Question 1.
Which of the following is not correctly matched with its IUPAC name?
(a) $CHF_2CBrClF$: 1-Bromo-1-chloro-1, 2, 2-trifluoroethane
(b) $(CCl_3)_3CCl$: 2-(Trichloromethyl)-1, 1, 2, 3, 3-heptachloropropane
(c) CH_3C (p-$ClC_6H_4)_2CH(Br)CH_3$: 2-Bromo-3, 3-bis (4- chlorophenyl) butane
(d) o-BrC_6H_4CH (CH_3) CH_2CH_3 : 2-Bromo-l- methylpropylbenzene

Answer

Answer: (b) $(CCl_3)_3CCl$: 2-(Trichloromethyl)-1, 1, 2, 3, 3-heptachloropropane

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Question 2.
The negative part of the addendum (the molecule to be added) adds on the carbon atom of the double bond containing the least number of hydrogen atoms. This rule is known as
(a) Saytzeffs rule
(b) Peroxide rule
(c) Markovnikov's rule
(d) van't hoff rule

Answer

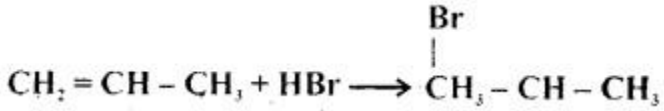
Answer: (c) Markovnikov's rule

Question 3.
Which of the following compounds can yield only one monochlorinafed product upon free radical chlorination?
(a) 2, 2-Dimethylpropane
(b) 2-Methylpropane
(c) 2-Methylbutane
(d) n-Butane

Answer

Answer: (a) 2, 2-Dimethylpropane

Question 4.
The reaction

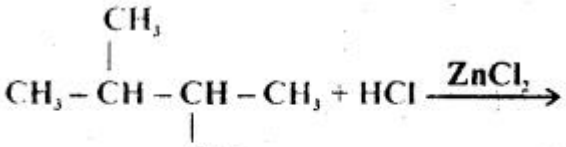


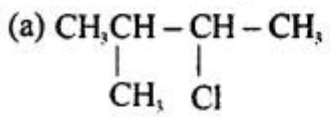
is an example of
(a) nucleophilic addition
(b) free radical addition
(c) electrophilic addition
(d) electrophilic substitution

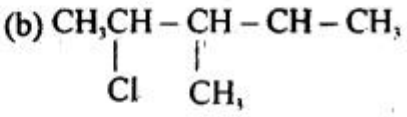
Answer

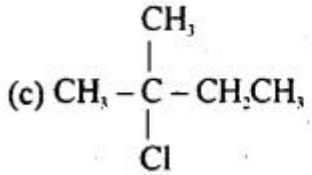
Answer: (c) electrophilic addition

Question 5.
Halogen acids react with alcohols to form alkyl halides. The reaction follows a nucleophilic substitution mechanism. What will be the product of the following reaction?



(a) 

(b) 

(c) 

(d) $CH_3CH_2CH_2CH_2CH_2Cl$

Answer

Answer: (a)

Question 6.
Bromination of methane in presence of sunlight is a
(a) nucleophilic substitution

(b) free radical substitution
(c) electrophilic substitution
(d) nucleophilic addition

Answer

Answer: (b) free radical substitution

Question 7.
Which of the following reactions follows Markovnikov's rule?
(a) C_2H_4 + HBr
(b) C_3H_6 + Cl_6
(c) C_3H_6 + HBr
(d) C_3H_6 + Br_2

Answer

Answer: (c) C_3H_6 + HBr

Question 8.
The reaction of toluene with chlorine in presence of $FeCl_3$ gives predominantly.
(a) amixture of o-and p-chlorotoluene
(b) benzyl chloride
(c) m-chlorotuluene
(d) benzoyl chloride

Answer

Answer: (a) amixture of o-and p-chlorotoluene

Question 9.
Which of the following compounds has the highest boiling point?
(a)$CH_3CH_2CH_2Cl$
(b) $CH_3CH_2CH_2CH_2Cl$
(c) $CH_3CH(CH_3)CH_2Cl$
(d) $(CH_3)_3CCl$

Answer

Answer: (b) $CH_3CH_2CH_2CH_2Cl$

Question 10.
Which of the following molecules has highest dipole moment?
(a) CH_3Cl
(b) CH_2Cl_2
(c) $CHCl_5$
(d) CCl_4

Answer

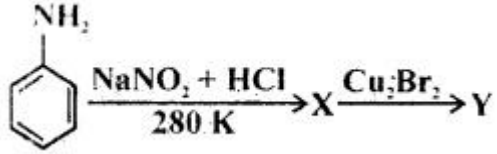
Answer: (a) CH_3Cl

Question 11.
Arrange the following compounds in-decreasing order of their boiling points
(i) CH_3Br
(ii) CH_3CH_2Br
(iii) $CH_3CH_2CH_2Br$
(iv) $CH_2CH_2CH_2CH_2Br$
(a) (i) > (ii) > (iii) > (iv)
(b) (iv) > (iii) > (ii) > (i)
(c) (i) > (iii) > (ii) > (iv)
(d) (iii) > (iv) > (i) > (ii)

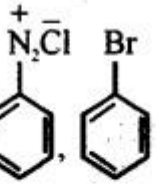
Answer

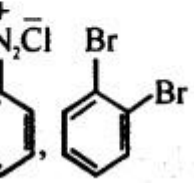
Answer: (b) (iv) > (iii) > (ii) > (i)

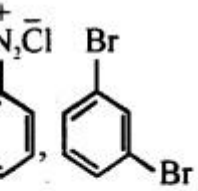
Question 24.

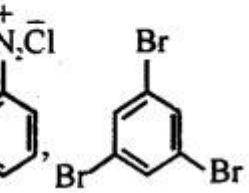


X and Y in the reaction are

(a) 

(b) 

(c) 

(d) 

Answer

Answer: (a)

Question 12.
Alkyl halides are immiscible in water though they are polar because
(a) they react with water to give alcohols
(b) they cannot form hydrogen bonds with water
(c) C -X bond cannot be broken easily
(d) they are stable compounds and are not reactive

Answer

Answer: (b) they cannot form hydrogen bonds with water

Question 13.
Which one of the following is not correct order of boiling .points of the alkyl/aryl

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) $CH_3(CH_2)_3Cl > CH_3CH_2CHClCH_3$

Answer

Answer: (c) $(CH_3)_3CCl > (CH_3)_2CHCH_2Cl$

Question 14.
Which of the following compounds will have highest melting point?
(a) Chlorobenzene
(b) o-Dichlorobenzene
(c) m-Dichlorobenzene
(d) p-Dichlorobenzene

Answer

Answer: (d) p-Dichlorobenzene

Question 15.
Ethyl alcohol is obtained when ethyl chloride is boiled with
(a) alcoholic KOH
(b) aqueous KOH
(c) water
(d) aqueous $KMnO_4$

Answer

Answer: (b) aqueous KOH

Question 16.
Which of the following alkyl halides undergoes hydrolysis with aqueous KOH at the fastest rate?
(a) $CH_3CH_2CH_2Cl$
(b) CH_3CH_2Cl

(C) $CH_3CH_2CH_2CH_2Cl$
(d) $CH_3CH_2CH\ (Br)\ CH_3$

Answer

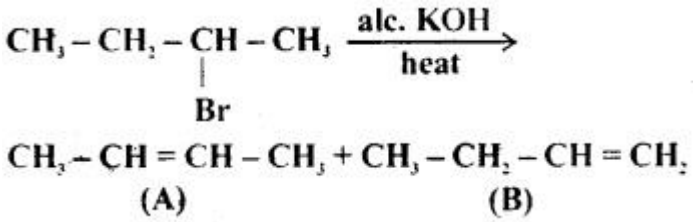
Answer: (d) $CH_3CH_2CH\ (Br)\ CH_3$

Question 17.
Butane nitrile can be prepard by heating.
(a) propyl alcohol with KCN
(b) butyl chloride with KCN
(c) butyl alcohol with KCN
(d) propyl chloride with KCN

Answer

Answer: (d) propyl chloride with KCN

Question 18.
Which of the following reactions will give the major and minor products?



(a) (a) is major product and (b) is minor product
(b) (a) is minor product and (b) is major product
(c) Both (a) and (b) are major products
(d) Only (b) is formed and (a) is not formed

Answer

Answer: (a) (a) is major product and (b) is minor product

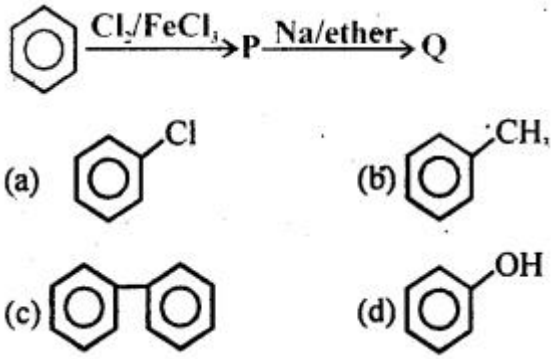
Question 19.

The final product in the reaction is
(a) CH_3OH
(b) HCOOH
(c) CH_3OH
(d) CH_3COOH

Answer

Answer: (d) CH_3COOH

Question 20.
The end product (Q) is in the following sequence of reaction



Answer

Answer: (c)

Question 21.
Methyl bromide reacts with AgF to give methyl fluoride and silver bromide. This reaction is called
(a) Fittig reaction
(b) Swarts reaction
(c) Wurtz reaction
(d) Finkelstein reaction

Answer

Answer: (b) Swarts reaction

Question 22.
The alkyl halide is converted into an alcohol by
(a) elimination
(b) dehydrohalogenation
(c) addition
(d) substitution

Answer

Answer: (d) substitution

Question 23.
A mixture of 1-chloropropane and 2-chloropropane when treated with alcoholic KOH gives
(a) prop-1-ene
(b) prop-2-ene
(c) a mixture of prop-1 -ene and prop-2-ene
(d) propanol

Answer

Answer: (a) prop-1-ene

Question 24.
An alkyl halide, RX reacts with KCN to given propane nitrile, RX is
(a) C_3H_7Br
(b) C_4H_9Br
(c) C_2H_5Br
(d) $C_5H_{11}Br$

Answer

Answer: (c) C_2H_5Br

Question 25.
In S_{N^2} reactions with the sequence of bond breaking and bond formation is as follows
(a) bond breaking is followed by formation
(b) bond formation is followed by breaking

(c) bond breaking and formation are simultaneously
(d) bond breaking and formation take place randomly

Answer

Answer: (c) bond breaking and formation are simultaneously

Question 26.
Grignard reagents are formed by the reaction of alkyl halides by warming
(a) with alcoholic solution
(b) with $MgCl_2$
(c) Mg in presence of dry ether
(d) with $MgCO_3$

Answer

Answer: (c) Mg in presence of dry ether

Question 27.
Which of the following is the most reactive towards nucleophilic substitution reaction?
(a) $ClCH_2 – CH = CH_2$
(b) $CH_2 = CH\text{-}Cl$
(c) $CH_3CH = CH\text{-}Cl$
(d) C_6H_6Cl

Answer

Answer: (a) $ClCH_2\text{-}CH = CH_2$

Q.28. Gem-dibromide is

(a) $CH_3CH(Br)CH_2(Br)$
(b) $CH_3CBr_2CH_3$
(c) $CH_2(Br)CH_2CH_2$
(d) CH_2BrCH_2Br

Answer Ans. (b) Gem-dihalides are those in which two halogen atoms are attached on the same carbon atom.

Q.29. IUPAC name of $(CH_3)_3CCl$
(a) 3-Chlorobutane
(b) 2-Chloro-2-methylpropane
(c) t-butyl chloride
(d) n-butyl chloride

Answer Ans. (b)

Q.30. Which of the following is a primary halide?
(a) Isopropyl iodide
(b) Secondary butyl iodide
(c) Tertiary butyl bromide
(d) Neohexyl chloride

Answer Ans. (d)

Q.31. When two halogen atoms are attached to same carbon atom then it is :
(a) vic-dihalide
(b) gem-dihalide
(c) α, ω -halide
(d) α, β -halide

Answer Ans. (b)

Q.32. How many structural isomers are possible for a compound with molecular formula C_3H_7Cl ?
(a) 2
(b) 5
(c) 7
(d) 9

Answer Ans. (a)

Q.33. The compound which contains all the four 1°, 2°, 3° and 4° carbon atoms is

(a) 2, 3-dimethyl pentane
(b) 3-chloro-2, 3-dimethylpentane
(c) 2, 3, 4-trimethylpentane
(d) 3, 3-dimethylpentane

Answer Ans. (b)

Q.34. IUPAC name of $CH_3CH_2C(Br) = CH—Cl$ is

(a) 2-bromo-1-chloro butene
(b) 1-chloro-2-bromo butene
(c) 3-chloro-2-bromo butene
(d) None of the above

Answer Ans. (a)

Q.35. Benzene hexachloride is

(a) 1, 2, 3, 4, 5, 6 – hexachlorocyclohexane
(b) 1, 1, 1, 6, 6, 6 – hexachlorocyclohexane
(c) 1, 6 – phenyl – 1, 6 – chlorohexane
(d) 1, 1 – phenyl – 6, 6 -chlorohexane

Answer Ans. (a)

Q.36. The IUPAC name of $CH_2 = CH—CH_2Cl$ is

(a) Allyl chloride
(b) 1-chloro-3-propene
(c) Vinyl chloride
(d) 3-chloro-1-propene

Answer Ans. (d)

Q.37. Which of the following halide is 2° ?
(a) Isopropyl chloride
(b) Isobutyl chloride
(c) n-propyl chloride
(d) n-butyl chloride

Answer Ans. (a)

Q.38. Halogenation of alkanes is
(a) a reductive process
(b) an oxidative process
(c) an isothermal process
(d) an endothermal process

Answer Ans. (b)

Q.39. C – X bond is strongest in
(a) CH_3Cl
(b) CH_3Br
(c) CH_3F
(d) CH_3I

Answer Ans. (c) Because of the small size of F, the C–F bond is strongest in CH3F.

Q.40. Which of the following will have the maximum dipole moment?
(a) CH_3F
(b) CH_3Cl
(c) CH_3Br
(d) CH_3I

Answer Ans. (b) CH3Cl has higher dipole moment than CH3F due to much longer C–Cl bond length than the C–F bond. The much longer bond length of the C–C bond outweighs the effect produced by lower electronegativity of Cl than that of F.

Q.41. Phosgene is a common name for
(a) phosphoryl chloride
(b) thionyl chloride
(c) carbon dioxide and phosphine
(d) carbonyl chloride

Answer Ans. (d)

Q.42. In the preparation of chlorobenzene from aniline, the most suitable reagent is
(a) Chlorine in the presence of ultraviolet light
(b) Chlorine in the presence of $AlCl_3$
(c) Nitrous acid followed by heating with Cu_2Cl_2
(d) HCl and Cu_2Cl_2

Answer Ans. (c)

Q.43. Ethylene dichloride can be prepared by adding HCl to
(a) Ethane
(b) Ethylene
(c) Acetylene
(d) Ethylene glycol

Answer Ans. (d)

Q.44. In which of the following conversions, phosphorus pentachloride is used as the reagent?
(a) $H_2C = CH_2 \rightarrow CH_3CH_2Cl$
(b) $CH_3CH_2OH \rightarrow CH_3CH_2Cl$

(c) H_3C-O-CH3 → CH_3Cl
(d) CH ≡ CH → CH_2 = CHCl

Answer Ans. (b)

Q.45. The decreasing order of boiling points of alkyl halides is

(a) RF > RCl > RBr > RI
(b) RBr > RCl > RI > RF
(c) RI > RBr > RCl > RF
(d) RCl > RF > RI > RBr

Answer Ans. (c) For the same alkyl group, the boiling points of alkyl halides decrease in the order :
RI > RBr > RCl > RF
This is because with the increase in size and mass of halogen atom, the magnitude of van der Waal's forces increases.

Q.46. The best method for the conversion of an alcohol into an alkyl chloride is by treating the alcohol with

(a) PCl_5
(b) dry HCl in the presence of anhydrous $ZnCl_2$
(c) $SOCl_2$ in presence of pyridine
(d) None of these

Answer Ans. (c)

Q.47. Which of the following is liquid at room temperature (b.p. is shown against it)?

(a) CH_3I 42ºC
(b) CH_3Br 3ºC
(c) C_2H_5Cl 12ºC
(d) CH_3F –78ºC

Answer Ans. (a)

Q.48. The catalyst used in the preparation of an alkyl chloride by the action of dry HCl on an alcohol is
(a) anhydrous $AlCl_3$
(b) $FeCl_3$
(c) anhydrous $ZnCl_2$
(d) Cu

Answer Ans. (c) In preparation of an alkyl chloride by the action of dry HCl, the catalyst generally used is anhydrous ZnCl2.

Q.49. Chlorobenzene is prepared commercially by
(a) Raschig process
(b) Wurtz Fittig reaction
(c) Friedel-Craft's reaction
(d) Grignard reaction

Answer Ans. (a)

Q.50. Conant Finkelstein reaction for the preparation of alkyl iodide is based upon the fact that
(a) Sodium iodide is soluble in methanol, while sodium chloride is insoluble in methanol
(b) Sodium iodide is soluble in methanol, while NaCl and NaBr are insoluble in methanol
(c) Sodium iodide is insoluble in methanol, while NaCl and NaBr are soluble
(d) The three halogens differ considerably in their electronegativity

Answer Ans. (b)

Q.51. Which of the following possesses highest melting point?
(a) Chlorobenzene

(b) m-dichlorobenzene
(c) o-dichlorobenzene
(d) p-dichlorobenzene

Answer Ans. (d)

Q.52. S_N1 reaction of alkyl halides lead to
(a) Retention of configuration
(b) Racemisation
(c) Inversion of configuration
(d) None of these
Answer
Answer: b

Q.53. p-djchlorobenzene has higher melting point than its o- and m-isomers because
(a) p-dichlorobenzene is more polar than o- and m- isomer.
(b) p-isomer has a symmetrical crystalline structure.
(c) boiling point of p-isomer is more than o- and m-isomer.
(d) All of these are correct reasons.

Answer
Answer: b

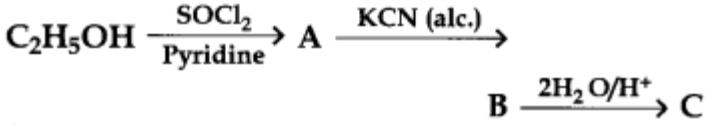
Q.54. Chloropicrin is formed by the reaction of
(a) steam on carbon tetrachloride.
(b) nitric acid on chlorobenzene.
(c) chlorine on picric acid.
(d) nitric acid on chloroform.

Answer
Answer: d

Q.55. Fitting reaction can be used to prepare
(a) Toluene
(b) Acetophenon
(c) Diphenyl
(d) Chlorobenzene

Answer
Answer: c

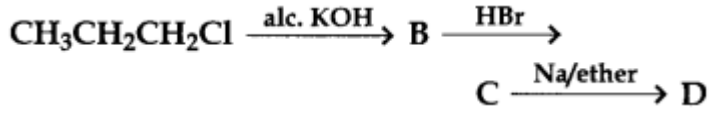
Q.56. Identify the end product (C) in the following sequence:



(a) $C_2H_5CH_2NH_2$ (b) $C_2H_5CONH_2$
(c) C_2H_5COOH (d) $C_2H_5NH_2 + HCOOH$

Answer
Answer: c

Q.57.



In the above reaction, the product D is
(a) Propane
(b) 2, 3-Dimethylbutane
(c) Hexane
(d) Allyl bromide

Answer
Answer: b

Q.58. Identify X and Y in the following sequence

$$C_2H_5Br \xrightarrow{X} \text{Product} \xrightarrow{Y} C_3H_7NH_2$$

(a) X = KCN, Y = $LiAlH_4$
(b) X = KCN, Y = H_3O^+
(c) X = CH_3Cl, Y = $AlCl_3$ HCl
(d) X = CH_3NH_2, Y = HNO_2

Answer

Answer: a

Q.59. In the following sequence of reactions:

$$C_2H_5Br \xrightarrow{AgCN} X \xrightarrow{\text{Reduction}} Y;\ Y \text{ is}$$

(a) n-propylamine
(b) isopropylamine
(c) ethylamine
(d) ethylmethylamine

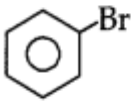
Answer

Answer: d

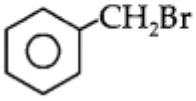
Q.60.

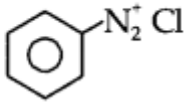
$$X \xrightarrow[HNO_3]{AgNO_3} \text{Yellow or While ppt}$$

Which of the following cannot be X?

(a) 

(b) $(CH_3)_3$ Cl

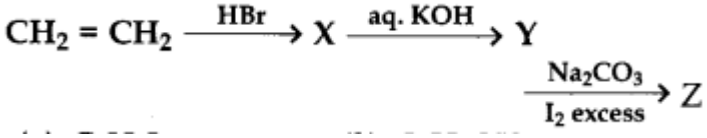
(c) 

(d) 

Answer

Answer: a

Q.61.
Identifay Z in the series



(a) C_2H_5I
(b) C_2H_5OH
(c) CHI_3
(d) CH_3CHO

Answer

Answer: c