Q1. 21 January Shift 2

The correct order of the rate of the reaction for the following reaction with respect to nucleophiles is :

$CH_3Br + Nu^{\ominus} \longrightarrow CH_3Nu + Br^{\ominus}$

(1) $PhO^- > -^-OH > CH_3COO^- > ClO_4^-$

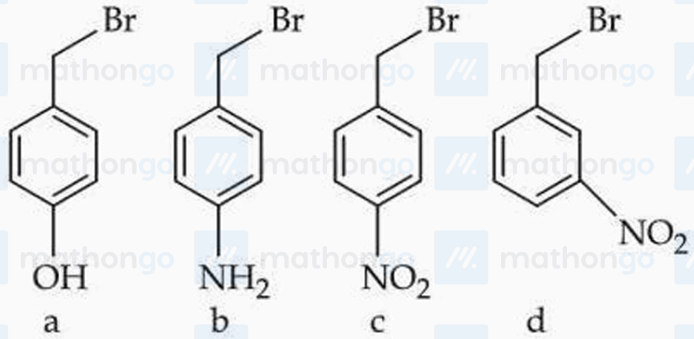
(2) $CH_3COO^- > PhO^- > -OH^- > ClO_4^-$

(3) $-OH > PhO^- > CH_3COO^- > ClO_4^-$

(4) $ClO_4^- > CH_3COO^- > -^-OH > PhO^-$

Q2. 21 January Shift 2

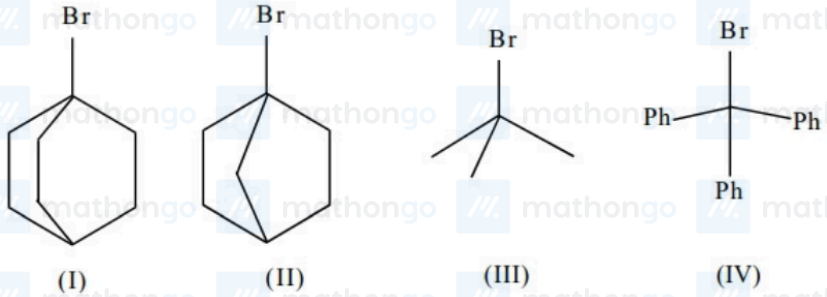
The correct order of reactivity of the following benzyl halides towards reaction with KCN is :



(1) $b > a > c > d$ (2) $b > a > d > c$ (3) $a > b > d > c$ (4) $a > b > c > d$

Q3. 22 January Shift 1

The correct order of the rate of reaction of the following reactants with nucleophile by S_N1 mechanism is : (Given : Structures I and II are rigid)



(1) III < I < II < IV (2) IV < III < II < I

(3) I < II < III < IV (4) II < I < III < IV

Q4. 22 January Shift 1

As compared with chlorocyclohexane, which of the following statements correctly apply to chlorobenzene?

A. The magnitude of negative charge is more on chlorine atom.

B. The $C-Cl$ bond has partial double bond character.

C. $C-Cl$ bond is less polar.

D. $C-Cl$ bond is longer due to repulsion between delocalised electrons of the aromatic ring and lone pairs of electrons of chlorine.

E. The $C-Cl$ bond is formed using sp^2 hybridised orbital of carbon.

Choose the correct answer from the options given below:

(1) B, C and E Only

(2) A, C and E Only

(3) A, D and E Only

(4) B, C and D Only

Q5. 22 January Shift 1

The correct order of reactivity of CH_3Br in methanol with the following nucleophiles is $F^-, I^-, C_2H_5O^-$ and $C_6H_5O^-$

(1) $I^- > C_2H_5O^- > F^- > C_6H_5O^-$

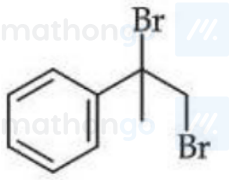
(2) $I^- > C_2H_5O^- > C_6H_5O^- > F^-$

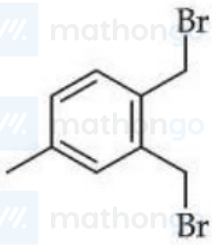
(3) $I^- > F^- > C_6H_5O^- > C_2H_5O^-$

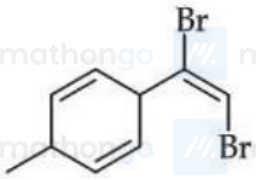
(4) $I^- > C_6H_5O^- > F^- > C_2H_5O^-$

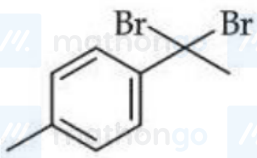
Q6. 22 January Shift 2

The dibromo compound [P] (molecular formula : $C_9H_{10}Br_2$) when heated with excess sodamide followed by treatment with dilute HCl gives [Q]. On warming [Q] with mercuric sulphate and dilute sulphuric acid yield [R] which gives positive lodoform test but negative Tollen's test. The compound [P] is :

(1) 

(2) 

(3) 

(4) 

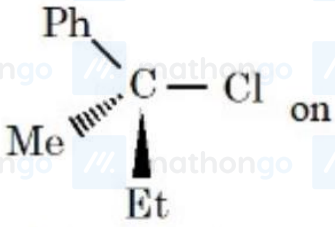
Q7. 23 January Shift 1

Consider all the structural isomers with molecular formula $C_5H_{11}Br$ are separately treated with $KOH(aq)$ to give respective substitution products, without any rearrangement. The number of products which can exhibit optical isomerism from these is ____.

Q8. 24 January Shift 1

Given below are two statements:

Statement I: ' $C-Cl'$ bond is stronger in $CH_2=CH-Cl$ than CH_3-CH_2-Cl



on

Statement II: The given optically active molecule, hydrolysis gives a solution that can rotate the plane polarized light.

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

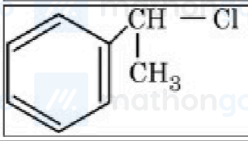
(2) Both Statement I and Statement II are true

(3) Both Statement I and Statement II are false

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

Q9. 24 January Shift 1

Match the LIST-I with LIST-II

	List-I Chloro derivative		**List-II Example**
A.	Vinyl Chloride	I.	$CH_2=CH-CH_2Cl$
B.	Benzyl Chloride	II.	$CH_3-CH(Cl)CH_3$
C.	Alkyl Chloride	III.	$CH_2=CHCl$
D.	Allyl Chloride	IV.	

Choose the correct answer from the options given below:

(1) A-III, B-IV, C-I, D-II

(2) A-I, B-II, C-IV, D-III

(3) A-IV, B-I, C-III, D-II

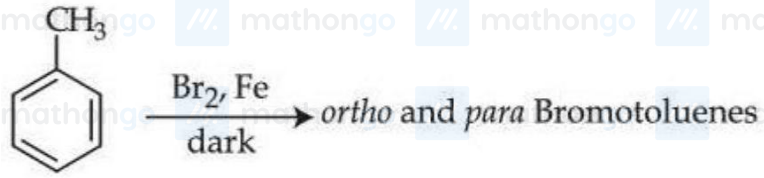
(4) A-III, B-IV, C-II, D-I

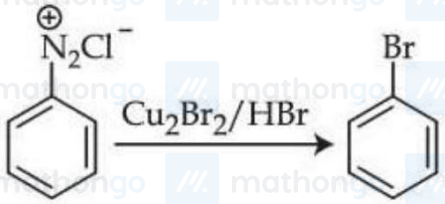
Q10. 24 January Shift 2

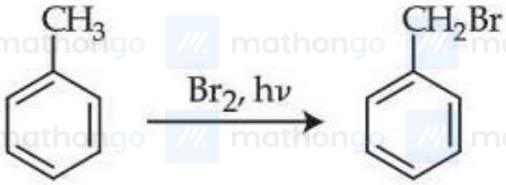
Grignard reagent $RMgBr(P)$ reacts with water and forms a gas (Q). One gram of Q occupies $1.4dm^3$ at STP. (P) on reaction with dry ice in dry ether followed by H_3O^+ forms a compound (Z). 0.1 mole of (Z) will weigh ____ g. (Nearest integer)

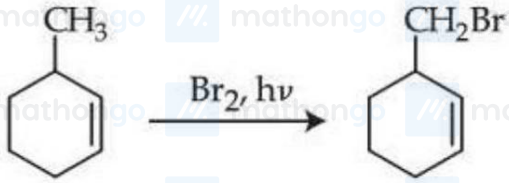
Q11. 28 January Shift 2

Which of the following reaction is NOT correctly represented?

(1) 

(2) 

(3) 

(4) 

ANSWER KEYS

1. (3)	**2.** (2)	**3.** (4)	**4.** (1)	**5.** (2)	**6.** (4)	**7.** 3	**8.** (4)
9. (4)	**10.** 6	**11.** (4)					