ORGANIC CHEMISTRY

NEET

CRASH COURSE

HALOGEN DERIVATIVES

SMART ACHIEVERS

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HALOGEN DERIVATIVES

Q.1 In Finkelstein Reaction, which reactants are used -
(1) NaI + C_2H_5OH (2) NaCl + acetone
(3) NaBr + CH_3COCH_3 (4) NaI + CH_3COCH_3

Q.2 $C_2H_5Cl + AgF \longrightarrow C_2H_5F + AgCl$
The above reaction is called -
(1) Hunsdiecker (2) Swart (3) Strecker (4) Wurtz

Q.3 The formation of an alkyl halide by reaction of hydrogen halide on an unsymmetrical alkene is an example of -
(1) A nucleophilic addition reaction (2) An electrophilic addition reaction
(3) A free radical reaction (4) An elimination reaction

Q.4 The S_N2 reactivity order for halides :-
(1) R - F > R - Cl > R - Br > R - I (2) R - I > R - Br > R - Cl > R - F
(3) R - Br > R - 1 > R - Cl > R - F (4) R - Cl > R - Br > R - F > R - I

Q.5 The correct order of polarity of alkyl halides is : -
(1) RI > RBr < RCl > RF (2) RF > RCl > RBr > RI
(3) RCl > RF > RBr > RI (4) None

Q.6 When ethyl bromide is treated with moist Ag_2O the product is –
(1) Ethyl ether (2) Ethanol (3) Ethoxy ethane (4) All of the above

Q.7 (A) $\xrightarrow{Cl_2}$ (B) $\xrightarrow{aq.\ KOH}$ (C) $\xrightarrow{(O)}$ CH_3CHO, Identify A, B & C -
(1) Ethylalcohol Ethyl chloride & Ethane
(2) Ethane, Ethylchloride & $CH_3–CH_2–OH$
(3) Propane, Propylchloride & $CH_3–CH_2–CH_2–OH$
(4) All the above

Q.8 An alkyl halide reacted with a metal cyanide to give an alkanenitrile. The metal cyanide is -
(1) AgCN (2) KCN (3) $Cu_2(CN)_2$ (4) $Ba(CN)_2$

Q.9 Ethylthioalcohol can be obtained when C_2H_5Br reacts with -
(1) KSH (2) NaOH (3) K_2S (4) Na_2S

Q.10 The reaction
$C_2H_5ONa + BrC_2H_5 \rightarrow C_2H_5–O–C_2H_5 + NaBr$ is called -
(1) Frankland reaction (2) Wurtz reaction
(3) Williamson's synthesis (4) Cannizzaro reaction

Q.11 Reaction of ethyl chloride with sodium leads to -
(1) Ethane (2) Propane (3) n-Butane (4) n-pentane

Q.12 Chloroform can be obtained from -
(1) Methanol (2) Methanal (3) Propanol–1 (4) Propanol–2

Q.13 $CH_3-\underset{\underset{O}{\|}}{C}-CH_3 \xrightarrow[Na_2CO_3]{I_2}$ (A) $\xrightarrow{\text{Ag powder}}$ (B) $\xrightarrow[Hg^{++}]{H_2SO_4}$ (C).

Product A, B & C are -
(1) Iodoform, Acetylene & Acetaldehyde
(2) Tri. iodomethane, Ethyne & Acetone
(3) Iodoform, Ethene & Ethylene glycol
(4) Ethene, iodoform & Ethylhydrogen sulphate

Q.14 Tear gas is -
(1) $C(NO_2)Cl_3$ (2) $COCl_2$ (3) CH_3Cl (4) CH_3COCl

Q.15 Chloroform when treated with aniline and alcoholic KOH forms -
(1) Phenyl cyanide (2) Phenyl isocyanide
(3) Phenyl cyanate (4) Phenyl isocyanate

Q.16 Which of the following compounds is used as a refrigerant -
(1) Acetone (2) CCl_4 (3) CF_4 (4) CCl_2F_2

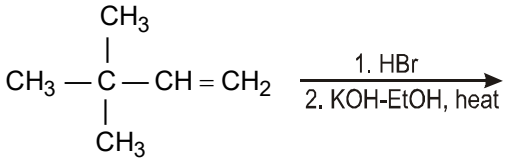
Q.17 Main cause of Ozone decay is –
(1) CFC (2) BFC (3) LMC (4) DKP

Q.18 What happens when CCl_4 is treated with $AgNO_3$ -
(1) A white ppt. of AgCl will be formed (2) Nothing will happen
(3) NO_2 will be evolved (4) CCl_4 will dissolved in $AgNO_3$

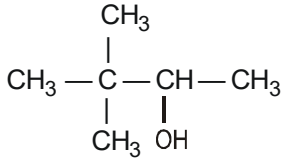
Q.19 In the following reaction : $\rangle$—Br + HC≡$\overline{C}$N$\overset{+}{a}$ ⟶
the substrate is transformed into
(1) $\rangle$—C≡CH (2) $(CH_3)_2C = CH_2$ (3)  (4) $\rangle$—C≡C — CH_3

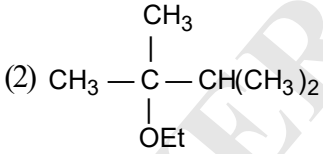
Q.20 Which of the following does not produce a white precipitate of AgCl on warming with alcoholic silver nitrate ?
(1)Allyl chloride (2)t-Butyl chloride
(3) Benzyl chloride (4) Vinyl chloride

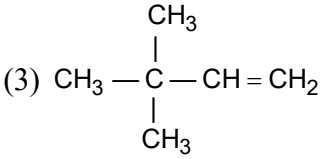
Q.21 Consider the following reaction sequence.

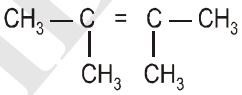


The major end product formed is

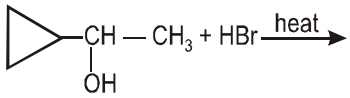
(1) 

(2) 

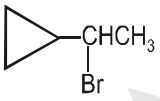
(3) 

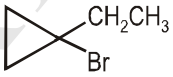
(4) 

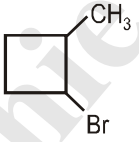
Q.22 In the reaction

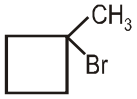


the major product formed is

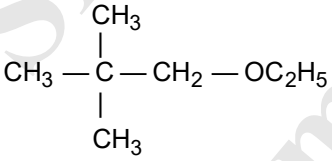
(1) 

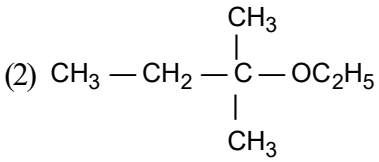
(2) 

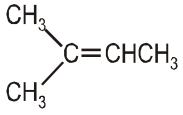
(3) 

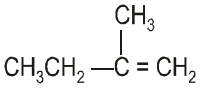
(4) 

Q.23 Neopentyl bromide is allowed to react with sodium ethoxide in ethanol The major product formed in the reaction is

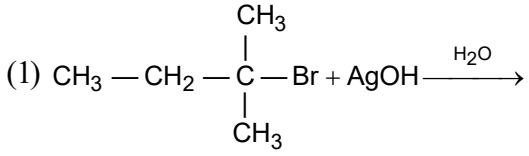
(1) 

(2) 

(3) 

(4) 

Q.24 Which of the following reactions is expected to take place by S_N2 mechanism ?

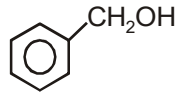
(1) 

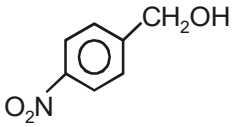
(2) $(CH_3)_3C - Br + KOH \xrightarrow{H_2O}$

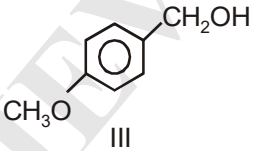
(3) $CH_3CH_2CHBrCH_3 + CH_3CO_2Na \xrightarrow{CH_3CO_2H}$

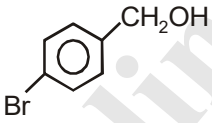
(4) $(CH_3)_2CHBr + AgCN \xrightarrow{\text{dimethyl sulphoxide}}$

Q.25 Consider the following alcohols.


I


II

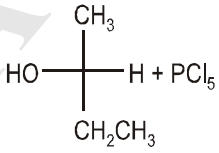

III

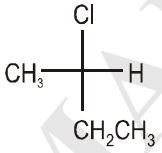

Iv

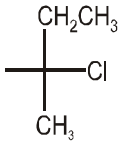
The order of decreasing reactivities of these alcohols towards nucleophilic substitution with HBr is

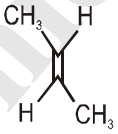
(1) III > I > IV > II (2) III > I > II > IV

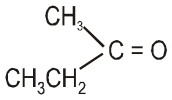
(3) I > III > IV > II (4) I > III > II > IV

Q.26 Consider the following reaction :  The product formed is

(1) 

(2) 

(3) 

(4) 

Q.27 Consider the following reaction sequence. $CH_3C \equiv CH \xrightarrow[2\,mole]{HCl} A \xrightarrow[heat]{aq.KOH} B$. The products (A) and (B) are, respectively,

(1) $CH_3CH_2CHCl_2$ and CH_3CH_2CHO

(2) $CH_3CCl_2CH_3$ and CH_3COCH_3

(3) $CH_3CCl_2CH_3$ and $CH_3C \equiv CH$

(4) $CH_3CHClCH_2Cl$ and $CH_3CHOHCH_2OH$

Q.28 $C_6H_5CH_2Cl + KCN\,(aq.) \rightarrow X + Y$

Compounds X and Y are :

(1) $C_6H_6 + KCl$ (2) $C_6H_5CH_2CN + KCl$

(3) $C_6H_5CH_3 + KCl$ (4) None of these

Q.29 Consider the following sequence of reactions.

$C_2H_5Cl \xrightarrow[DMSO,heat]{KCN} X \xrightarrow[prolonged\ heat]{H_3O^+} Y$. The products (X) and (Y) are, respectively -

(1) C_2H_5CN and $C_2H_5CH_2NH_2$ (2) C_2H_5CN and $C_2H_5CONH_2$
(3) C_2H_5NC and $C_2H_5NHCH_3$ (4) C_2H_5CN and C_2H_5COOH

Q.30 Of the following, which is an S_N1 reaction -

(1) $(CH_3)_3CBr + H_2O \longrightarrow$ (2) $CH_3CH_2CH_2Cl + I^- \longrightarrow$
(3) $(CH_3)_3CBr + CN^- \longrightarrow$ (4) $CH_3CHBrCH_3 + OH(alc.) \longrightarrow$

Q.31 Ethyl bromide can be converted into ethyl alcohol by -

(1) Heating with an alcoholic solution of KOH
(2) The action of moist silver oxide
(3) Heating with dil. HCl and Zn
(4) Refluxing with methanol

Q.32 Impure chloroform cannot be tested by -

(1) Concentrated sulphuric acid (2) Blue litmus
(3) Silver nitrate solution (4) Silver powder

Q.33 Treatment of ammonia with excess ethyl chloride will give -

(1) Diethylamine (2) Ethane
(3) Methylamine (4) Tetraethyl ammonium chloride

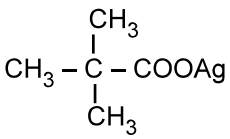
Q.34 Most volatile alkyl chloride is -

(1) Ethyl chloride (2) Butyl chloride
(3) Amyl chloride (4) Propyl chloride

Q.35 $A + PCl_5 \longrightarrow POCl_3$ + Alkyl halide. Compound A would be -

(1) Alkoxy alkane (2) Alkane (3) Alkanol (4) Alkanal

Q.36 In the Hunsdicker reaction the compound



is heated with -

(1) CH_3Br (2) Br_2
(3) $CH_3Br + AgF$ (4) $NaI + AgBr$

Q.37 Chloroform is used as a laboratory reagent for testing the presence of -

(1) Nitro compound (2) Primary amines
(3) Secondary amines (4) Tertiary amines

Q.38 Chloropicrin is -
(1) $C_2H_5C(NO)_5SH$ (2) CCl_3CHO (3) CCl_3NO_2 (4) CCl_3NO_3

Q.39 Chloropicrin is used as -
(1) An anaesthetic (2) An insecticide (3) A hypnotic drug (4) All of these

Q.40 Which of the following is known as freon -
(1) CCl_2F_2 (2) $CHCl_3$ (3) CH_2F_2 (4) CF_4

Q.41 In the reaction : $RCOOAg + Br_2 \xrightarrow{CCl_4} RBr + CO_2 + AgBr$ the intermediate formed is–
(1) R–COOBr (2) RCOO• (3) R• (4) all of these

Q.42 Consider the following reaction sequence. $CH_3C \equiv CH \xrightarrow[HgSO_4]{aq.H_2SO_4} A \xrightarrow[heat]{PCl_5} B$. The product (A) and (B) are, respectively -
(1) CH_3COCH_3 and $CH_3CCl_2CH_3$ (2) CH_3CH_2CHO and $CH_3CH_2CHCl_2$
(3) $CH_3CHOHCH_3$ and $CH_3CHClCH_3$ (4) $CH_3CH_2CH_2OH$ and $CH_3CH_2CH_2Cl$

Q.43 Consider the following sequence of reactions.

$$\underset{(C_3H_6Cl_2)}{(A)} \xrightarrow[heat]{alc.KOH} B \xrightarrow[2.H_2O_2/OH]{1.B_2H_6} C$$

$$A \xrightarrow[heat]{aq.KOH} C$$

Th compound (A) is -
(1) $CH_3CH_2CHCl_2$ (2) $CH_3CCl_2CH_3$
(3) $CH_3CHClCH_2Cl$ (4) $ClCH_2CH_2CH_2Cl$

Q.44 Which of the following reactions will not give an isocyanide -
(1) $CH_3CH_2Br + AgCN \longrightarrow$ (2) $CH_3CH_2NH_2 + CHCl_3 + KOH \xrightarrow{heat}$
(3) $CH_3CH_2NHC(=O)-H + POCl_3 \xrightarrow{heat}$ (4) $CH_3CH_2CONH_2 + P_4O_{10} \xrightarrow{heat}$

Q.45 Which of the following is aprotic solvent ?
(1) DMSO (2) NH_3 (3) H_2O (4) CH_3COOH

Q.46 Which of the following is polar protic solvent ?
(1) CH_3COCH_3 (2) CH_3COOH (3) CH_3SOCH_3 (4) $CH_3-C(=O)-N(Me)(Me)$

Q.47 Electrophiles are
(1) Electron deficent species (2) having vacant p or d-orbital
(3) Electron rich species (4) (1) & (2) both

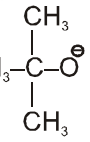
Q.48 Which of the following is an electrophilic reagent ?
(1) H_2O (2) OH^- (3) NO_2^+ (4) None

Q.49 Which of the following is not electrophile ?
(1) CN^- (2) H^+ (3) Br^+ (4) $AlCl_3$

Q.50 Which of the following statement is correct for nucleophile ?
(1) Electron rich species are called nucleophile.
(2) Nucleophiles are Lewis bases.
(3) Nucleophile donates long pair of electron to vacant orbital of carbon atom.
(4) All are correct.

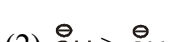
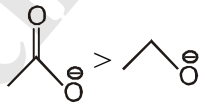
Q.51 For the following the increasing order of nucleophilicity would be :
(i) I^- (ii) Cl^- (iii) Br^-
(1) $I^- < Cl^- < Br^-$ (2) $Br^- < Cl^- < I^-$ (3) $I^- < Br^- < Cl^-$ (4) $Cl^- < Br^- < I^-$

Q.52 Which one of the following has maximum nucleophilicity :

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

Q.53 Which among the following species is an ambident nucleophile ?
(1) Ethene (2) Benzene (3) Cyanide ion (4) Acetone

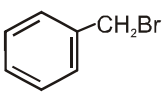
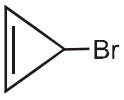
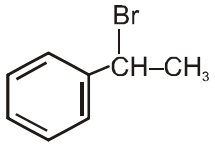
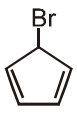
Q.54 The correct leaving group ability order is :

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

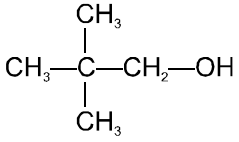
Q.55 S_N1 reactions occur through the intermediate formation of-
(1) Carbocations (2) Carbanions (3) Free radicals (4) None of these

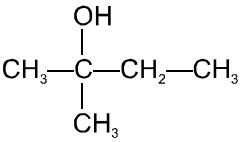
Q.56 S_N1 reactions are favoured by -
(1) Non-polar solvents.
(2) Bulky groups on the carbon atom attached to the halogen atom.
(3) Small groups on carbon atom attached to the halogen atom.
(4) None of these.

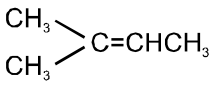
Q.57 Which of the following will not give precipitate with aq. $AgNO_3$?

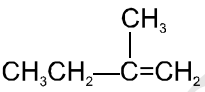
(1)  (2)  (3)  (4) 

Q.58 Neopentyl bromide is allowed to react with aquous acetone. The major product formed in the reaction is:

(1) 

(2) 

(3) 

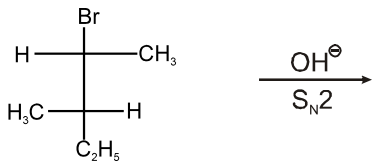
(4) 

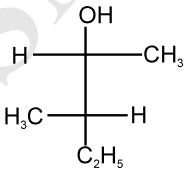
Q.59 Which one of the following statement is wrong about S_N2 reaction ?
(1) The rate of reaction is independent of the concentration of nucleophile.
(2) Nucleophile attacks the carbon from the side opposite to where the leaving group is attached.
(3) Only in one step the bond formation and bond breaking takes place.
(4) The rate of reaction $\propto$ [substrate] [nucleophile]

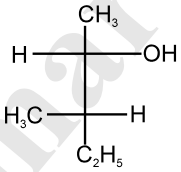
Q.60 When the concentration of alkyl halide is tripled and the concentration of $\overset{\ominus}{OH}$ ion is reduced to half, the rate of S_N2 reaction increases by:
(1) 3 times (2) 2 times (3) 1.5 times (4) 6 times

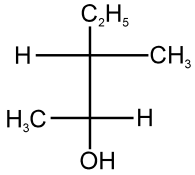
Q.61 Reaction of methyl bromide with an alcoholic solution of silver cyanide predominantly gives :
(1) Acetonitrile (2) Methyl isocyanide (3) Methyl isocyanate (4) Methyl isothiocyanate

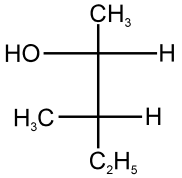
Q.62 The least reactive alkyl chloride towards substitution reaction is :
(1) Methyl chloride (2) Allyl chloride (3) Ethyl chloride (4) Vinyl chloride

Q.63 In the following reaction the most probable product will be : 

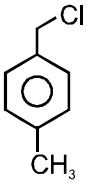
(1) 

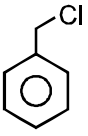
(2) 

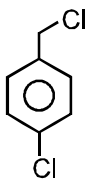
(3) 

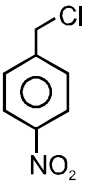
(4) 

Q.64 Which of the following is most reactive towards S_N2 reaction ?

(1) 

(2) 

(3) 

(4) 

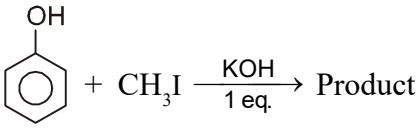
Q.65 What is the final product of the given reaction :

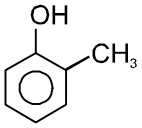
$CH_3 - C \equiv CH \xrightarrow{Na} \xrightarrow{CH_3-CH_2-I}$ Product

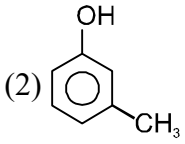
(1) $CH_2=CH-CH_2-CH_3$ (2) $CH_3-CH_2-C\equiv C-CH_2-CH_3$

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

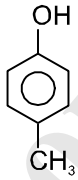
Q.66 What is the final product of the given reaction ?



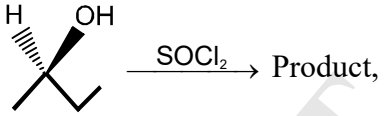
(1) 

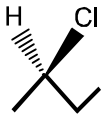
(2) 

(3) 

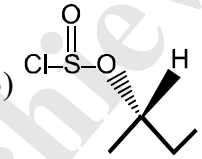
(4) 

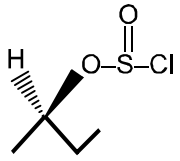
Q.67 The product formed in the reaction ?



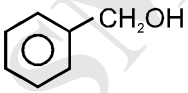
(1) 

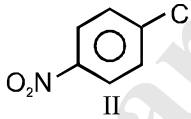
(2) 

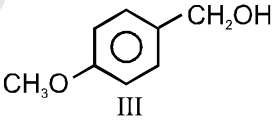
(3) 

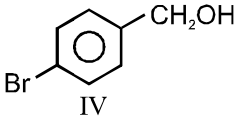
(4) 

Q.68 Consider the following alcohols :

I 

II 

III 

IV 

The order of decreasing reactivities of these alochols towards nucleophilic substitution with HBr is

(1) III > I > IV > II (2) III > I > II > IV (3) I > III > IV > II (4) I > III > II > IV

Q.69 Primary, secondary and tertiary alcohols are distinguished by

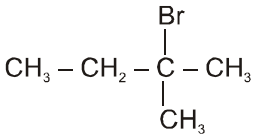
(1) Oxidation method (2) Lucas test (3) Victor mayer's test (4) All of the above

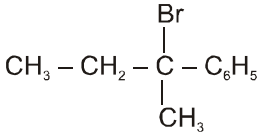
Q.70 Power alcohol is the mixture of :

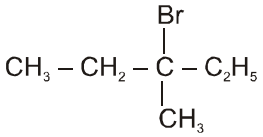
(1) Absolute alcohol + Methyl alcohol ` (2) Absolute alcohol + Petrol

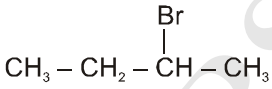
(3) Rectified alcohol + Petrol (4) Denatured alcohol + Petrol

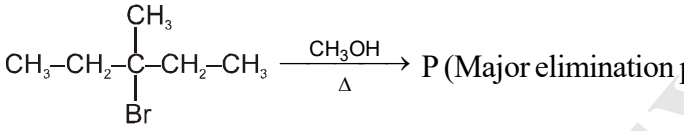
Q.71 Which one of the following compound is most reactive for E1 reaction ?

(1) 

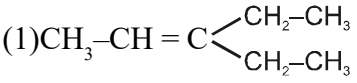
(2) 

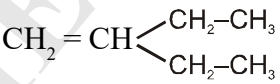
(3) 

(4) 

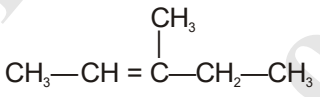
Q.72  P (Major elimination product)

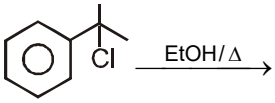
The major elimination (E-1) product P is :

(1) 

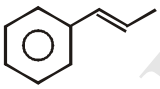
(2) 

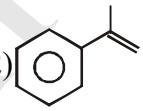
(3) $CH_2 = CH_2$

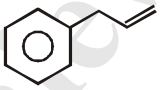
(4) 

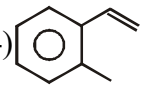
Q.73  P (Major elimination product)

P is

(1) 

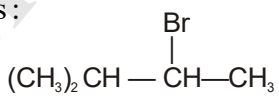
(2) 

(3) 

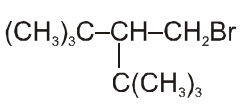
(4) 

Q.74 Most reactive alkyl halide towards E2 mechanism is :

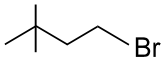
(1) $(CH_3)_3C–CH_2Br$

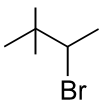
(2) 

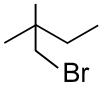
(3) $(CH_3)_3C–CH_2CH_2Br$

(4) 

Q.75 Which of the following cannot undergo E2 reaction ?

(1) 

(2) 

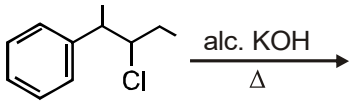
(3) 

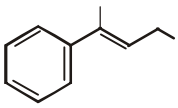
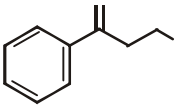
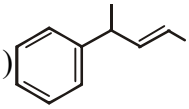
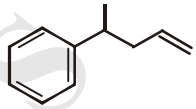
(4) none of these

Q.76 A mixture of 1-chlorobutane and 2-chlorobutane when treated with alcoholic KOH gives -

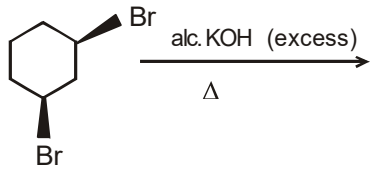
(1) 1-Butene
(2) 2-Butene
(3) Isobutylene
(4) Mixture of 1-butene + 2-butene

Q.77 Major product of the reaction given below is :



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

Q.78 The most probable product is the following reaction :



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

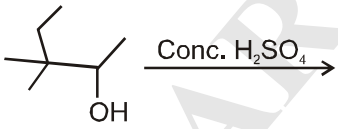
Q.79 Dehydration of alcohol is an example of :

(1) addition reaction (2) substitution reaction (3) elimination reaction (4) rearrangement

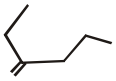
Q.80 Which of the following step is involved in the acid catalysed dehydration of alcohols ?

(1) Expulsion of a OH^- ion (2) A free radical intermediate formation

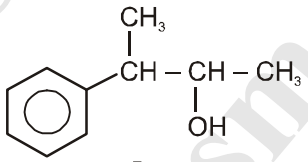
(3) A carbocation intermediate formation (4) A carbanion intermediate formation

Q.81 

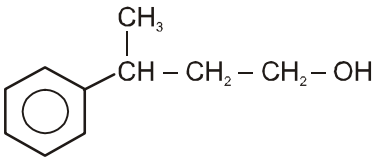
Major product is :

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

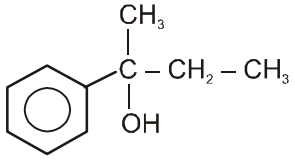
Q.82 The relative rate of acid catalysed dehydration of following alcohols would be :



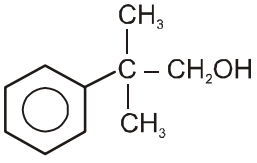
I



II



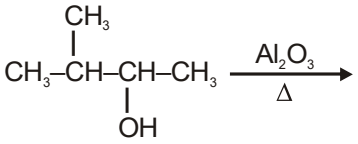
III

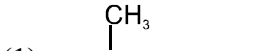
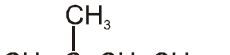


IV

(1) III > I > IV > II (2) III >IV > I > II (3) I > III > IV > II (4) III > IV > I > II

Q.83 Major product of the given reaction is :

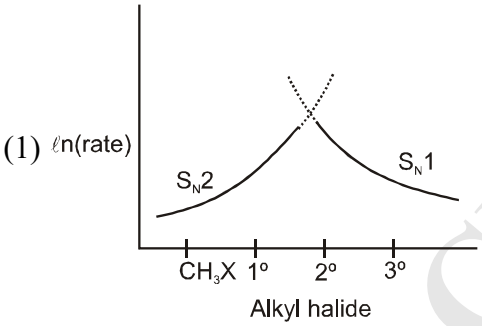


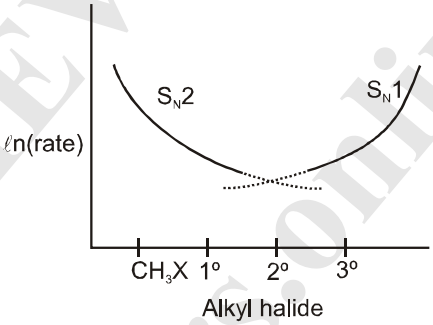
(1)  (2)  (3)  (4) $CH_3–CH_2–CH_2–CH=CH_2$

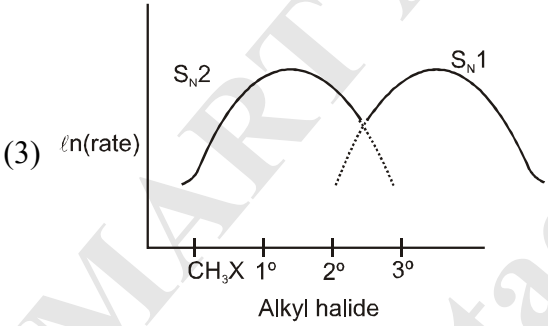
Q.84 Pinacol –Pinacolone reaction is an example of -

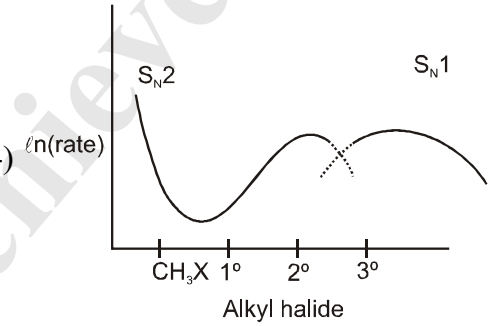
(1) Elimination (2) Substitution (3) Addition (4) isomerisation

Q.85 Which of the following curves correctly represents S_N1 vs S_N2 ?

(1) 

(2) 

(3) 

(4) 

Q.86 When ethyl iodide is heated with dry silver oxide, if forms-

(1) Ethyl alcohol (2) Diethyl ether (3) Silver ethoxide (4) Ethyl methyl ether

Q.87 When excess of ethyl alcohol heated at 140°C with concentrate sulphuric acid the compound that distill is:

(1) $C_2H_5—O—C_2H_5$ (2) Ethyl hydrogen sulphate

(3) $CH_2 = CH_2$ (4) di ethyl sulphate

Q.88 $Ph–O–CH_2–Ph \xrightarrow[excess]{HI}$ Products

(1) Ph–OH & $Ph–CH_2–I$ (2) Ph–OH & $Ph–CH_2–OH$

(3) Ph–I & $Ph–CH_2–OH$ (4) Ph–I & $Ph–CH_2–I$

Q.89 If chloroform is left open in air in presence of sun-rays :

(1) Phosgene gas is formed (2) Explosion takes place

(3) Polymerisation take place (4) No reaction take place

ASSERTION AND REASON

Directions : Each of these questions contains an Assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

(1) If both assertion and reason are true and reason is the correct explanation of assertion.

(2) If both assertion and reason are true but reason is not the correct explanation of assertion.

(3) If Assertion is true but reason is false.

(4) If both assertion and reason are false.

Q.90 **Assertion :** In SN^1 reaction inversion and retention both are take place .

Reason : In SN^1 reaction intermediate is carbocation

Q.91 **Assertion :** The dipole moment of CH_3F is greater than CH_3Cl.

Reason : C–F bond is more polar than C–Cl bond.

Q.92 **Assertion :** S_{N^2} reaction takes place in single step.

Reason : S_{N^2} reaction involves the reactivity order of alkyl halides as 1° > 2° > 3° halides.

Q.93 **Assertion :** Optically active 2-iodobutane on treatment with NaI in acetone undergoes racemization.

Reason: Reaction involves multiple Walden inversion and the product contains mixture of dextro and laevo isomer.

Q.94 **Assertion :** Ethyl chloride is more reactive than vinyl chloride towards nucleophile substitution reactions.

Reason : In vinyl chloride, the –Cl is bonded to sp^2-hybridized carbon of an alkene.

Q.95 **Assertion :** Benzyl bromide when kept in acetone water produces benzyl alcohol.

Reason : The reaction followis S_N2 mechanism.

ANSWER KEY

Q.1	4	Q.2	2	Q.3	2	Q.4	2	Q.5	2	Q.6	2	Q.7	2
Q.8	2	Q.9	1	Q.10	3	Q.11	3	Q.12	4	Q.13	1	Q.14	1
Q.15	2	Q.16	4	Q.17	1	Q.18	2	Q.19	2	Q.20	4	Q.21	4
Q.22	1	Q.23	3	Q.24	3	Q.25	1	Q.26	1	Q.27	2	Q.28	2
Q.29	4	Q.30	1	Q.31	2	Q.32	4	Q.33	4	Q.34	1	Q.35	3
Q.36	2	Q.37	2	Q.38	3	Q.39	2	Q.40	1	Q.41	4	Q.42	1
Q.43	1	Q.44	4	Q.45	1	Q.46	2	Q.47	4	Q.48	3	Q.49	1
Q.50	4	Q.51	4	Q.52	1	Q.53	3	Q.54	3	Q.55	1	Q.56	2
Q.57	4	Q.58	2	Q.59	1	Q.60	3	Q.61	2	Q.62	4	Q.63	1
Q.64	4	Q.65	4	Q.66	3	Q.67	1	Q.68	1	Q.69	4	Q.70	2
Q.71	2	Q.72	4	Q.73	2	Q.74	2	Q.75	3	Q.76	4	Q.77	1
Q.78	1	Q.79	3	Q.80	3	Q.81	3	Q.82	1	Q.83	3	Q.84	1
Q.85	2	Q.86	2	Q.87	1	Q.88	1	Q.89	1	Q.90	1	Q.91	4
Q.92	2	Q.93	1	Q.94	1	Q.95	2						