

India's Number 1 Education App

CHEMISTRY

BOOKS - BITSAT GUIDE

HALOGEN DERIVATIVES OF HYDROCARBON

Practice Exercise

1. The true order of reactivity towards $S_N 1$ reaction is

A. vinyl chloride $>$ allyl chloride	>
isopropyl chloride	
B. allyl chloride > isopropyl chloride	>
vinyl chloride	
C. vinyl chloride > isopropyl chloride	>
allyl chloride	
D. isopropyl chloride > vinyl chloride	>
allyl chloride	

Answer: B



2. Consider the following reaction,

 $(CH_3)_3C-Cl+OH
ightarrow (CH_3)_3C-OH+Cl^-$

The true statement about the above process is

A. the rate becomes four times of the halide

becomes twice

B. the rate does not change by reducing

 $\left[OH^{\,-}
ight]$ to half

C. the rate does not change by doubling

[halide]

D. the rate becomes twice on doubling the

 $\left[OH^{-}
ight]$

Answer: B



3. Consider the following reaction,

$CH_3Br+OH^- ightarrow CH_3OH+Br^-$

The true statement about the above process is

A. the rate does not change on doubling $[CH_3Br]$ and making $[OH^-]$ to half B. the rate becomes half on doubling $[CH_3Br]$ C. the rate becomes half on doubling

 $\left[OH^{\,-}
ight]$

D. All the above are correct

Answer: A

4. The product of the reaction of alcoholic silver

nitrite with ethyl bromide is:

A. ethyl bromide

B. ethene

C. nitroethane

D. ethyl alcohol

Answer: A

5. Which does not give methyl bromide?

A. $CH_3OH + HBr$

 $\mathsf{B.}\,CH_3OH+Br_2$

 $C. CH_3OH + PBr_3$

D. $CH_3COOAg + Br_2$

Answer: B



6. Consider the following haloalkanes,

I. CH_3l II. CH_3F

III. CH_3Cl IV. CH_3Br

The correct sequence of increasing order of dipole moment is

A. I < II < III < IV

 $\mathsf{B}.\,IV < III < II < I$

 ${\rm C.}\,I < IV < II < III$

D. III < IV < I < II

Answer: C



 $\mathsf{C.}\,CH_2N_2$

D. CH_3 ONA

Answer: B



8. In alkaline hydrolysis of a tertiary halide by aqueous alkali, if concentration of alkali is doubled, then the reaction rate

A. will be boubled

B. will be halved

C. will remain constant

D. Cannot say anything

Answer: C



9. Which of the following sequence of reagent

is best suited for the reaction shown below?



A. (i) CH_3MGBr, H_3O^+ (ii) H^+/Δ (iii)

 HBr/H_2O_2



HBr

C. (i) CH_3MGBr, H_3O^+ (ii) HBr

D. (i) HBr/ROOR (ii) CH_3MGBr, H_3O^+

Answer: A

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10. The order of reactivities of the following alky

halides for an $S_N 2$ reaction is .

A. RF > RCl > RBr > Rl

 $\mathsf{B.}\,RF > RBr > RCl > Rl$

C. RCl > RBr > RF > Rl

D. Rl > RBr > RCl > RF

Answer: D

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11. Choose the incorrect statement.

A. An $S_N 1$ reaction proceeds with inversion	
of configuration	
B. An $S_N 2$ reaction proceeds with	
stereochemical inversion	
C. An S_N2 reaction follows second order	
kinetics	
D. The reaction of tert-butyl bromide with	
OH^{-} follows first order kinetics	

Answer: A



12. An prgamoc cp,[pimd $C_5H_9Br(A)$ which readily decolourises bromine water and cold alkaline $KMnO_4$ solution gives $C_5H_{11}Br(B)$ on catalytic hydrogenation. The reaction of A with alcoholic KOH first and then with $NaNH_2$ produces C with evolution of NH_3 . C reacts with Lindlar's catalyst to give D and on reaction with Na in liquid NH_3 produces E. D and E are isomers. The compound A is

A. $CH_3CH_2CH = \overset{Br}{\overset{|}{C}} - CH_3$

 $\overset{Br}{\stackrel{|}{\vdash}}{\mathsf{B.}} CH_3 CH_2 - \overset{C}{C} = CHCH_3$

C. Both (a) and (b)

D. Neither (a) nor (b)

Answer: A



13. Consider the following reaction,



D and E respectively are







D. None of the above

Answer: C



14. The main product of the reaction of propane with chlorine at $25^{\circ}C$ in the presence of sunlight is

A. 1-chloropropane

B. 2-chloropropane

C. chloroethane

D. chloromethane

Answer: B

15. Hunsdiecker reaction is an example of

A. decarboxylation

B. debromination

C. decarboxylation and bromination

D. bromination

Answer: C



16. When 3-phenyl propene is treated with HBr in the presence of proxide, the major product formed is

- A. 1-bromo-3-phenyl propane
- B. 1,2-dibromo-3-phenyl propane
- C. 2-bromo-1-phenyl propane
- D. 3-(p-bromo phenyl) propene

Answer: A



17. The alkyl halide that undergoes $S_N 1$ reaction more readily is

A. ethyl bromide

B. iso-propyl bromide

C. vinyl bromide

D. t-butyl bromide

Answer: D

18. Which alkyl halide from the following would you expect to react more rapidly by $S_N 2$ mechanism ?



Answer: A



19. Consider the following reaction,

 $CH_3Br+Nu^ightarrow CH_3-Nu+Br^-$

The decreasing order of the rate of the above reaction with Nu^- is

I. PHO^- II. AcO^-

III. HO^- IV. CH_3O^-

A. IV > III > I > II

 $\mathsf{B}.\,IV>III>II>I$

 $\mathsf{C}.\, I > II > III > IV$

 $\mathsf{D}.\,II > IV > III > I$

Answer: A

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20. The compound A in the following reaction sequence is $A \xrightarrow{PCl_5} B \xrightarrow{AlC. KOH} C \xrightarrow{\downarrow H_2/Ni} Propane$

A. chloroethane

B. ethanol

C. 1,2-dichloroethane

D. None of these

Answer: D



21. Which of the following statement regarding

 $S_N 1$ reaction shown by alkyl halide is incorrect?

A. The added Nu^- plays no kinetic role in

 $S_N 1$ reaction

B. $S_N 1$ reaction involves the inversion of configuration of optically active substance

C. $S_N 1$ reaction on chiral starting material ends up with racemisation of the product

D. Polar protic solvent increases the rate of

 $S_N 1$ reaction

Answer: B

22. The product of which of the following reactions is not a vicinal dihalide?

A. Reaction of ethylene glycol with $P+Br_2$

B. Reaction of HCl with ethyne

C. Reaction of HBr with ethyne in the

presence of peroxide

D. Reaction of Cl_2 with propene

Answer: B

23. The treatment of
$$CH_3MgX$$
 with
 $CH_3 - C \equiv C - H$ produces
A. $CH_3 - CH = CH_2$
B. $CH_3C \equiv C - CH_2$
 $H H H$
C. $CH_3 - C = C - CH_2$
D. CH_4

Answer: D

24. Consider the following bromides,-



The correct order of $S_N 1$ reactivity is

A. II > III > I

 $\mathsf{B}.\,II>I>III$

 $\mathsf{C}.\,III>II>I$

 $\mathsf{D}.\,I > II > III$

Answer: A



25. Which of the following reactions come within the framework of elimination?

A. $(CH_3)_2 CHCl + SH^{\oplus}$

B. $(CH_{3-}(3)C - Br + ext{ethanolic KCN})$

C. $CH_3CH_2CH_2Cl+l^-$

D. $(CH_3)_2 CHBr + aq. KOH$

Answer: B

26. $20\,\%\,$ aqueous solution of sodium, chloride containing ethy alcohol or electrolyasis gives

A. C_2H_5Cl

B. CH_3CHO

 $C. CHCl_3$

D. CCl_3CHO

Answer: C

27. Alkaline hydrolysis of which of the following

compounds give methyl ketones?

- I. Ethylene dichloride
- II. 2,2-dichlorobutane
- III. Ethylidene chloride
- IV. Isopropylidene chloride
 - A. I, II and III
 - B. II, III and IV
 - C. I and III
 - D. II and IV

Answer: D



28. When optically active halide is attacked by CN^{-} , the product obtained is a racemic mixture. Hence, the halide should be

A. primary

B. secondary

C. tertiary

D. None of the above





29. Dipole moment of cis-2, 3-dichloro-2 butne is Than the dipole moment of cis1, 2-dichloroethene.

A. more

B. less

C. neither more nor less

D. None of the above





30. Aryl halides are less reactive towards nucleophilic substitution reaction as compared to alyl halides due to

A. the formation of less stable carbonium

ion

B. resonance stabilisation

C. longer carbon-halogen bond

D. sp^2 -hybridised C attach to X

Answer: B





the product Y is

A. o-cresol

B. p-cresol

C. 2,4-dihydroxytoluene

D. benzoic acid

Answer:



32. The increasing order of reactivity of the following bromides in $S_N 1$ reaction is



A. IV > III > I > II

$\mathsf{B}. III > IV > I > II$

$\mathsf{C}.\,II>III>I>IV$

$\mathsf{D}.\,II > III > IV > I$

Answer: A

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33. The Wurtz-Fittig reaction involves

condensation of

A. two molecules of aryl halides

B. one molecule of each of aryl halide and

aldyl halide

C. one molcule of each aryl halide and

phenol

D. two molecules of an alkyl halide

Answer: B

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34. The compound C_7H_8 undergoes the

following reactions

The product 'C' is .

A. o-bromotoluene

B. m-bromtoluene

C. p-bromotoluene

D. 3-bromo-2,4,6-trichlorotoluene

Answer: B



35. Which product is formed when trans-2phenyl-1-bromocyclopentane is treated with alcoholic KOH?

A. 4-phenylcyclopentene

B. 2-phenylcyclopentene

C. 1-phenylcyclopentene

D. 3-phenylcyclopentene

Answer: D

36. Assertion (A) Exposure of ultraviolet rays to human causes the skin cancer, disorder and disrupt the immune system.

Reason (R) Carbon tetrachloride is released into air, it rises to atmosphere and deplets the ozone layer.

A. Both A and R are correct and R is correct explanation of A

B. Both A and R are connect but R is not the

correct explanation of A

C. A is correct but R is incorrect

D. R is correct but R is incorrect

Answer: A

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37. IUPAC name DDT is

A. 1,1-bis(4-chlorophenyl)-2,2,2-

trichloroethane

B. 1,2-bis(4-chlorophenyl)-1,1,1-

trichloroethane

C. 2,2-bis(4-chlorophenyl)-1,1,1-

trichloroethane

D. 2,1-bis(4-chlorophenyl)-1,1,1-

trichloroethane

Answer: C

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38. Which of the following statements is/are

true for chloroform?

A. Chloroform exposure causes damage to

heart

B. People develop sores when skin is

immersed in chloroform

C. Chloroform has no effect on central

nervous system`

D. All of the above

Answer: B

1. Arrange the following compounds in

increasing order of their boiling points:



A. II < I < III

 $\mathsf{B.}\,I < II < III$

 $\mathsf{C}.III < I < II$

D. III < II < I

Answer: C



2. Which of the following is less acidic among

the given halogen compounds?

A. CHF_3

 $\mathsf{B.}\,CHl_3$

 $\mathsf{C.}\,CHCl_3$

D. $CHBr_3$

Answer: A



3. 2-bromopentane with alcoholic KOH yields a mixture of three alkenes. Which of the following alkene is predominant?

A. 1-pentene

B. Cis-2-pentene

C. Trans-2-pentene

D. Cis-1-pentene

Answer: C

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4. Toluene on reaction with N-bromo-succinimide gives

A. p-bromomethylbenzene

B. o-bromomethylbenzene

C. phenyl-bromomethane

D. m-bromomethylbenzene

Answer: C

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5. Which of the following will yield a mixture of 2-chlorobutene and 3-chlorobutene on treatment with HCl?

A.
$$CH_2 = C = CH - CH_3$$

$$\mathsf{B}.\, H_2C = \mathop{C}_{\mid}_{CH_3} - CH = CH_2$$

 $\mathsf{C}.\,CH_2=CH-CH=CH_2$

D. $HC \equiv C - CH = CH_2$

Answer: A



6. 3-methyl-2-butanol on treatment with HCl gives (major product)

- A. 2-chloro-2-methylbutane
- B. 2-chloro-3-methylbutane
- C. 2,2-dimethylpentane
- D. None of the above

Answer: B



7. The correct order of reactivity of hydrogen

halides with ethyl alcohol is

A. HF > HCl > HBr > Hl

$\mathsf{B}.\,HCl>HBr>HF>Hl$

 $\mathsf{C}.\,HBr>HCl>Hl>HF$

 $\mathsf{D}.\,Hl > HBr > HCl > HF$

Answer: D

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8. Suitable reagents A and B for the following

reactions respectively are



A. Br and Br_2

B. Br_2 and NBS

C. NBS and NBS

D. NBS and Br_2

Answer: D

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9. Following compound is treated with NBS:

 $CH_2CH \longrightarrow CH_2 + NBS \longrightarrow A$

Compound formed A is









Answer: A

10. Consider the following reaction,



A will have configuration





C. Both (a) and (b)

D. None of these



