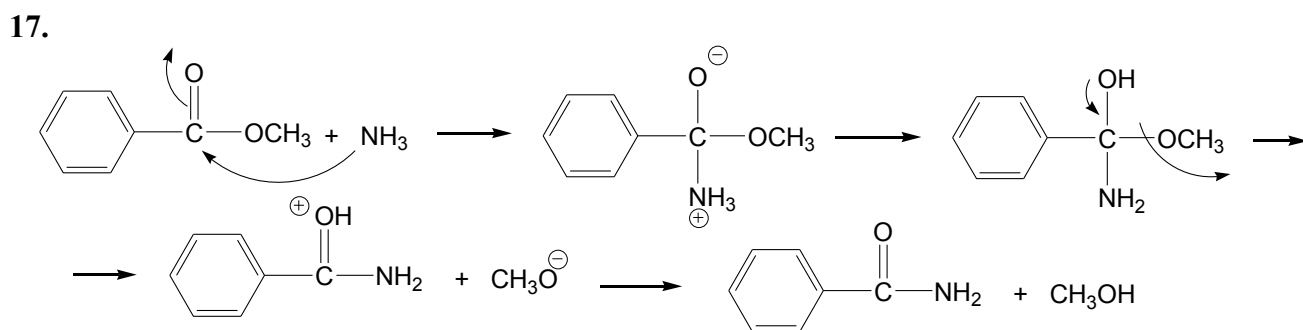
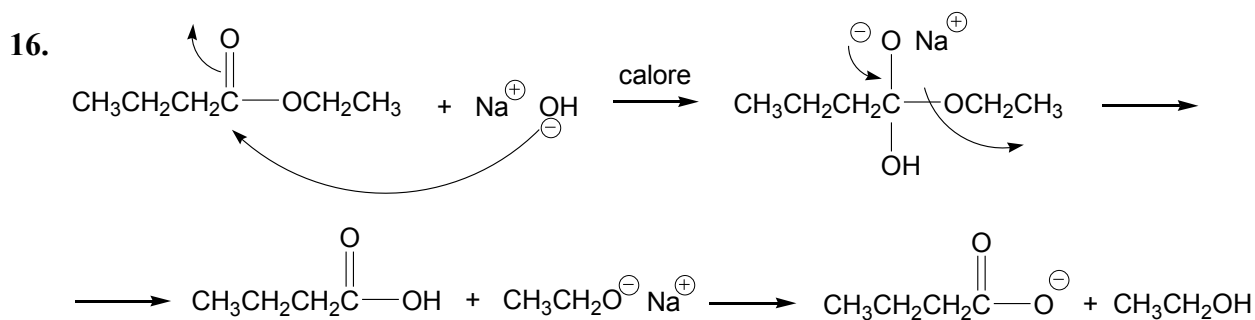
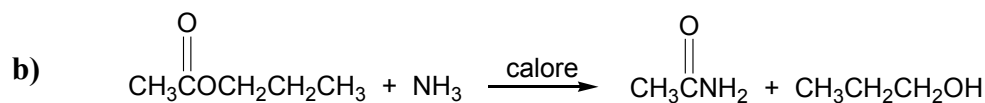
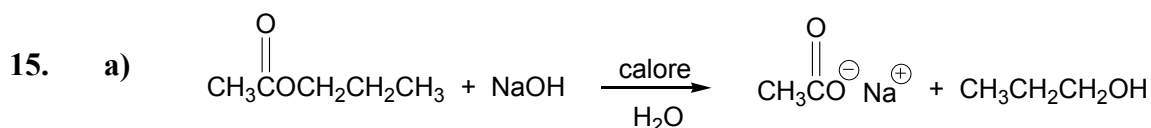
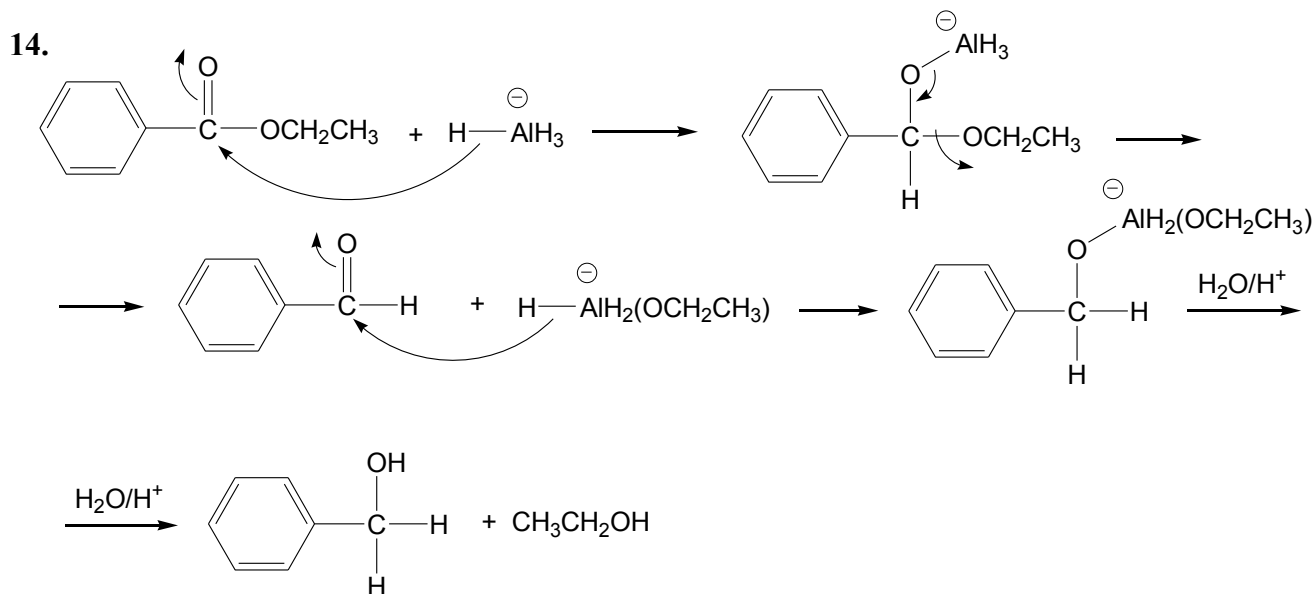


12.  $\text{CH}_3\text{COCl} > \text{CH}_3\text{CO}_2\text{COCH}_3 > \text{CH}_3\text{CO}_2\text{CH}_3 > \text{CH}_3\text{CONH}_2$

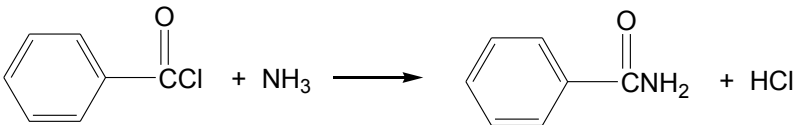
13. **Perché l'alogenuro alchilico terziario non può subire  $\text{S}_{\text{N}}2$ .**

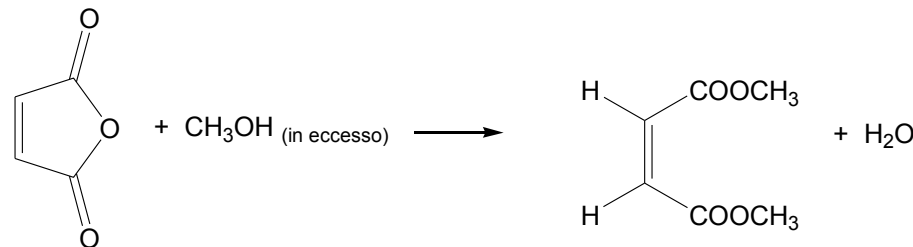


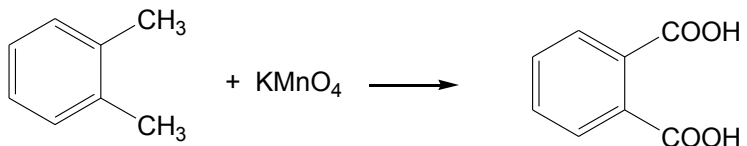
Percorsi di chimica organica - Soluzioni degli esercizi del testo

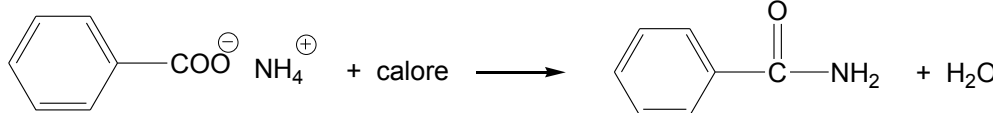


Percorsi di chimica organica - Soluzioni degli esercizi del testo

18. a) 
$$\text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{O}}{\parallel}\text{CBr} + \text{H}_2\text{O} \longrightarrow \text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{O}}{\parallel}\text{COH} + \text{HBr}$$
- b) 
$$\text{CH}_3\overset{\text{O}}{\parallel}\text{CCl} + \text{CH}_3\text{CH}_2\text{OH} \longrightarrow \text{CH}_3\overset{\text{O}}{\parallel}\text{COCH}_2\text{CH}_3 + \text{HCl}$$
- c) 
$$\text{CH}_3\overset{\text{O}}{\parallel}\text{COC}\overset{\text{O}}{\parallel}\text{CH}_3 + \text{CH}_3(\text{CH}_2)_4\text{CH}_2\text{OH} \longrightarrow \text{CH}_3\overset{\text{O}}{\parallel}\text{COCH}_2(\text{CH}_2)_4\text{CH}_3 + \text{CH}_3\overset{\text{O}}{\parallel}\text{COH}$$
- d) 

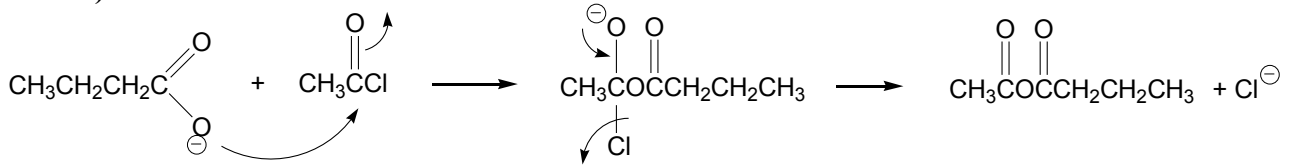
$$\text{C}_6\text{H}_5\overset{\text{O}}{\parallel}\text{CCl} + \text{NH}_3 \longrightarrow \text{C}_6\text{H}_5\overset{\text{O}}{\parallel}\text{CNH}_2 + \text{HCl}$$
- e) 

$$\text{C}_4\text{H}_4\text{O}_3 + \text{CH}_3\text{OH} \text{ (in eccesso)} \longrightarrow \text{H}_2\text{C}=\text{C}(\text{COOCH}_3)_2 + \text{H}_2\text{O}$$
19. a) 
$$\text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{O}}{\parallel}\text{COH} + \text{PCl}_5 \longrightarrow \text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{O}}{\parallel}\text{CCl} + \text{POCl}_3 + \text{HCl}$$
- b) 
$$\text{CH}_3(\text{CH}_2)_6\overset{\text{O}}{\parallel}\text{COH} + \text{SOCl}_2 \longrightarrow \text{CH}_3(\text{CH}_2)_6\overset{\text{O}}{\parallel}\text{CCl} + \text{SO}_2 + \text{HCl}$$
- c) 

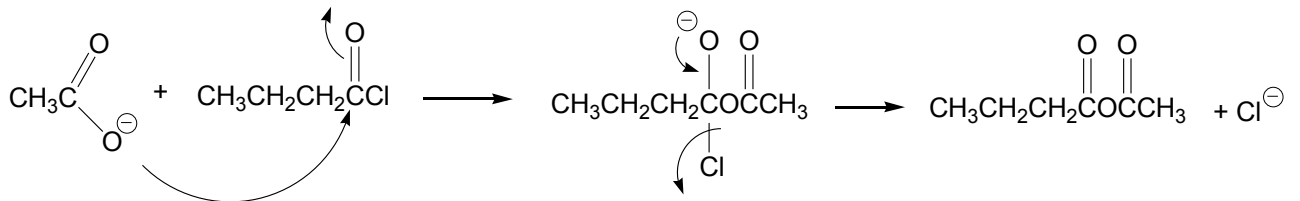
$$\text{C}_6\text{H}_4(\text{CH}_3)_2 + \text{KMnO}_4 \longrightarrow \text{C}_6\text{H}_4(\text{COOH})_2$$
- d) 

$$\text{C}_6\text{H}_5\text{COO}^\ominus \text{NH}_4^\oplus + \text{calore} \longrightarrow \text{C}_6\text{H}_5\overset{\text{O}}{\parallel}\text{CNH}_2 + \text{H}_2\text{O}$$
- e) 
$$\text{CH}_3(\text{CH}_2)_5\overset{\text{O}}{\parallel}\text{CNH}_2 + \text{LiAlH}_4 \longrightarrow \text{CH}_3(\text{CH}_2)_5\text{CH}_2\text{NH}_2$$

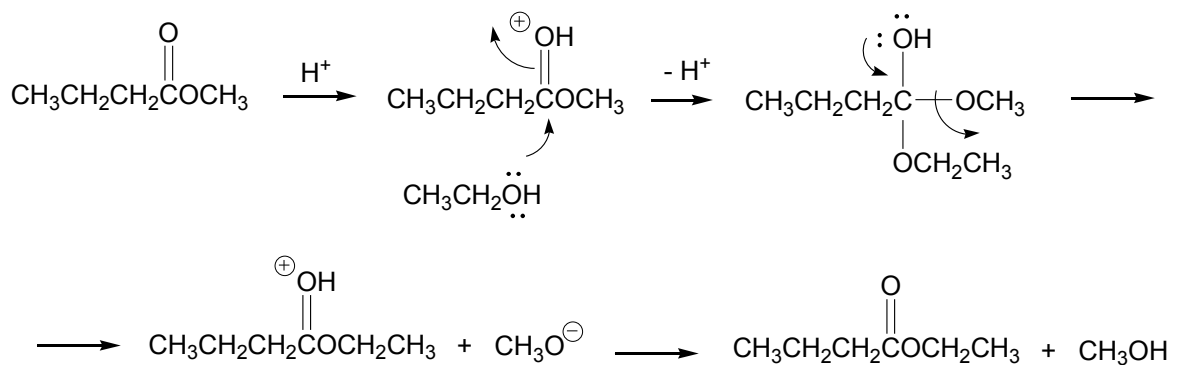
20. I)



II)



21. Si ottiene propanoato di etile perché l'etanolo agisce da nucleofilo sul propanoato di metile dando transesterificazione:



22.

