

BYJU'S Study Planner for Board Term I (CBSE Grade 12)

Date: 10/11/2021

Subject: Chemistry

Topic : Haloalkanes and
Haloarenes

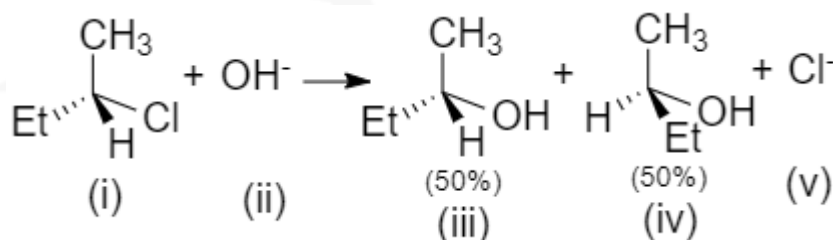
Class: Standard XII

1. Alcohols can be prepared by haloalkanes using hydroxide ion in aqueous media through S_N1 and S_N2 .

The S_N1 reaction is a two-step reaction. In the first step, the carbon-halogen bond breaks to generate a stable carbocation. In the second step, the nucleophile reacts rapidly with the carbocation. This reaction follows first order kinetics.

The S_N2 is a concerted reaction in which transition state is achieved where bond making and bond breaking occur simultaneously. This reaction follows second order kinetics.

Consider the following reaction sequence.



Which of the following statement is correct about the mechanism of this reaction?

- A. A carbocation will be formed as an intermediate in the reaction
- B. OH^- will attach the substrate (i) from one side and Cl^- will leave it simultaneously from other side
- C. An unstable intermediate will be formed in which OH^- and Cl^- will be attached by weak bonds
- D. Reaction proceeds through E_1 mechanism

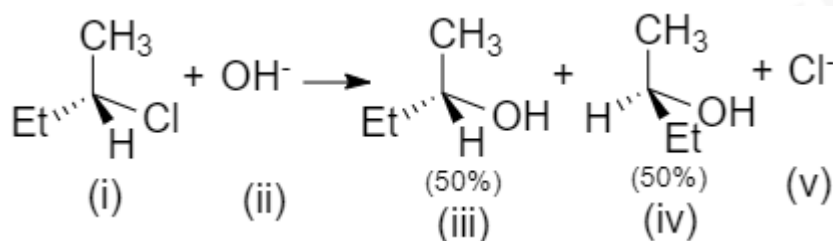
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2. Alcohols can be prepared by haloalkanes using hydroxide ion in aqueous media through S_N1 and S_N2 .

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The S_N2 is a concerted reaction in which transition state is achieved where bond making and bond breaking occur simultaneously. This reaction follows second order kinetics.

Consider the following reaction sequence.



Which of the following statement is correct about the kinetics of this reaction?

- A. The rate of reaction depends on the concentration of only (ii)
- B. The rate of reaction depends on the concentration of only (i)
- C. The rate of reaction depends on concentration of both (i) and (ii)
- D. The rate of reaction is independent of concentration of both (i) and (ii)

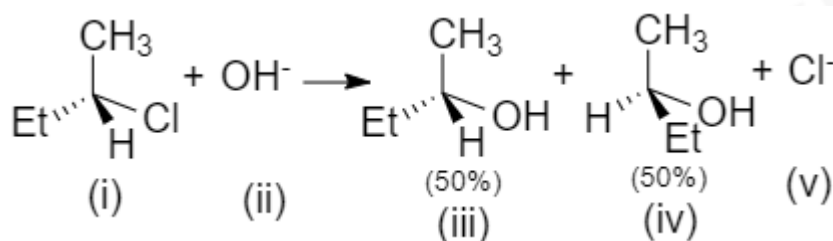
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3. Alcohols can be prepared by haloalkanes using hydroxide ion in aqueous media through S_N1 and S_N2 .

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The S_N2 is a concerted reaction in which transition state is achieved where bond making and bond breaking occur simultaneously. This reaction follows second order kinetics.

Consider the following reaction sequence.



Which of the following statement is correct about regarding the reaction?

- A. Molecularity of the reaction is two
 - B. Polar protic solvents drive this reaction
 - C. Polar aprotic solvents are preferred
 - D. None of these
4. Which of the following analogies is correct?
Isopropyl chloride : 2°alkyl halide :: Isobutyl chloride :
- A. 1°alkyl halide
 - B. 2°alkyl halide
 - C. 3°alkyl halide
 - D. None of these

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5.

Column - I	Column - II
(i) S_N1 reaction	(A) <i>vic</i> -dihalide
(ii) Alkylidene halides	(B) <i>gem</i> -dihalide
(iii) Bromination	(C) Racemisation
(iv) Elimination of HX	(D) Saytzeff rule

Which of the following is the best matched option?

- A.** i-C, ii- D, iii- A, iv-B
- B.** i-C, ii- B, iii- A, iv-D
- C.** i-D, ii- B, iii- A, iv-C
- D.** i-D, ii- A, iii- B, iv-C
6. Given below are two statements labelled as Assertion (A) and Reason (R).
Assertion (A): It is difficult to replace chlorine by $-OH$ in chlorobenzene in companion to that in chloroethane.
Reason (B): chlorine carbon ($C - Cl$) bond in chlorobenzene has a partial double bond character due to resonance.
- A.** Both A and R are true and R is the correct explanation of A
- B.** Both A and R are true but R is not the correct explanation of A
- C.** A is true but R is false
- D.** A is false but R is true

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7. Given below are two statements labelled as Assertion (A) and Reason (R).

Assertion (A): S_N2 reaction of an optically active aryl halide with an aqueous solution of KOH always gives an alcohol with opposite sign of rotation.

Reason (B): S_N2 reactions always proceed with inversion of configuration.

- A. Both A and R are true and R is the correct explanation of A
 - B. Both A and R are true but R is not the correct explanation of A
 - C. A is true but R is false
 - D. A is false but R is true
8. Given below are two statements labelled as Assertion (A) and Reason (R).

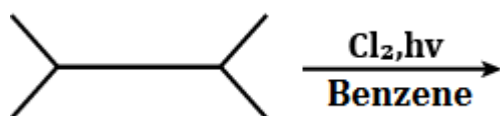
Assertion (A): Treatment of chloroethane with a saturated solution of $AgCN$ gives ethyl isocyanide as a major product.

Reason (B): Cyanide ion (CN^-) is an ambident nucleophile.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not the correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

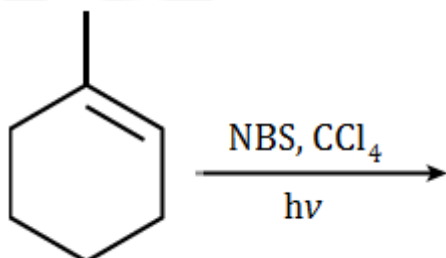
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9. The major monochlorinated product in the following reaction is



- A.
- B.
- C.
- D. None of these

10. The total number of structural isomers formed in the following reaction is:



- A. 6
- B. 5
- C. 4
- D. 3

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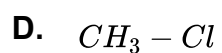
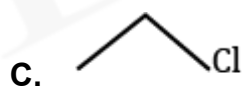
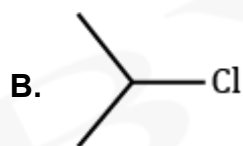
11. The correct order of increasing $C - X$ bond length is:
(R is methyl group)
- A. $RI > RBr > RCl > RF$
 - B. $RF > RCl > RBr > RI$
 - C. $RBr > RCl > RI > RF$
 - D. $RCl > RF > RI > RBr$
12. The IUPAC name of $CH_2 = CH - CH_2Cl$ is
- A. 3-chloro-1-propene
 - B. 1-chloro-3-propene
 - C. Allyl chloride
 - D. Vinyl chloride
13. The reaction of $SOCl_2$ on alcohols to form alkyl chlorides gives good yields because
- A. alkyl chlorides are immiscible with $SOCl_2$
 - B. by-products of the reaction are gaseous and escape out
 - C. alcohol and $SOCl_2$ are soluble in water
 - D. the reaction does not occur via intermediate formation of an alkyl chlorosulphite
14. Finkelstein reaction is
- A. $2CH_3CH_2Cl + Ag_2O (dry) \rightarrow CH_3CH_2OCH_2CH_3 + 2AgCl$
 - B. $CH_3CH_2Br + NaI \xrightarrow{\text{Dry Acetone}} CH_3CH_2I + NaBr$
 - C. $2CH_3CH_2Br + Ag_2O + H_2O \rightarrow 2CH_3CH_2OH + 2AgBr$
 - D. $CH_3CH_2Cl + NaOCH_3 \rightarrow CH_3CH_2OCH_3 + NaCl$

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15. Which one of the following is not correct order of boiling points of the alkyl halides?

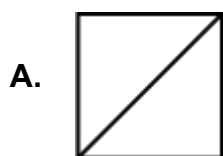
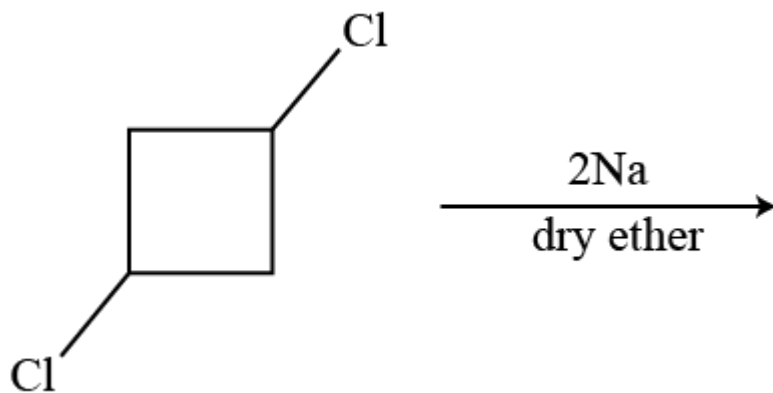
- A. $CHCl_3 > CH_2Cl_2$
- B. $CH_3(CH_2)_3Cl > CH_3(CH_2)_2Cl$
- C. $(CH_3)_3CCl > (CH_3)_2CHCH_2Cl$
- D. $CH_3(CH_2)_3Cl > CH_3CH_2CHClCH_3$

16. Which of the following alkyl halide is more reactive towards $E1$ reaction?

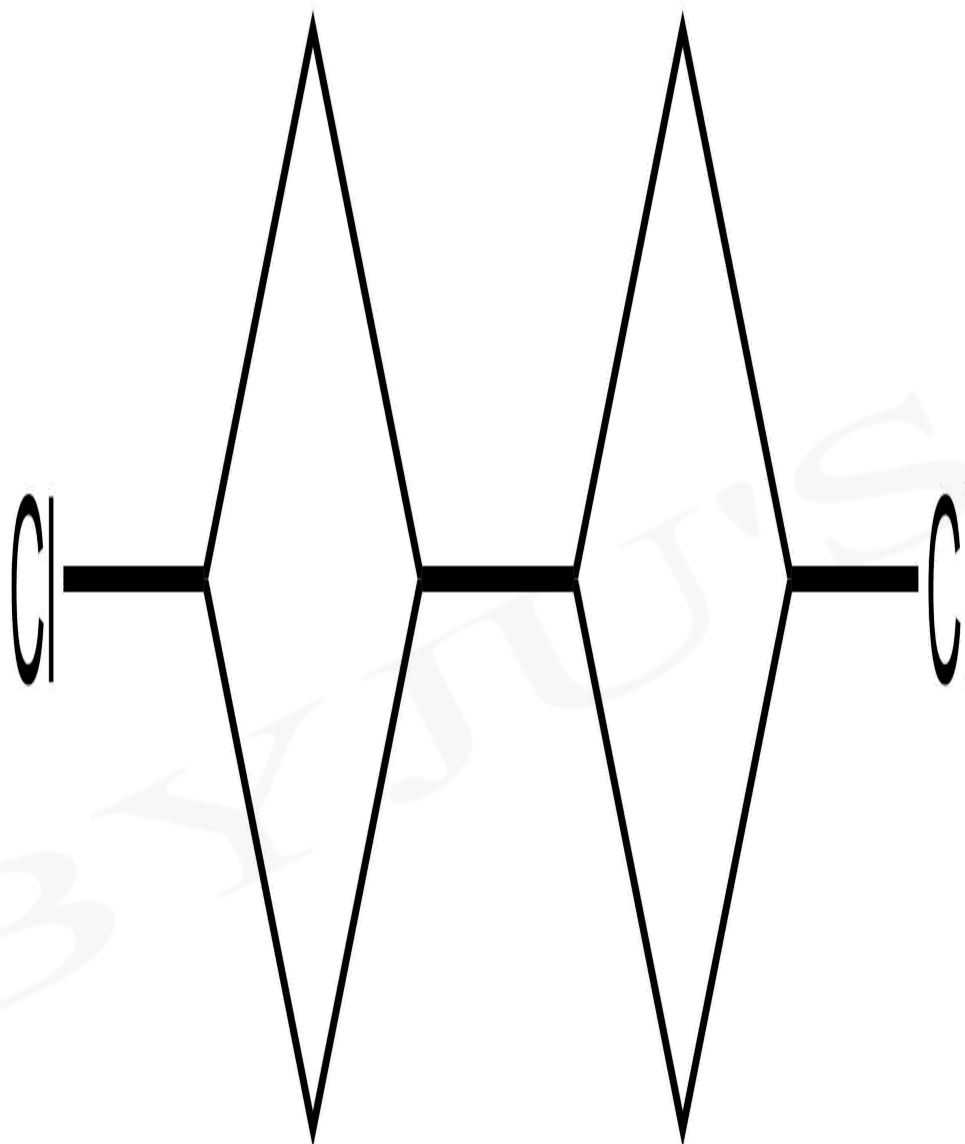


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17. Find the major product for the given reaction?



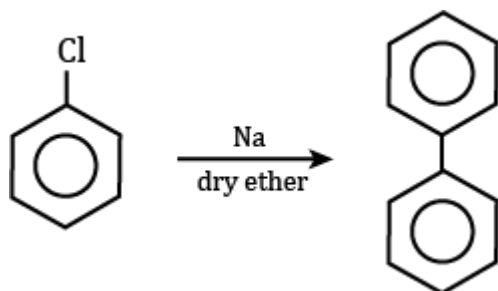
C.

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D. None of the above

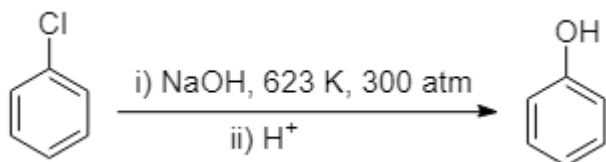
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18. The below reaction is known as :



- A. Wurtz reaction
 - B. Wurtz fittig reaction
 - C. Fittig reaction
 - D. Kolbe's electrolysis
19. Action of alcoholic $AgNO_3$ on chlorobenzene is similar to the action on
- A. Allyl chloride
 - B. Vinyl chloride
 - C. Isopropyl chloride
 - D. Benzyl chloride

20. Following equation illustrates



- A. Dow's process
- B. Kolbe's process
- C. Carbylamine test
- D. Haloform reaction