Q1 - 25 July - Shift 2

$$CH_3-CH_2-CN \xrightarrow[\text{Ether}]{CH_3MgBr} A \xrightarrow{H_3O^+} B \xrightarrow[HCl]{Zn-Hg} C$$

The correct structure of C is

(A) $CH_3—CH_2—CH_2—CH_3$

(B) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-CH_3$

(C) $CH_3-CH_2-\overset{\overset{OH}{|}}{CH}-CH_3$

(D) $CH_3—CH_2—CH=CH_2$

Space for your notes:

Q2 - 26 July - Shift 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**

Assertion (A) : Experimental reaction of CH_3Cl with aniline and anhydrous $AlCl_3$ does **not** give o and p-methylaniline.

Reason (R) : The — NH_2 group of aniline becomes deactivating because of salt formation with anhydrous $AlCl_3$ and hence yields *m*-methyl aniline as the product.

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

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(C) (A) is true, but (R) is false.

(D) (A) is false, but (R) is true.

Space for your notes:

Q3 - 26 July - Shift 2

Hydrolysis of which compound will give carbolic acid ?

(A) Cumene

(B) Benzenediazonium chloride

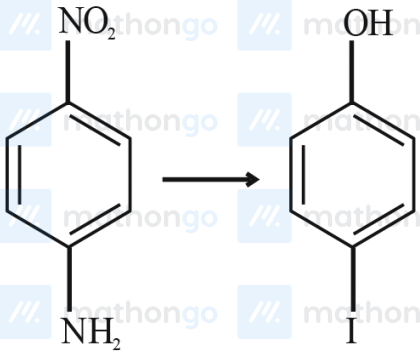
(C) Benzal chloride

(D) Ethylene glycol ketal

Space for your notes:

Q4 - 26 July - Shift 2

The correct sequential order of the reagents for the given reaction is :



(A) HNO_2, Fe/H^+, HNO_2, KI, H_2O/H^+

(B) HNO_2, KI, Fe/H^+, HNO_2, H_2O/warm

(C) HNO_2, KI, HNO_2, Fe/H^+, H_2O/H^+

(D) HNO_2, Fe/H^+, KI, HNO_2, H_2O/warm

Space for your notes:

Q5 - 27 July - Shift 1

Match **List I** with **List II**

List I	**List II**
A. Benzenesulphonyl chloride	I. Test for primary amines
B. Hoffmann bromamide reaction	II. Anti Saytzeff
C. Carbylamine reaction	III. Hinsberg reagent
D. Hoffmann orientation	IV. Known reaction of Isocyanates.

Choose the correct answer from the options given below:

(A) A-IV, B –III, C-II, D-I

(B) A-IV, B –II, C-I, D-III

(C) A-III, B –IV, C-I, D-II

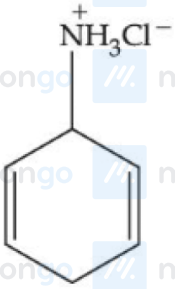
(D) A-IV, B –III, C-I, D-II

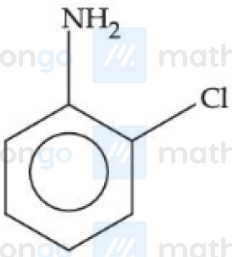
Space for your notes:

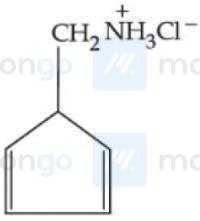
Q6 - 27 July - Shift 2

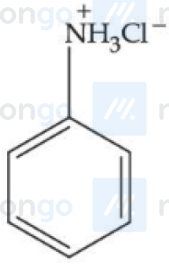
An organic compound 'A' contains nitrogen and chlorine. It dissolves readily in water to give a solution that turns litmus red. Titration of compound 'A' with standard base indicates that the molecular weight of 'A' is 131 ± 2. When a sample of 'A' is treated with aq. NaOH, a liquid separates which contains N but not Cl. Treatment of the obtained liquid with nitrous acid followed by phenol gives orange precipitate. The compound 'A' is :

Space for your notes:

(A) 

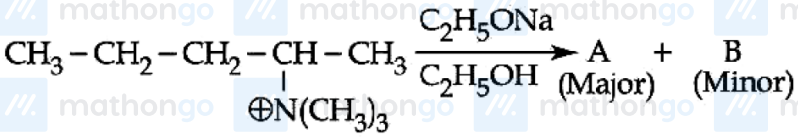
(B) 

(C) 

(D) 

Q7 - 28 July - Shift 1

Identify the correct statement for the below given transformation.



(A) A - $CH_3CH_2CH=CH-CH_3$,

B – $CH_3CH_2CH_2CH=CH_2$,

Saytzeff products

(B) A - $CH_3CH_2CH=CH-CH_3$,

B – $CH_3CH_2CH_2CH=CH_2$,

Hafmann products

(C) A - $CH_3CH_2CH_2CH=CH_2$,

B – $CH_3CH_2CH=CHCH_3$,

Hofmann products

(D) A - $CH_3CH_2CH_2CH=CH_2$,

B – $CH_3CH_2CH=CHCH_3$,

Saytzeff products

Space for your notes:

Q8 - 28 July - Shift 2

Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R**

Assertion A : Aniline on nitration yields ortho, meta & para nitro derivatives of aniline.

Reason R: Nitrating mixture is a strong acidic mixture.

In the light of the above statements, choose the ***correct*** answer from the options given below

(A) Both A and R are true and R is the correct explanation of A

(B) Both A and R are true but R is NOT the correct explanation of A

(C) A is true but R is false

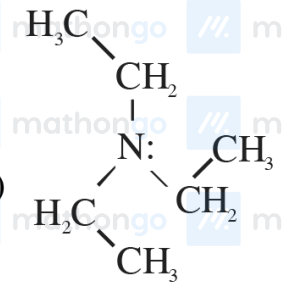
(D) A is false but R is true

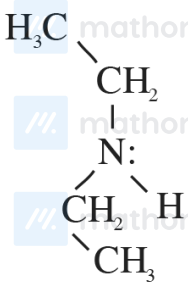
Space for your notes:

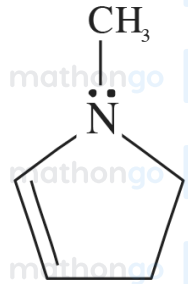
Q9 - 29 July - Shift 1

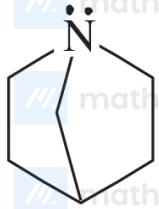
Which among the following is the strongest Bronsted base ?

Space for your notes:

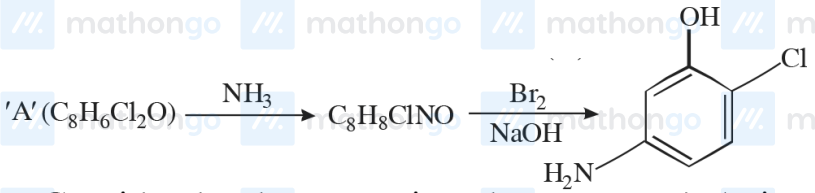
(A) 

(B) 

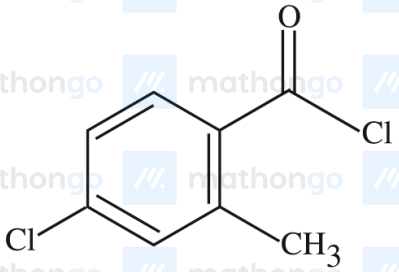
(C) 

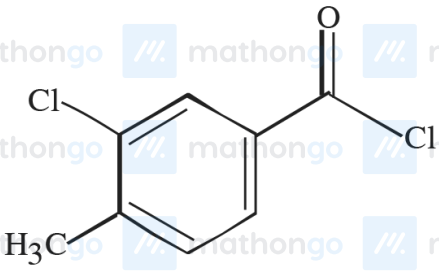
(D) 

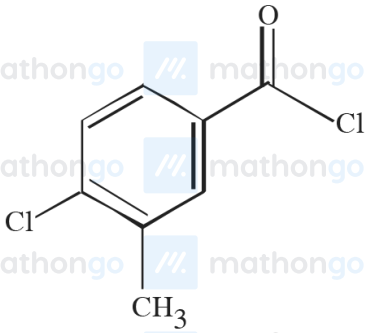
Q10 - 29 July - Shift 1



Consider the above reaction, the compound 'A' is :

(A) 

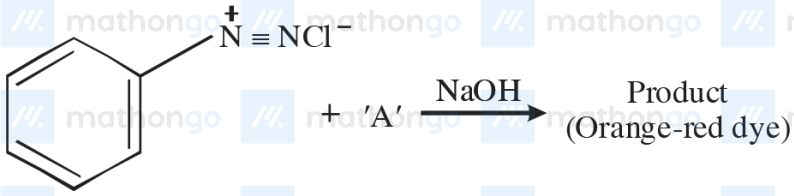
(B) 

(C) 

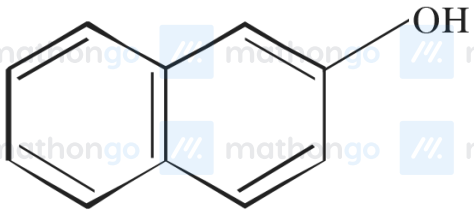
(D) 

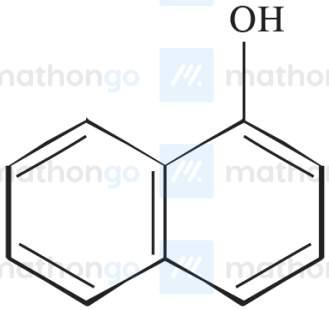
Q11 - 29 July - Shift 1

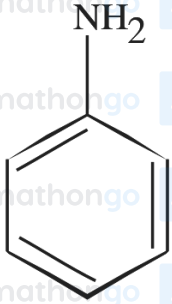
Space for your notes:

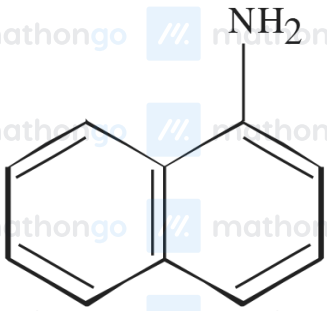


Which among the following represent reagent 'A'?

(A) 

(B) 

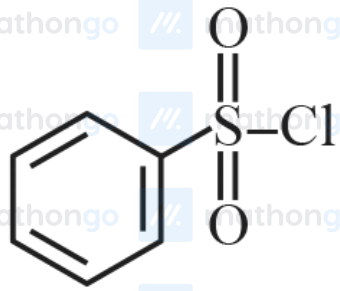
(C) 

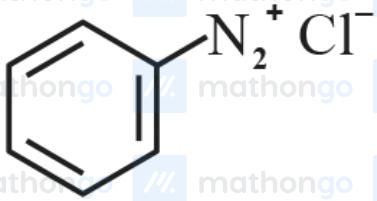
(D) 

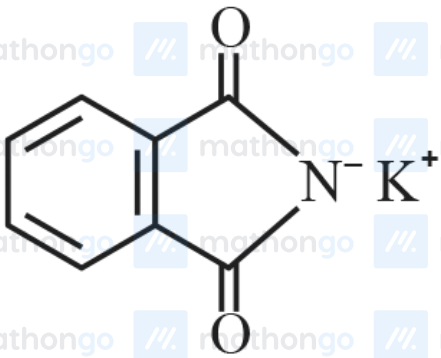
Space for your notes:

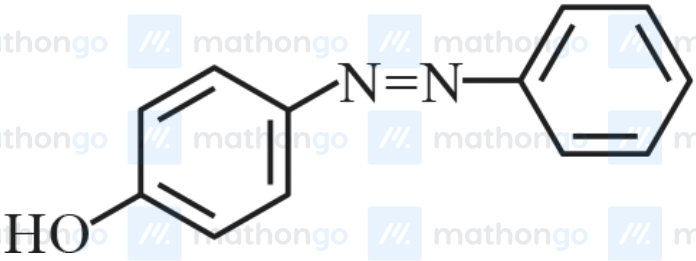
Q12 - 29 July - Shift 2

The Hinsberg reagent is :

(A) 

(B) 

(C) 

(D) 

Space for your notes:

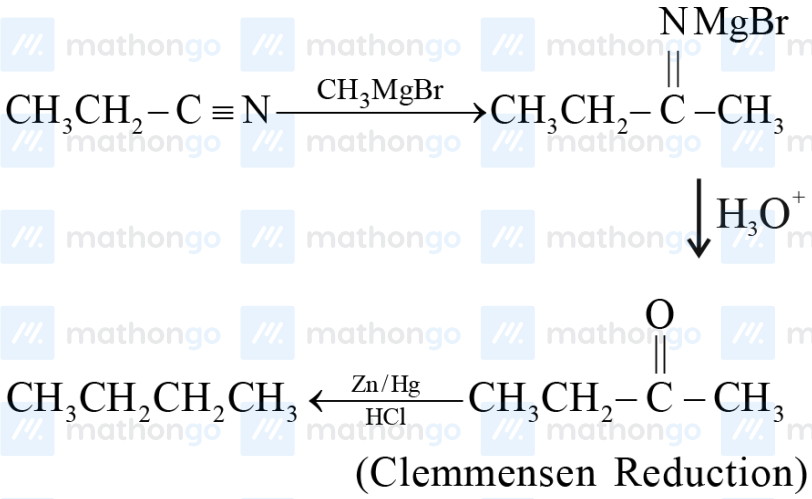
Answer Key

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

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

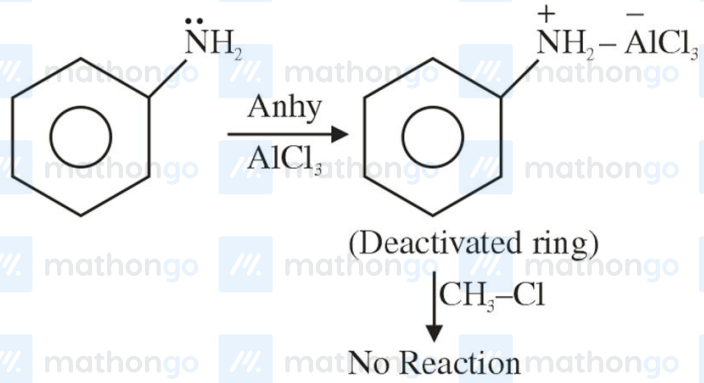
Q9 (D) **Q10** (C) **Q11** (A) **Q12** (A)

Q1 (A)



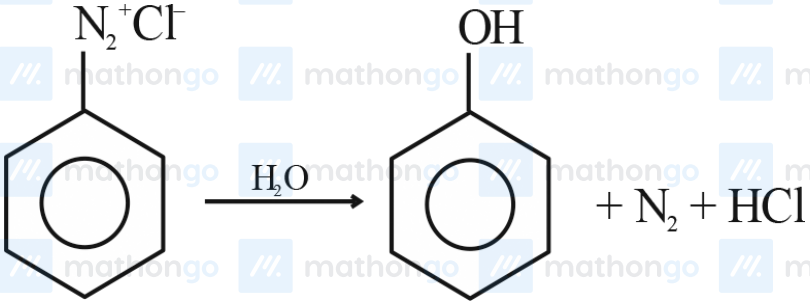
(Clemmensen Reduction)

Q2 (C)

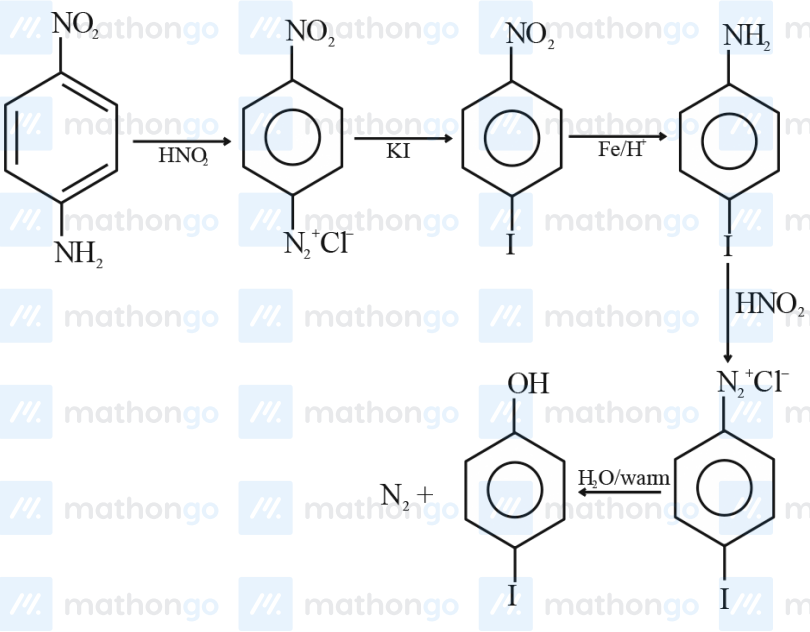


Friedel Craft Alkylation does not occur on this deactivated ring.

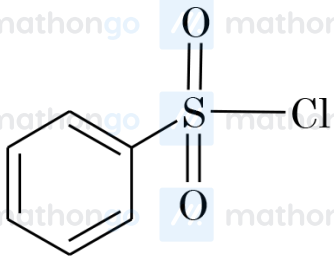
Q3 (B)



Q4 (B)



Q5 (C)

(A)  → Hinsberg reagent

Benzen sulphonyl chloride

(B) Hoffmann bromamide reaction → known reaction of isocynates

$R-CO-NH_2 + X_2 + 4\,NaOH \rightarrow R\text{-}NH_2 + 2NaX + Na_2CO_3 + 2H_2O$

Intermediate : R- N = C = O (isocyanate)

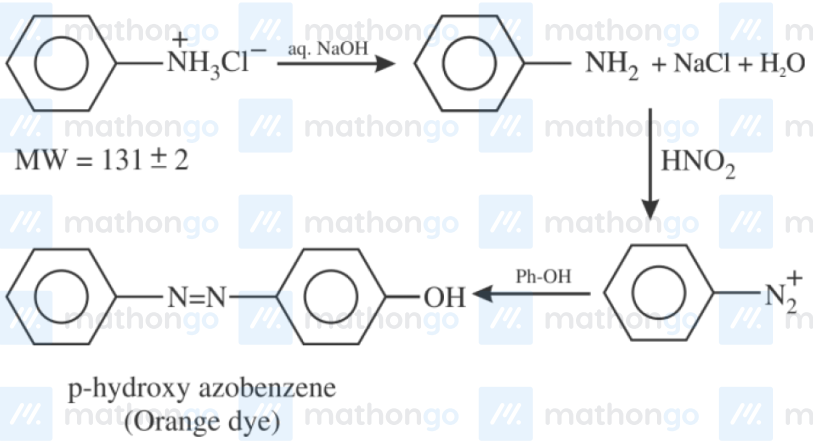
(C) Carbylamine reaction → Test for primary amine

$R\text{-}NH_2$ or $Ar-NH_2 + CHCl_3 + 3KOH \rightarrow RNC$ or $Ar\text{-}NC + 3KCl + 3H_2O$

(D) Hoffmann orientation → Anti saytzeff

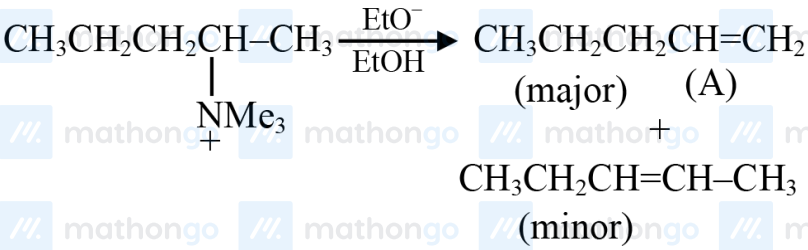
(Formation of less substituted alkene as major product)

Q6 (D)

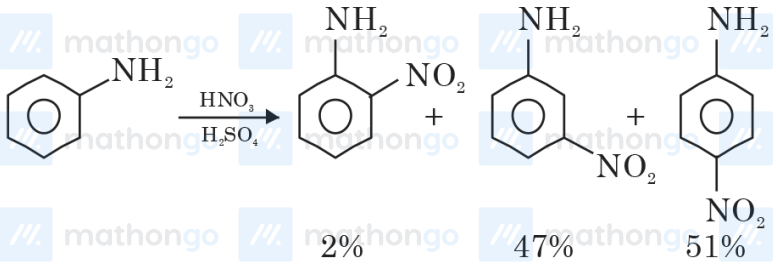


p-hydroxy azobenzene
(Orange dye)

Q7 (C)

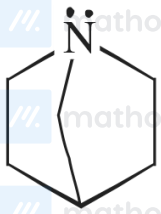


Q8 (A)



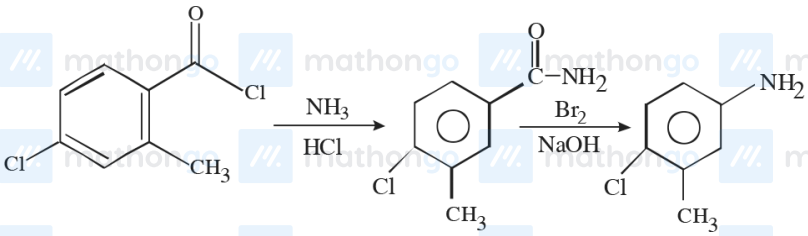
Due to formation of anilinium ion in acidic medium meta product is also obtained in significant amount

Q9 (D)

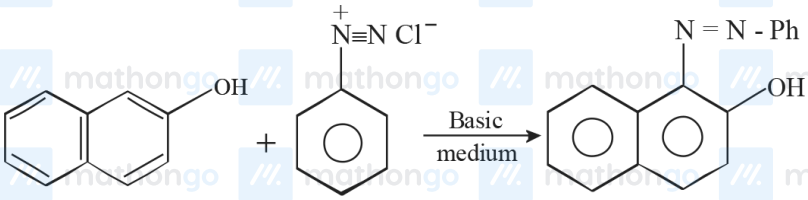


It is most basic because there is no amine inversion.

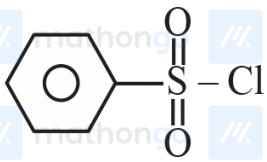
Q10 (C)



Q11 (A)



Q12 (A)



B.S.C (Benzene sulphonyl chloride) is known's Hinsberg Reagent