ORGANIC CHEMISTRY

NEET / AIIMS

CRASH COURSE

HYDROCARBON

SMART ACHIEVERS

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587, Nitikhand-1, Indirapuram, Gzb.

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HYDROCARBON

Q.1 The highest boiling point is expected for -
(1) isooctane (2) n-octane
(3) 2, 2, 3, 3-tetramethylbutane (4) n-butane

Q.2 Which reducing agent is used in Clemmensen reduction –
(1) Zn / HCl (2) $LiAlH_4$ (3) Zn-Hg / HCl (4) Na / C_2H_5OH

Q.3 The order of reactivity of halogens towards halogenation of alkanes is :
(1) $F_2 > Br_2 > Cl_2$ (2) $F_2 > Cl_2 > Br_2$ (3) $Cl_2 > F_2 > Br_2$ (4) $Cl_2 > Br_2 > F_2$

Q.4 Kolbe's reaction is convenient for the preparation of :
(1) Methane
(2) Alkanes containing even number of carbon atoms
(3) Alkanes containing even as well as odd number of carbon atoms
(4) Alkanes containing odd number of carbon atoms

Q.5 Formation of alkane by the action of Zn on alkyl halide is called-
(1) Frankland reaction (2) Wurtz reaction
(3) Cannizzaro's reaction (4) Kolbe's reaction

Q.6 The thermal decomposition of alkanes in the absence of air is known as :
(1) oxidation (2) Combustion (3) Hydrogenation (4) pyrolysis

Q.7 The most volatile alkane is :
(1) n-pentane (2) isopentane (3) neopentane (4) n-hexane

Q.8 Wurtz reaction on a mixture of ethyl halide and isobutyl halide gives :
(1) Butane and isobutane (2) Butane and 2, 5-dimethylhexane
(3) Butane, 2, 5-dimethylhexane and isohexane (4) Butane and isohexane

Q.9 Which of the following reactions does not involve a C – C bond formation ?
(1) Hydrolysis of a Grignard reagent (2) Combination of two alkyl free radicals
(3) Corey-House synthesis of alkanes (4) $RNa + R – Br \rightarrow R – R + NaBr$

Q.10 The carbon-carbon bond length in the following compounds -

$CH_2 = CH_2$	$CH_2=CH–CH=CH_2$	$CH_3—CH_3$	$CH\equiv CH$
I	II	III	IV

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

Q.11 Baeyer's reagent is
(1) alkaline potassium permanganate solution
(2) acidified potassium permangnate solution
(3) neutral potassium permangnate solution
(4) aqueous bromine solution

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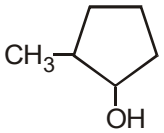
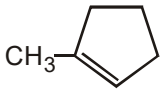
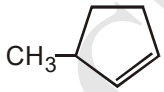
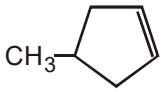
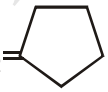
Q.12 The disappearance of the characteristic purple colour of $KMnO_4$ in its reaction with an alkene is the test for unsaturation. It is known as :
(1) Markownikoffs test (2) Baeyer's test
(3) Wurtz test (4) Grignard test

Q.13 In the sequence of reactions, $CH_3CH_2CH_2OH \xrightarrow{PCl_5} A \xrightarrow[KOH]{alc.} B$, the product B is -
(1) Propyne (2) Propylene (3) Propane (4) Propanol

Q.14 Ethyl chloride on heating with alcoholic potash gives :
(1) C_2H_4 (2) C_2H_2 (3) C_2H_6 (4) CH_4

Q.15 Which alcohols can be turned most easily to alkenes -
(1) Ethyl alcohol (2) n-Butyl alcohol (3) Sec. butyl alcohol (4) Tert. butyl alcohol

Q.16  $\xrightarrow{POCl_3}$ A (major), A is -
(1)  (2)  (3)  (4) 

Q.17 Ethylene can be prepared by electrolysis of an aqueous solution of :
(1) Sodium acetate (2) Sodium succinate
(3) Sodium fumarate (4) Sodium propionate

Q.18 Which ester on pyrolysis gives isobutylene -
(1) $CH_3–CH_2–CH_2–O–\underset{\underset{O}{\|}}{C}–CH_3$ (2) $CH_3COOCH_2CH_2CH_3$
(3) $CH_3COOCH_2 – CH(CH_3)_2$ (4) All the above

Q.19 The reaction : $CH_2 = CHCH_3 + HBr \rightarrow CH_3CHBrCH_3$ is -
(1) Nucleophilic addition (2) Electrophilic addition
(3) Electrophilic substitution (4) Free radical addition

Q.20 An alkene on ozonolysis yields only ethanal. There is an isomer of this which on ozonolysis yields
(1) propanone and methanal
(2) propanone and ethanal
(3) ethanal and methanal
(4) only propanone

Q.21 The markownikoff's rule is used in connection with -
(1) Stereochemistry of elimination reactions (2) Stability of free radicals.
(3) Activity of enzymes (4) Addition of acids to double bonds

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Q.22 Anti- Markownikoff addition of HBr is not observed in
(1) propene (2) butene (3) 2-butene (4) 2- pentene

Q.23 The catalyst used in kharash reaction, is -
(1) Only halogenated compound (2) Any peroxide
(3) $Al_2 (SO_4)_3$ (4) $TiCl_4$

Q.24 The addition of Br_2 to trans -2- butene produces
(1) (+) 2,3- dibromobutane (2) (-) 2,3 - dibromobutane
(3) rac- 2,3- dibromobutane (4) meso-2,3- dibromobutane

Q.25 Reactivity of alkenes towards HX increases in the order -
(1) Butene > Propene > Ethene
(2) Butene > Ethene > Propene
(3) Ethene > Propene > Butene
(4) None of these

Q.26 The addition of HCl in the presence of peroxide does not follow anti-Markownikoffs rule because
(1) HCl bond is too strong to be broken homolytically
(2) Cl atom is not reactive enough to add on to a double bond
(3) Cl combines with H to give back HCl
(4) HCl is a reducing agent

Q.27 Which one of these will react with sodium metal -
(1) Ethyne (2) Ethene (3) Ethane (4) Ether

Q.28 Lindlar's catalyst is :
(1) Na in liquid NH_3 (2) Pt in ethanol (3) Ni in ether (4) Pd with $BaSO_4$

Q.29 The compounds 1- butyne and 2- butyne can be distinguished by using
(1) bromine water (2) $KMnO_4$ solution
(3) Tollens reagent (4) chlorine gas

Q.30 A gas on passing through ammonical solution of $AgNO_3$ does not give any precipitate but decolourises alkaline $KMnO_4$ solution. The gas may be :
(1) C_2H_2 (2) C_2H_4 (3) C_3H_4 (4) C_3H_3

Q.31 1- Butyne reacts with cold alkaline $KMnO_4$ to produce
(1) CH_3CH_2COOH (2) $CH_3CH_2CH_2COOH$
(3) $CH_3CH_2COOH + CO_2$ (4) $CH_3CH_2COOH + HCOOH$

Q.32 The reactivity of the halogens towards methane decreases in the order -
(1) $F_2 > Cl_2 > Br_2 > I_2$ (2) $I_2 > Br_2 > Cl_2 > F_2$
(3) $F_2 > Cl_2 > I_2 > Br_2$ (4) $Cl_2 > F_2 > Br_2 > I_2$

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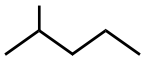
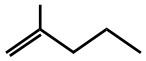
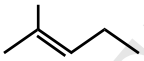
Q.33 Ethane is subjected to combustion process. The hybrid state of carbon during combustion changes from-

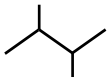
(1) sp^2 to sp^3 (2) sp^3 to sp (3) sp to sp^3 (4) Can't be predicted

Q.34 Which of the following on reaction with RMgX does not give RH ?

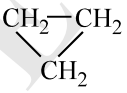
(1) Ethylamine (2) Dimethylamine (3) Trimethylamine (4) Phenol

Q.35  $\xrightarrow[25°C]{AlCl_3.HCl}$ A, A is -

(1)  (2) 

(3)  (4) 

Q.36 $BrCH_2–CH_2–CH_2Br$ reacts with Na in the presence of ether at 100 °C to produce –

(1) $BrCH_2–CH=CH_2$ (2) $CH_2=C=CH_2$ (3)  (4) All of these

Q.37 $B \xleftarrow[Catalyst]{Lindlar's} R-C\equiv C-R \xrightarrow{Na/NH_3} A$. A and B are geometrical isomers (R–CH = CH – R) -

(1) A is trans, B is cis (2) A and B both are cis

(3) A and B both are trans (4) A is cis, B is trans

Q.38 When ethyl alcohol is heated with conc. H_2SO_4 at 433 K, ethylene is formed by :

(1) Intramolecular hydration (2) Intermolecular hydration

(3) Intermolecular dehydration (4) Intramolecular dehydration.

Q.39 Addition of halogen acid is least in :

(1) $CH_2 = CHCl$ (2) $CH_2 = CH_2$

(3) $CH_3– CH = CH_2$ (4) $(CH_3)_2C = CH_2$

Q.40 The compound formed when 2-butene is treated with hot alk $KMnO_4$ is -

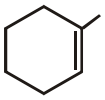
(1) Acetaldehyde (2) Acetic acid

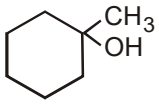
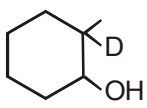
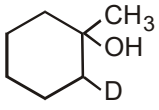
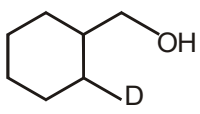
(3) $CH_2OH.CH_2OH$ (4) $CH_3.CH_2.CO.CH_3$

Q.41 If ethene and acetyl chloride react in presence of $AlCl_3$ the product will be :

(1) $CH_3COCH_2–CH_2Cl$ (2) $CH_2=CHCOCH_2Cl$

(3) $CH_2=CHCOCH_3$+HCl (4) $CH_2=CHCOCHCl_2$

Q.42  $\xrightarrow[H_2O_2/OH]{BD_3/THF}$ Product A, A is -

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

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Q.43 The unknown compounds A, B and C in the reaction sequence

$$A \xrightarrow[\Delta]{KOH,\ C_2H_5OH} B + KBr + H_2O \xleftarrow[\Delta]{KOH,\ C_2H_5OH} C$$

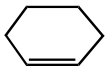
are given by the set -

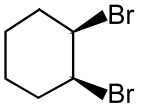
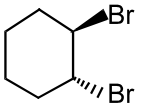
(1) Isopropyl chloride, propyne, propyl chloride.

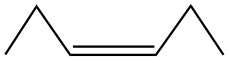
(2) Isopropyl bromide, propene, methyl bromide.

(3) Isopropyl chloride, propene, propyl chloride.

(4) n-propyl bromide, propene, 2-bromopropane.

Q.44  $+ Br_2 \longrightarrow$ A. A will have configuration :

(1)  (2)  (3) both true (4) none is true

Q.45  $\xrightarrow[H_2O_2]{O_sO_4}$ A. A is :

(1) meso diol (2) racemic diol (3) both correct (4) none is correct

Q.46 Suitable reagent to ascertain double bond in C_4H_8 will be -

(1) Bromination (2) Hydroxylation (3) Ozonolysis (4) Hydroboration

Q.47 Which of the following alkenes gives acetaldehyde only on ozonolysis -

(1) 1-Butene (2) β-Butylene (3) Isobutylene (4) α-Butylene

Q.48 Identify Z in the sequence, $CH_3 - CH_2 - CH = CH_2 \xrightarrow{HBr/H_2O_2} Y \xrightarrow{C_2H_5O^- - Na+} Z$

(1) $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - O - CH_2 - CH_3$

(2) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - O - CH_2 - CH_3$

(3) $CH_3 - (CH_2)_3 - O - CH_2 - CH_3$

(4) $CH_3 - (CH_2)_4 - O - CH_3$

Q.49 The catalyst required for the reaction : $HC \equiv CH + \text{dil. } H_2SO_4 \xrightarrow{\text{Catalyst}} CH_3CHO$ is -

(1) $HgSO_4$ (2) Pd (3) Pt (4) $AlCl_3$

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Q.50 Which of the following reactions would yield 2-pentyne ?

(1) $HC{\equiv}CH \xrightarrow{NaNH_2} \xrightarrow{CH_3CH_2CH_2I}$

(2) $CH_3C{\equiv}CH \xrightarrow[1\,mol]{NaNH_2} \xrightarrow{CH_3CH_2I}$

(3) $CH_3\underset{\underset{Br}{|}}{C}H\overset{\overset{Br}{|}}{C}HCH_2CH_3 \xrightarrow[CH_3CO_2H]{Zn}$

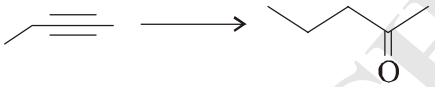
(4) $CH_3CH_2\underset{\underset{OH}{|}}{C}HCH_2CH_3 \xrightarrow[heat]{H_2SO_4}$

Q.51 Identify the products $HC \equiv CCH_2CH_2CH_3 \xrightarrow{Warm\ alk.\ KMnO_4}$

(1) $CO_2 + CH_3CH_2CH_2COOH$ (2) $CH_3CH_2CHO + OHC-CH_2-CH_3$

(3) $CO_2 + CH_3CH_2CH_2CHO$ (4) $CH_3CH_2CH_2CHO + 2CO_2$

Q.52 Select the best reagent(s) to accomplish the following transformation :



(1) BH_3–THF ; $NaOH/H_2O_2$ (2) $Hg^{2+}/H_2SO_4/H_2O$

(3) O_3; Zn/H^+ (4) H_2/Lindlar catalyst ; H_2O/H_2SO_4

Q.53 $C_3H_8 + Cl_2 \xrightarrow{Light} C_3H_7Cl + HCl$ is an example of which of the following types of reactions -

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

Q.54 Which one of the following is reduced with Zn & HCl to give the corresponding hydrocarbon :

(1) Butane-2-one (2) Acetic acid (3) Acetamide (4) Ethyl acetate

Q.55 The compound which gives only acetaldehyde on ozonolysis is -

(1) Butene-1 (2) Butene-2 (3) Ethylene (4) Propylene

Q.56 Reaction of one molecule of HBr with one molecule of 1,3-butadiene 40ºC gives predominantly

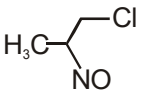
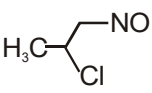
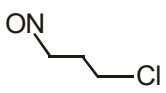
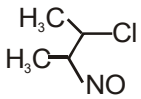
(1) 1-bromo-2-butene under thermodynamically controlled conditions

(2) 3-bromobutene under kinetically controlled conditions

(3) 1-bromo-2-butene under kinetically controlled conditions

(4) 3-bromobutene under thermodynamically controlled conditions

Q.57 Find the final product ; $CH_3-CH=CH_2+NOCl \longrightarrow$?

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

Q.58 Which of the following alkanes has the lowest boiling point?

(1) n-Pentane (2) Isopentane (3) Neopentane (4) n-Hexane.

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Q.59 An unknown carboxylic acid salt on kolbe's electrolysis form cyclobutane; the carboxylic acid can be:
(1) adipic acid (2) hexanoic acid (3) succinic acid (4) fumaric acid

Q.60 A mixture of two organic compound was treated with sodium metal in ether solution. Isobutane was obtained as product. The two compounds are
(1) Methyl chloride and propyl chloride (2) Methyl chloride and ethyl chloride
(3) Isopropyl chloride and Methyl chloride (4) Isopropyl chloride and ethyl chloride

Q.61 Which of the following cannot be considered as a step of mechanism in chain reaction of methane with CI_2?

Q.62 During chlorination of methane to methyl chloride, the propagation step is represented by

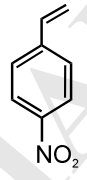
(1) $CI — CI \xrightarrow{h\nu} \dot{C}l + \dot{C}l$ (2) $\dot{C}H_3 + \dot{C}l \longrightarrow CH_3CI$

(3) $CH_4 + \dot{C}l \longrightarrow \dot{C}H_3 + HCl$ (4) $\dot{C}l + \dot{C}l \longrightarrow CI — CI$

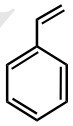
Q.63 Iodination of an alkane is carried out in presence of
(1) Alcohol (2) $P + I_2$ (3) HNO_3 or HIO_3 (4) A reducing agent

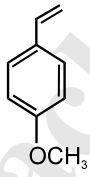
Q.64 Addition of CI_2 water (or HOCI) to propene gives
(1) 1-Chloro-2-propanol (2) 2-Chloro-1-propanol
(3) 3-Chloro-1-propanol (4) 1-Chloro-1-propanol

Q.65 Arrange in decreasing order of reactivity with HCl :



I


II



III

(1) II > III > I (2) III > II > I (3) III > I > II (4) none of the above

Q.66 Addition of HCI to 2-methyl-2-butene mainly gives
(1) 1-Chloro-2-methylbutane (2) 2-Chloro-2-methylbutane
(3) 2-Chlorobutane (4) 1-Chlorobutane.

Q.67 Kharasch effect regarding addition of HBr is not observed in :
(1) hex–1–ene (2) prop–1–ene (3) hex–3–ene (4) pent–1–ene

Q.68 To prepare But-2-yne from 2, 2, 3, 3-Tetrachlorobutane, reagent used is :
(1) Zinc dust / Δ (2) Sodamide (3) Alc. KOH (4) aq. KOH

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Q.69 The product/s obtained when 1-pentyne is reacted with H_2O, H^+, Hg^{+2} is/are

(1) $CH_3COCH_2CH_2CH_3$ (2) $CH_3CH_2COCH_2CH_3$

(3) $CH_3CH_2CH_2COOH + HCOOH$ (4) $CH_3CH_2CH_2CH_2COOH$

Q.70 Acetylene reacts with excess of hypochlorous acid to produce

(1) Acetylene tetrachloride (2) Acetylene chlorohydrin

(3) Acetaldehyde (4) Dichloroacetaldehyde.

Q.71 Acetylene on treatment with dil. H_2SO_4 having $HgSO_4$ gives :

(1) acetaldehyde (2) acetic acid (3) ethanol (4) ethylene

Q.72 Which of the following reagents will distinguish between 1-butyne and 2-butyne?

(1) Br_2/ CCI_4 (2) $AgNO_3 + NH_4OH$ (3) Dil. Cold $KMnO_4$ (4) $KMnO_4$

Q.73 Which of the following will produce acetone ?

(1) $CH_3C \equiv CH \xrightarrow[HgSO_4]{H_2SO_4}$ (2) $CH_3 - C \equiv CH \xrightarrow[(ii)H_2O_2/OH^-]{(i)B_2H_6}$

(3) $CH_3–CH=CH–CH_3 \xrightarrow{O_3/Zn, H_2O}$ (4) $CH \equiv CH \xrightarrow[HgSO_4]{H_2SO_4}$

Q.74 Isomerization of an alkane may be carried out by using

(1) AI_2O_3

(2) HI/P

(3) Anhyd. $AICI_3$ at 300ºC in presence of HCl

(4) Conc. H_2SO_4.

Q.75 Which of the following alkanes can be synthesized by the Wurtz reaction in good yield ?

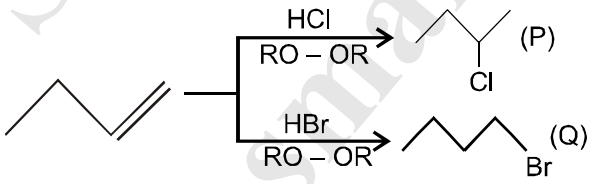
(1) $(CH_3)_2CH - CH_2 - CH(CH_3)_2$ (2) $(CH_3)_2CH - CH_2 - CH_2 - CH(CH_3)_2$

(3) $CH_3 - CH_2 - C(CH_3)_2CH_2 - CH_3$ (4) $(CH_3)_3C - CH_2 - CH_2 - CH_3$

Q.76 The number of possible enantiomer pairs that can be produced during monochlorination of 2-methylbutane is

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

Q.77



Which is correct statement for P & Q

(1) P is product of ionic reaction & Q is product of radical reaction.

(2) P & Q both are product of ionic reaction.

(3) P & Q both are product of free radical reaction.

(4) P is free radical reaction & Q is ionic reaction.

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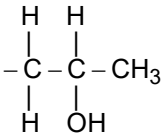
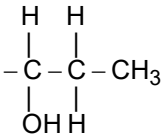
Q.78 $Ph-CH_2-CH=CH_2 \xrightarrow{dil.\ H_2SO_4}$ Product, Product obtained is :

(1) $Ph-CH_2-CH_2-CH_2-OH$

(2) 

(3) 

(4) $Ph-CH_2-OH$

Q.79 $CH_3CH_2CH_2C\equiv CH \xrightarrow{BH_3,\ THF} \xrightarrow{H_2O_2/OH^-}$ 'X'
Identify the product 'X' :

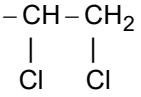
(1) $CH_3CH_2CH_2CH_2CHO$

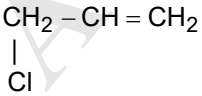
(2) 

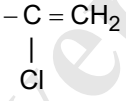
(3) $CH_3CH_2CH_2CHO$

(4) 

Q.80 $CH_3CH=CH_2 \xrightarrow{Cl_2,\ 500°C}$ P, Product P is :

(1) 

(2) 

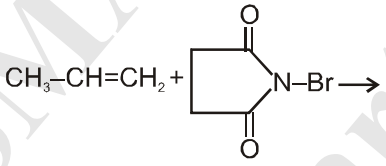
(3) 

(4) $CH_3-CH=CH-Cl$

Q.81 Which of the following do not give Allyl halide ?

(1) $CH_2=CH-CH_3+SO_2Cl_2 \xrightarrow[\text{traces of peroxide}]{475K}$

(2) $CH_2=CH-CH_3+Cl_2 \xrightarrow{400°C-500°C}$

(3) 

N-Bromo Succinimide (NBS)

(4) $CH_3-CH=CH_2+HBr \xrightarrow{Peroxide}$

Q.82 Which of the following compounds on hydrolysis gives acetylene ?

(1) CaC_2 (2) Mg_2C_3 (3) Al_4C_3 (4) Cu_2Cl_2

Q.83 ..... is obtained when iodoform is heated with Ag powder :

(1) CH_4 (2) C_2H_4 (3) C_2H_6 (4) C_2H_2

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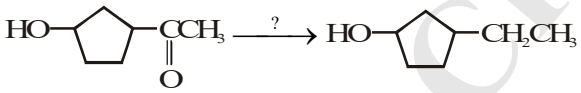
Q.84 The order of reactivity of alkyl halides in Wurtz reaction is
(1) R–I > R–Br > R–Cl (2) R–I < R–Br < R–Cl
(3) R–Br > R–I < R–Cl (4) R–I > R–Cl > R–Br

Q.85 The Corey-House alkane synthesis is carried out by treating an alkyl halide with
(1) Lithium metal
(2) Copper metal
(3) Lithium metal followed by reaction with cuprous iodide and then treating the product with an alkyl halide
(4) Cuprous iodide followed by reaction with alkyl halide

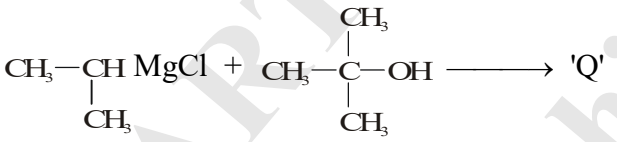
Q.86 Which of the following compound is not suitable to obtain from wurtz reaction ?
(1) ethane (2) butane (3) isobutane (4) hexane

Q.87 When ethyl chloride and n-propyl chloride undergoes wurtz reaction which is not obtained
(1) n-butane (2) n-pentane (3) n-hexane (4) isobutane

Q.88 Which of the following reagent can be used for following conversion



(1) Zn – Hg/HCl (2) Red P + HI (3) $NH_2 - NH_2/^{\ominus}OH$ (4) All of them

Q.89  'Q' ; What is 'Q' ?
(1) isobutane (2) isopropane
(3) tert. butyl chloride (4) propane

Q.90 Which alkane is liquid at room temperature
(1) Hexane (2) Butane (3) Propane (4) Ethane

Q.91 The nitrating agent for the nitration of alkanes is:
(1) Conc. HNO_3
(2) Mixture of conc. HNO_3 and conc. H_2SO_4
(3) Acetyl nitrate
(4) HNO_3 vapours at high temperature

Q.92 The antiknock compound is
(1) TEL (2) Diethylzinc (3) Dimethylcadmium (4) Tetramethyl tin

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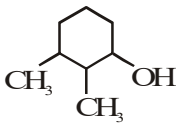
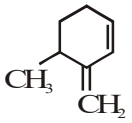
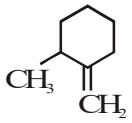
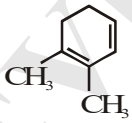
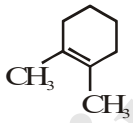
Q.93 Photochemical chlorination of alkane is initiated by a process of

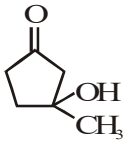
(1) pyrolysis (2) substitution (3) Homolysis (4) Peroxidation

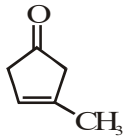
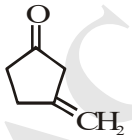
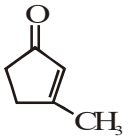
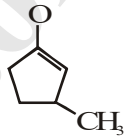
Q.94 Isomerization in alkane may be brought about by using :

(1) Al_2O_3 (2) Fe_2O_3 (3) $AlCl_3$ and HCl (4) Concentrated H_2SO_4

Q.95  X (major) 'A' is

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

Q.96  A (major) 'A' is

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

Q.97 Ozonolysis of 3–Methyl–1–butene gives a mixture of

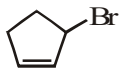
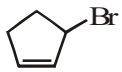
(1) Propanal and ethanal (2) Propanone and ethanal

(3) 2–Methylpropanal and methanal (4) Butanone and methanal

Q.98 Oxidation of isobutylene with acid potassium permanganate gives

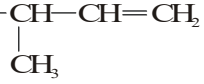
(1) Acetone + CO_2 (2) Acetic acid (3) Acetic acid + CO_2 (4) Acetic acid + acetone

Q.99  $\xrightarrow{Br_2}$ A $\xrightarrow{\text{alc KOH}}$ B ; What is the structure of B

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

Q100 Which of the following is maximum reactive for NBS

(1) $PhCH_3$ (2) Ph CH_2—CH_3

(3) $PhCH_2$—CH=CH_2 (4) 

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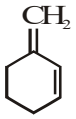
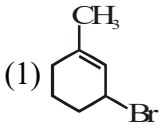
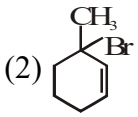
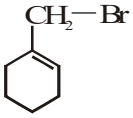
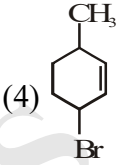
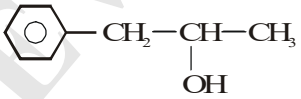
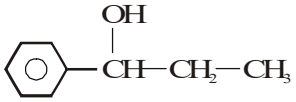
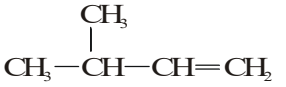
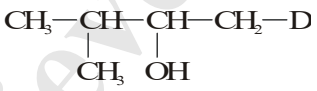
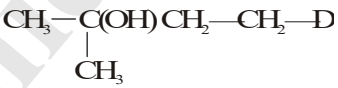
Q.101  $\xrightarrow{HBr}$ A (major) ; 'A' is

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

Q.102 The major product of the following reaction is

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

Q.103  $\xrightarrow{\overset{\oplus}{D}/\ H_2O}$ A; A (major product) is

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

Q.104 Which one of the following has the smallest heat of hydrogenation per mole

(1) 1–butene (2) Trans–2–butene (3) Cis–2–butene (4) Propene

Q.105 The correct order of increasing stability of the given alkenes is

(1) 1 – pentene > cis –2– pentene > trans – 2–pentene > 2 – methyl – 2 – butene

(2) 1 – pentene > trans –2– pentene > cis –2– pentene > 2 – methyl – 2 – butene

(3) 1 – pentene < cis –2– pentene < trans – 2–pentene < 2 – methyl – 2 – butene

(4) 1 – pentene < trans – 2–pentene < cis –2– pentene < 2 – methyl – 2 – butene

Q106 An alkene on treating with hot acidified $KMnO_4$ gives 4 - oxopentanoic acid. The alkene is

(1) Pentene (2) 2–Pentene

(3) 1–Methyl cyclobutene (4) 1, 2– Dimethyl cyclopropene

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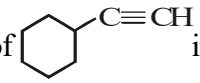
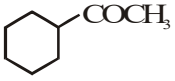
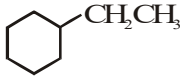
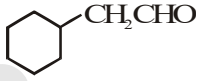
Q.107 Hydration of  in presence of

H_2SO_4 / $HgSO_4$ gives

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

Q.108 B $\xleftarrow[H_2O_2 \,/\, {}^{-}OH]{BH_3 \,/\, THF}$ $CH_3—C\equiv CH$ $\xrightarrow{HgSO_4 \,/\, H_2SO_4}$ A, A and B are

(1) CH_3CH_2CHO, CH_3COCH_3 (2) CH_3COCH_3,$CH_3\,CH_2CHO$

(3) CH_3COCH_3 both (4) CH_3COCH_3 , $CH_3\,CH_2\,CH_2\,OH$

Q.109 $MeCH_2C\equiv CH$ $\xrightarrow{NH_3 \,/\, NaNH_2}$ A $\xrightarrow{Et\ Br}$ B,

A and B are

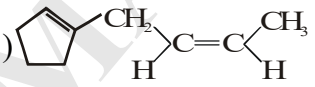
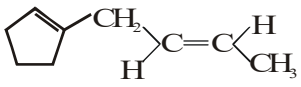
(1) $MeCH_2C\equiv C—Na$, $MeCH_2C\equiv C—Et$

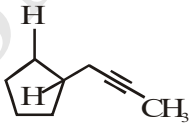
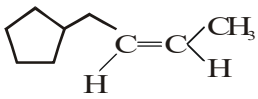
(2) $MeCH_2CH=CH_2$, $MeCH_2—CHEt—CH_3$

(3) $MeCH_2CH=CHNH_2$,$MeCH_2CH=CH–NHBr$

(4) $MeCH_2C\equiv C—NH_2$, $MeC\equiv C—NH—Br$

Q.110  $\xrightarrow[\text{Lindlar catalyst}]{H_2}$ product will be :

(1)  (2) 

(3)  (4) 

Q.111 Which one of the following is most stable :

(1) $CH\equiv\overset{\oplus}{C}$ (2) $CH_2=\overset{\oplus}{C}H$ (3) $CH_3—\overset{\oplus}{C}H_2$ (4) $CH_3—\overset{\oplus}{O}$

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Q.112 To distinguish between propene and propyne, the reagent would be -

(1) Bromine (2) Alkaline $KMnO_4$

(3) Ammonical silver nitrate (4) Ozone

Q.113 1-Alkyne and 2 -Alkyne can not be distinguished by :

(1) Ammonical $AgNO_3$ (2) Baeyer's reagent (3) Br_2 in CCl_4 (4) 2 and 3 both

Q.114 $CH \equiv CH \xrightarrow{CH_3MgBr} A\ (gas) + B,$

$B \xrightarrow{CH_3-I} C.$ C is :

(1) CH_4 (2) $CH_3—CH_3$ (3) $CH \equiv C—CH_3$ (4) $CH_3—C \equiv C—I$

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.115 **Assertion :** Addition of HBr on 2-butene gives two isomeric products.
Reason : Addition of HBr on 2-butene follows Markownikoff's rule.

Q.116 **Assertion :** Akynes are more reactive towards nucleophilic addition reaction as compared to alkenes.
Reason : Alkynes contain two pi bonds, while alkenes have only one bond.

Q.117 **Assertion :** Melting point of neo-pentane is greater than that of n-pentane but the boiling point of n-pentane is greater than that of neo -pentane
Reason : Melting point depends upon packing in crystal lattice whereas boiling point depends upon surface area of the molecule.

Q.118 **Assertion :** The boiling point of n-alkenes increases with increase in number of carbon atoms.
Reason : Van der Waals force of attraction increases with increase in number of carbon and molecular mass.

Q.119 **Assertion** : Petroleum is a good source of aliphatic hydrocarbons.
Reason : Aromatic compounds are obtained by distillation of coal-tar

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Q.120 **Assertion** : Ethene is more reactive than ethane.
Reason : Bond energy of C–C bond in ethene is more than the bond energy of C–C bond in ethane

Q.121 **Assertion** : Hydration of alkenes in the presence of mineral acids, takes place via carbocations as intermediates
Reason : Hydration of alkenes is initiated by electrophilic attack of H^+ ions on carbon-carbon double bond.

Q.122 **Assertion :** The characteristic reactions of alkenes are electrophilic addition reactions.
Reason : Carbon-carbon double bond acts as a source of electrons for the electrophile.

Q.123 **Assertion** : Cis-2-Butene is more polar than trans-2-butene.
Reason : Cis-2-Butene is superimposable on its mirror image whereas trans-2-butene is not super imposable on its mirror image

Q.124 **Assertion** : Ethene as well as benzene are planar molecules.
Reason : All the carbon atoms in ethene as well as benzene are sp^2 hybridised.

Q.125 **Assertion :** Propene reacts with hydrogen chloride in the presence of organic peroxide to give 1-bromopropane.
Reason : Addition of HCl does not follow Kharasch effect.

Q.126 **Assertion :** 1-Butene on reaction with HBr in the presence of peroxide produces 1-bromobutane.
Reason : It involves the formation of a primary radical.

Q.127 **Assertion :** Addition of HBr to 1-butene gives two optical isomers.
Reason : The product contains one asymmetric carbon.

Q.128 **Assertion :** Addition of HCl to propene in presence of peroxide gives 1-chloropropane.
Reason : The reaction occurs by carbonium ion intermediate.

Q.129 **Assertion :** Propene is more reactive than ethene towards electrophilic addition reactions.
Reason : Electron density of double bond increases due to hyperconjugation of methyl group.

Q.130 **Assertion :** $CH_3-\underset{\underset{Cl}{|}}{CH}-CH_2-CH_3 \xrightarrow{\text{Alc. KOH}} CH_3-CH=CH-CH_3 + KCl + H_2O$ Dehydro halogenation reaction of 2-chlorobutane gives 2-butene.
Reason : Elimination reaction take place according to saytzeff's rule.

Q.131 **Assertion :** Addition of bromine to trans-but-2-ene yields meso-2, 3-dibromobutane.
Reason : Bromine addition to an alkene is an electrophilic addition.

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ANSWER KEY

Q.1	2	Q.2	3	Q.3	2	Q.4	2	Q.5	1	Q.6	4	Q.7	3
Q.8	3	Q.9	1	Q.10	2	Q.11	1	Q.12	2	Q.13	2	Q.14	1
Q.15	4	Q.16	1	Q.17	2	Q.18	3	Q.19	2	Q.20	1	Q.21	4
Q.22	3	Q.23	2	Q.24	4	Q.25	4	Q.26	1	Q.27	1	Q.28	4
Q.29	3	Q.30	2	Q.31	3	Q.32	1	Q.33	2	Q.34	3	Q.35	3
Q.36	3	Q.37	1	Q.38	4	Q.39	1	Q.40	2	Q.41	1	Q.42	2
Q.43	3	Q.44	2	Q.45	1	Q.46	1	Q.47	2	Q.48	3	Q.49	1
Q.50	2	Q.51	1	Q.52	1	Q.53	1	Q.54	1	Q.55	2	Q.56	1
Q.57	2	Q.58	3	Q.59	1	Q.60	3	Q.61	2	Q.62	3	Q.63	3
Q.64	1	Q.65	2	Q.66	2	Q.67	3	Q.68	1	Q.69	1	Q.70	4
Q.71	1	Q.72	2	Q.73	1	Q.74	3	Q.75	2	Q.76	1	Q.77	1
Q.78	3	Q.79	1	Q.80	2	Q.81	4	Q.82	1	Q.83	4	Q.84	1
Q.85	3	Q.86	3	Q.87	4	Q.88	3	Q.89	4	Q.90	1	Q.91	4
Q.92	1	Q.93	3	Q.94	3	Q.95	4	Q.96	3	Q.97	3	Q.98	1
Q.99	4	Q100	4	Q.101	1	Q.102	3	Q.103	4	Q.104	2	Q.105	3
Q106	3	Q.107	1	Q.108	2	Q.109	1	Q.110	1	Q.111	4	Q.112	3
Q.113	3	Q.114	3	Q.115	3	Q.116	2	Q.117	4	Q.118	1	Q.119	2
Q.120	2	Q.121	1	Q.122	1	Q.123	3	Q.124	1	Q.125	4	Q.126	3
Q.127	1	Q.128	4	Q.129	1	Q.130	1	Q.131	2				

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