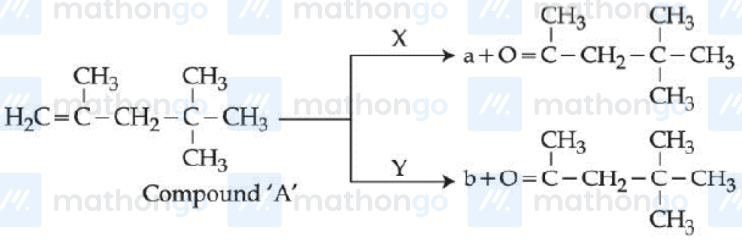
Q1 - 25 July - Shift 1

A compound 'A' on reaction with 'X' and 'Y' produces the same major product but different by product 'a' and 'b'. Oxidation of 'a' gives a substance produced by ants.



'X' and 'Y' respectively are :

(A) $KMnO_4/H^+$ and dil. $KMnO_4$, 273 K

(B) $KMnO_4$,(dilute), 273 K and $KMnO_4/H^+$

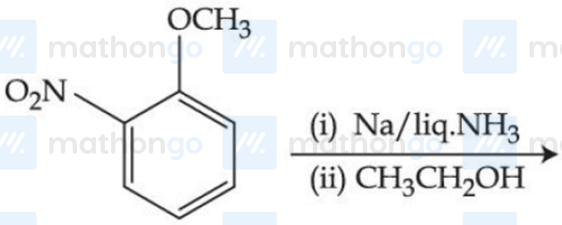
(C) $KMnO_4/H^+$ and O_3, H_2O/Zn

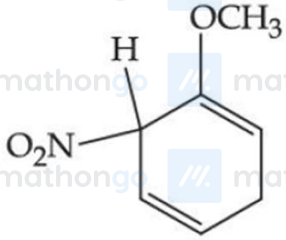
(D) O_3, H_2O/Zn and $KMnO_4/H^+$

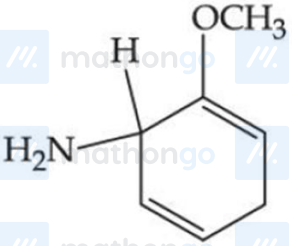
Space for your notes:

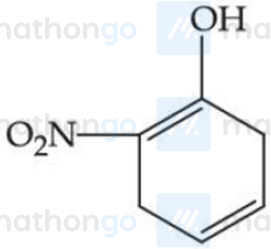
Q2 - 26 July - Shift 1

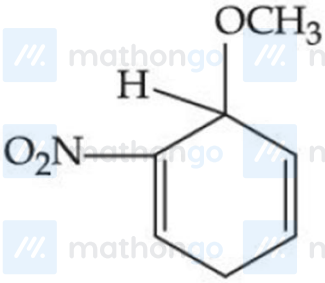
The major product of the following reaction is



(A) 

(B) 

(C) 

(D) 

Space for your notes:

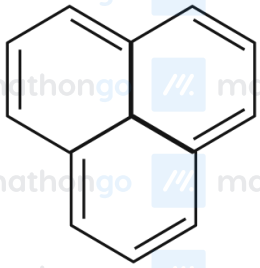
Q3 - 26 July - Shift 1

In the presence of sunlight, benzene reacts with Cl_2 to give product, X. The number of hydrogens in X is_____.

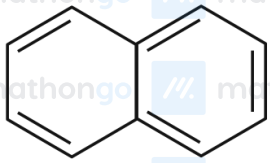
Space for your notes:

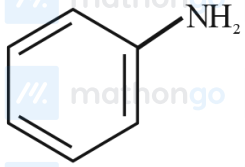
Q4 - 26 July - Shift 2

Which of the following is not an example of benzenoid compound ?

(A) 

(B) 

(C) 

(D) 

Space for your notes:

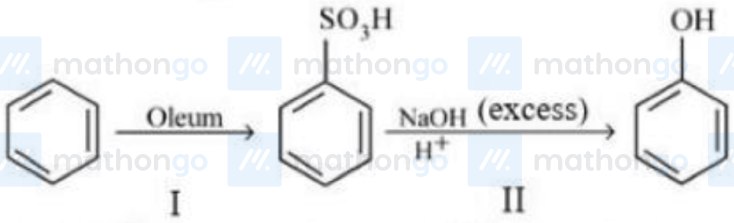
Q5 - 26 July - Shift 2

Total number of isomers (including stereoisomers) obtain on monochlorination of methylcyclohexane is _____.

Space for your notes:

Q6 - 27 July - Shift 1

In the following reaction

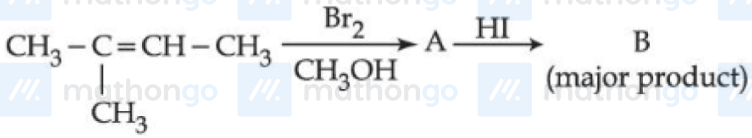


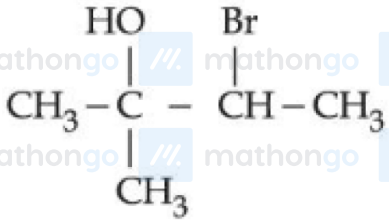
The % yield for reaction I is 60% and that of reaction II is 50%. The overall yield of the complete reaction is ___% [nearest integer]

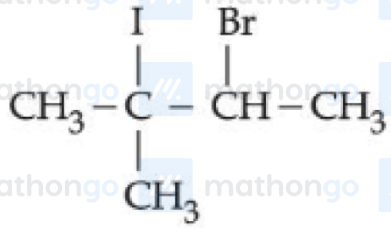
Space for your notes:

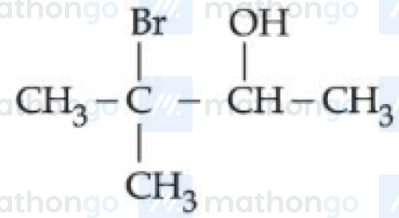
Q7 - 27 July - Shift 2

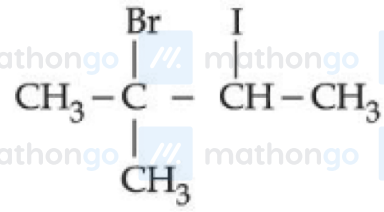
Major product 'B' of the following reaction sequence is:



(A) 

(B) 

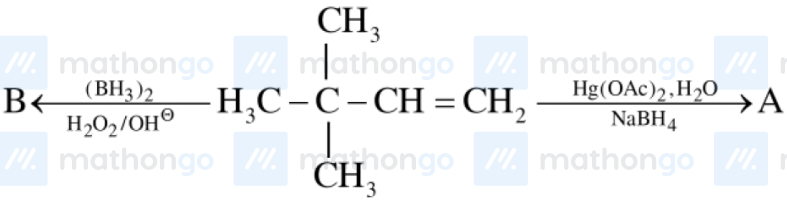
(C) 

(D) 

Space for your notes:

Q8 - 28 July - Shift 1

Choose the correct option for the following reactions.



(A) 'A' and 'B' are both Markovnikov addition products.

(B) 'A' is Markovnikov product and 'B' is anti-Markovnikov product.

(C) 'A' and 'B' are both anti-Markovnikov products.

(D) 'B' is Markovnikov and 'A' is anti-Markovnikov product.

Space for your notes:

Q9 - 28 July - Shift 2

Arrange the following in increasing order of reactivity towards nitration

A. p-xylene

B. bromobenzene

C. mesitylene

D, nitrobenzene

E. benzene

Choose the correct answer from the options given below

(A) C < D < E < A < B

(B) D < B < E < A < C

(C) D < C < E < A < B

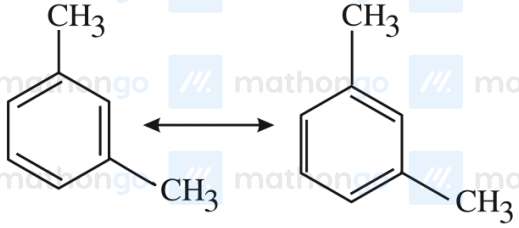
(D) C < D < E < B < A

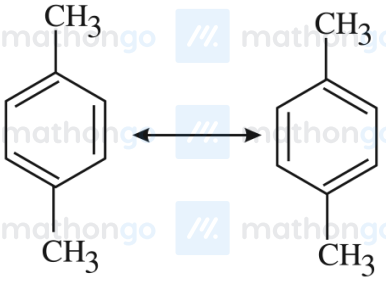
Space for your notes:

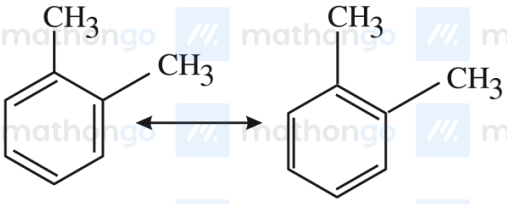
Q10 - 29 July - Shift 1

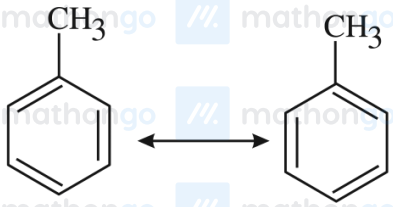
Which among the following pairs of the structures will give different products on ozonolysis? (Consider the double bonds in the structures are rigid and not delocalized.)

Space for your notes:

(A) 

(B) 

(C) 

(D) 

Q11 - 29 July - Shift 1

In bromination of Propyne, with Bromine 1, 1, 2, 2-tetrabromopropane is obtained in 27% yield. The amount of 1, 1, 2, 2 tetrabromopropane obtained from 1 g of Bromine in this reaction is _____ $\times 10^{-1}$ g. (Nearest integer)

(Molar Mass : Bromine = 80 g/mol)

Space for your notes:

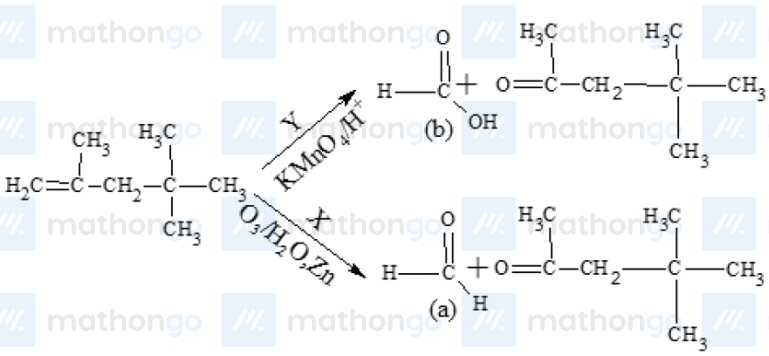
Answer Key

Q1 (D) **Q2** (A) **Q3** (6) **Q4** (B)

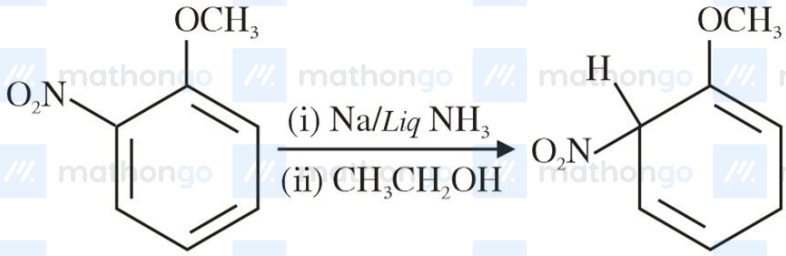
Q5 (12) **Q6** (30) **Q7** (B) **Q8** (B)

Q9 (B) **Q10** (C) **Q11** (3)

Q1 (D)

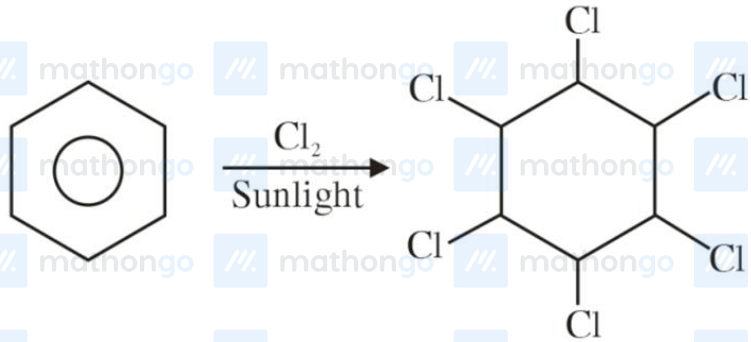


Q2 (A)



Given reaction is an example of birch reduction.

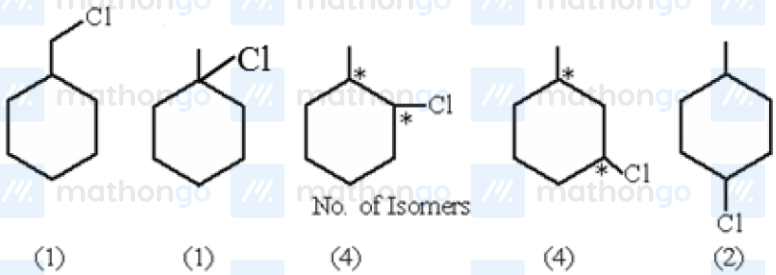
Q3 (6)



Q4 (B)

(B)

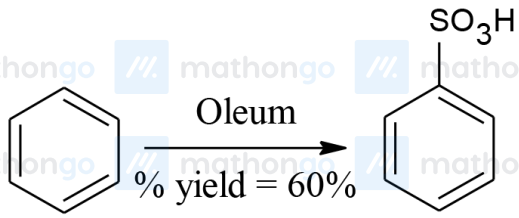
Q5 (12)



(1) (1) (4) (4) (2)

Q6 (30)

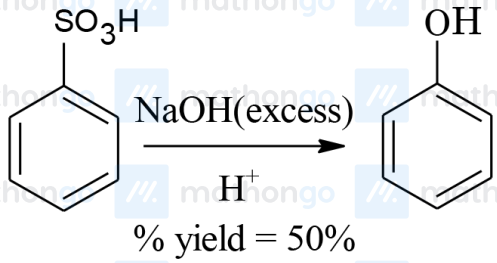
(I)



Let initial moles of reactant taken = n

Total moles obtained for benzene sulphonic acid (with % yield = 60%) = 0.6n

(II)

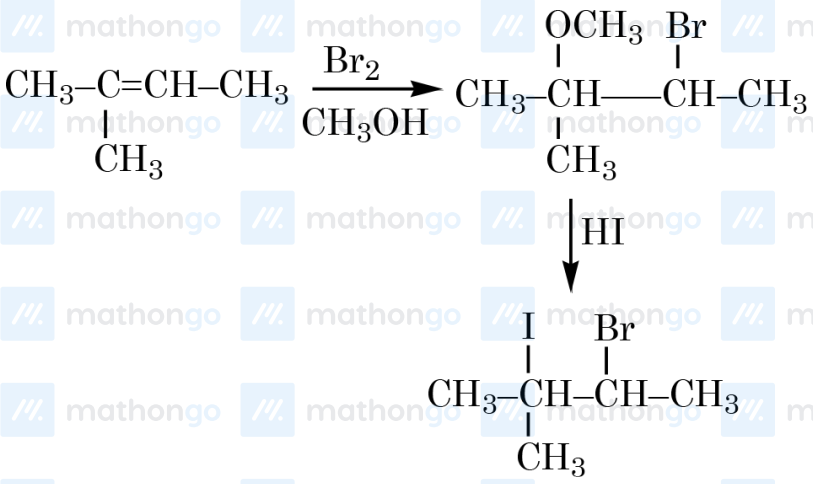


Moles of benzene sulphonic acid before reaction II = 0.6n

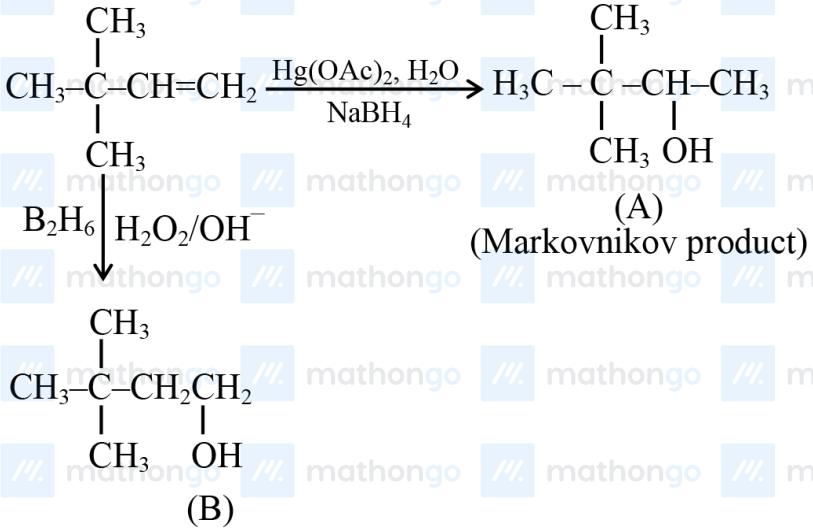
Moles obtained for phenol (with % yield = 50%) = $0.6\times0.5n = 0.3n$

So over all % yield of complete reaction = $\frac{0.3n}{n}\times100 = 30$

Q7 (B)



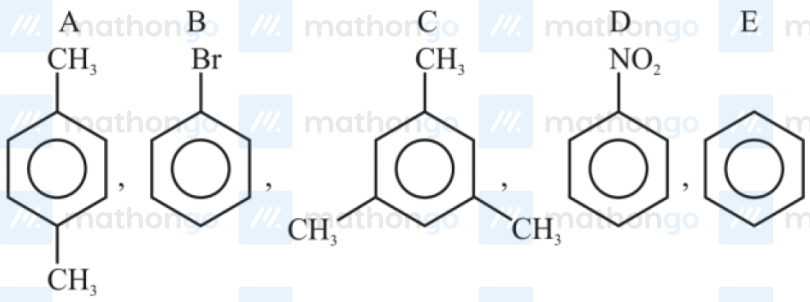
Q8 (B)



(A)
(Markovnikov product)

(B)
(Anti Markovnikov product)

Q9 (B)



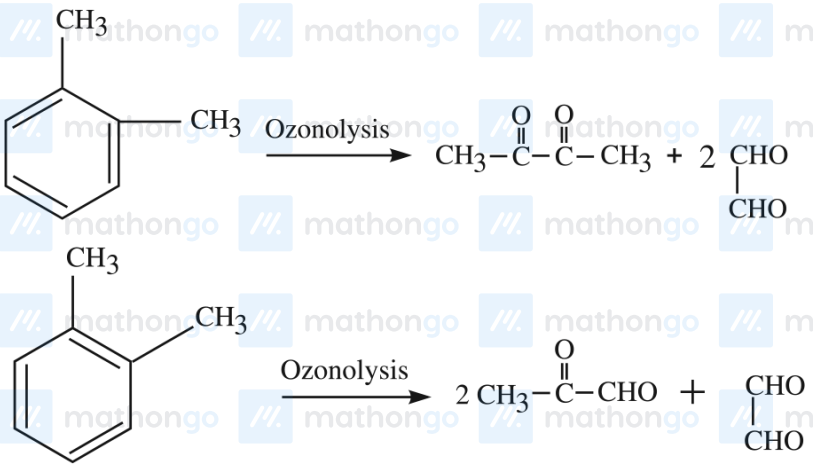
$-NO_2$ is strongly deactivating

–Br – deactivating

$-CH_3$–activating group

D < B < E < A < C

Q10 (C)



Q11 (3)

$$CH_3-C\equiv CH+2Br_2 \rightarrow CH_3-\underset{\underset{Br}{|}}{\overset{\overset{Br}{|}}{C}}-\underset{\underset{Br}{|}}{\overset{\overset{Br}{|}}{CH}}$$

$$= \frac{1}{160}\times\frac{1}{2}\times 360\times 0.27$$

$$= 0.30375$$

$$= 3.0375\times 10^{-1}$$

Ans. $= 3$