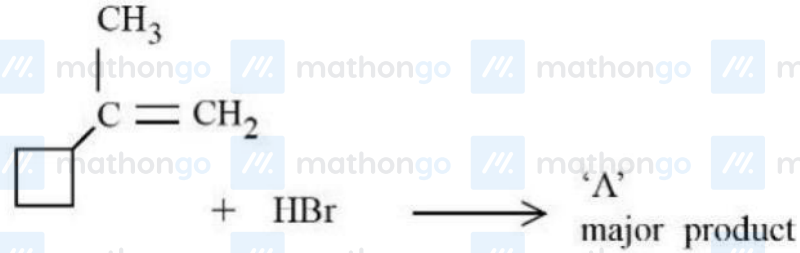
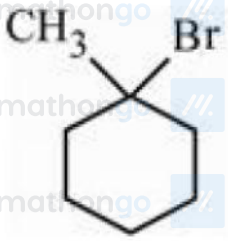
Q1 - 24 January - Shift 1

In the following given reaction 'A' is

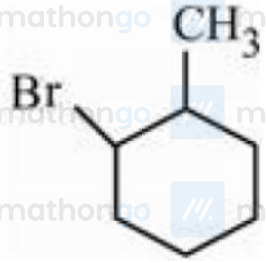


Space for your notes:

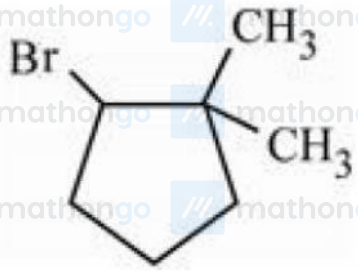
(1)



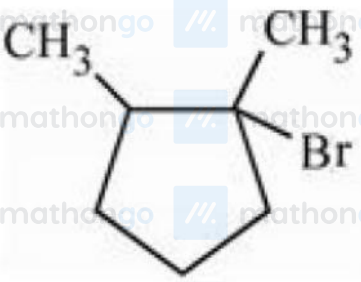
(2)



(3)

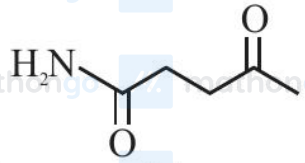


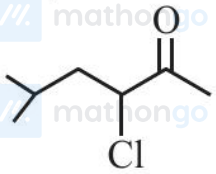
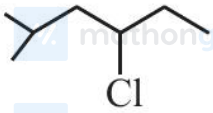
(4)



Q2 - 24 January - Shift 2

Given below are two statements :

Statement I :  under Clemmensen reduction conditions will give  .

Statement II :  under Wolff-Kishner reduction condition will give 

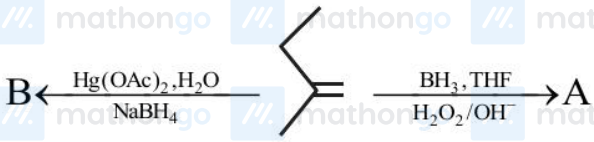
In the light of the above statements, choose the correct answer from the options given below :

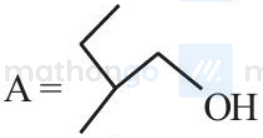
(1) Statement I is false but Statement II is true
(2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false
(4) Both Statement I and Statement II are true

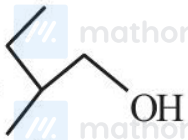
Space for your notes:

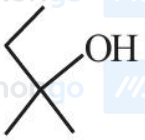
Q3 - 24 January - Shift 2

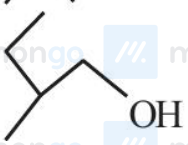
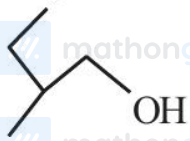
Find out the major products from the following reactions.



(1) A =  , B = 

(2) A =  , B = 

(3) A =  , B = 

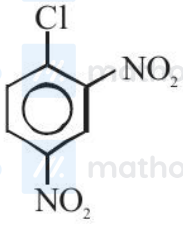
(4) A =  , B = 

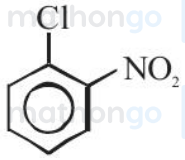
Space for your notes:

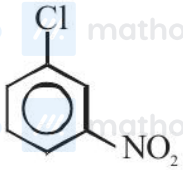
Q4 - 25 January - Shift 1

The compound which will have the lowest rate towards nucleophilic aromatic substitution on treatment with OH^- is

(1) 

(2) 

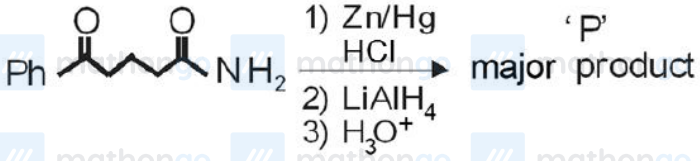
(3) 

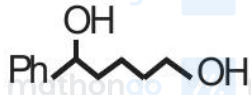
(4) 

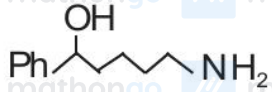
Space for your notes:

Q5 - 29 January - Shift 1

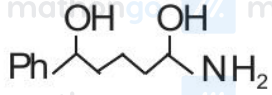
The major product 'P' for the following sequence of reactions is:



(1) 

(2) 

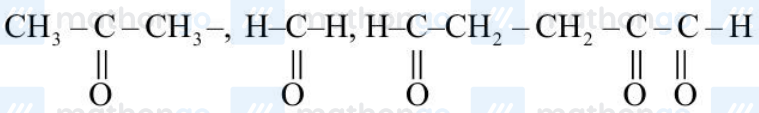
(3) 

(4) 

Space for your notes:

Q6 - 29 January - Shift 1

17 mg of a hydrocarbon (M.F. $C_{10}H_{16}$) takes up 8.40 mL of the H_2 gas measured at 0°C and 760 mm of Hg. Ozonolysis of the same hydrocarbon yields



The number of double bond/s present in the hydrocarbon is _____.

Space for your notes:

Q7 - 29 January - Shift 2

The one giving maximum number of isomeric alkenes on dehydrohalogenation reaction is (excluding rearrangement)

(1) 1-Bromo-2-methylbutane

(2) 2-Bromopropane

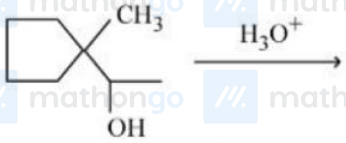
(3) 2-Bromopentane

(4) 2-Bromo-3,3-dimethylpentane

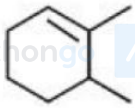
Space for your notes:

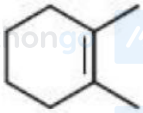
Q8 - 29 January - Shift 2

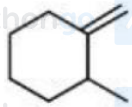
Find out the major product for the following reaction.



Major Product

(1) 

(2) 

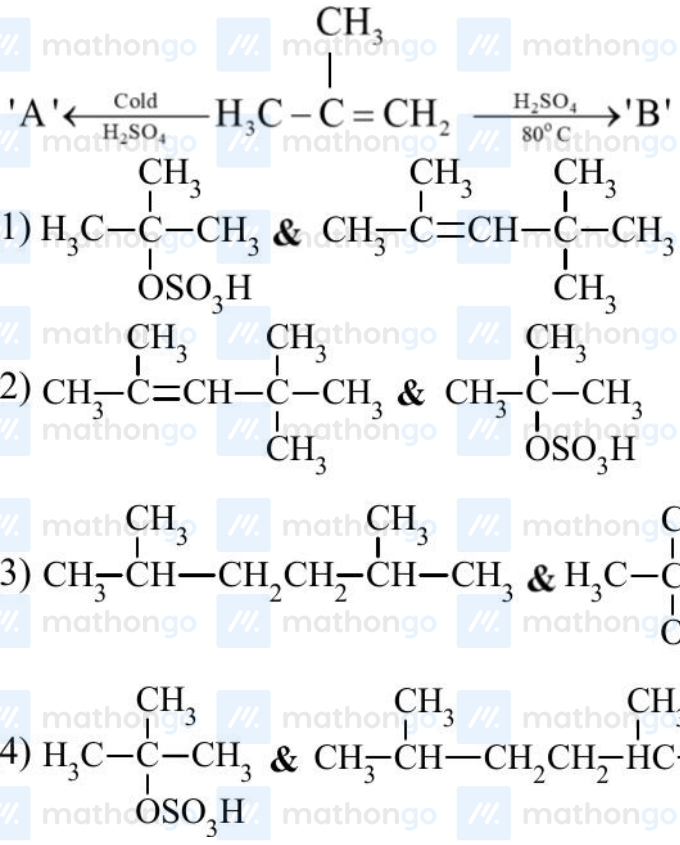
(3) 

(4) 

Space for your notes:

Q9 - 30 January - Shift 1

The major products 'A' and 'B', respectively, are



(1) $H_3C-\underset{\underset{OSO_3H}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$ & $CH_3-\overset{\overset{CH_3}{|}}{C}=CH-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-CH_3$

(2) $CH_3-\overset{\overset{CH_3}{|}}{C}=CH-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$ & $CH_3-\underset{\underset{OSO_3H}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$

(3) $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_3$ & $H_3C-\underset{\underset{OSO_3H}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$

(4) $H_3C-\underset{\underset{OSO_3H}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$ & $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2CH_2-\underset{\underset{CH_3}{|}}{HC}-CH_3$

Space for your notes:

Q10 - 31 January - Shift 1

Choose the correct set of reagents for the following conversion

trans (Ph-CH=CH–CH_3) → cis (Ph-CH=CH–CH_3)

(1) Br_2, alc KOH, $NaNH_2$, Na(Liq NH_3)

(2) Br_2, alc KOH, $NaNH_2$, H_2 Lindlar Catalyst

(3) Br_2, aq KOH, $NaNH_2$, H_2 Lindlar Catalyst

(4) Br_2, aq KOH, $NaNH_2$, Na(Liq NH_3)

Space for your notes:

Q11 - 31 January - Shift 2

A hydrocarbon 'X' with formula C_6H_8 uses two moles of H_2 on catalytic hydrogenation of its one mole. On ozonolysis, 'X' yields two moles of methane dicarbaldehyde. The hydrocarbon 'X' is :

(1) hexa-1, 3, 5-triene
(2) 1-methylcyclopenta-1, 4-diene
(3) cyclohexa-1, 3-diene
(4) cyclohexa-1, 4-diene

Space for your notes:

Q12 - 01 February - Shift 1

But-2-yne is reacted separately with one mole of Hydrogen as shown below:

$$\underline{B} \xleftarrow[\text{liq } NH_3]{Na} CH_3 - C \equiv C - CH_3 \xrightarrow[\Delta]{Pd/C} \underline{A}$$
$$+H_2$$

Identify the incorrect statements from the options given below:

A. A is more soluble than B.

B. The boiling point & melting point of A are higher and lower than B respectively.

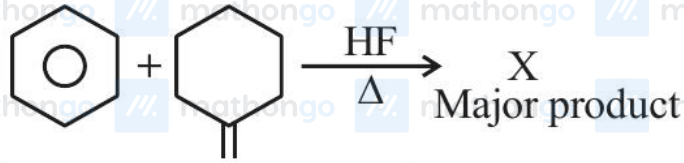
C. A is more polar than B because dipole moment of A is zero.

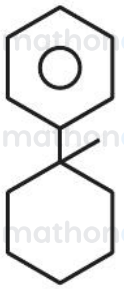
D. Br_2 adds easily to B than A.

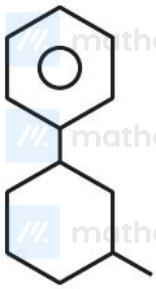
(1) B and C only
(2) B, C and D only
(3) A, C and D only
(4) A and B only

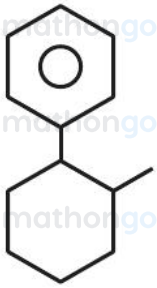
Space for your notes:

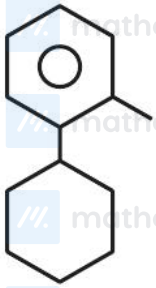
Q13 - 01 February - Shift 2

'X' is : 

(1) 

(2) 

(3) 

(4) 

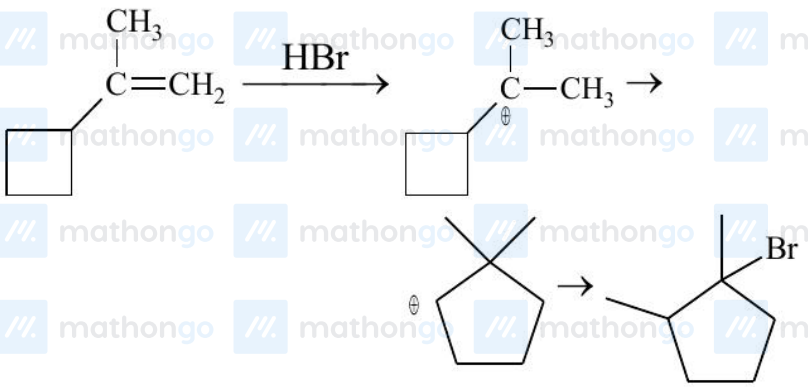
Space for your notes:

Answer Key

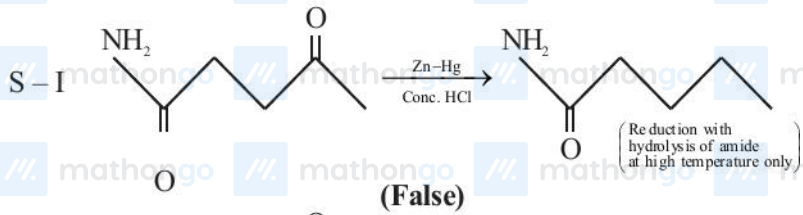
(As per Official NTA Key released on 2 Feb)

Q1 (4)	**Q2** (3)	**Q3** (1)	**Q4** (4)
Q5 (3)	**Q6** (3)	**Q7** (3)	**Q8** (2)
Q9 (1)	**Q10** (2)	**Q11** (4)	**Q12** (2)
Q13 (1)			

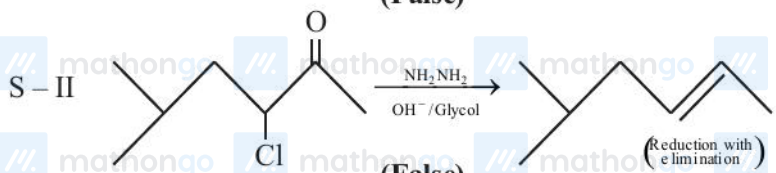
Q1 (4)



Q2 (3)

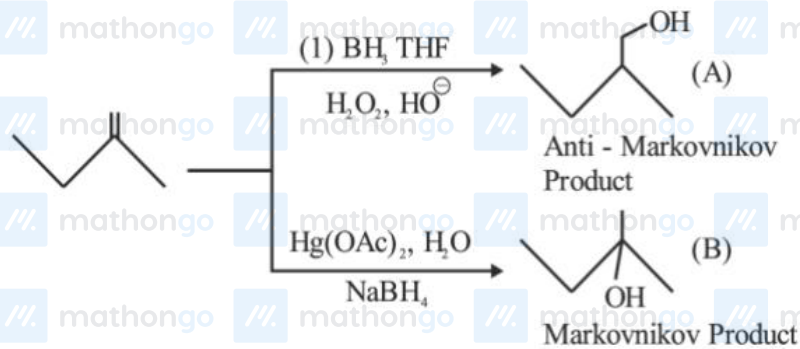


(False)



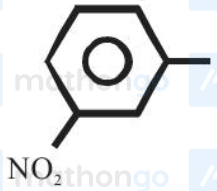
(False)

Q3 (1)

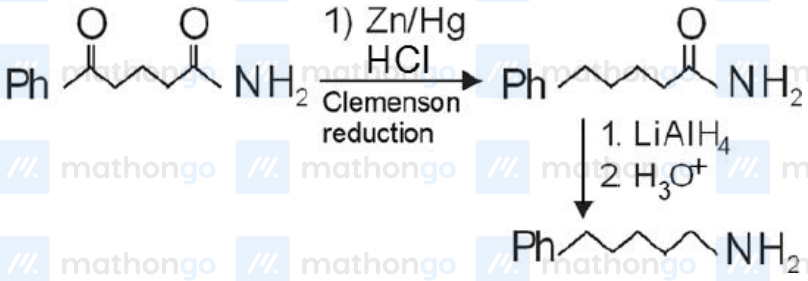


Q4 (4)

Electron withdrawing groups are highly ineffective at meta position in nucleophilic aromatic substitution reactions.

Hence compound  will have lowest rate in nucleophilic aromatic substitution.

Q5 (3)



Q6 (3)

$$\text{Moles of hydrocarbon} = \frac{17\times10^{-3}}{136} = 1.25 \times 10^{-4}$$

Mole of H_2 gas

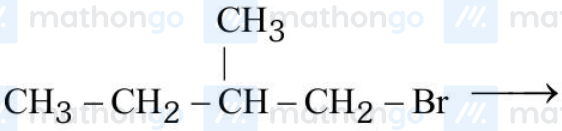
$$\Rightarrow 1\times\frac{8.40}{1000} = n \times 0.0821 \times 273$$

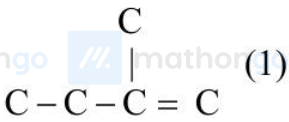
$$\Rightarrow n = 3.75 \times 10^{-4}$$

Hydrogen molecule used for 1 molecule of hydrocarbon is 3

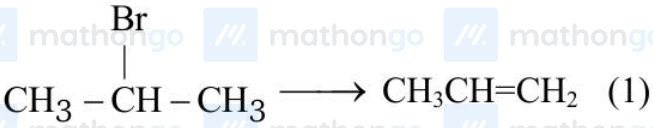
$$= \frac{3.75\times10^{-4}}{1.25\times10^{-4}} = 3$$

Q7 (3)

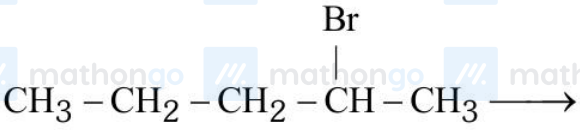




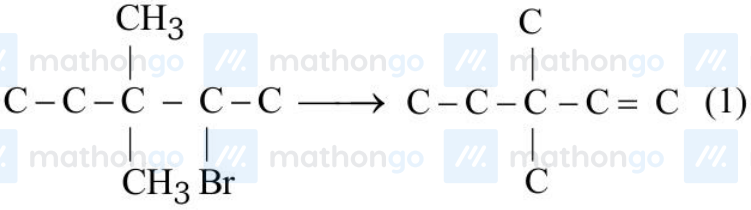
(1)



(1)

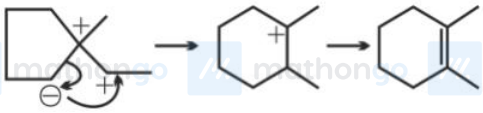


C-C-C-C=C + C-C-C=C-C, cis & trans (3)

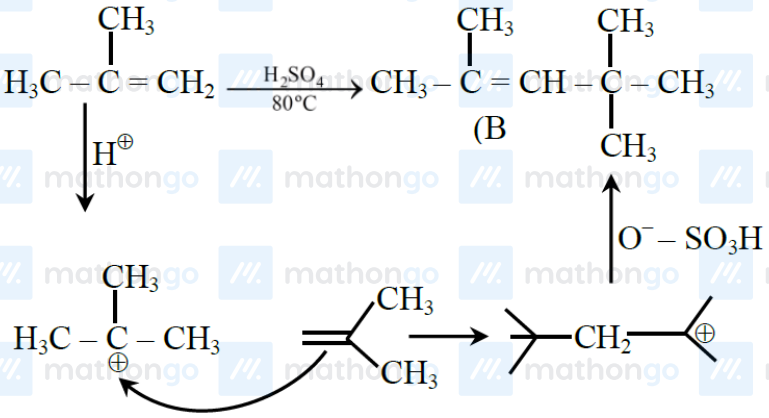


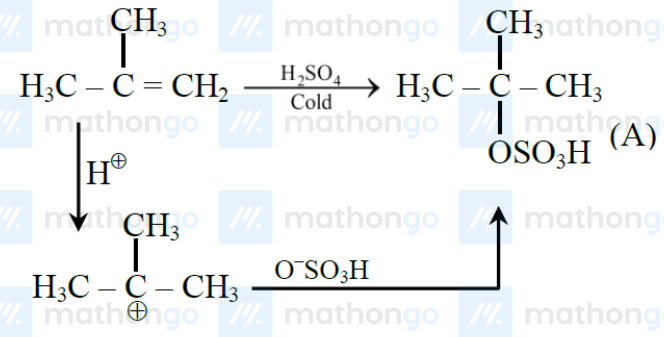
(1)

Q8 (2)

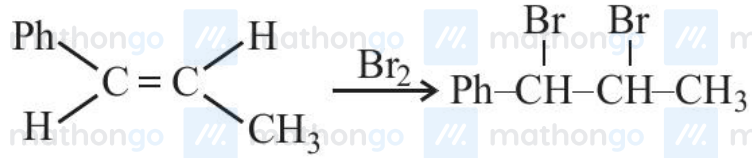


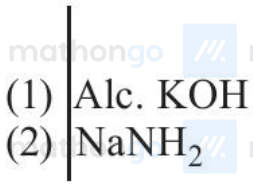
Q9 (1)

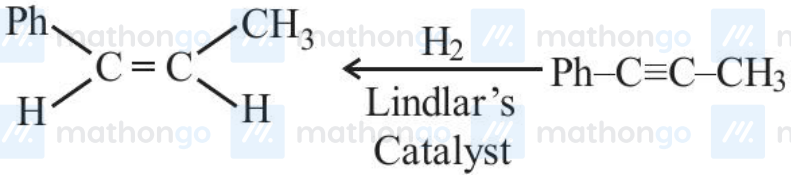

CH3
H3C – C = CH2
H2SO4
80°C
CH3 – C = CH – C – CH3
(B
CH3
CH3
H⊕
O⁻ – SO3H
CH3
H3C – C – CH3
CH3
CH2
⊕


CH3
H3C – C = CH2
H2SO4
Cold
H3C – C – CH3
OSO3H
(A)
H⊕
CH3
H3C – C – CH3
O⁻SO3H

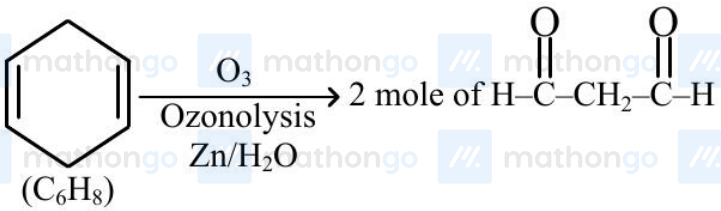
Q10 (2)


Ph
H
C = C
H
CH3
Br2
Br Br
Ph–CH–CH–CH3


(1) Alc. KOH
(2) NaNH2


Ph
CH3
C = C
H
H
H2
Lindlar's
Catalyst
Ph–C≡C–CH3

Q11 (4)



(C_6H_8)

(Cyclohexa-1, 4-diene)

Q12 (2)

Incorrect statements are C and D only, correct choice is not available.

Q13 (1)