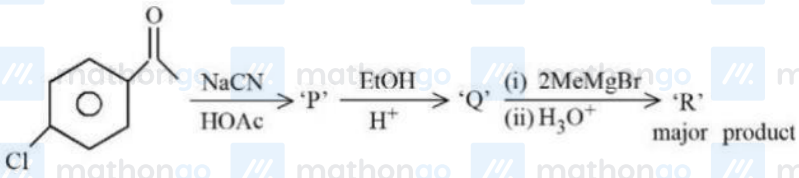
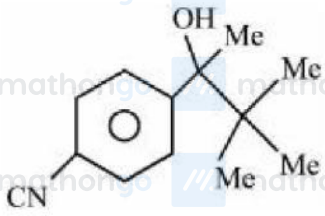
**Q1 - 24 January - Shift 1**

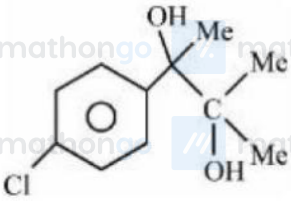
'R' formed in the following sequence of reaction is:



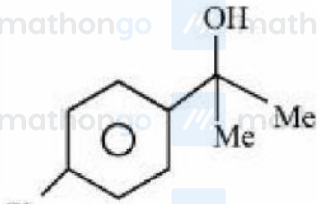

(1)



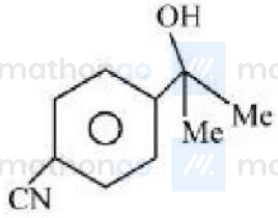

(2)




(3)




(4)




*Space for your notes:*

**Q2 - 25 January - Shift 1**

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

**Assertion A** : Acetal/Ketal is stable in basic medium.

**Reason R** : The high leaving tendency of alkoxide ion gives the stability to acetal/ketal in basic medium.

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

(1) A is true but R is false

(2) A is false but R is true

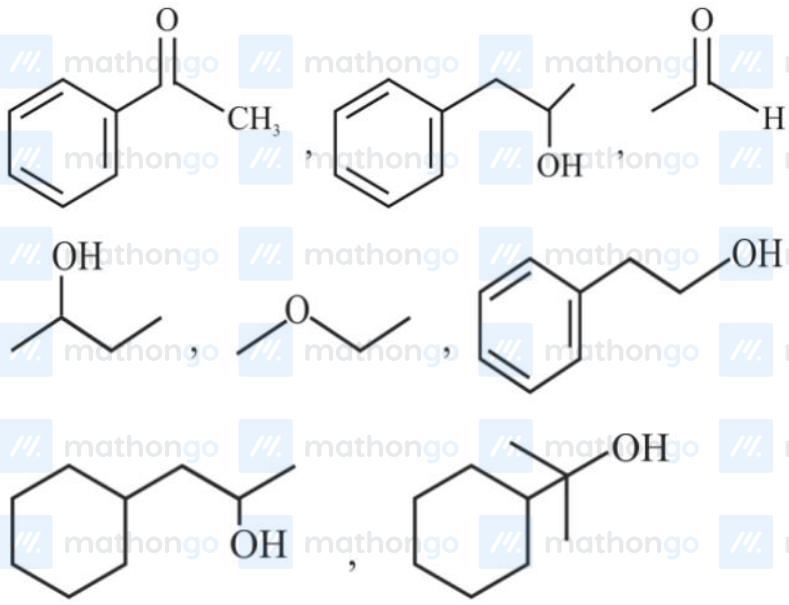
(3) Both A and R are true and R is the correct explanation of A

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

*Space for your notes:*

**Q3 - 25 January - Shift 2**

Number of compounds giving (i) red colouration with ceric ammonium nitrate and also (ii) positive iodoform test from the following is _____

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**Q4 - 29 January - Shift 1**

| List-I | List-II |
|---|---|
| Reaction | Reagents |
| (A) Hoffmann Degradation | (I) Conc.KOH, Δ |
| (B) Clemenson reduction | (II) $CHCl_3$, $NaOH/H_3O^+$ |
| (C) Cannizaro reaction | (III) $Br_2$, NaOH |
| (D) Reimer-Tiemann reaction | (IV) Zn-Hg/HCl |

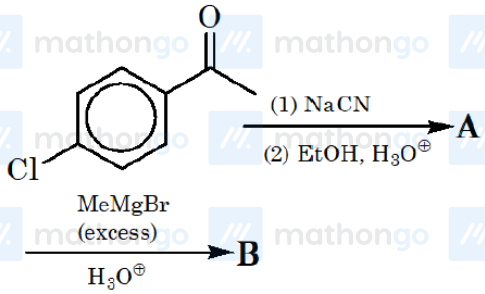
(1) (A) – III, (B) – IV, (C) – II, (D) - I
(2) (A) – II, (B) – IV, (C) – I, (D) - III
(3) (A) – III, (B) – IV, (C) – I, (D) - II
(4) (A) – II, (B) – I, (C) – III, (D) - IV

*Space for your notes:*

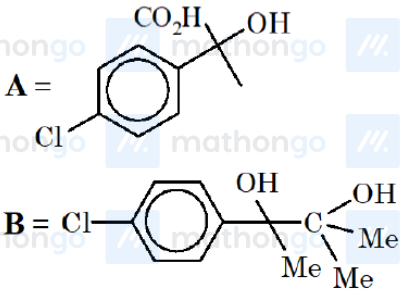
**Q5 - 29 January - Shift 2**

*Space for your notes:*

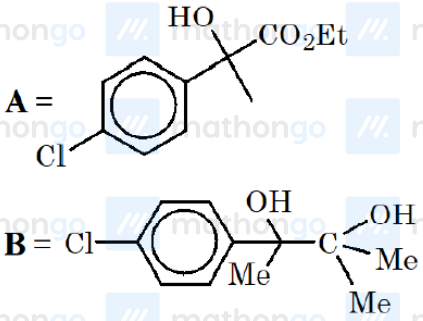
Find out the major products from the following reaction sequence.



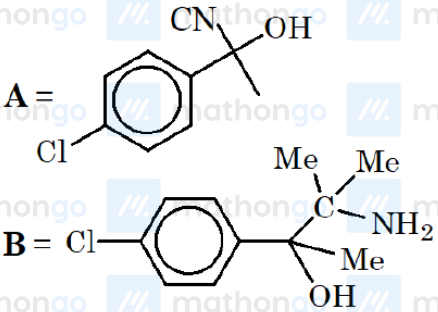

(1)



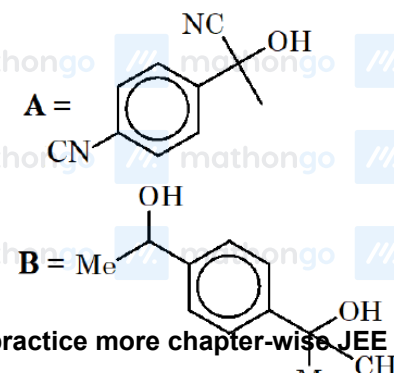

(2)




(3)




(4)

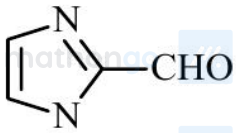


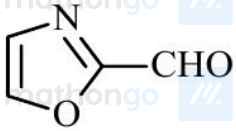
**Q6 - 30 January - Shift 1**

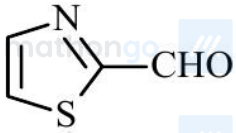
Which of the following compounds would give the following set of qualitative analysis ?

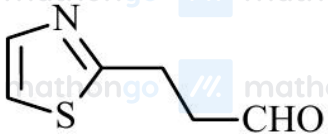
(i) Fehling's Test : Positive

(ii) Na fusion extract upon treatment with sodium nitroprusside gives a blood red colour but not

(1) 

(2) 

(3) 

(4) 

*Space for your notes:*

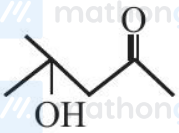
**Q7 - 30 January - Shift 1**

A trisubstituted compound 'A', $C_{10}H_{12}O_2$ gives neutral $FeCl_3$ test positive. Treatment of compound 'A' with NaOH and $CH_3Br$ gives $C_{11}H_{14}O_2$ , with hydroiodic acid gives methyl iodide and with hot conc. NaOH gives a compound B, $C_{10}H_{12}O_2$ . Compound 'A' also decolorises alkaline $KMnO_4$ . The number of $\pi$ bond/s present in the compound 'A' is _____.

*Space for your notes:*

**Q8 - 30 January - Shift 2**

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

**Assertion A :**  can be easily reduced using Zn-Hg/ HCl to 

**Reason R :** Zn-Hg/HCl is used to reduce carbonyl group to $-CH_2-$ group.

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

(1) A is false but R is true

(2) A is true but R is false

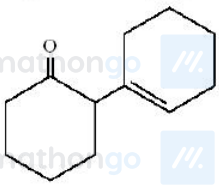
(3) Both A and R are true but R is not the correct explanation of A

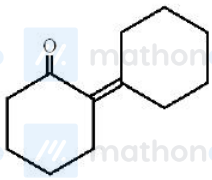
(4) Both A and R are true and R is the correct explanation of A

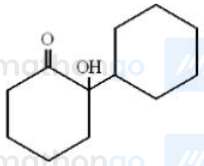
*Space for your notes:*

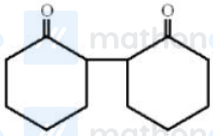
**Q9 - 31 January - Shift 2**

Cyclohexylamine when treated with nitrous acid yields (P). On treating (P) with PCC results in (Q). When (Q) is heated with dil. NaOH we get (R) The final product (R) is :

(1) 

(2) 

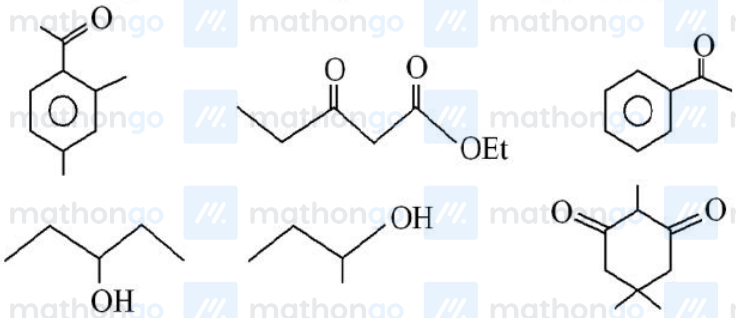
(3) 

(4) 

*Space for your notes:*

**Q10 - 31 January - Shift 2**

The number of molecules which gives haloform test among the following molecules is _____ .



*Space for your notes:*

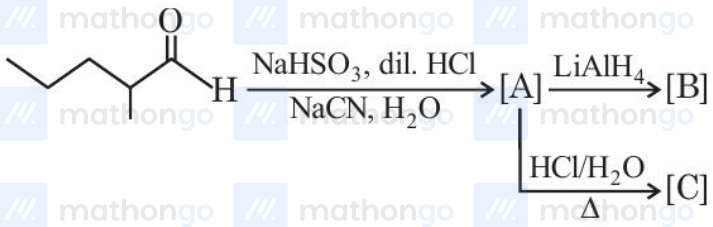
**Q11 - 01 February - Shift 1**

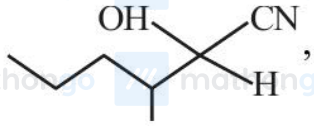
Number of isomeric compounds with molecular formula $C_9H_{10}O$ which (i) do not dissolve in NaOH (ii) do not dissolve in HCl. (iii) do not give orange precipitate with 2, 4 – DNP (iv) on hydrogenation give identical compound with molecular formula $C_9H_{12}O$ is _____ .

*Space for your notes:*

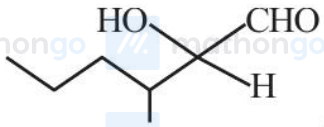
**Q12 - 01 February - Shift 2**

The structures of major products A, B and C in the following reaction are sequence.

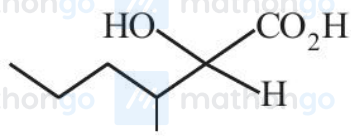


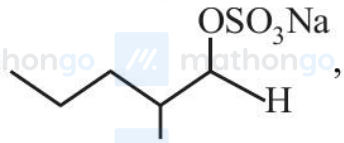

(1) A = 

,

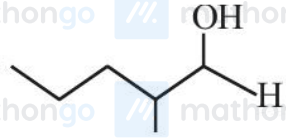
B = 

,

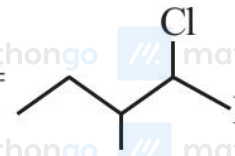
C = 

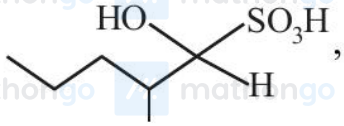

(2) A = 

,

B = 

,

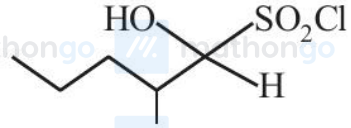
C = 

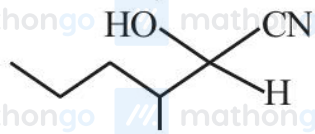

(3) A = 

,

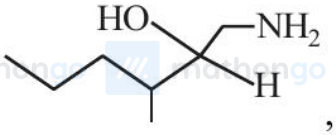
B = 

,

C = 


(4) A = 

,

B = 

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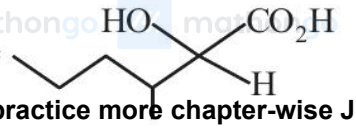
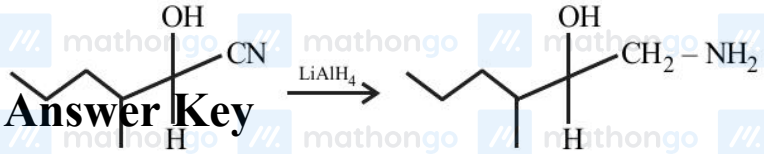
C = 


*Space for your notes:*

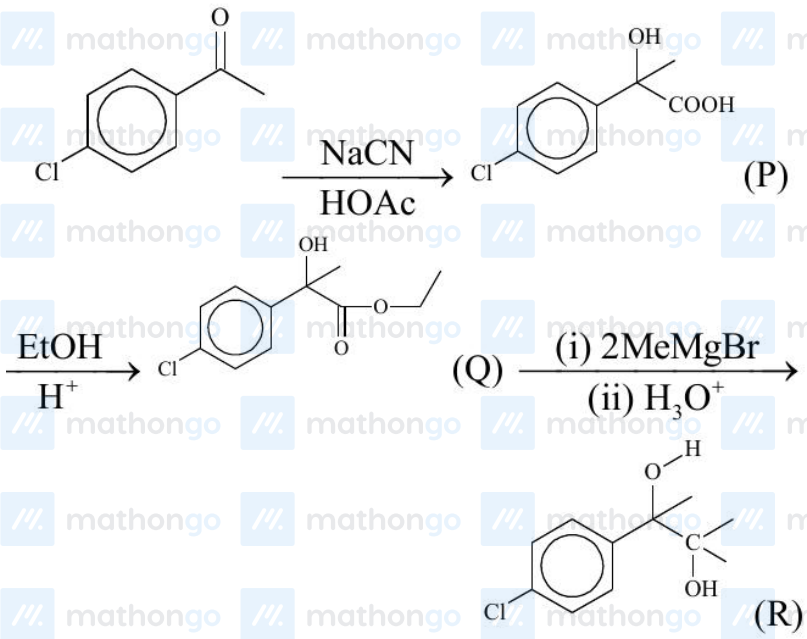



# Answer Key

**(As per Official NTA Key released on 2 Feb)**

| | | | |
|---|---|---|---|
| **Q1** (2) | **Q2** (1) | **Q3** (3) | **Q4** (3) |
| **Q5** (2) | **Q6** (4) | **Q7** (4) | **Q8** (1) |
| **Q9** (2) | **Q10** (3) | **Q11** (2) | **Q12** (4) |

**Q1 (2)**



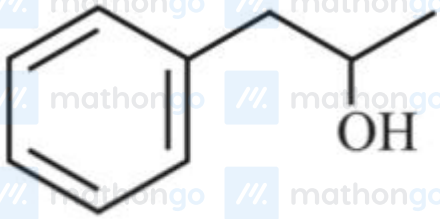

**Q2 (1)**

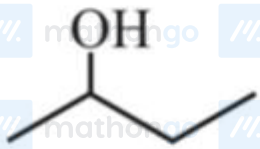
For Assertion :Acetal and ketals are basically ethers hence they must be stable in basic medium but should break down in acidic medium.

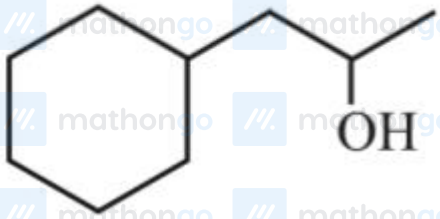
Hence assertion is correct.

For reason: Alkoxide ion ($RO^-$) is not considered a good leaving group hence reason must be false.

**Q3 (3)**



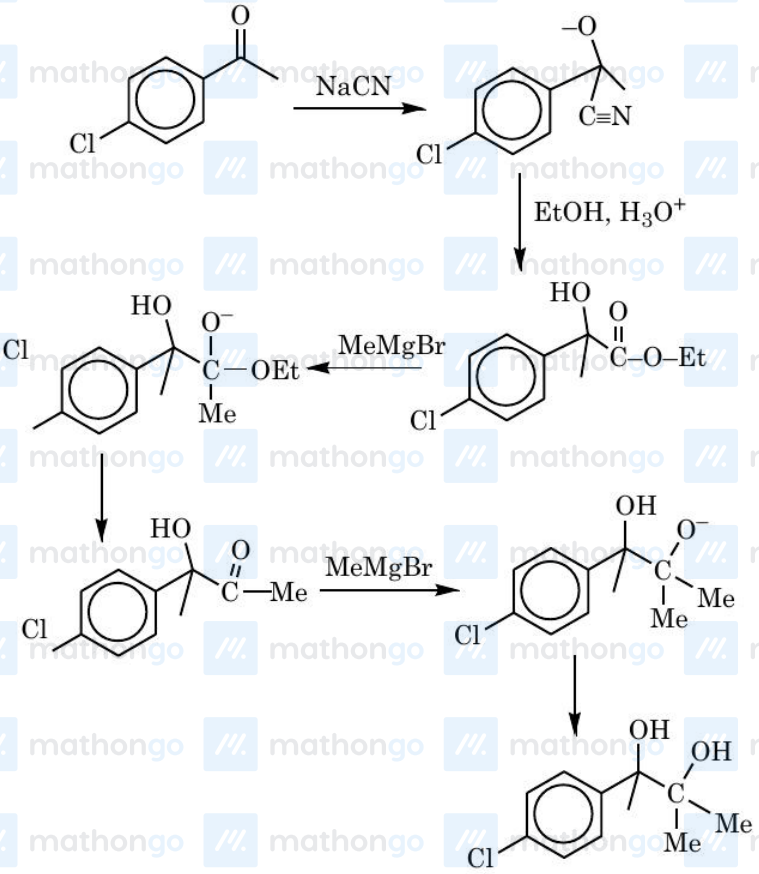




Q4 (3)

| Reactions | Reagent used |
|---|---|
| (A) Hoffmann degradation | $Br_2/NaOH$ |
| (B) Clemenson reduction | Zn– Hg/HCl |
| (C) Cannizaro reaction | conc.KOH/Δ |
| (D) Reimer-Tiemann reaction | $CHCl_3$, $NaOH/H_3O^+$ |

Q5 (2)



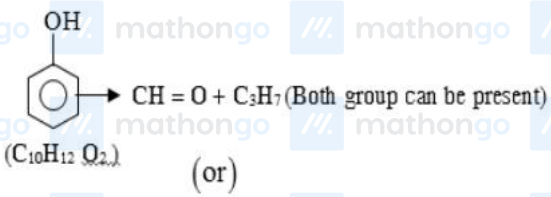

**Q6 (4)**

Aromatic aldehydes do not give Fehling's test..

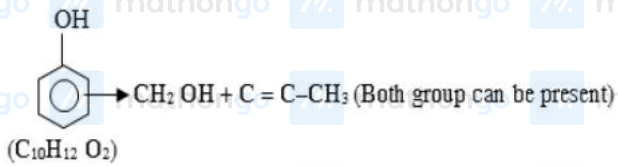
Both nitrogen and sulfur must be present to obtain blood red colour

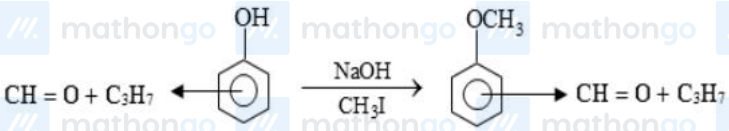
Sodium nitroprusside gives blood red colour with S & N.

**Q7 (4)**

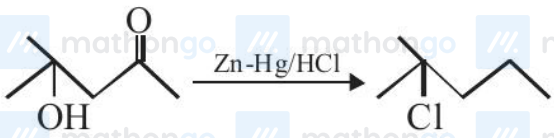



(or)



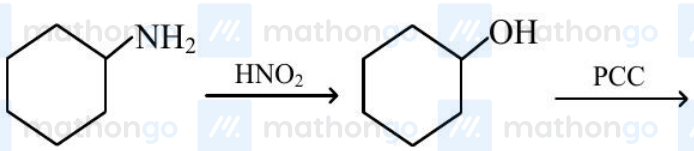



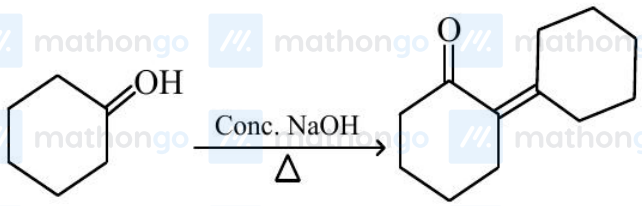

**Q8 (1)**




The acid sensitive alcohol group reacts with HCl, hence Clemmenson reduction is not suitable for above conversion.

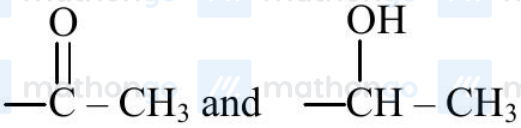
**Q9 (2)**




**Q10 (3)**

Molecules having



gives positive haloform test.

**Q11 (2)**

As per the language of given question, the best possible isomeric structure is $Ph - CH = CH - O - CH_3$ (cis and trans). So, the answer is 2.

**Q12 (4)**