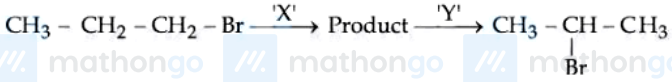
Q1 - 2024 (04 Apr Shift 1)

Identify the correct set of reagents or reaction conditions ' X ' and ' Y ' in the following set of transformation



(1) $X = \text{dil.aq. NaOH}, 20^{\circ}C, \quad Y = Br_2/CHCl_3$

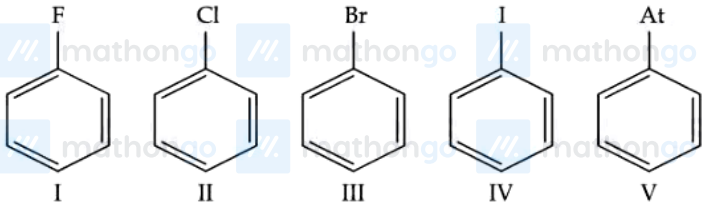
(2) $X = \text{conc.alc. NaOH}, 80^{\circ}C, Y = Br_2/CHCl_3$

(3) $X = \text{dil.aq. NaOH}, 20^{\circ}C, \quad Y = \text{HBr /acetic acid}$

(4) $X = \text{conc.alc. NaOH}, 80^{\circ}C, Y = \text{HBr/ acetic acid}$

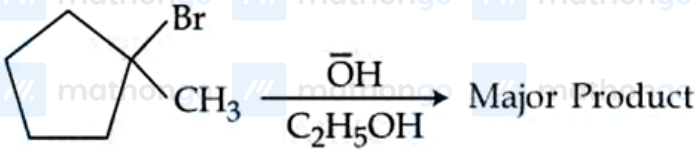
Q2 - 2024 (05 Apr Shift 1)

The number of halobenzenes from the following that can be prepared by Sandmeyer's reaction is _____

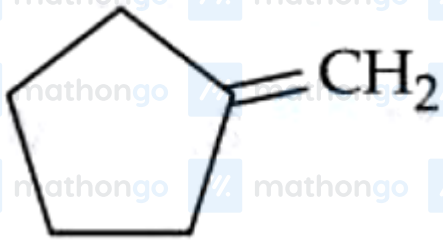


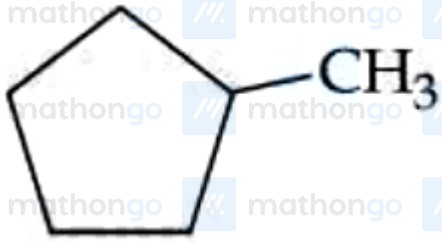
Q3 - 2024 (05 Apr Shift 2)

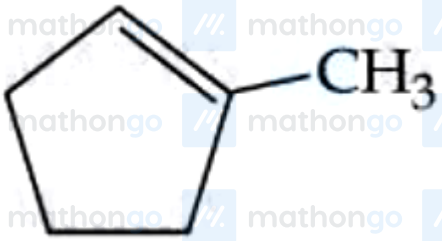
Identify the major product in the following reaction.

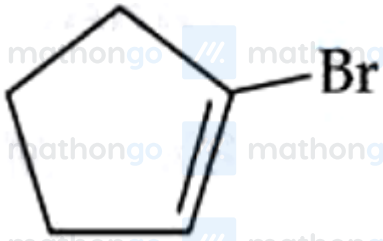


(1)



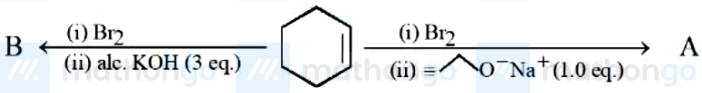
(2) 

(3) 

(4) 

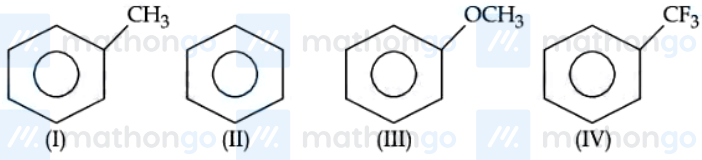
Q4 - 2024 (06 Apr Shift 1)

The major products from the following reaction sequence are product A and product B.



The total sum of π electrons in product A and product B are _____ (nearest integer)

Q5 - 2024 (06 Apr Shift 2)



The correct arrangement for decreasing order of electrophilic substitution for above compounds is :

(1) (III) > (I) > (II) > (IV)

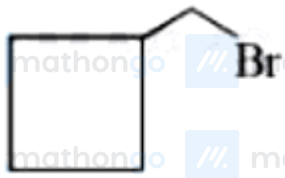
(2) (IV) > (I) > (II) > (III)

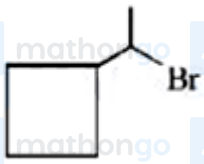
(3) (III) > (IV) > (II) > (I)

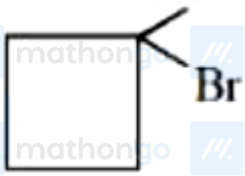
(4) (II) > (IV) > (III) > (I)

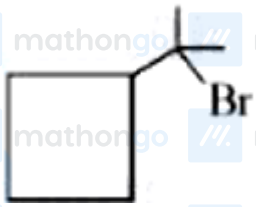
Q6 - 2024 (08 Apr Shift 1)

Which among the following compounds will undergo fastest S_N2 reaction.

(1) 

(2) 

(3) 

(4) 

Q7 - 2024 (08 Apr Shift 2)

Given below are two statements :

Statement (I) : S_N2 reactions are 'stereospecific', indicating that they result in the formation of only one stereo-isomer as the product.

Statement (II) : S_N1 reactions generally result in formation of product as racemic mixtures.

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

(1) Both Statement I and Statement II are false

(2) Statement I is false but Statement II is true

(3) Statement I is true but Statement II is false

(4) Both Statement I and Statement II are true

Q8 - 2024 (09 Apr Shift 1)

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

Assertion (A): S_N2 reaction of $C_6H_5CH_2Br$ occurs more readily than the S_N2 reaction of CH_3CH_2Br.

Reason (R) : The partially bonded unhybridized p-orbital that develops in the trigonal bipyramidal transition state is stabilized by conjugation with the phenyl ring.

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

(1) (A) is correct but (R) is not correct

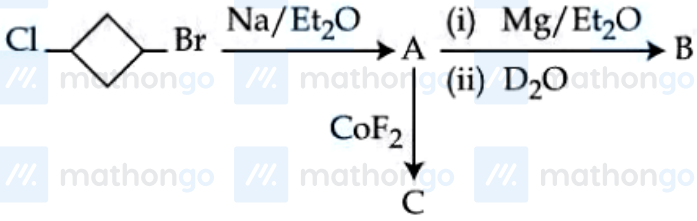
(2) (A) is not correct but (R) is correct

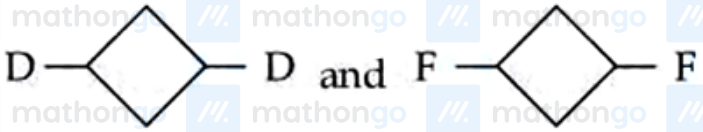
(3) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

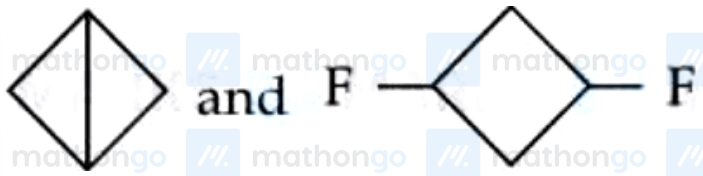
(4) Both (A) and (R) are correct and (R) is the correct explanation of (**A**)

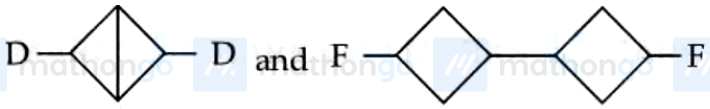
Q9 - 2024 (09 Apr Shift 1)

In the following sequence of reaction, the major products B and C respectively are :



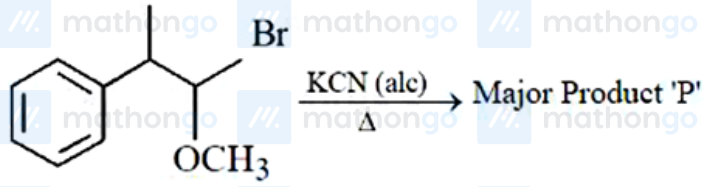
(1) 

(2) 

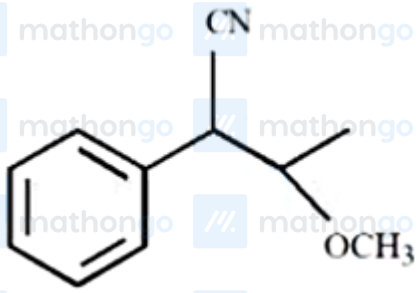
(3) 

(4) 

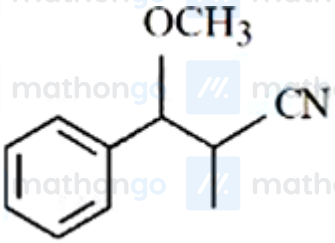
Q10 - 2024 (09 Apr Shift 2)



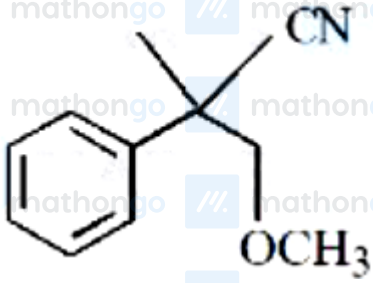
In the above reaction product ' P ' is



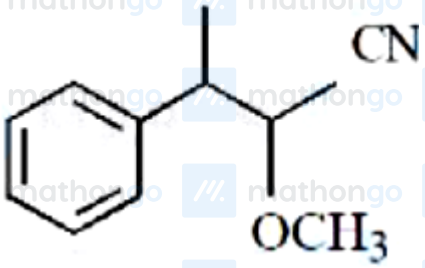
(1)



(2)



(3)



(4)

Answer Key

Q1 (4) **Q2** (2) **Q3** (3) **Q4** (8)

Q5 (1) **Q6** (1) **Q7** (4) **Q8** (4)

Q9 (4) **Q10** (4)

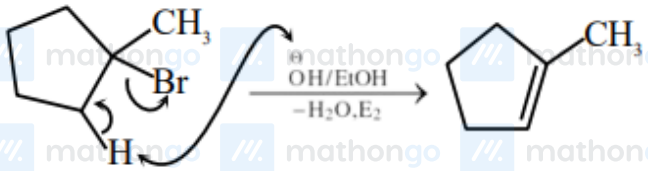
Q1

$$CH_3 - CH_2 - CH_2 - Br \xrightarrow{X = \text{conc.alc. NaOH}} CH_3 - CH = CH_2 \xrightarrow{Y \equiv HBr/\ \text{Acetic acid}} CH_3 - CHBr - CH_3$$

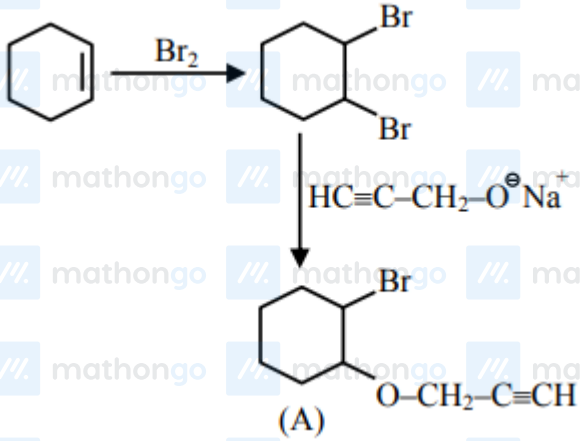
Q2

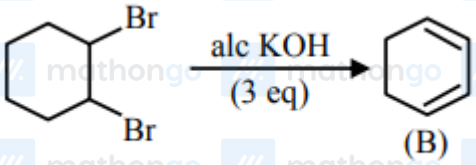
In Sandmayer reaction only bromobenzene & chlorobenzene are prepared

Q3

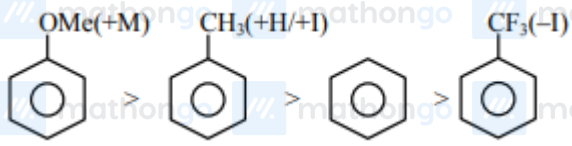


Q4

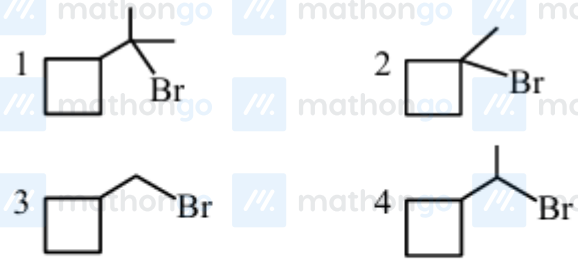


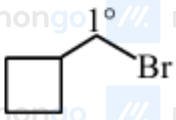


Q5



Q6



fastest SN^2 reaction give 

Rate of SN^2 is $Me - x > 1^\circ - x > 2^\circ - x > 3^\circ - x$

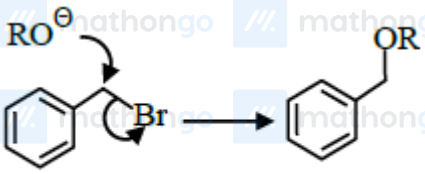
Q7

$SN^2 \rightarrow$ Inversion

$SN^1 \rightarrow$ Racemisation

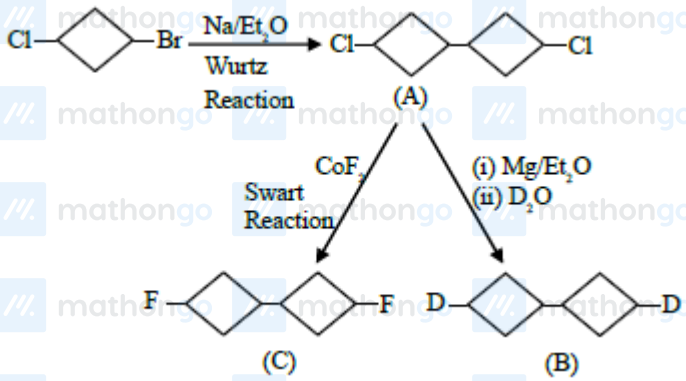
Q8

The benzyl group acts in much the same way using the π-system of the benzene ring for conjugation with the p-orbital in the transition state.

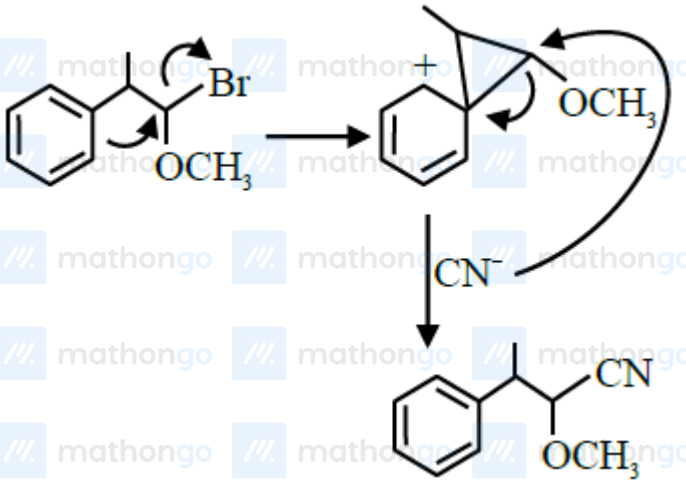


benzyl bromide

Q9



Q10



Due to NGP effect of phenyl ring Nucleophilic substitution of Br will occurs.