

CHEMISTRY · JEE MAIN

Halogen Derivatives — Haloalkanes & Haloarenes

Chapter-wise previous year questions, with answer key

13

PYQS

2021-2025

PAPERS

2

TOPICS

Polyhalogen Compounds

SN1 and SN2 Mechanisms

- 1 Attempt each question on paper first — they're grouped by topic, newest papers first.
- 2 Check yourself against the answer key at the end.
- 3 Got one wrong? Tap "Step-by-step solution" under it for the full working.

Stuck on a question?

Every question has a free step-by-step solution on PrepWiser — tap "Step-by-step solution" under it.

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Polyhalogen Compounds · 2 PYQs

Q1 JEE Main 2024 · 1 Feb · Shift 2

Match List - I with List - II.

List I (Compound)	List II (Use)
(A) Carbon tetrachloride	(I) Paint remover
(B) Methylene chloride	(II) Refrigerators and air conditioners
(C) DDT	(III) Fire extinguisher
(D) Freons	(IV) Non Biodegradable insecticide

Choose the correct answer from the options given below :

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

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

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

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

[Step-by-step solution ► prepwisar.in/questions/WLJiAujqyk](https://www.prepwisar.in/questions/WLJiAujqyk)

Q2 JEE Main 2022 · 24 Jun · Shift 2

Which one of the following compounds is used as a chemical in certain type of fire extinguishers?

(A) Baking soda

(B) Soda ash

(C) Washing soda

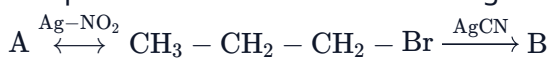
(D) Caustic soda

[Step-by-step solution ► prepwisar.in/questions/YVccIO1ExJ](https://www.prepwisar.in/questions/YVccIO1ExJ)

SN1 and SN2 Mechanisms · 11 PYQs

Q3 JEE Main 2025 · 28 Jan · Shift 1

The products A and B in the following reactions, respectively are



(A) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{ONO}$, $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CN}$

(B) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NO}_2$, $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CN}$

(C) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{ONO}$, $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NC}$

(D) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NO}_2$, $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NC}$

[Step-by-step solution ► prepwisar.in/questions/fimYIL75xG](https://www.prepwisar.in/questions/fimYIL75xG)

Q4 JEE Main 2024 · 9 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 :

- (A) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- (B) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- (C) (A) is not correct but (R) is correct
- (D) (A) is correct but (R) is not correct

[Step-by-step solution ► prepwiser.in/questions/zv5ds1vQHk](https://www.prepwiser.in/questions/zv5ds1vQHk)

Q5 JEE Main 2024 · 8 Apr · Shift 2

Which one the following compounds will readily react with dilute NaOH ?

- (A) $C_6H_5CH_2OH$
- (B) C_2H_5OH
- (C) C_6H_5OH
- (D) $(CH_3)_3COH$

[Step-by-step solution ► prepwiser.in/questions/N7X73YzsZN](https://www.prepwiser.in/questions/N7X73YzsZN)

Q6 JEE Main 2024 · 8 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 :

- (A) Both Statement I and Statement II are false
- (B) Statement I is false but Statement II is true
- (C) Statement I is true but Statement II is false
- (D) Both Statement I and Statement II are true

[Step-by-step solution ► prepwiser.in/questions/9rPJwS0YO](https://www.prepwiser.in/questions/9rPJwS0YO)

Q7 JEE Main 2024 · 1 Feb · Shift 1

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

Assertion (A) : Haloalkanes react with KCN to form alkyl cyanides as a main product while with AgCN form isocyanide as the main product.

Reason (R) : KCN and AgCN both are highly ionic compounds.

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

- (A) (A) is correct but (R) is not correct
- (B) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- (C) (A) is not correct but (R) is correct
- (D) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

[Step-by-step solution ► prepwiser.in/questions/-hg93gcQp8](https://www.prepwiser.in/questions/-hg93gcQp8)

Q8 JEE Main 2024 · 30 Jan · Shift 2

Given below are two statements:

Statement - I: High concentration of strong nucleophilic reagent with secondary alkyl halides which do not have bulky substituents will follow S_N^2 mechanism.

Statement - II: A secondary alkyl halide when treated with a large excess of ethanol follows S_N^1 mechanism.

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

- (A) Both Statement I and Statement II are true.
- (B) Statement I is true but Statement II is false.
- (C) Both Statement I and Statement II are false.
- (D) Statement I is false but Statement II is true.

[Step-by-step solution ► prepwiser.in/questions/oGqOt-4kvp](https://www.prepwiser.in/questions/oGqOt-4kvp)

Q9 JEE Main 2024 · 29 Jan · Shift 2

Alkyl halide is converted into alkyl isocyanide by reaction with

- (A) KCN
- (B) NH_4CN
- (C) NaCN
- (D) AgCN

[Step-by-step solution ► prepwiser.in/questions/gDwv7VIBSg](https://www.prepwiser.in/questions/gDwv7VIBSg)

Q10 JEE Main 2024 · 27 Jan · Shift 1

The correct statement regarding nucleophilic substitution reaction in a chiral alkyl halide is ;

- (A) Retention occurs in S_N1 reaction and inversion occurs in S_N2 reaction.
- (B) Racemisation occurs in S_N1 reaction and retention occurs in S_N2 reaction.
- (C) Racemisation occurs in both S_N1 and S_N2 reactions.
- (D) Racemisation occurs in S_N1 reaction and inversion occurs in S_N2 reaction.

[Step-by-step solution ► prepwiser.in/questions/E_ppPnIh1P](https://www.prepwiser.in/questions/E_ppPnIh1P)

Q11 JEE Main 2023 · 13 Apr · Shift 1

2-Methyl propyl bromide reacts with $\text{C}_2\text{H}_5\text{O}^-$ and gives 'A' whereas on reaction with $\text{C}_2\text{H}_5\text{OH}$ it gives 'B'. The mechanism followed in these reactions and the products 'A' and 'B' respectively are :

- (A) $\text{S}_{\text{N}}1$, A = tert-butyl ethyl ether; $\text{S}_{\text{N}}2$, B = iso-butyl ethyl ether
- (B) $\text{S}_{\text{N}}1$, A = tert-butyl ethyl ether; $\text{S}_{\text{N}}1$, B = 2-butyl ethyl ether
- (C) $\text{S}_{\text{N}}2$, A = iso-butyl ethyl ether; $\text{S}_{\text{N}}1$, B = tert-butyl ethyl ether
- (D) $\text{S}_{\text{N}}2$, A = 2-butyl ethyl ether; $\text{S}_{\text{N}}2$, B = iso-butyl ethyl ether

[Step-by-step solution ► prepwisser.in/questions/L6Psas5HMT](https://www.prepwisser.in/questions/L6Psas5HMT)

Q12 JEE Main 2023 · 24 Jan · Shift 1

Assertion A : Hydrolysis of an alkyl chloride is a slow reaction but in the presence of NaI, the rate of the hydrolysis increases.

Reason R : I^- is a good nucleophile as well as a good leaving group.

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

- (A) A is true but R is false
- (B) A is false but R is true
- (C) Both A and R are true and R is the correct explanation of A
- (D) Both A and R are true but R is NOT the correct explanation of A

[Step-by-step solution ► prepwisser.in/questions/KwbTJSzH3j](https://www.prepwisser.in/questions/KwbTJSzH3j)

Q13 JEE Main 2021 · 18 Mar · Shift 2

Given below are two statements :

Statement I : $\text{C}_2\text{H}_5\text{OH}$ and AgCN both can generate nucleophile.

Statement II : KCN and AgCN both will generate nitrile nucleophile with all reaction conditions.

Choose the most appropriate option :

- (A) Statement I is false but statement II is true.
- (B) Both statement I and statement II are true.
- (C) Both statement I and statement II are false.
- (D) Statement I is true but statement II is false.

[Step-by-step solution ► prepwisser.in/questions/UurKJNCV7z](https://www.prepwisser.in/questions/UurKJNCV7z)

Answer key — Halogen Derivatives — Haloalkanes & Haloarenes

Numbers match the question numbers above. For full working, open the solution link under each question.

1	B	2	A	3	D	4	B	5	C	6	D	7	A	8	A
9	D	10	D	11	C	12	C	13	D						

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