Chapter 01

Halogen Derivatives

TOPIC WISE QUESTIONS

Q.1 Which of the following is 1° alkyl halide?
(1) $R - CH_2 - X$ (2) R_2CHX
(3) $R_3C - X$ (4) $R - H$

Q.2 2° alkyl halide among the following:
(1) isopropyl chloride (2) isobutyl chloride
(3) n-propyl chloride (4) n-butyl chloride

Q.3 Which of the following is a primary halide?
(1) iso – propyliodide
(2) sec - Butyliodide
(3) tert – Butylbromide
(4) neo – hexylchloride

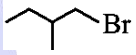
Q.4 The correct order of acid catalysed dehydration of alcohols is:
(1) 1° > 2° > 3° (2) 3° > 2° > 1°
(3) 2° > 1° > 3° (4) 1° > 3° > 2°

Q.5 Lucas reagent reacts fastest with:
(1) 1 - butanol
(2) 2 - butanol
(3) 2 - methyl - 1- propanol
(4) 2 - methyl - 2 - Propanol

Q.6 C_4H_9X is a:
(1) Pri - alkyl halide
(2) Sec - alkyl halide
(3) Ter - alkyl halide
(4) Primary, sec and tertiary alkyl halide

Q.7 The IUPAC name of tertiary butyl chloride is:
(1) 2 - chloro - 2 - methyl propane
(2) 3 - chlorobutane
(3) 4 - chlorobutane
(4) 1, 2 - chloro - 3 - methyl propane

Q.8 The common name for the molecule given below is- $CH_2 = CH - CH_2 - Cl$
(1) Vinyl chloride
(2) Aryl chloride
(3) Allyl chloride
(4) None of these

Q.9 The structure of 2 - Bromopentane:
(1) 
(2) 
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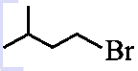
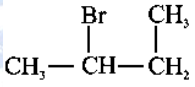
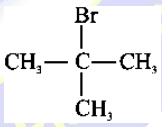
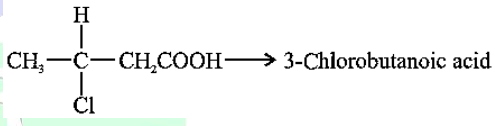
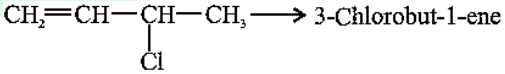
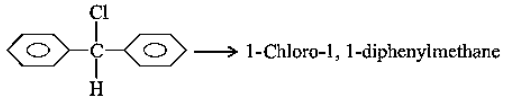
(4) 

Q.10 The structure of 2 - Bromo - 2 - methyl propane:
(1) 
(2) $CH_3 - CH_3 - CH_2 - Br$
(3) 
(4) None of these

Q.11 Identify the incorrect IUPAC name-
(1) 
(2) 
(3) 
(4) None of these

Q.12 The reagent used to get alkyl halide from alcohol:
(1) PCl_5 (2) $SOCl_2$

(3) Both (1) and (2) (4) Cl_2

Q.13 For the preparation of alkyl halides from alcohols which among the following cannot be used:

(1) PCl_5 (2) $SOCl_2$ (3) PCl_3 (4) NaCl

Q.14 In the reaction ROH $\xrightarrow{\text{Red P+I}_2}$ RI + A; A is:

(1) H_3PO_2 (2) H_3PO_3 (3) H_3PO_4 (4) HPO_3

Q.15 1-Butene when treated with HBr gives:

(1) sec - butyl bromide

(2) n - butyl bromide

(3) 1 - bromo butane

(4) 3 - butyl bromide

Q.16 What is the final product of the given reaction:

$CH_3 - C \equiv CH \xrightarrow{Na} \xrightarrow{CH_3-CH_2-I}$ Product

(1) $CH_2 = CH - CH_2 - CH_3$

(2) $CH_3–CH_2–C\equiv C–CH_2–CH_3$

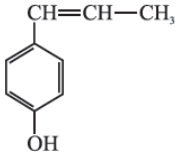
(3) $CH \equiv C - CH_2 - CH_2 - CH_3$

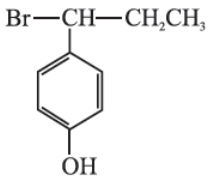
(4) $CH_3 - C \equiv C - CH_2 - CH_3$

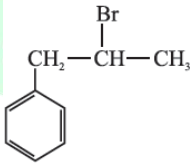
Q.17 Which of the following reaction follows Markovnikov's rule?

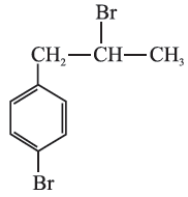
(1) C_2H_4 + HBr (2) $C_3H_6 + Cl_2$

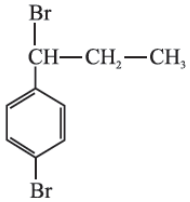
(3) C_3H_6 + HBr (4) $C_3H_6 + Br_2$

Q.18  + HBr → X, here X in the reaction is:

(1) 

(2) 

(3) 

(4) 

Q.19 Which one of the following methods cannot yield alkyl halide?

(1) $CH_3COOAg + Br_2 \xrightarrow[\Delta]{\text{anhyd.ZnCl}_2}$

(2) $CH_3COOAg + Br_2 \xrightarrow{CCl_4}$

(3) $CH_2 = CH_2 \xrightarrow{SOCl_2}$

(4) $CH_3CH_2OH + HX \xrightarrow[\Delta]{\text{anhyd.ZnCl}_2}$

Q.20 In the preparation of alkyl halide from alkene and halogen which of the following reaction is involved?

(1) Electrophilic addition

(2) Nucleophilic addition

(3) Electrophilic substitution

(4) Nucleophilic substitution

Q.21 In the preparation of alkyl halide from alkane and halogen, which of the following reaction is involved?

(1) Free radical substitution

(2) Nucleophilic addition

(3) Electrophilic substitution

(4) Nucleophilic substitution

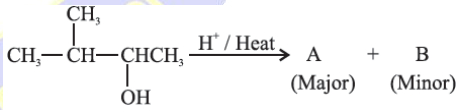
Q.22 Identify B in the following scheme:

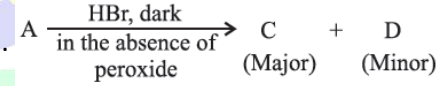
$CH_3CH_2CH_2OH \xrightarrow{PCl_5} A \xrightarrow{\text{alc.KOH}} B$

(1) Propyne (2) Propene

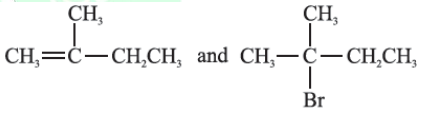
(3) Propanol (4) Propanone

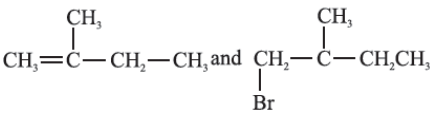
Q.23 In the following reactions:

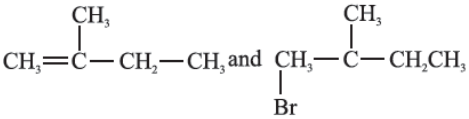
I. 

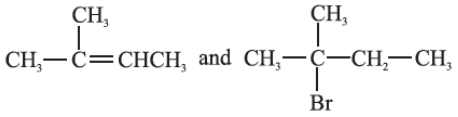
II. 

The major product (A) and (C) are respectively

(1) 

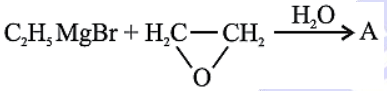
(2) 

(3) 

(4)  and

Q.24 Which of the following compounds can yield only one monochlorinated product upon free radical chlorination?
(1) 2, 2 - Dimethyl propane
(2) 2 - Methyl propane
(3) 2 - Methyl butane
(4) n - Butane

Q.25 In the following reaction, A is:



(1) $C_2H_5CH_2CHO$ (2) $C_2H_5CH_2CH_2OH$
(3) $C_2H_5CH_2OH$ (4) $C_2H_5HSO_4$

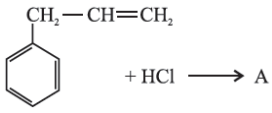
Q.26 1 - chloropropane $\xrightarrow{\text{alc.KOH}}$ B $\xrightarrow{\text{HX}}$ C.
(1) 1 – chloropropene
(2) Alkyl halide
(3) 2 – chloropropane
(4) sec - alkyl halide

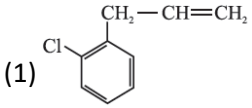
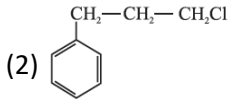
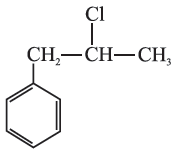
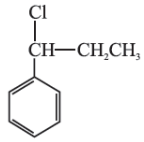
Q.27 In Dow's process the starting raw material is:
(1) Phenol
(2) Chlorobenzene
(3) Aniline
(4) Diazo benzene

Q.28 Chlorobenzene is prepared commercially by:
(1) Dow's process
(2) Decon's process
(3) Raschig process
(4) Etard's process

Q.29 The reaction of toluene with chlorine in the presence of $FeCl_3$ gives predominantly:
(1) A mixture of o - and p - chlorotoluene
(2) Benzyl chloride
(3) M - chlorotoluene
(4) Benzoyl chloride

Q.30 What is 'A' in the following reaction?



(1) 
(2) 
(3) 
(4) 

Q.31 An organic compound which produces a bluish green coloured flame on heating in the presence of copper is:
(1) Chlorobenzene (2) Benzaldehyde
(3) Aniline (4) Benzoic acid

Q.32 When alkyl halide reacts with moist Ag_2O gives:
(1) Alcohol (2) Ether
(3) Alkane (4) Alkene

Q.33 Which of the following molecules has highest dipole moment?
(1) CH_3Cl (2) CH_2Cl_2
(3) $CHCl_3$ (4) CCl_4

Q.34 Decreasing order of reactivity of hydrogen halide acid in the conversion of ROH → RX is:
(1) HCl > HBr > HI > HF
(2) HI > HBr > HCl > HF
(3) HF > HCl > HBr > HI
(4) HF > HBr > HI > HCl

Q.35 The density of glycerol is higher than propanol due to:
(1) Van der waals' attraction
(2) Hydrogen bonding
(3) Ionic bonding
(4) More no. of covalent bonds

Q.36 Treatment of ammonia with excess of ethyl chloride will yield:
(1) Diethyl amine
(2) Ethane
(3) Tetraethyl ammonium chloride
(4) Methyl amine

Q.37 The correct order of boiling point for isomeric primary (1°), secondary (2°) and tertiary (3°) alcohols is:
(1) 1° > 2° > 3° (2) 3° > 2° > 1°
(3) 2° > 1° > 3° (4) 2° > 3° > 1°

Q.38 A primary alkyl halide would prefer to undergo:
(1) S_N1 reaction (2) S_N2 reaction
(3) α – elimination (4) Racemisation

Q.39 Which is the correct increasing order of boiling points of the following compounds?
1 - Iodobutane, 1 - Bromobutane,
1 - chlorobutane, Butane.
(1) Butane < 1 - chlorobutane < 1 - Bromobutane < 1 - Iodobutane
(2) 1 - Iodobutane < 1 - bromobutane < 1 - chlorobutane < Butane
(3) Butane < 1 - Iodobutane < 1 - Bromobutane < 1 - chlorobutane
(4) Butane < 1 - cholorobutane < 1 - Iodobutane < 1 - Bromo butane.

Q.40 The halogen atom attached to C - atom in the benzene ring is:
(1) o - directing and activating
(2) p - directing and activating
(3) o, p - directing and deactivating
(4) m - directing and deactivating

Q.41 A S_N2 reaction takes place with:
(1) Retention of configuration
(2) Inversion of configuration
(3) Racemisation
(4) Formation of meso form

Q.42 The raw material for raschig process is:
(1) Chloro benzene (2) Phenol
(3) Benzene (4) Anisol

Q.43 Chlorobenzene on treatment with sodium in dry ether gives diphenyl. The name of the reaction is:
(1) Fittig reaction (2) Wurtz fittig reaction
(3) Wurtz reaction (4) Sandmeyer reaction

Q.44 Which of the following alkyl halide is used as an ethylating agent?
(1) CH_3I (2) C_2H_5Cl
(3) $C_2H_4Br_2$ (4) C_2H_5OH

Q.45 Which of the following is used as refrigerant?
(1) CH_3COCH_3 (2) CCl_4
(3) C_2H_5Cl (4) CF_4

Q.46 Consider two reactions:
(1) $(CH_3)_2CH-CH_2Br \xrightarrow{C_2H_5OH} (CH_3)_2CH-CH_2-O-C_2H_5+HBr$
(2) $(CH_3)_2CH-CH_2Br \xrightarrow{C_2H_5O^-} (CH_3)_2CH-CH_2-O-C_2H_5+Br^-$
The mechanism of reactions (A) and (B) are respectively:
(1) S_N2, S_N2 (2) S_N2, S_N1
(3) S_N1, S_N2 (4) S_N1, S_N1

Q.47 S_N1 reaction occurs through the intermediate formation of:
(1) Carbocation (2) Carbanion
(3) Free radicals (4) Transition

Q.48 Identify the products (A) and (B) in the reactions:
RX + AgCN → (A) + AgX
RX + KCN → (B) + KX
(1) (A) → RCN, (B) → RCN
(2) (A) R – CN, (B) R → NC
(3) (A) → RNC, (B) → RCN
(4) (A) → R – NC, (B)R → NC

Q.49 The alkyl halide is converted into an alcohol by:
(1) Elimination
(2) Dehydrogenation
(3) Addition
(4) Substitution

Q.50 Grignard reagents are formed by the reaction of alkyl halides by warming with:
(1) With alcoholic solution
(2) With $MgCl_2$
(3) Mg in presence of dry ether
(4) With $MgCO_3$

Q.51 Which of the following alkyl halides is hydrolysed by S_N1 mechanism?

(1) CH_3Cl (2) CH_3CH_2Cl

(3) $CH_3CH_2CH_2Cl$ (4) $(CH_3)_3C\,Cl$

Q.52 The most reactive nucleophile among the following is:

(1) CH_3O^- (2) $C_6H_5O^-$

(3) $(CH_3)_2CHO^-$ (4) $(CH_3)_3CO^-$

Q.53 The correct order of reactivity towards nucleophilic substitution reaction is:

(1) $CH_3F > CH_3Cl > CH_3Br > CH_3I$

(2) $CH_3I >$ CH Br $> CH_3Cl > CH_3F$

(3) $CH_3I > CH_3Cl > CH_3Br > CH_3F$

(4) $CH_3I > CH_3Br > CH_3F > CH_3Cl$

Q.54 Among the choices of alkyl bromide, the least reactive bromide in S_N2 reaction is:

(1) 1 – bromo pentane

(2) 2 - bromo - 2 - methyl butane

(3) 1 - bromo - 3 methyl butane

(4) 1 - bromo - 2 - methyl butane

Q.55 2 - chloro - 2 - methyl propane on reaction with alc. KOH gives X as the product. X is:

(1) But - 2 - ene

(2) 2 - methylbut - 1 -ene

(3) 2 - methylprop - 1 – ene

(4) 2 - methylbutan - 2 - ol

Q.56 Which of the following haloalkanes reacts with aqueous KOH most easily (via S_N1)?

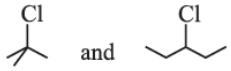
(1) 1 - Bromobutane

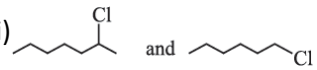
(2) 2 - Bromobutane

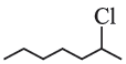
(3) 2 - Bromo - 2 - methylpropane

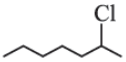
(4) 2 - chlorobutane

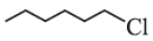
Q.57 In the following pairs of halogen compounds, which compound undergoes faster S_N1 reaction?

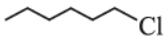
(i)  and

(ii) 

(1) (i)  (ii) 

(2) (i)  (ii) 

(3) (i)  (ii) 

(4) (i)  (ii) 

Q.58 Which of the following haloalkane is most reactive towards S_N1?

(1) 1 – chloropropane (2) 1 - Bromopropane

(3) 2 - chloropropane (4) 2 - Bromopropane

Q.59 Reaction of ethyl halide with alkoxide is called:

(1) Wurtz reaction

(2) Williamson's synthesis

(3) Elimination reaction

(4) Carbylamine reaction

Q.60 Friedal craft's acetylation of benzene ring involves the use of:

(1) CH_3Cl (2) CH_3COCl

(3) $(CH_3CO)_2O$ (4) Either (2) or (3)

Q.61 In the reaction

$$CH_3-CH_2-CH=CH_2 \xrightarrow{HX} B \xrightarrow[Ag_2O]{moist} C;\ C \text{ is:}$$

(1) n - propyl alcohol (2) Isopropyl alcohol

(3) Primary alcohol (4) Secondary alcohol

Q.62 Alc. KOH is used for:

(1) Dehydrogenation

(2) Dehydrohalogenation

(3) Dehalogenation

(4) Dehydration

Q.63 In the reaction.

$$C_2H_5I \xrightarrow{alc.KOH} X \xrightarrow{Br_2} Y \xrightarrow{KCN} Z;$$ X, Y and Z are respectively:

(1) C_2H_4, C_2H_5 Br, C_2H_5CN

(2) C_2H_5OH, C_2H_5Br, $C_2H{=}CN$

(3) C_2H_4, $CH_2BrCH{=}Br$, CH_2CNCH_2CN

(4) C_2H_4, $C_2H_4Br_2$, C_2H_5CN

Q.64 In S_N2 reactions the order of reactivity of the halides. CH_3X, C_2H_5X,n – C_3H_7X,n – C_4H_9X is

(1) $CH_3X > C_2H_5X >$ n – $C_3H_7X >$ n – C_4H_9X

(2) $C_2H_5X >$ n – $C_3H_7X >$ n – $C_4H_9X > CH_3X$

(3) $C_2H_5X > n - C_3H=X > n - C_4H_9X < CH_3X$

(4) $n - C_4H_9X > n - C_3H_7X > C_2H_5X > CH_3X$

Q.65 S_N2 mechanism proceeds through the formation of a:

(1) Carbocation (2) Transition state

(3) Free radical (4) Carbanion

Q.66 Wurtz reaction is not possible with:

(1) CH_3I (2) $(CH_3)_3Cl$

(3) $(CH_3)_2CH.I$ (4) C_2H_5I

Q.67 2 - bromobutane on treatment with alc. KOH gives:

(1) But - 1 - ene

(2) Butan - 2 - ol

(3) But - 2 - ene

(4) Both (1) and (2)

Q.68 The reaction, $C_2H_5Br + NaI \xrightarrow[\Delta]{\text{actone}} C_2H_5I + NaBr$ is

(1) Wurtz reaction

(2) Finkelstein reaction

(3) Hunsdiecker's reaction

(4) Swartz reaction

Q.69 In the following sequence of reactions:

$$CH_3CH_2CH_2OH \xrightarrow{HBr} A \xrightarrow{alc.KOH}$$

$$B \xrightarrow[Peroxide]{HBr} C \xrightarrow{aq.KOH} D$$

The original compound and D are:

(1) Same (2) Isomers

(3) Metamers (4) Homologues

Q.70 In the following sequence of reaction,

$$CH_3 - Br \xrightarrow{KCN} (A) \xrightarrow{H_3O^+} B \xrightarrow[ether]{LiAlH_4} C.$$ C is :

(1) Acetone (2) Methane

(3) Acetaldehyde (4) Ethyl alcohol

Q.71 Following is the substitution in which –CN replace –Cl

$$R - Cl + KCN \xrightarrow{\Delta} R - CN + KCl$$

(alcoholic)

To obtain propane nitrile, R – Cl should be:

(1) Chloroethane (2) 1 - chloropropane

(3) Chloromethane (4) 2 – chloropropane

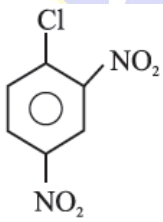
Q.72 $C_2H_5Cl \xrightarrow[Ag_2O]{Moist} A \xrightarrow[360°C]{Al_2O_3} B \xrightarrow{S_2Cl_2} C$

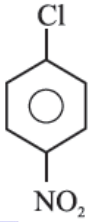
In the above sequence of reactions, identify C:

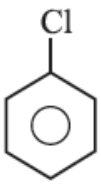
(1) Chloroethane (2) Chloropicrin

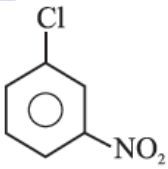
(3) Mustard gas (4) Lewisite gas

Q.73 The compound that reacts the fastest with sodium methoxide is:

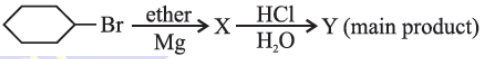
(1) 

(2) 

(3) 

(4) 

Q.74 In that given reaction, 'Y' in the reaction is:



(1) Hexane

(2) Cyclohexane

(3) Cyclohexyl cyclohexane

(4) Cyclohexyl ether.

Q.75 What is the name of the following reaction?

$$CH_3 - CH_2 - CH_2Br \xrightarrow[Dryacetone]{NaI} CH_3CH_2CH_2I$$

(1) Sandmeyer reaction

(2) Gattermann reaction

(3) Finkelstein reaction

(4) Swarts reaction

Q.76 $CH_3CH_2CH_2Br \xrightarrow[alcohol]{KOH} CH_3CH=CH_2$

The above reaction is an example of:

(1) Substitution

(2) Elimination

(3) Addition

(4) Rearrangement

Q.77 Which one of the following species will be most reactive in S_N2 reaction?

(1)  (2) 

(3)  (4) 

Q.78 Iso - propyl bromide on Wurtz reaction gives:

(1) Hexane

(2) Propane

(3) 2,3 - dimethyl butane

(4) Neo – hexane

Q.79 The following is used in paint removing:

(1) $CHCl_3$ (2) CH_2Cl_2

(3) CCl_4 (4) CH_3Cl

Q.80 In fire extinguishers, following is used:

(1) $CHCl_3$ (2) CS_2

(3) CCl_4 (4) CH_2Cl

Q.81 An organic halogen compound which is used as refrigerant in refrigerators and air conditioners is:

(1) BHC (2) CCl_4 (3) Freon (4) $CHCl_3$

Q.82 Gammexane is chemically known as:

(1) Benzene hexachloride

(2) Hexa chlorobenzene

(3) Benzene hexabromide

(4) Hexa bromobenzene

Q.83 Freon used as refrigerant is:

(1) $CF_2 = CF_2$ (2) CH_2F_2

(3) $CCl_2 F_2$ (4) CF_4

Q.84 Which one of the following has highest chlorine content?

(1) Pyrene (2) DDT

(3) Chloral (4) BHC

Q.85 Which of the following is used for metal cleaning and finishing?

(1) $CHCl_3$ (2) CHI_3

(3) CH_2Cl_2 (4) C_6H_6

Q.86 Freon R - 22 is

(1) $CHClF_2$ (2) CCl_2F_2

(3) CH_3Cl (4) CH_2Cl_2

Q.87 The chemical formula of tear gas is:

(1) $COCl_2$ (2) CO_2

(3) Cl_2 (4) $CCl_3.NO_2$

ANSWER KEY

TOPIC WISE QUESTIONS

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	1	4	2	4	4	1	3	3	3	4	3	4	2	1
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	4	3	1	3	1	1	2	4	1	2	4	2	3	1	3
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	1	1	1	2	2	3	1	2	1	3	2	3	1	2	2,3,4
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	1	3	4	3	4	1	2	2	3	3	2	4	2	4
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	4	2	3	1	2	2	3	2	1	4	1	3	1	2	3
Que.	76	77	78	79	80	81	82	83	84	85	86	87			
Ans.	2	1	3	2	3	3	1	3	1	3	1	4			