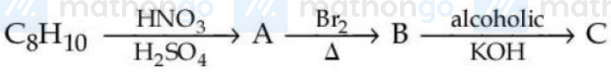
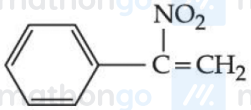
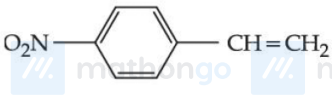
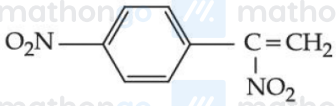
Q1 - 24 June - Shift 1

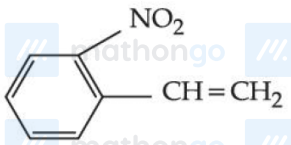
In the given reactions sequence, the major product 'C' is :



(A) 

(B) 

(C) 

(D) 

Space for your notes:

Q2 - 24 June - Shift 2

The conversion of propan-1-ol to n-butylamine involves the sequential addition of reagents. The correct sequential order of reagents is.

(A)(i) $SOCl_2$ (ii) KCN (iii) $H_2/Ni,Na(Hg)/C_2H_5OH$

(B) (i) HCl (ii) H_2/Ni, $Na(Hg)/C_2H_5OH$

(C) (i) $SOCl_2$ (ii) KCN (iii) CH_3NH_2

(D) (i) HCl (ii) CH_3NH_2

Space for your notes:

Q3 - 25 June - Shift 1

The reaction of $R-\underset{\underset{O}{\|}}{C}-NH_2$ with bromine and KOH gives RNH_2 as the end product. Which one of the following is the intermediate product formed in this reaction ?

Space for your notes:

(A) $R-\underset{\underset{O}{\|}}{C}-NH-Br$

(B) $R-NH-Br$

(C) $R-N=C=O$

(D) $R-\underset{\underset{O}{\|}}{C}-NBr_2$

Q4 - 25 June - Shift 2

During halogen test, sodium fusion extract is boiled with concentrated HNO_3 to

Space for your notes:

(A) remove unreacted sodium

(B) decompose cyanide or sulphide of sodium

(C) extract halogen from organic compound

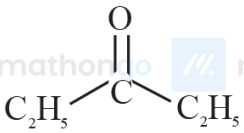
(D) maintain the pH of extract

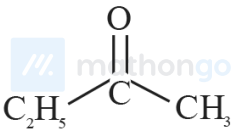
Q5 - 25 June - Shift 2

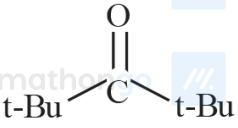
Which of the following ketone will NOT give enamine on treatment with secondary amines?

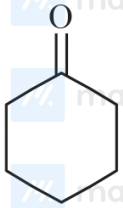
[where t-Bu is $-C(CH_3)_3$]

Space for your notes:

(A) 

(B) 

(C) 

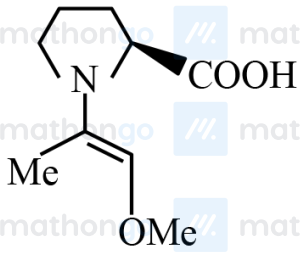
(D) 

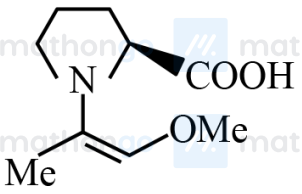
Q6 - 26 June - Shift 1

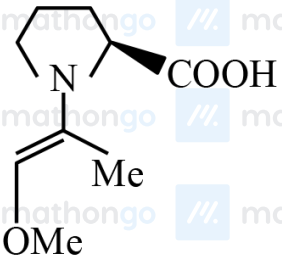
Among the following structures, which will show the most stable enamine formation ?

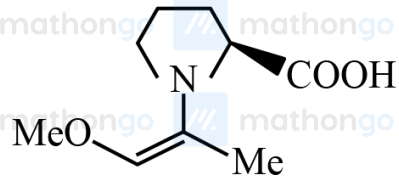
(Where Me is $-CH_3$)

Space for your notes:

(A) 

(B) 

(C) 

(D) 

Q7 - 26 June - Shift 2

Which statement is NOT correct for p-toluenesulphonyl chloride?

Space for your notes:

(1) It is known as Hinsberg's reagent.

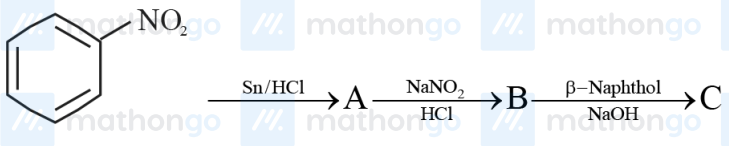
(2) It is used to distinguish primary and secondary amines.

(3) On treatment with secondary amine, it leads to a product, that is soluble in alkali.

(4) It doesn't react with tertiary amines.

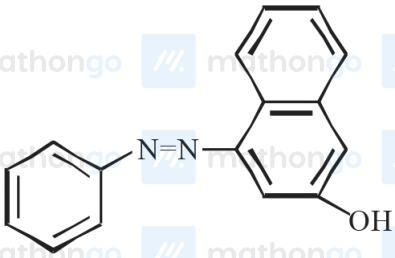
Q8 - 26 June - Shift 2

The final product 'C' is the following series series of reactions

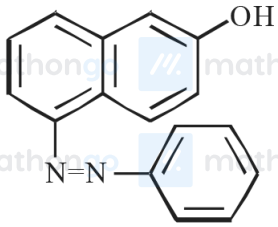


is

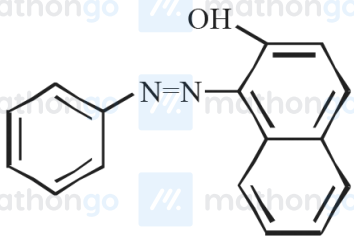
(1)



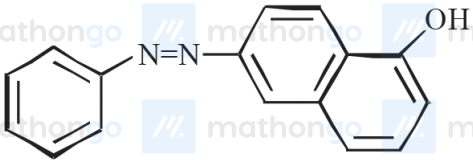
(2)



(3)



(4)



Space for your notes:

Q9 - 27 June - Shift 1

Given below are two statements:

Statements-I : In Hofmann degradation reaction, the migration of only an alkyl group takes place from carbonyl carbon of the amide to the nitrogen atom.

Statement-II : The group is migrated in Hofmann degradation reaction to electron deficient atom.

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

(A)Both **Statement-I** and **Statement-II** are correct

(B) Both **Statement-I** and **Statement-II** are incorrect

(C) **Statement-I** is correct but **Statement-II** is incorrect

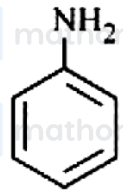
(D) **Statement-I** is incorrect but **Statement-II** is correct

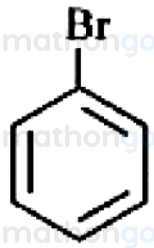
Space for your notes:

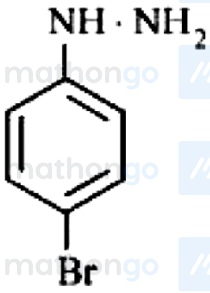
Q10 - 28 June - Shift 1

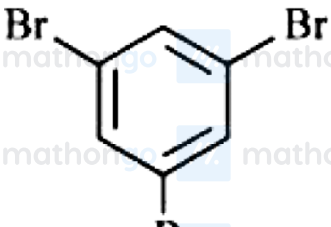
Identify the major product formed in the following sequence of reactions :

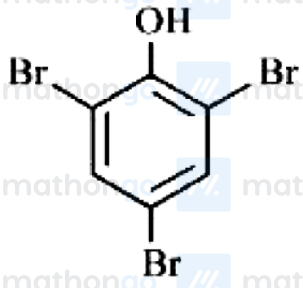
Space for your notes:



(A) 

(B) 

(C) 

(D) 

Q11 - 28 June - Shift 1

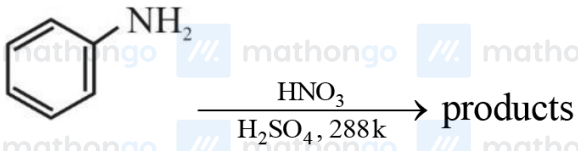
A primary aliphatic amine on reaction with nitrous acid in cold (273 K) and there after raising temperature of reaction mixture to room temperature (298 K). Gives a/an

Space for your notes:

(A) nitrile (B) alcohol
(C) diazonium salt (D) secondary amine

Q12 - 28 June - Shift 2

With respect to the following reaction, consider the given statements :



(A) o-Nitroaniline and p-nitroaniline are the predominant products

(B) p-Nitroaniline and m-nitroaniline are the predominant products

(C) HNO_3 acts as an acid

(D) H_2SO_4 acts as an acid

(A) (A) and (C) are correct statements.

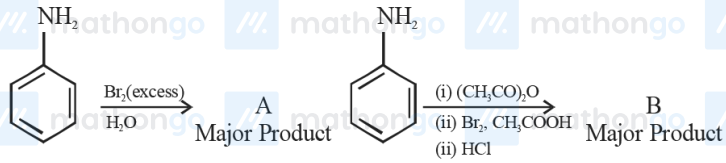
(B) (A) and (D) are correct statements.

(C) (B) and (D) are correct statements.

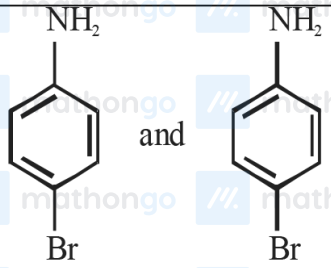
(D) (B) and (C) are correct statements.

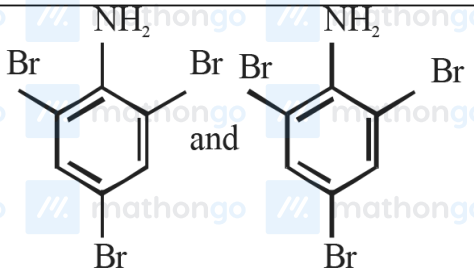
Space for your notes:

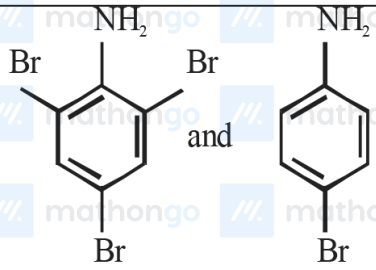
Q13 - 29 June - Shift 1

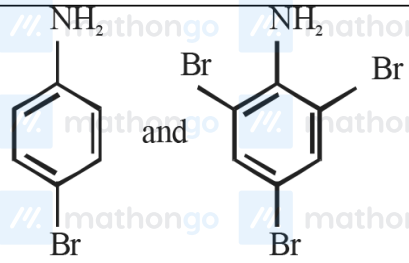


Consider the above reaction, the product A and product B respectively are

(A) 

(B) 

(C) 

(D) 

Space for your notes:

Answer Key

Q1 (B) **Q2** (A) **Q3** (C) **Q4** (B)

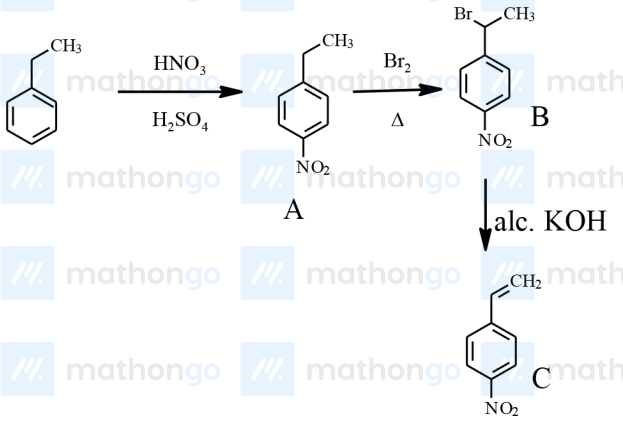
Q5 (C) **Q6** (C) **Q7** (C) **Q8** (C)

Q9 (D) **Q10** (C) **Q11** (B) **Q12** (C)

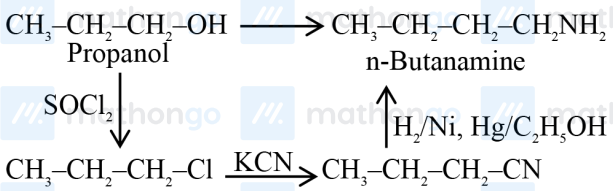
Q13 (C)

Q1 (B)

C_8H_{10} DU = 9 –5 = 4

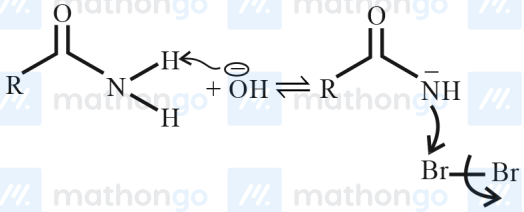


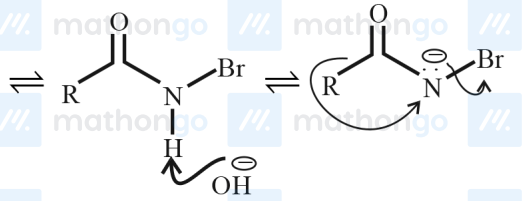
Q2 (A)

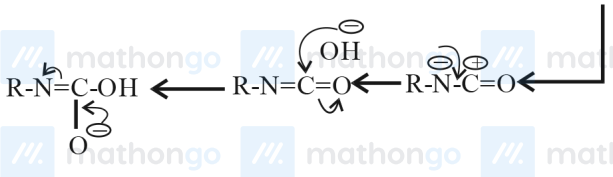


Q3 (C)

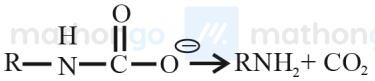
The given reaction is Hoffmann-Bromide degradation method.







Proton transfer

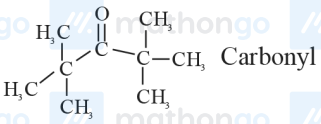


Q4 (B)

Sodium fusion extract is boiled with concentrated HNO_3 to remove sodium cyanide and sodium sulphide

Q5 (C)

Enamine formation is an example of nucleophilic addition elimination reaction

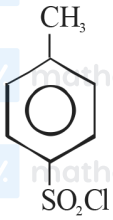
Since in ketone  Carbonyl

Group is highly sterically hindered hence attack of nucleophile will not be possible.

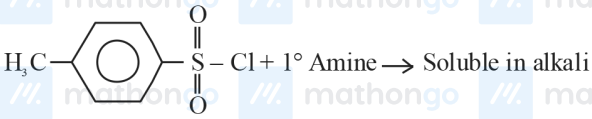
Q6 (C)

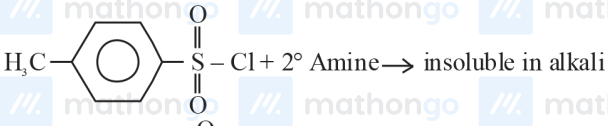
All these enamines are interconvertible through their resonating structures. So most stable form is 'C' due to steric factor.

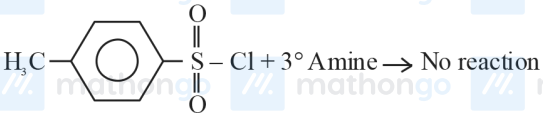
Q7 (C)



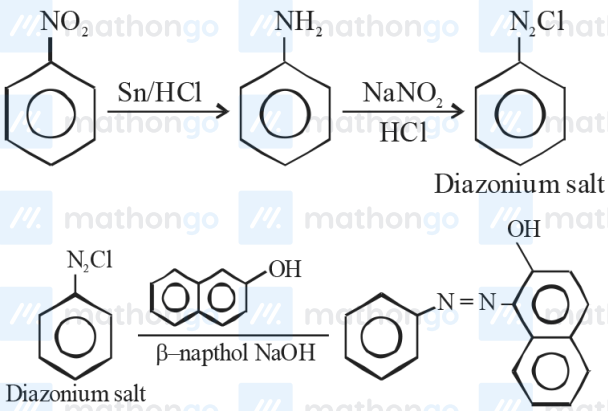
Hinsberg's reagent







Q8 (C)



Q9 (D)

$$R - CO - NH_2 + Br_2 + NaOH \rightarrow$$

$$R - NH_2 + Na_2CO_3 + NaBr + H_2O$$

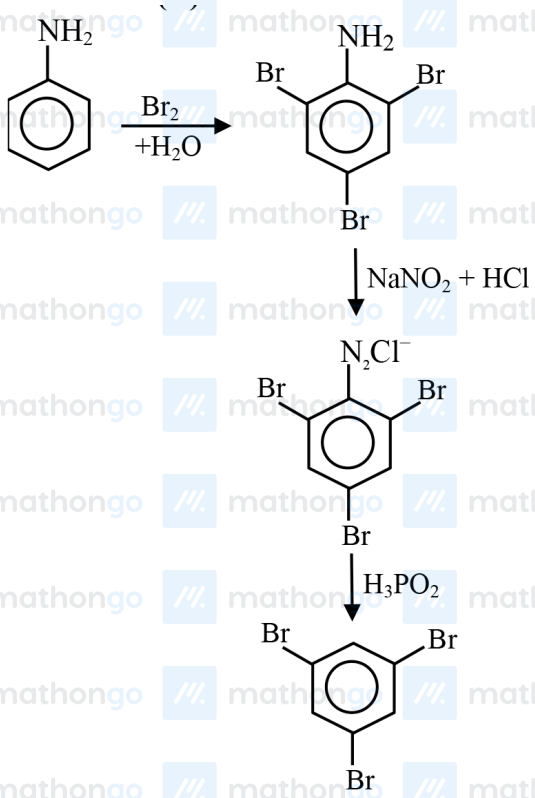
$$R - CO - NH_2 + \bar{O}H \rightarrow R - CO - \bar{N}H \xrightarrow{Br_2}$$

$$R - CO - NH - Br \xrightarrow{OH^-} R - CO - \bar{N} - Br$$

$$\xrightarrow{\text{migration of R}} R - NCO \xrightarrow{2\bar{O}H} RNH_2 + CO_3^{2-}$$

In this reaction of alkyl as well as aryl group can migrate to electron deficient nitrogen atom.

Q10 (C)

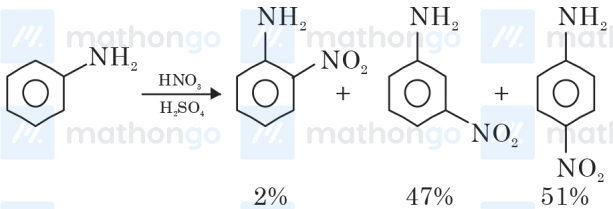


Sol.

Q11 (B)

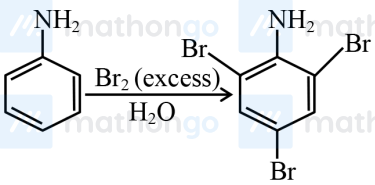
$$R-NH_2 \xrightarrow[+HCl]{NaNO_2} R-N_2^+ \rightarrow R^+ \xrightarrow[H_2O]{} R-OH$$

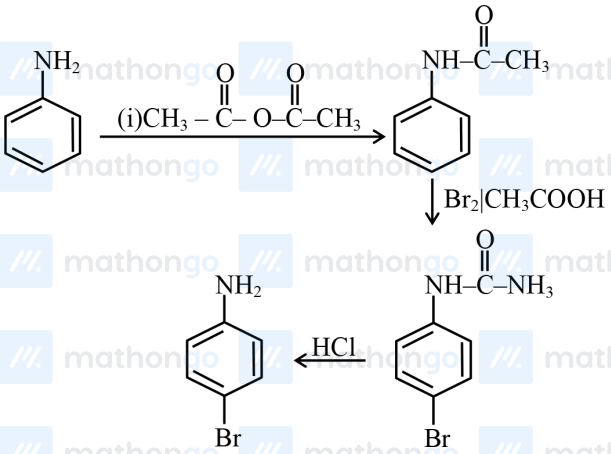
Q12 (C)



$$\underset{\text{Base}}{HNO_3} + \underset{\text{Acid}}{H_2SO_4} \rightarrow NO_2^+$$

Q13 (C)


NH2
Br2 (excess)
H2O
NH2
Br
Br
Br


NH2
(i)CH3 – C– O–C–CH3
O
O
NH–C–CH3
O
Br2|CH3COOH
NH2
HCl
NH–C–NH3
O
Br
Br