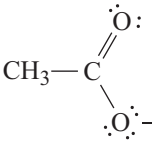
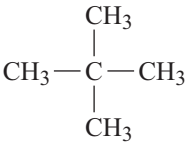
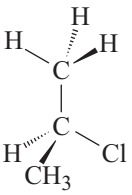
COMPLEMENTI B

Risposte ai quiz

CAPITOLO 1

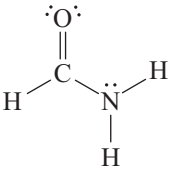
1.1 (d) **1.2** (d) **1.3** (e) **1.4** (d) **1.5** (c) **1.6** 

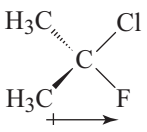
1.7 $CH_3CHCH_2CH_3$ (CH_3 sotto il secondo C) e 

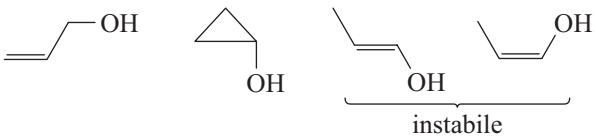
1.8 

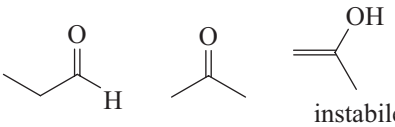
1.9 (a) sp^2 (b) sp^3 (c) 0 (d) piana trigonale (e) 0 D

1.10 (a) + 1 (b) 0 (c) − 1

1.11 

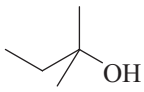
1.12 

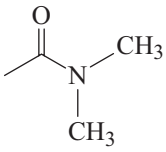
1.13 

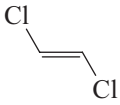


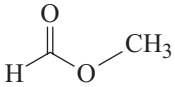
CAPITOLO 2

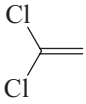
2.1 (e) **2.2** (a) **2.3** (b)

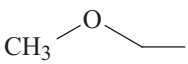
2.4 (a) 

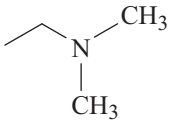
(b) 

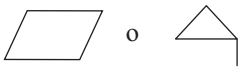
(c) 

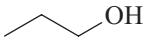
(d) 

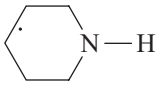
(e) 

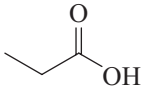
(f) 

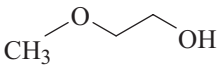
(g) 

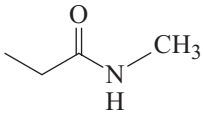
2.5 

2.6 (a) 

(b) 

(c) 

(d) 

(e) 

2.7 (a) Fenil isopropil etere
(b) Etilfenilmetilammina
(c) Isopropilammina

CAPITOLO 3

3.1 (a) **3.2** (c) **3.3** (b) **3.4** (e) **3.5** (b)

3.6 (b)

3.7 $H_2SO_4 + NaF \longrightarrow NaHSO_4 + HF$

3.8 $(CH_3)_2NH$

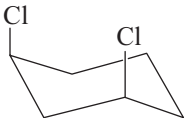
3.9 (a) CH_3CH_2Li (b) D_2O

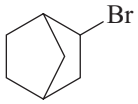
3.10 (a) CH_3Li (b) $CH_3\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2OH$ (c) $CH_3\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2OLi$

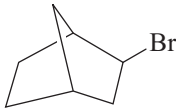
CAPITOLO 4

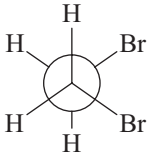
4.1 (c) **4.2** (c) **4.3** (b) **4.4** (a) **4.5** (b)

4.6 (a) **4.7** (a)

4.8 (a) 

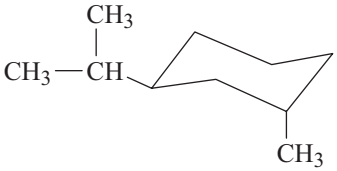
(b) 

o 

(c) 

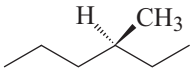
4.9 (a) H_2, Pt, pressione o H_2, Ni, pressione

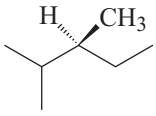
(b) $(CH_3)_2CHCH_2CH_3 + 8\,O_2 \longrightarrow 5\,CO_2 + 6\,H_2O$

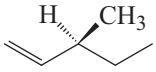
4.10 

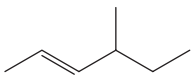
CAPITOLO 5

5.1 (a) **5.2** (b) **5.3** (b) **5.4** (e) **5.5** (b)

5.6 

e 

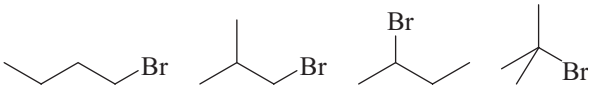
5.7 

5.8 
(*E* e *Z*)

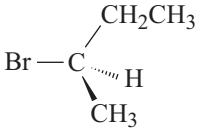
CAPITOLO 6

6.1 (b) **6.2** (b) **6.3** (a)

6.4

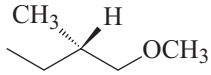


6.5 **A** =

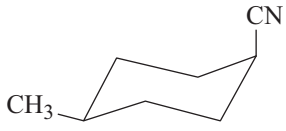


B = $CH_3CH_2CH{=}CH_2$

C =

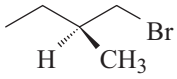


D =

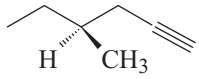


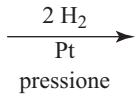
6.6 (b)

6.7 **A** =

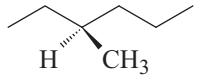


B =





C =



CAPITOLO 7

7.1 (c) **7.2** (d) **7.3** (a)

7.4 (a) Li, $C_2H_5NH_2$, −78 °C, poi NH_4Cl

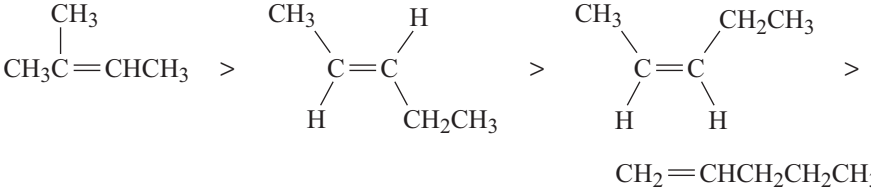
(b) $H_2/Ni_2B(P{-}2)$ o $H_2/Pd/\ CaCO_3$ (catalizzatore di Lindlar)

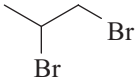
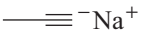
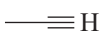
(c) H_2/Ni, pressione o H_2/Pt, pressione (utilizzando almeno 2 equivalenti molari di H_2)

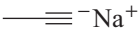
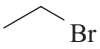
(d) C_2H_5ONa/C_2H_5OH

(e) $(CH_3)_3COK/(CH_3)_3COH$

7.5



7.6 (a)  (b)  (c) 

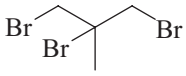
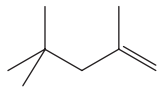
(d)  (e) 

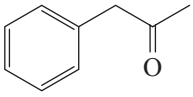
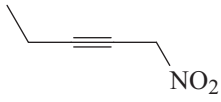
CAPITOLO 8

8.1 (e) **8.2** (c) **8.3** (e) **8.4** (a) **8.5** (d) **8.6** (c)

8.7 (c) **8.8** (b)

CAPITOLO 9

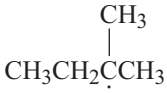
9.1 (a)  (b)  (c) 

(d)  (e) 

9.2 (c) **9.3** (a)

CAPITOLO 10

10.1 (d) **10.2** (b) **10.3** (c) **10.4** (b) **10.5** (c)

10.6 

10.7 Sei

10.8 (d)

CAPITOLO 11

11.1 (d) **11.2** (a) **11.3** (e)

11.4A = $C_6H_5CH_2ONa$ **B** = $C_6H_5CH_2OCH_2CH_2OH$

C = $C_6H_5CH_2OCH_2CH_2OSO_2CH_3$ **D** = $C_6H_5CH_2OCH_2CH_2OCH_2CH_3$

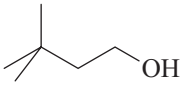
CAPITOLO 12

12.1 (b) **12.2** (a)

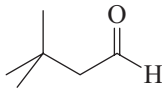
12.3 **A** = $CH_3C{\equiv}CLi$ o $CH_3C{\equiv}CMgBr$

B = NaH

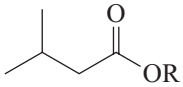
C = CH_3I

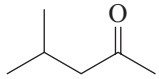
12.4 **A** = 

B = PCC/CH_2Cl_2

C = 

D = C_6H_5MgBr

12.5 **A** = 

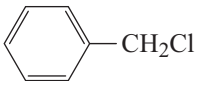
o 

CAPITOLO 13

13.1 (d) **13.2** (c) **13.3** (c) **13.4** (c) **13.5** (b)

CAPITOLO 14

14.1 (e) **14.2** (a) **14.3** (b) **14.4** (b)

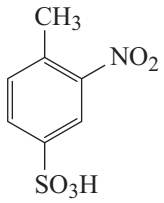
14.5 

14.6 Azulene

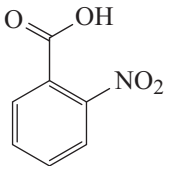
CAPITOLO 15

15.1 (a) **15.2** (a) **15.3** (b)

15.4 (a) **A** = SO_3/H_2SO_4 **B** =



C = H_2O, H_2SO_4, calore **D** =



(b) **A** = $SOCl_2$ or PCl_5 **B** =

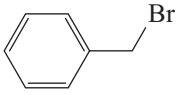
 + $AlCl_3$

C = Zn(Hg), HCl, riflusso **D** = $Br_2/FeBr_3$

CAPITOLO 16

16.1 (d) **16.2** (b) **16.3** (b)

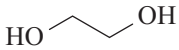
16.4 (a) **A** =



B = NaCN

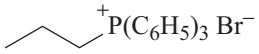
C (1) DIBAL-H, esano, −78°C (2) H_2O

(b) **A** = PCC, CH_2Cl_2 **B** =

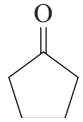


C = H_2O, H_3O^+

(c) **A** = $(C_6H_5)_3P$ **B** =

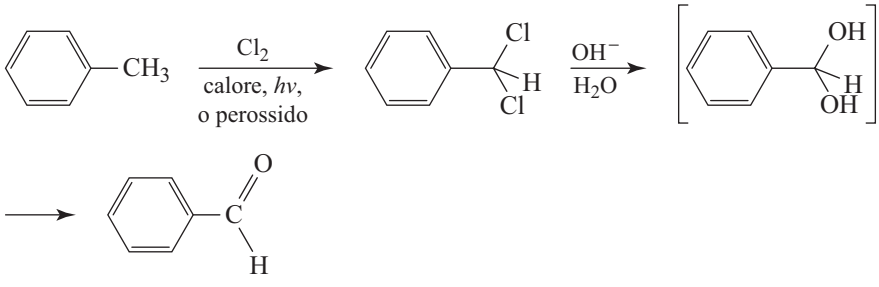


C =



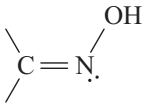
(d) **A** = (1) CH_3MgBr (2) H_2CrO_4 **B** = HCN **C** = (1) $LiAlH_4$, Et_2O (2) H_2O

16.5

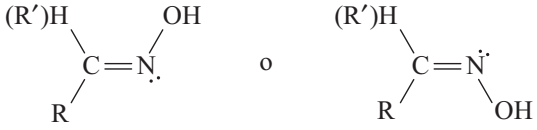


Il diolo geminale che si forma a seguito dell'idrolisi alcalina perde acqua per formare l'aldeide.

16.6 La formula generale di un'ossima è:

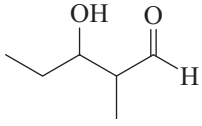


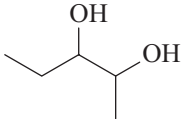
Sia il carbonio che l'azoto sono ibridati sp^2; la coppia elettronica dell'azoto occupa un orbitale sp^2. Le aldossime e le chetossime esistono nelle due forme stereoisomeriche:

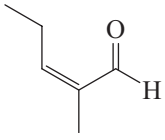


Questo tipo di stereoisomeria si osserva anche nel caso di altri composti che possiedono il gruppo C=N, come i fenilidrazoni e le immine.

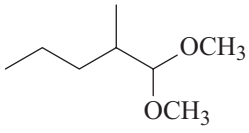
CAPITOLO 17

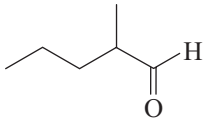
17.1 (a) 

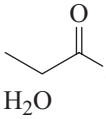
(b) 

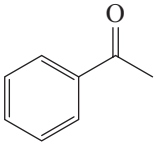
(c) 

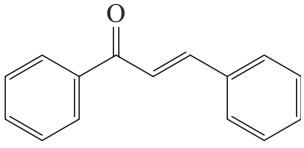
(d) $LiAlH_4$, Et_2O (e) H_2, Ni, pressione (f) CH_3OH (eccesso,) HA

(g) 

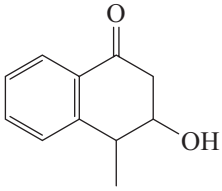
(h) 

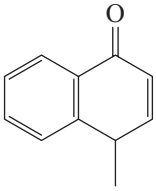
(i) (1) 
OEt, LDA, −78°
(2) H_2O

17.2 (a) 

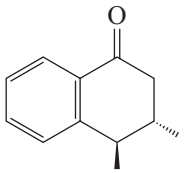
(b) 

(c) HCN

17.3 (a) 

(b) 

(c) CH_3MgI, Et_2O

(d) 

+

addizione semplice

(e) $Zn(Hg)/HCl$

17.4 (e) **17.5** (a)

CAPITOLO 18

18.1 (b) **18.2** (d) **18.3** (d)

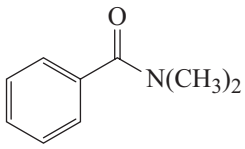
18.4 **A** = Acido 3-clorobutanoico

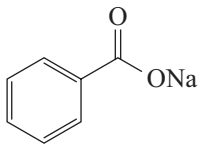
B = 4-Nitrobenzoato di metile o *p*-nitrobenzoato di metile

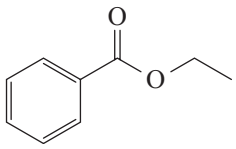
C = *N*-Metilanilina

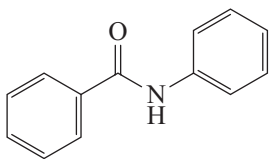
18.5 (a) **A** = (1) $KMnO_4$, OH^-, calore **B** = $SOCl_2$ o PCl_5

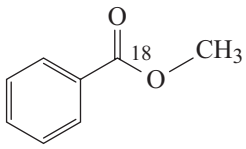
(2) H_3O^+

C = 

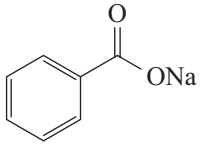
D = 

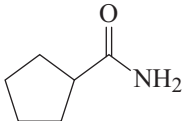
E = 

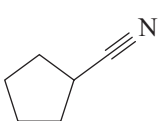
F = 

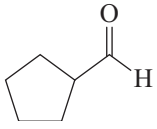
(b) **A** = 

B = $CH_3—\overset{18}{O}H$

C = 

(c) **A** = 

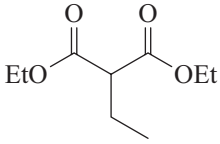
B = 

C = 

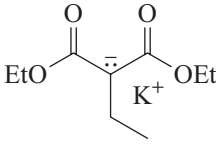
CAPITOLO 19

19.1 (c) **19.2** (e) **19.3** (b)

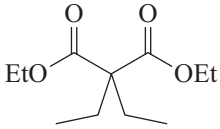
19.4 (a) **A** =



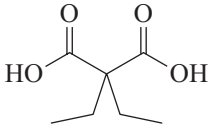
B =



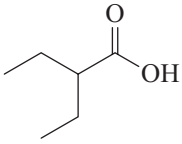
C =



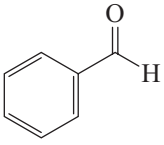
D =



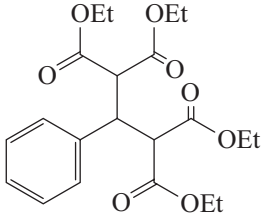
E =



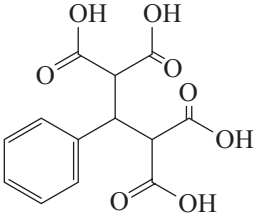
(b) **A** =



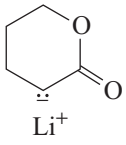
B =



C =

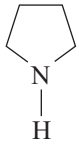


(c) **A** =

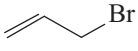


B =

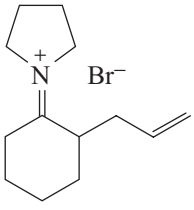
(d) **A** =



B =



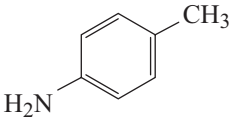
C =

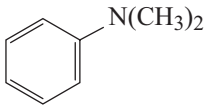


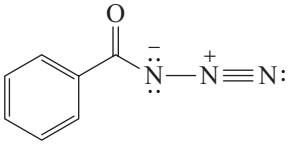
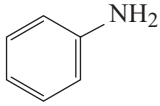
CAPITOLO 20

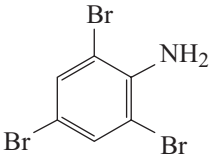
20.1 (d) **20.2** (e)

20.3 (a) (2) (b) (4) (c) (3)

20.4 (a) **A** = HNO_3/H_2SO_4 **B** =  **C** = $NaNO_2$, HCl, 0–5°C

D = CuCN **E** = $LiAlH_4$, Et_2O **F** = 

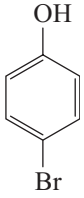
(b) **A** = NaN_3 **B** =  **C** = 

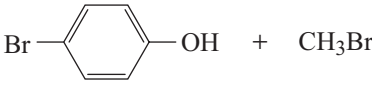
D =  **E** = H_3PO_2

20.5 (a) (2) (b) (2) (c) (1)

CAPITOLO 21

21.1 (a) **21.2** (b) **21.3** (b) **21.4** (e)

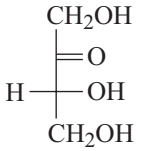
21.5 (a) **A** =  **B** = KNH_2, NH_3 liq., –33°C

21.6 

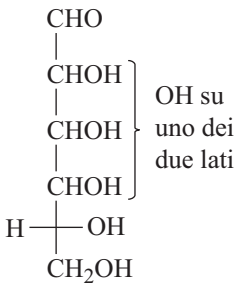
21.7 (a) (1) (b) (1)

CAPITOLO 22

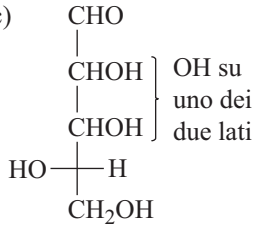
22.1 (a)



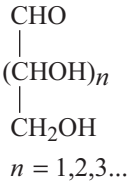
(b)



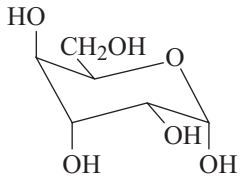
(c)



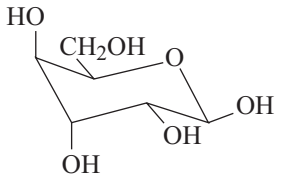
(d)



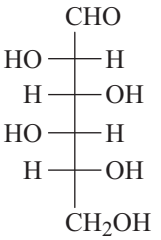
(e)



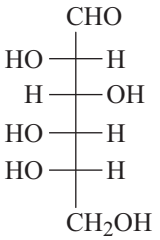
(f)



(g)

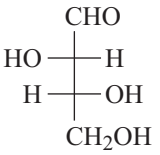


(h)

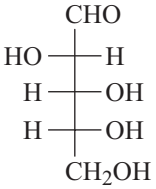


22.2 C

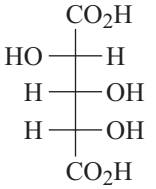
22.3



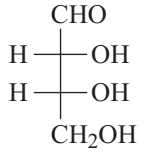
22.4 (a)



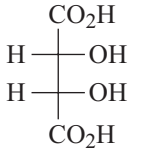
(b)



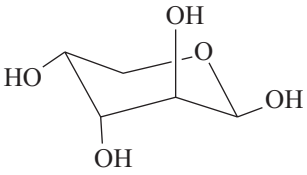
(c)



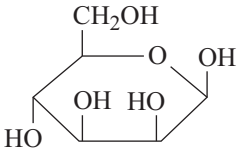
(d)



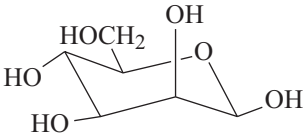
22.5



22.6 (a)



(b)



(c) Riducente

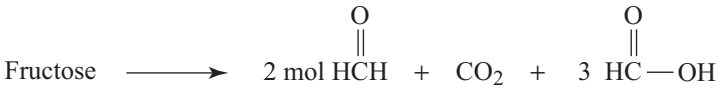
(d) Attivo (e) Aldonico (f) Attivo (g) Aldarico (h) $NaBH_4$

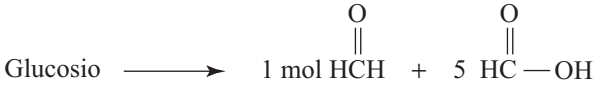
(i) Attivo

22.7 (a) Galattosio $\xrightarrow{NaBH_4}$ alditolo otticamente *inattivo*; glucosio → alditolo otticamente attivo

Galattosio $\xrightarrow[\text{dil.}]{HNO_3}$ acido aldarico otticamente *inattivo* glucosio → acido aldarico otticamente attivo

(b) Ossidazione con HIO_4 ⟶ prodotti differenti:

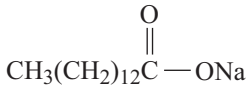




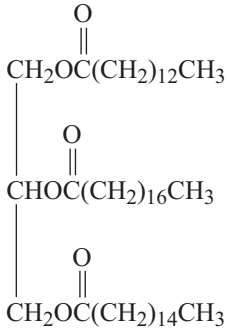
22.8 (e) **22.9** (d)

CAPITOLO 23

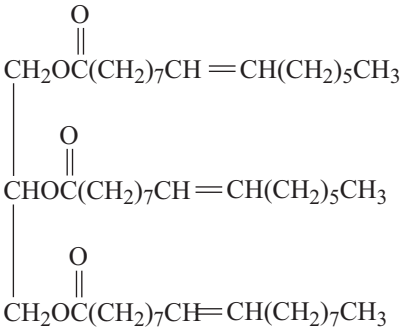
23.1 (a) $CH_3(CH_2)_{12}CO_2H$ (b)



(c)

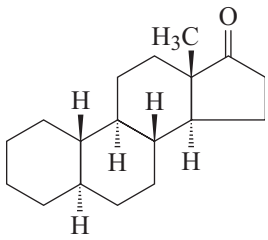


(d)



(e) $CH_3(CH_2)_{13}SO_3Na$

(f)



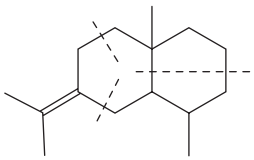
23.2 (a) I_2/OH^- (saggio iodoformio)
(b) Br_2/CCl_4
(c) Solo l'etilestradiolo mostra un assorbimento IR a $\sim$3300 cm^{-1}.

23.3 5α-Androstano

23.4 (a) $CH_3(CH_2)_4CH_2C{\equiv}CH$
(b) $CH_3(CH_2)_5C{\equiv}CNa$
(c) $CH_3(CH_2)_5C{\equiv}C(CH_2)_6CH_2Cl$
(d) KCN
(e) $CH_3(CH_2)_5C{\equiv}C(CH_2)_7CO_2H$
(f) H_2/Pd

23.5 Sesquiterpene

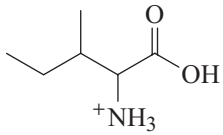
23.6



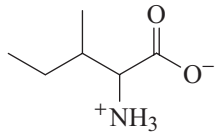
23.7 (e)

CAPITOLO 24

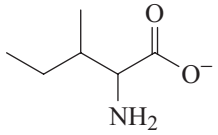
24.1 (a)



(b)



(c)



24.2 PLGFGY