

CARBOXYLIC ACID AND THEIR DERIVATIVES

1. Match list - I and List - II.

List-I

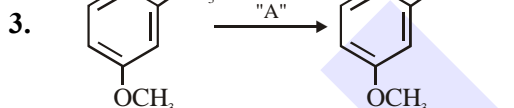
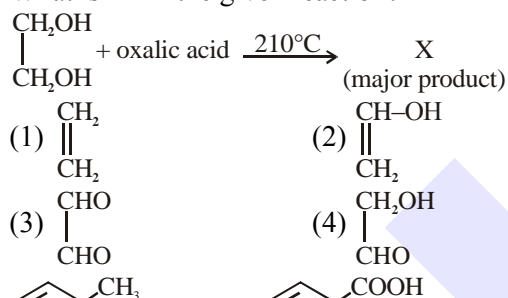
List-II

- (a) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{Cl} \rightarrow \text{R}-\text{CHO}$ (i) Br_2/NaOH
 (b) $\text{R}-\text{CH}_2-\text{COOH} \rightarrow \text{R}-\underset{\text{Cl}}{\underset{|}{\text{CH}}}-\text{COOH}$ (ii) $\text{H}_2/\text{Pd}-\text{BaSO}_4$
 (c) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2 \rightarrow \text{R}-\text{NH}_2$ (iii) $\text{Zn}(\text{Hg})/\text{Conc. HCl}$
 (d) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3 \rightarrow \text{R}-\text{CH}_2-\text{CH}_3$ (iv) $\text{Cl}_2/\text{Red P, H}_2\text{O}$

Choose the correct answer from the options given below :

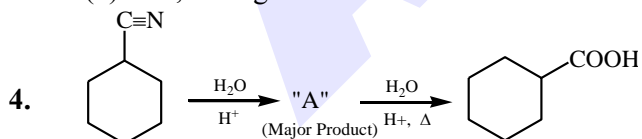
- (1) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
 (2) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
 (3) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
 (4) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

2. What is 'X' in the given reaction?



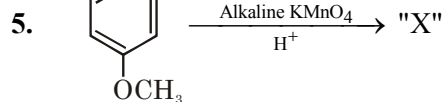
In the above reaction, the reagent "A" is :

- (1) $\text{NaBH}_4, \text{H}_3\text{O}^+$
 (2) LiAlH_4
 (3) Alkaline $\text{KMnO}_4, \text{H}^+$
 (4) HCl, Zn-Hg



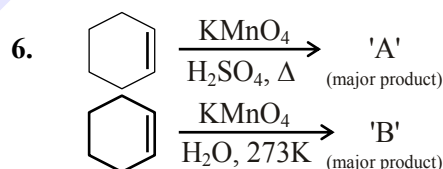
Consider the above chemical reaction and identify product "A"

- (1) $\text{C}_6\text{H}_{11}\text{CH}_2\text{NH}_2$ (2) $\text{C}_6\text{H}_{11}\text{CH}_2\text{NO}_2$
 (3) $\text{C}_6\text{H}_{11}\text{CONH}_2$ (4) $\text{C}_6\text{H}_{11}\text{C}(\text{H})=\text{N}-\text{OH}$



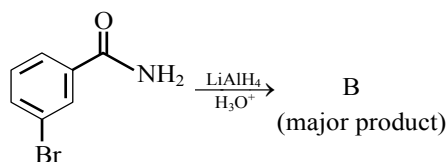
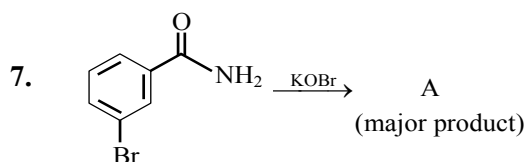
Considering the above chemical reaction, identify the product "X" :

- (1) $\text{X}-\text{C}_6\text{H}_4(\text{CHO})(\text{OCH}_3)$
 (2) $\text{X}-\text{C}_6\text{H}_4(\text{CH}_2\text{OH})(\text{OCH}_3)$
 (3) $\text{X}-\text{C}_6\text{H}_4(\text{COOH})(\text{OCH}_3)$
 (4) $\text{X}-\text{C}_6\text{H}_4(\text{CH}_3)(\text{OH})$

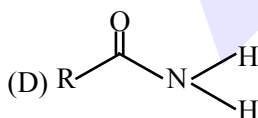
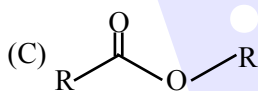
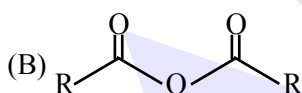
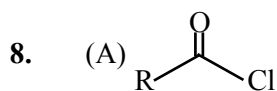
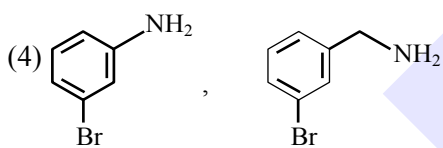
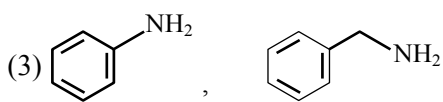
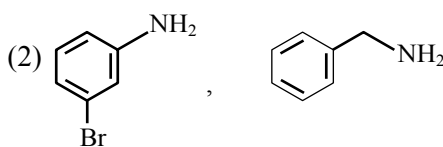
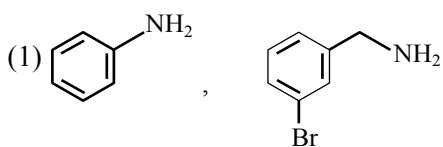


For above chemical reactions, identify the correct statement from the following:

- (1) Both compound 'A' and compound 'B' are dicarboxylic acids
 (2) Both compound 'A' and compound 'B' are diols
 (3) Compound 'A' is diol and compound 'B' is dicarboxylic acid
 (4) Compound 'A' is dicarboxylic acid and compound 'B' is diol



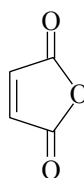
In the above reactions, product A and product B respectively are :



The **correct** order of their reactivity towards hydrolysis at room temperature is :

- (1) (A) > (B) > (C) > (D)
- (2) (D) > (A) > (B) > (C)
- (3) (D) > (B) > (A) > (C)
- (4) (A) > (C) > (B) > (D)

9.

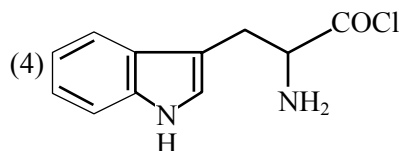
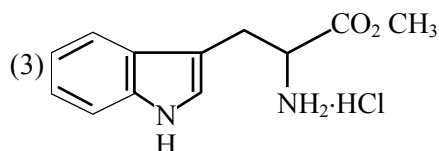
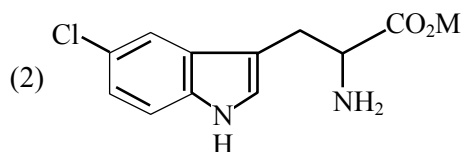
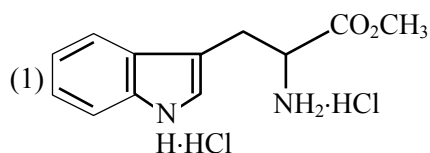
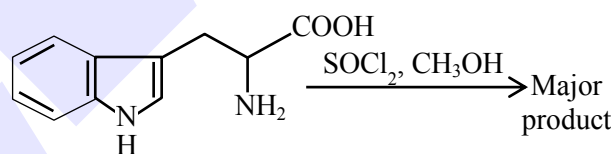


Maleic anhydride

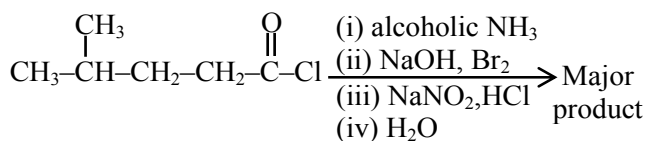
Maleic anhydride can be prepared by :

- (1) Heating trans-but-2-enedioic acid
- (2) Heating cis-but-2-enedioic acid
- (3) Treating cis-but-2-enedioic acid with alcohol and acid
- (4) Treating trans-but-2-enedioic acid with alcohol and acid

10. The major product formed in the following reaction is :



11. The major product of the following reaction is :

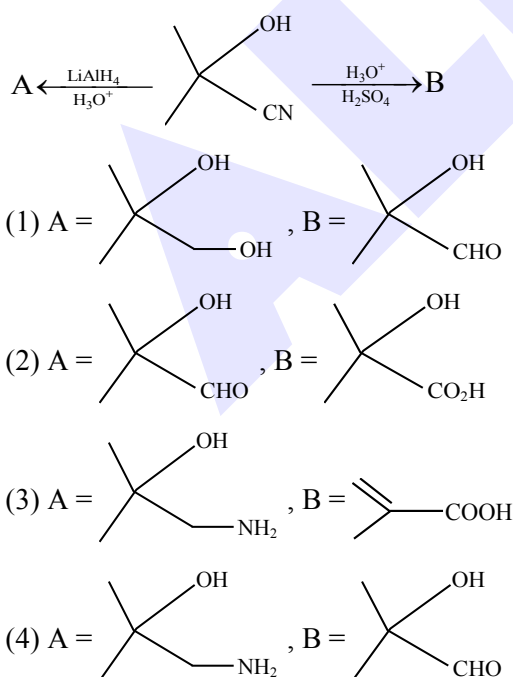


- (1) $\text{CH}_3-\underset{\text{CH}_3}{\underset{\text{Br}}{\text{CH}}}-\text{CH}-\text{CH}_2\text{OH}$
- (2) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2-\text{CH}_2-\text{CH}_2\text{OH}$
- (3) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2-\text{CH}_2\text{OH}$
- (4) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2-\text{CH}_2-\text{Cl}$

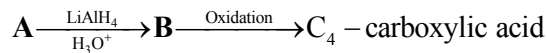
12. Which one of the following reactions will **not** yield propionic acid?

- (1) $\text{CH}_3\text{CH}_2\text{COCH}_3 + \text{OH}^-/\text{H}_3\text{O}^+$
- (2) $\text{CH}_3\text{CH}_2\text{CH}_3 + \text{KMnO}_4 (\text{Heat}), \text{OH}^-/\text{H}_3\text{O}^+$
- (3) $\text{CH}_3\text{CH}_2\text{CCl}_3 + \text{OH}^-/\text{H}_3\text{O}^+$
- (4) $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} + \text{Mg}, \text{CO}_2 \text{ dry ether}/\text{H}_3\text{O}^+$

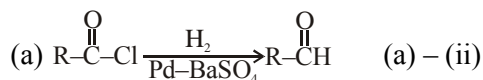
13. The major products A and B in the following set of reactions are :



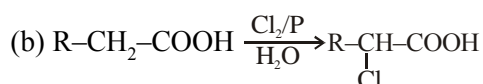
14. In the following sequence of reactions a compound A, (molecular formula $\text{C}_6\text{H}_{12}\text{O}_2$) with a straight chain structure gives a C_4 carboxylic acid. A is :



- (1) $\text{CH}_3-\text{CH}_2-\text{COO}-\text{CH}_2-\text{CH}_2-\text{CH}_3$
- (2) $\text{CH}_3-\text{CH}_2-\underset{\text{OH}}{\text{CH}}-\text{CH}_2-\text{O}-\text{CH}=\text{CH}_2$
- (3) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{COO}-\text{CH}_2-\text{CH}_3$
- (4) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}=\text{CH}-\text{CH}_2-\text{OH}$

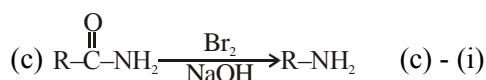
SOLUTION**1. Official Ans. by NTA (3)****Sol.** Match list-I & list-II

Rosenmund Reduction

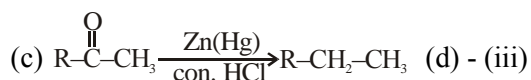


HVZ reaction

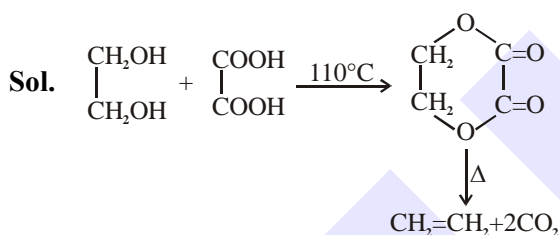
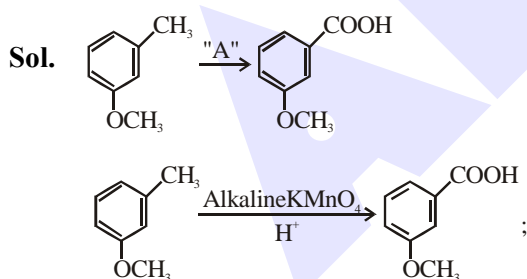
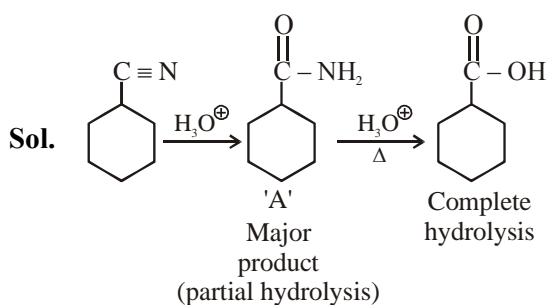
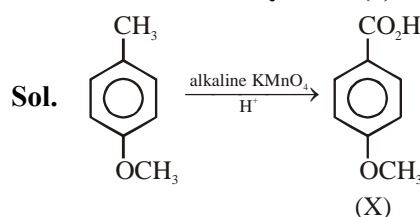
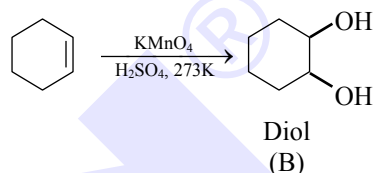
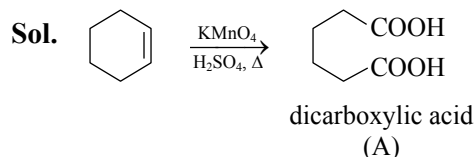
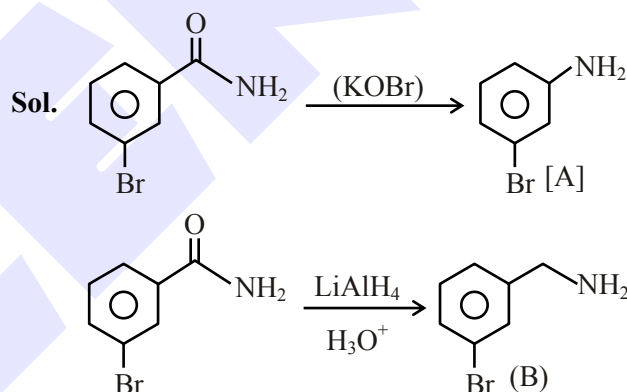
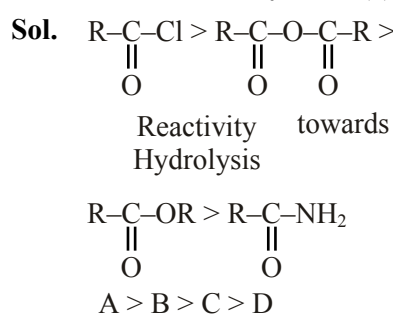
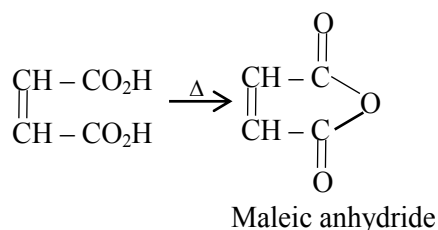
(b)-(iv)



Hoffmann Bromamide reaction

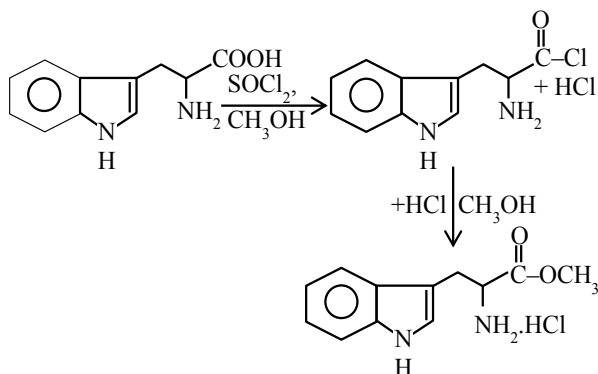


Clemmenson reduction

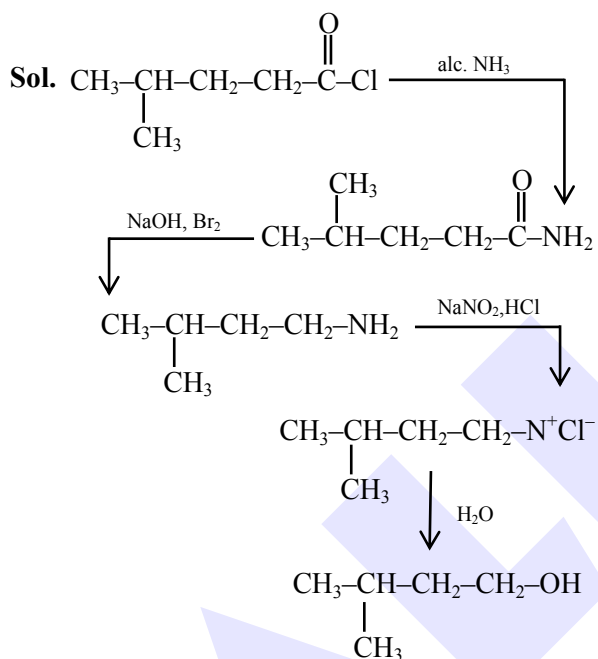
2. Official Ans. by NTA (1)**3. Official Ans. by NTA (3)****4. Official Ans. by NTA (3)****5. Official Ans. by NTA (3)****6. Official Ans. by NTA (4)****7. Official Ans. by NTA (4)****8. Official Ans. by NTA (1)****9. Official Ans. by NTA (2)****Sol.** Cis but 2-enoic acid

10. Official Ans. by NTA (3)

Sol.

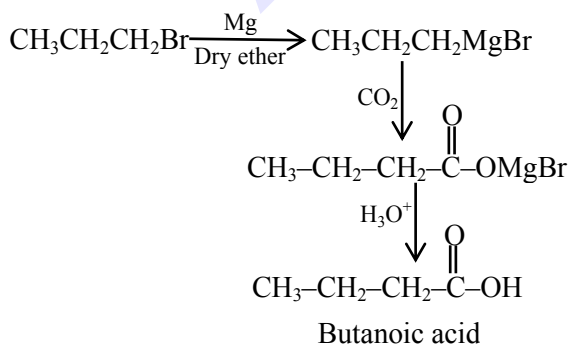


11. Official Ans. by NTA (3)



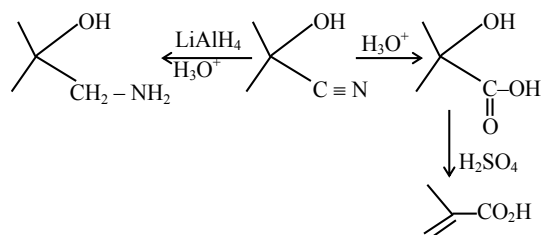
12. Official Ans. by NTA (4)

Sol. All gives propanoic acid as product but option 4 gives butanoic as product



13. Official Ans. by NTA (3)

Sol.



14. Official Ans. by NTA (3)

