Q1 2021 (01 Sep Shift 2)

Given below are two statements :

Statement I : The nucleophilic addition of sodium hydrogen sulphite to an aldehyde or a ketone involves proton transfer to form a stable ion.

Statement II : The nucleophilic addition of hydrogen cyanide to an aldehyde or a ketone yields amine as final product.

In the light of the above statements, choose the *most appropriate* answer from the options given below :

(1) Both *Statement* I and *Statement* II are true.

(2) *Statement* I is true but *Statement* II is false.

(3) *Statement* I is false but *Statement* II is true.

(4) Both *Statement* I and *Statement* II are false.

Q2 2021 (01 Sep Shift 2)

Experimentally reducing a functional group cannot be done by which one of the following reagents ?

(1) $Pt - C/H_2$

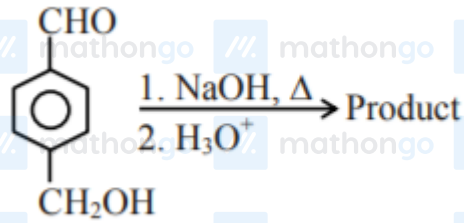
(2) Na/H_2

(3) $Pd - C/H_2$

(4) Zn/H_2O

Q3 2021 (31 Aug Shift 2)

For the reaction given below :



The compound which is *not* formed as a product in the reaction is a :

(1) compound with both alcohol and acid functional groups

(2) monocarboxylic acid

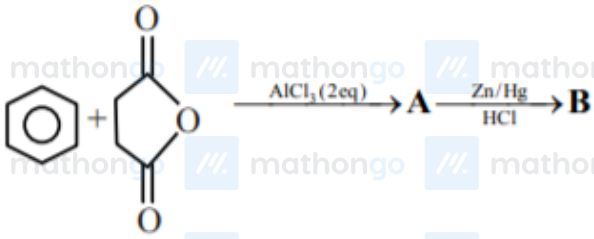
(3) dicarboxylic acid

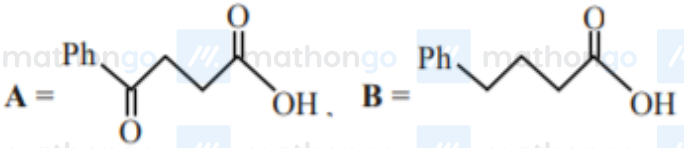
(4) diol

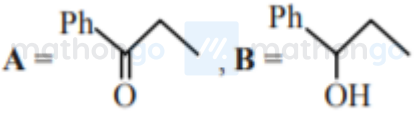
Q4 2021 (31 Aug Shift 2)

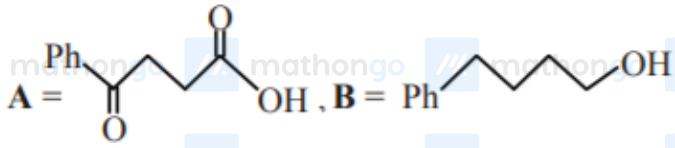
The structures of **A** and **B** formed in the following reaction are :

[Ph = $-C_6H_5$]



(1) 

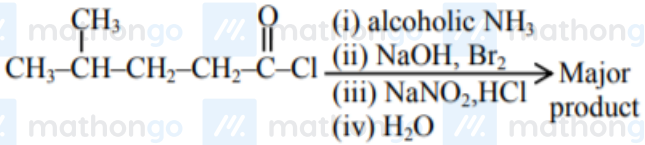
(2) 

(3) 

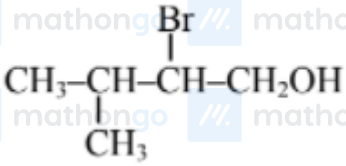
(4) 

Q5 2021 (27 Aug Shift 1)

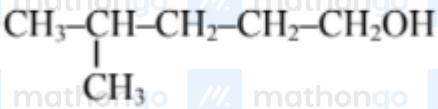
The major product of the following reaction is :



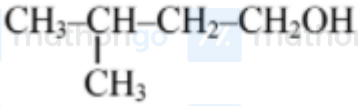
(1)



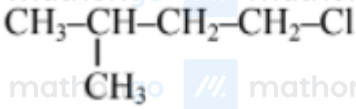
(2)



(3)

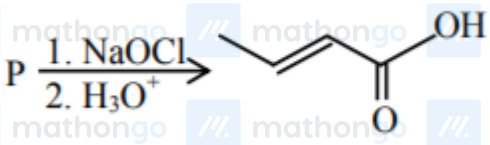


(4)

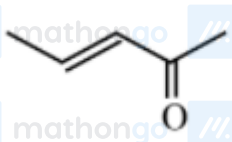


Q6 2021 (27 Aug Shift 1)

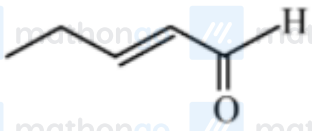
The structure of the starting compound **P** used in the reaction given below is :

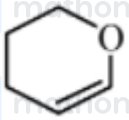


(1)



(2)

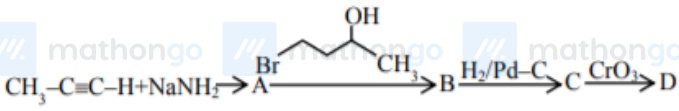


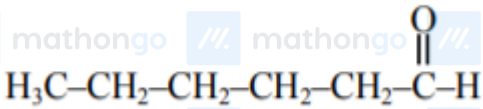
(3) 

(4) 

Q7 2021 (27 Aug Shift 1)

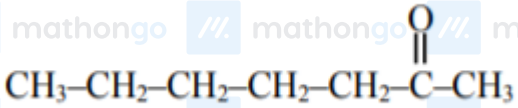
In the following sequence of reactions, the final product D is :



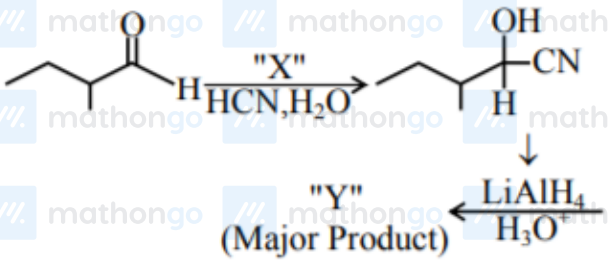
(1) 

(2) $CH_3 - CH = CH - CH_2 - CH_2 - CH_2 - COOH$

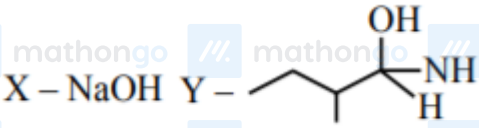
(3) $H_3C - CH = CH - CH(OH) - CH_2 - CH_2 - CH_3$

(4) 

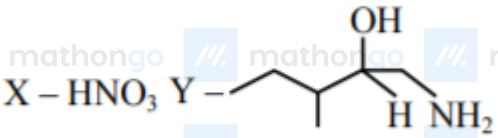
Q8 2021 (26 Aug Shift 2)



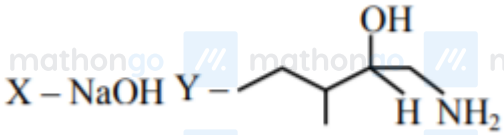
Consider the given reaction, Identify ' $\mathbf{X}'$ and ' $\mathbf{Y}'$:



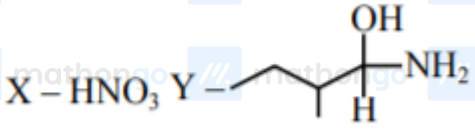
(1)



(2)



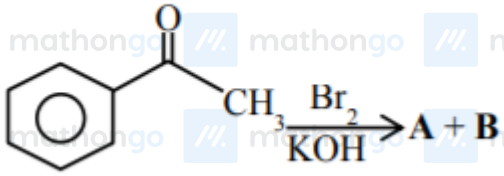
(3)

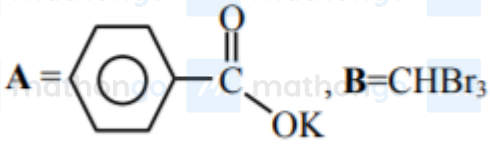


(4)

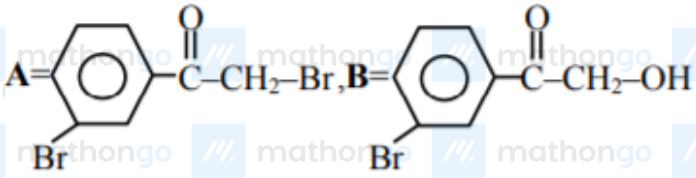
Q9 2021 (26 Aug Shift 1)

The major products formed in the following reaction sequence $\mathbf{A}$ and $\mathbf{B}$ are :

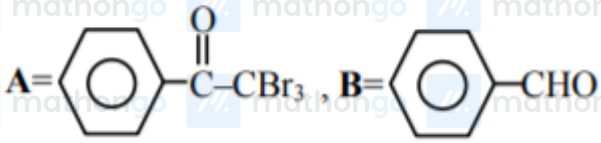



A =
O
C
OK
, B=CHBr3

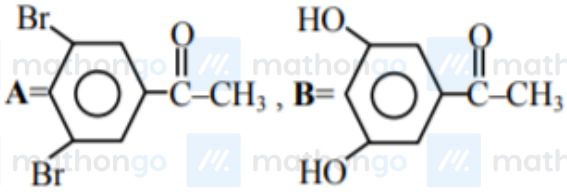
(1)


A=
O
C–CH2–Br
Br
,B=
O
C–CH2–OH
Br

(2)


A=
O
C–CBr3
, B=
CHO

(3)


Br
A=
O
C–CH3
Br
, B=
HO
O
C–CH3
HO

(4)

Answer Key

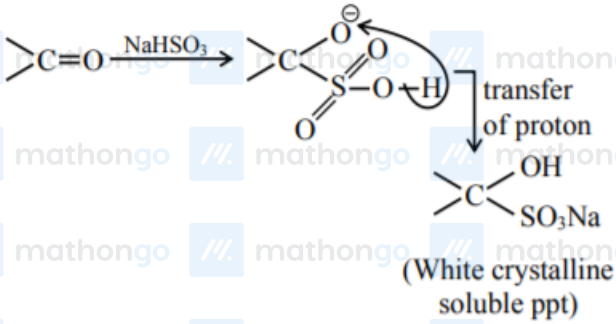
Q1 (2) **Q2** (2) **Q3** (3) **Q4** (1)

Q5 (3) **Q6** (1) **Q7** (4) **Q8** (3)

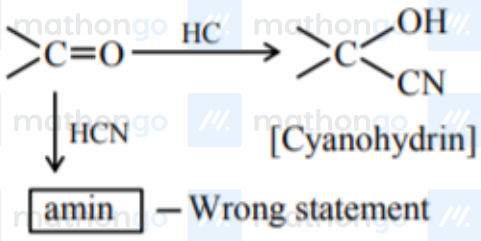
Q9 (1)

Q1 (2)

Statement I : Correct



Statement II :



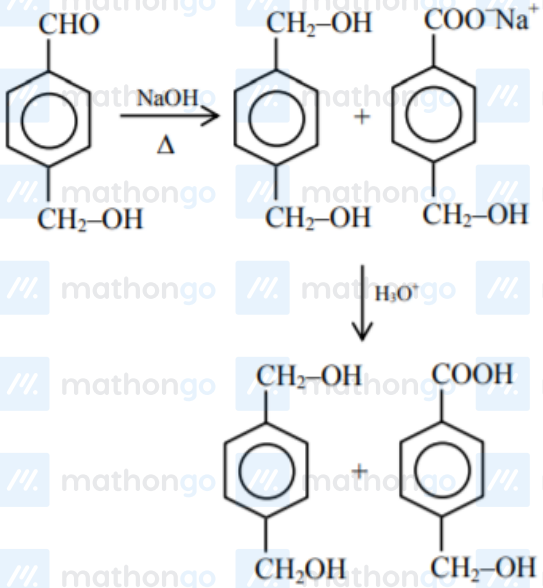
amin – Wrong statement

(Amine not formed)

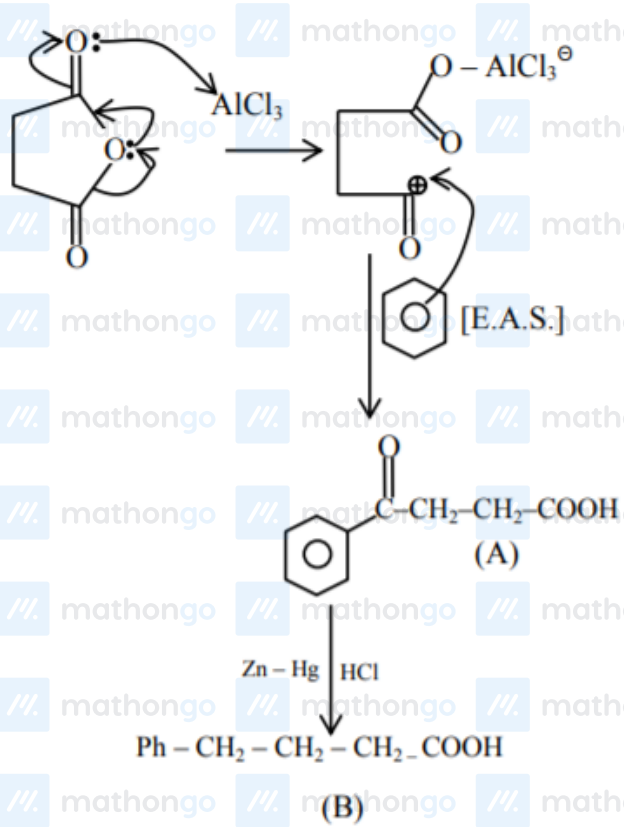
Q2 (2)

Solution NaH_2 is not reducing agent.

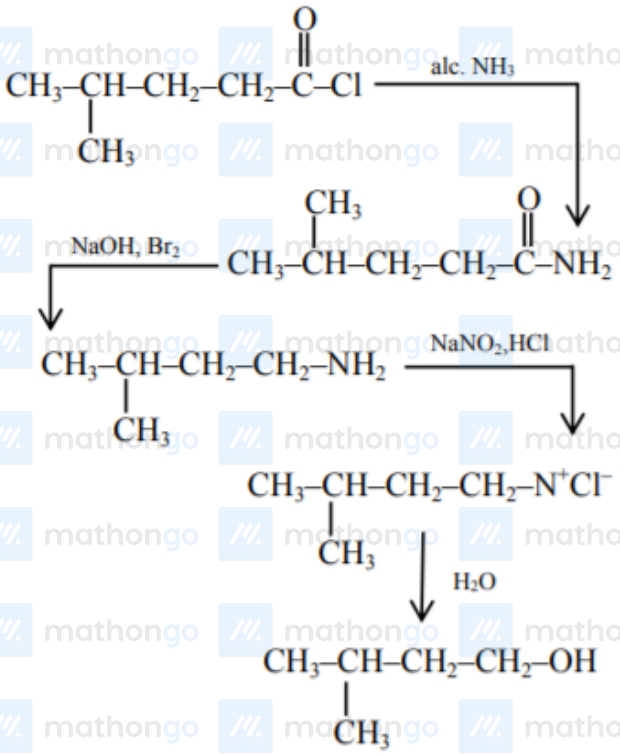
Q3 (3)


CHO
CH2–OH
NaOH
Δ
CH2–OH
CH2–OH
COO⁻Na⁺
CH2–OH
H3O⁺
CH2–OH
CH2OH
COOH
CH2–OH

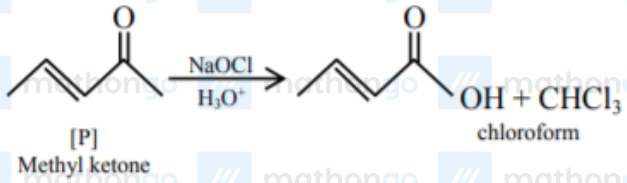
Q4 (1)


O
O
O
AlCl3
O – AlCl3⊖
O
O
[E.A.S.]
O
C–CH2–CH2–COOH
(A)
Zn – Hg
HCl
Ph – CH2 – CH2 – CH2 _ COOH
(B)

Q5 (3)

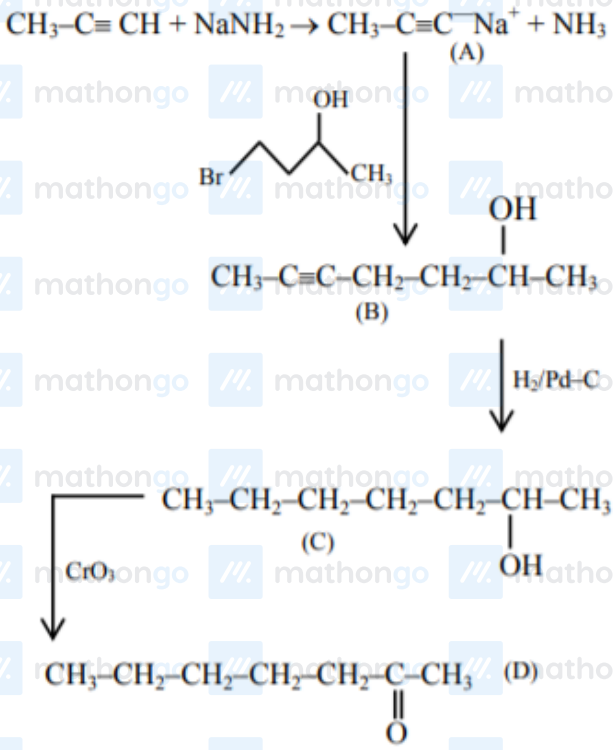


Q6 (1)

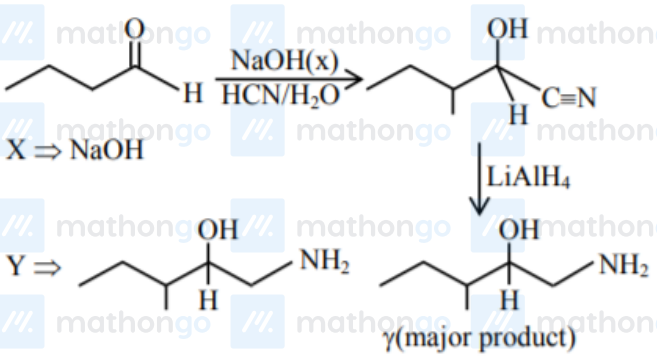


NaOCl is used in haloform reaction as reagent.

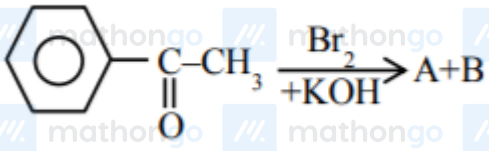
Q7 (4)

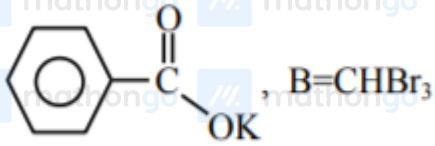

CH3–C≡CH + NaNH2 → CH3–C≡C⁻Na⁺ + NH3
(A)
OH
Br
CH3
OH
CH3–C≡C–CH2–CH2–CH–CH3
(B)
H2/Pd–C
CH3–CH2–CH2–CH2–CH2–CH–CH3
(C)
OH
CrO3
CH3–CH2–CH2–CH2–CH2–C–CH3
(D)
O

Q8 (3)


O
H
NaOH(x)
HCN/H2O
OH
H
C≡N
X ⇒ NaOH
LiAlH4
Y ⇒
OH
NH2
H
OH
NH2
H
γ(major product)

Q9 (1)


C–CH3
O
Br2
+KOH
A+B



(1)