Quiz: Hydrocarbon 1

Q1: Which of the following hydrocarbons shows maximum heat of hydrogenation per mole of H2?

A) Ethene
B) Benzene
C) Cyclohexene
D) 1,3-Butadiene

Q2: The number of sigma (sigma) and pi (pi) bonds present in benzene (C6H6) respectively are:

A) 12 sigma, 3 pi
B) 6 sigma, 6 pi
C) 12 sigma, 6 pi
D) 9 sigma, 3 pi

Q3: Which alkene shows geometrical isomerism?

A) Propene
B) 2-Methylpropene
C) But-2-ene
D) Ethene

Q4: Ozonolysis of propene followed by Zn/H2O gives:

A) Methanal + Ethanal
B) Methanal + Methanone
C) Ethanal + Methanone
D) Two molecules of methanal

Q5: Which carbocation is most stable?

A) CH3+
B) CH3CH2+
C) (CH3)2CH+
D) (CH3)3C+

Q6: The correct increasing order of acidity is:

A) Alkane < Alkene < Alkyne
B) Alkene < Alkane < Alkyne
C) Alkyne < Alkene < Alkane
D) Alkane < Alkyne < Alkene

Q7: Which reagent converts an alkyne into a cis-alkene?

A) Na / NH3
B) H2 / Pd-C
C) H2 / Lindlar catalyst
D) KMnO4

Q8: The IUPAC name of (CH3)3C-CH=CH2 is:

A) 3-Methylbut-1-ene
B) 2,2-Dimethylpropene
C) 2-Methylbut-1-ene
D) 2,2-Dimethylbut-1-ene

Q9: Which hydrocarbon does not undergo electrophilic substitution?

A) Benzene
B) Toluene
C) Ethene
D) Anisole

Q10: In free radical chlorination of methane, the initiation step is:

A) CH4 -> CH3· + H·
B) Cl2 -> 2Cl·
C) CH3· + Cl2 -> CH3Cl + Cl·
D) Cl· + CH4 -> CH3· + HCl

Q11: Which of the following is aromatic?

A) Cyclobutadiene
B) Cyclooctatetraene
C) Benzene
D) Cyclopentadiene

Q12: The hybridisation of carbon atoms in ethyne is:

A) sp2
B) sp3
C) sp
D) sp2 and sp

Q13: Which reagent distinguishes ethene and ethane?

A) Bromine water
B) Dilute HCl
C) NaOH
D) Water

Q14: Markovnikov addition occurs due to formation of:

A) More substituted alkene
B) More stable carbocation
C) Free radical intermediate
D) Carbanion

Q15: Anti-Markovnikov addition of HBr occurs in presence of:

A) Peroxide
B) UV light
C) AlCl3
D) ZnCl2

Q16: Which alkyne gives acidic hydrogen?

A) But-2-yne
B) Propyne
C) 2-Methylbut-2-yne
D) Diphenylacetylene

Q17: The major product of nitration of toluene is:

A) o-Nitrotoluene
B) m-Nitrotoluene
C) p-Nitrotoluene
D) Equal o- and p-

Q18: Which hydrocarbon gives only one monochloro product?

A) Ethane
B) Propane
C) Isobutane
D) Neopentane

Q19: The bond angle in sp-hybridised carbon is:

A) 109.5 deg
B) 120 deg
C) 180 deg
D) 90 deg

Q20: Which reaction converts alkene into alkane?

A) Ozonolysis
B) Hydrogenation
C) Hydration
D) Polymerisation

Q21: Which compound shows maximum hyperconjugation?

A) Ethane
B) Propene
C) Isobutane
D) Tert-butyl cation

Q22: The number of structural isomers of C4H10 is:

A) 1
B) 2
C) 3
D) 4

Q23: Which compound undergoes fastest SN1 reaction?

A) CH3Cl
B) C2H5Cl
C) (CH3)2CHCl
D) (CH3)3CCl

Q24: Which hydrocarbon gives black precipitate with ammoniacal AgNO3?

A) Ethene
B) Ethane
C) Ethyne
D) Benzene

Q25: The total number of pi electrons in naphthalene is:

A) 6
B) 8
C) 10
D) 12

Q26: Which compound is least reactive towards electrophilic substitution?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Aniline

Q27: The major product formed when propene reacts with cold dilute KMnO4 is:

A) Propanone
B) Ethane-1,2-diol
C) Propane
D) Propanoic acid

Q28: Which of the following has maximum bond length?

A) C-C
B) C=C
C) C===C
D) All equal

Q29: Which compound is non-aromatic?

A) Benzene
B) Cyclopentadienyl anion
C) Cyclooctatetraene
D) Tropylium cation

Q30: Which reaction is used to prepare alkane from alkyl halide?

A) Wurtz reaction
B) Kolbe reaction
C) Friedel-Crafts
D) Ozonolysis

Q31: The degree of unsaturation of C6H6 is:

A) 2
B) 3
C) 4
D) 5

Q32: Which hydrocarbon undergoes addition reactions most readily?

A) Alkane
B) Alkene
C) Aromatic hydrocarbon
D) Cycloalkane

Q33: The catalyst used in Friedel-Crafts alkylation is:

A) $AlCl_3$
B) $ZnCl_2$
C) $FeCl_3$
D) H_2SO_4

Q34: Which compound shows maximum resonance stabilisation?

A) Ethene
B) 1,3-Butadiene
C) Benzene
D) Propene

Q35: Which hydrocarbon gives sooty flame?

A) Methane
B) Ethane
C) Benzene
D) Propane

Q36: Which is the correct order of bond strength?

A) C≡C > C=C > C-C
B) C-C > C=C > C≡C
C) C=C > C≡C > C-C
D) C≡C > C-C > C=C

Q37: The product formed when ethyne reacts with excess HBr is:

A) Bromoethene
B) 1,2-Dibromoethane
C) 1,1-Dibromoethane
D) Ethyl bromide

Q38: Which intermediate is formed in electrophilic addition to alkenes?

A) Free radical
B) Carbocation
C) Carbanion
D) Carbene

Q39: Which compound is planar?

A) Cyclohexane
B) Cyclobutane
C) Benzene
D) Cyclopropane

Q40: Which reaction is used to distinguish alkenes from alkynes?

A) Bromine water
B) Baeyer's test
C) Ammoniacal AgNO3
D) Dilute KMnO4

Q41: The heat of combustion of benzene is less than expected because benzene is:

A) Unsaturated
B) Highly symmetrical
C) Resonance stabilised
D) Volatile

Q42: Which of the following alkenes is most stable?

A) Ethene
B) Propene
C) But-1-ene
D) 2-Methylpropene

Q43: The major product of addition of HCl to propene is formed due to:

A) Free radical mechanism
B) Carbanion formation
C) Carbocation rearrangement
D) More stable carbocation formation

Q44: Which hydrocarbon undergoes substitution reactions most readily?

A) Alkene
B) Alkyne
C) Alkane
D) Aromatic hydrocarbon

Q45: The correct order of acidity is:

A) Ethane < Ethene < Ethyne
B) Ethyne < Ethene < Ethane
C) Ethene < Ethane < Ethyne
D) Ethane < Ethyne < Ethene

Q46: Which reagent converts alkyne into trans-alkene?

A) H2 / Lindlar catalyst
B) Na / NH3 (liq)
C) H2 / Pd-C
D) KMnO4

Q47: The number of pi bonds in anthracene is:

A) 7
B) 9
C) 10
D) 14

Q48: Which compound shows metamerism?

A) Butane
B) Diethyl ether
C) Propene
D) Ethene

Q49: The product formed when benzene reacts with Cl2 in presence of FeCl3 is:

A) Chlorobenzene
B) Benzyl chloride
C) Hexachlorocyclohexane
D) Dichlorobenzene

Q50: Which alkane gives maximum number of monochloro derivatives?

A) Ethane
B) Propane
C) Neopentane
D) Isopentane

Q51: The bond order of benzene is approximately:

A) 1
B) 1.5
C) 2
D) 1.33

Q52: Which of the following compounds is anti-aromatic?

A) Cyclopropenyl cation
B) Cyclopentadienyl anion
C) Cyclobutadiene
D) Benzene

Q53: The hybridisation of carbon atoms in benzene is:

A) sp
B) sp2
C) sp3
D) sp and sp2

Q54: Which compound undergoes ozonolysis to give two molecules of acetone?

A) But-2-ene
B) 2,3-Dimethylbut-2-ene
C) Pent-2-ene
D) Isobutene

Q55: Which hydrocarbon is used as a solvent due to its non-polar nature?

A) Benzene
B) Ethyne
C) Ethene
D) Methane

Q56: The reaction of ethyne with dilute alkaline KMnO4 gives:

A) Oxalic acid
B) Glyoxal
C) Ethane-1,2-diol
D) No reaction

Q57: Which of the following does not show position isomerism?

A) But-1-ene
B) But-2-ene
C) Propene
D) Pent-2-ene

Q58: Which alkyl halide is most reactive towards SN2 reaction?

A) CH3Cl
B) C2H5Cl
C) (CH3)2CHCl
D) (CH3)3CCl

Q59: The reaction of benzene with conc. HNO3 and conc. H2SO4 is an example of:

A) Addition
B) Substitution
C) Elimination
D) Oxidation

Q60: Which hydrocarbon is least acidic?

A) Ethane
B) Ethene
C) Ethyne
D) Propyne

Q61: Which of the following compounds will show cis-trans isomerism?

A) 2-Methylpropene
B) But-1-ene
C) But-2-ene
D) Propene

Q62: Which compound gives red precipitate with ammoniacal Cu2Cl2?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q63: The correct order of boiling points is:

A) n-Butane > Isobutane
B) Isobutane > n-Butane
C) Both equal
D) Depends on pressure

Q64: Which compound has maximum angle strain?

A) Cyclohexane
B) Cyclopentane
C) Cyclobutane
D) Cyclopropane

Q65: Which reagent is used to prepare ethyne from calcium carbide?

A) Water
B) Dilute HCl
C) NaOH
D) Alcoholic KOH

Q66: Which of the following hydrocarbons is most reactive towards bromination?

A) Methane
B) Ethane
C) Propane
D) Isobutane

Q67: The major product of Friedel-Crafts alkylation of benzene with CH3Cl is:

A) Toluene
B) Ethylbenzene
C) Xylene
D) Cumene

Q68: Which compound is used as a starting material for manufacture of styrene?

A) Benzene
B) Ethylbenzene
C) Toluene
D) Xylene

Q69: The product formed when benzene reacts with excess Cl2 in sunlight is:

A) Chlorobenzene
B) Hexachlorobenzene
C) BHC
D) Dichlorobenzene

Q70: Which hydrocarbon has the highest percentage of carbon?

A) Ethane
B) Ethene
C) Ethyne
D) Propane

Q71: The reagent used to convert alkene to alcohol is:

A) Conc. H2SO4
B) Cold KMnO4
C) Ozone
D) HBr

Q72: Which of the following is an example of homologous series?

A) Methane, ethane, ethene
B) Ethane, propane, butane
C) Ethene, ethyne, benzene
D) Methane, ethene, ethyne

Q73: The number of sigma bonds in ethene is:

A) 4
B) 5
C) 6
D) 7

Q74: Which compound undergoes polymerisation most readily?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q75: Which hydrocarbon is used as a fuel gas with highest calorific value?

A) Methane
B) Ethane
C) Propane
D) Butane

Q76: The product formed when toluene is oxidised with alkaline KMnO4 is:

A) Benzyl alcohol
B) Benzaldehyde
C) Benzoic acid
D) Benzene

Q77: Which compound shows maximum resonance energy?

A) Ethene
B) 1,3-Butadiene
C) Benzene
D) Naphthalene

Q78: Which of the following does not undergo electrophilic substitution?

A) Benzene
B) Toluene
C) Phenol
D) Ethene

Q79: Which hydrocarbon forms explosive mixture with air?

A) Methane
B) Ethane
C) Propane
D) Acetylene

Q80: The total number of isomers possible for C5H12 is:

A) 2
B) 3
C) 4
D) 5

Q81: The resonance energy of benzene is approximately:

A) 36 kJ mol-1
B) 72 kJ mol-1
C) 150 kJ mol-1
D) 208 kJ mol-1

Q82: Which of the following alkenes will show maximum heat of hydrogenation?

A) 2-Methylpropene
B) But-2-ene
C) But-1-ene
D) Ethene

Q83: The number of stereoisomers possible for 2,3-dimethylbut-2-ene is:

A) 0
B) 1
C) 2
D) 3

Q84: Which carbocation rearrangement is most likely during addition of HCl to 3-methyl-1-butene?

A) Hydride shift
B) Methyl shift
C) No rearrangement
D) Ring expansion

Q85: The major product formed when ethyne reacts with hot acidic KMnO4 is:

A) Oxalic acid
B) Glyoxal
C) Ethanoic acid
D) CO2

Q86: Which of the following species is aromatic?

A) Cyclobutadienyl dianion
B) Cyclopropenyl anion
C) Cyclopentadienyl cation
D) Cyclooctatetraene dianion

Q87: The correct order of stability of carbocations is:

A) 3 deg > 2 deg > 1 deg > CH3+
B) CH3+ > 1 deg > 2 deg > 3 deg
C) 2 deg > 3 deg > 1 deg > CH3+
D) 3 deg > 1 deg > 2 deg > CH3+

Q88: Which alkene gives meso compound on dihydroxylation with cold KMnO4?

A) But-1-ene
B) cis-But-2-ene
C) trans-But-2-ene
D) 2-Methylpropene

Q89: The major product of free radical bromination of propane is:

A) 1-Bromopropane
B) 2-Bromopropane
C) Equal amounts of both
D) Propyl bromide only

Q90: Which compound has maximum torsional strain?

A) Ethane (staggered)
B) Ethane (eclipsed)
C) Cyclohexane (chair)
D) Cyclopropane

Q91: The number of sigma bonds present in naphthalene is:

A) 16
B) 18
C) 19
D) 21

Q92: Which reagent converts alkene directly into vicinal dibromide?

A) HBr
B) Br2 / CCl4
C) Br2 / H2O
D) NBS

Q93: The total number of constitutional isomers of C6H14 is:

A) 3
B) 4
C) 5
D) 6

Q94: Which hydrocarbon undergoes addition reaction most slowly?

A) Ethene
B) Propene
C) But-2-ene
D) Benzene

Q95: The bond dissociation energy is maximum for:

A) C-C
B) C=C
C) C===C
D) C-H

Q96: Which compound gives positive Baeyer's test but does not decolourise bromine water in dark?

A) Ethene
B) Ethyne
C) Benzene
D) Cyclohexene

Q97: The major product of hydration of propene in presence of dilute H2SO4 is:

A) Propan-1-ol
B) Propan-2-ol
C) Propanal
D) Acetone

Q98: Which compound is most reactive towards electrophilic aromatic substitution?

A) Benzene
B) Chlorobenzene
C) Nitrobenzene
D) Phenol

Q99: The number of pi electrons in anthracene is:

A) 10
B) 12
C) 14
D) 18

Q100: Which hydrocarbon has highest boiling point?

A) n-Butane
B) Isobutane
C) Propane
D) Ethane

Q101: Which intermediate is formed during nitration of benzene?

A) sigma-complex
B) pi-complex
C) Free radical
D) Carbanion

Q102: The percentage of s-character in sp2 hybrid orbitals is:

A) 25%
B) 33%
C) 50%
D) 67%

Q103: Which compound shows anti-Markovnikov addition of HBr without peroxide?

A) Ethene
B) Propene
C) Allyl bromide
D) None

Q104: The major product when toluene undergoes chlorination in presence of sunlight is:

A) o-Chlorotoluene
B) p-Chlorotoluene
C) Benzyl chloride
D) Chlorobenzene

Q105: Which compound is non-planar due to steric strain?

A) Benzene
B) Cyclobutadiene
C) Cyclooctatetraene
D) Naphthalene

Q106: The total number of alkynes possible with molecular formula C5H8 is:

A) 1
B) 2
C) 3
D) 4

Q107: Which compound has maximum resonance stabilisation among the following?

A) Benzene
B) Naphthalene
C) Anthracene
D) Phenanthrene

Q108: Which hydrocarbon reacts fastest with cold dilute KMnO4?

A) Ethane
B) Ethene
C) Benzene
D) Cyclohexane

Q109: The product formed when benzene reacts with propene in presence of HF is:

A) Cumene
B) Ethylbenzene
C) Isopropylbenzene
D) Propylbenzene

Q110: The number of hydrogen atoms attached to sp2 hybridised carbons in benzene is:

A) 3
B) 4
C) 5
D) 6

Q111: Which of the following is most acidic?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q112: The hybridisation of carbon atoms in cyclopropane is:

A) sp
B) sp2
C) sp3
D) Distorted sp3

Q113: Which compound gives only one product on nitration?

A) Toluene
B) Benzene
C) Chlorobenzene
D) Phenol

Q114: Which hydrocarbon undergoes polymerisation to form PVC?

A) Ethene
B) Chloroethene
C) Ethyne
D) Propene

Q115: The product of ozonolysis of trans-but-2-ene is:

A) Two molecules of ethanal
B) Ethanal + acetone
C) Two molecules of acetone
D) Ethanone + methanal

Q116: Which compound is least reactive towards free radical chlorination?

A) Methane
B) Ethane
C) Propane
D) Isobutane

Q117: The number of isomers of C7H8 is:

A) 3
B) 4
C) 5
D) 6

Q118: Which compound undergoes side-chain oxidation with KMnO4?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Nitrobenzene

Q119: Which hydrocarbon has highest heat of combustion per mole?

A) Methane
B) Ethane
C) Propane
D) Butane

Q120: Which of the following undergoes fastest electrophilic addition?

A) Ethene
B) Propene
C) 2-Methylpropene
D) But-2-ene

Q121: The total number of distinct monochloro derivatives possible for n-hexane is:

A) 3
B) 4
C) 5
D) 6

Q122: The major product formed when propene reacts with cold, concentrated H_2SO_4 is:

A) Propan-1-ol
B) Propan-2-ol
C) Isopropyl hydrogen sulphate
D) n-Propyl hydrogen sulphate

Q123: Which of the following alkenes shows maximum rate of electrophilic addition of HBr (no peroxide)?

A) Ethene
B) Propene
C) But-1-ene
D) 2-Methylpropene

Q124: The total number of sigma bonds present in anthracene is:

A) 21
B) 22
C) 23
D) 24

Q125: Which compound will give a meso product on bromination in CCl_4?

A) cis-But-2-ene
B) trans-But-2-ene
C) But-1-ene
D) 2-Methylpropene

Q126: The correct order of stability of alkenes is:

A) Mono < Di < Tri < Tetra substituted
B) Tetra < Tri < Di < Mono substituted
C) Di < Mono < Tri < Tetra substituted
D) Mono < Tri < Di < Tetra substituted

Q127: Which of the following hydrocarbons gives maximum resonance energy per ring?

A) Benzene
B) Naphthalene
C) Anthracene
D) Phenanthrene

Q128: The major product of ozonolysis of 3-methyl-1-butene is:

A) Acetone + formaldehyde
B) Acetaldehyde + acetone
C) Formaldehyde + isobutyraldehyde
D) Two molecules of acetone

Q129: Which hydrocarbon undergoes fastest nitration?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Nitrobenzene

Q130: The number of alkynes possible with molecular formula C6H10 is:

A) 4
B) 5
C) 6
D) 7

Q131: Which of the following is anti-aromatic?

A) Cyclopentadienyl anion
B) Cyclopropenyl cation
C) Cyclobutadiene
D) Benzene

Q132: The bond angle in cyclopropane is approximately:

A) 60 deg
B) 90 deg
C) 104.5 deg
D) 109.5 deg

Q133: Which intermediate is common to both nitration and sulphonation of benzene?

A) pi-complex
B) sigma-complex
C) Free radical
D) Carbanion

Q134: The major product formed when ethyne reacts with excess Cl2 is:

A) CHCl=CHCl
B) CHCl2-CHCl2
C) CH2Cl-CH2Cl
D) CCl4

Q135: Which of the following has maximum heat of combustion per mole of compound?

A) Ethane
B) Propane
C) Butane
D) Pentane

Q136: Which compound will not decolourise bromine water in absence of catalyst?

A) Ethene
B) Ethyne
C) Cyclohexene
D) Benzene

Q137: The correct order of reactivity towards free radical bromination is:

A) 3 deg > 2 deg > 1 deg > CH3
B) 1 deg > 2 deg > 3 deg > CH3
C) CH3 > 1 deg > 2 deg > 3 deg
D) 2 deg > 3 deg > 1 deg > CH3

Q138: Which hydrocarbon undergoes polymerisation to give polyethene?

A) Ethane
B) Ethene
C) Ethyne
D) Propane

Q139: The major product of hydration of ethyne in presence of HgSO4/H2SO4 is:

A) Ethanol
B) Ethanal
C) Ethene-1,2-diol
D) Ethane

Q140: Which compound is most resistant to oxidation by alkaline KMnO4?

A) Ethene
B) Propene
C) Cyclohexene
D) Benzene

Q141: The total number of pi bonds present in phenanthrene is:

A) 6
B) 7
C) 8
D) 9

Q142: Which compound shows maximum hyperconjugation effect?

A) Ethene
B) Propene
C) Isobutene
D) 2-Methylpropene

Q143: The product formed when benzene reacts with CH3Cl/AlCl3 is:

A) Ethylbenzene
B) Toluene
C) Xylene
D) Cumene

Q144: Which of the following hydrocarbons has the lowest boiling point?

A) n-Butane
B) Isobutane
C) Propane
D) Ethane

Q145: Which of the following does not undergo electrophilic substitution?

A) Benzene
B) Toluene
C) Anisole
D) Ethene

Q146: The degree of unsaturation of C7H8 is:

A) 3
B) 4
C) 5
D) 6

Q147: Which compound gives a single mononitration product?

A) Toluene
B) Benzene
C) Chlorobenzene
D) Phenol

Q148: The major product formed when propene reacts with Br2 in presence of peroxide is:

A) 1,2-Dibromopropane
B) 1-Bromopropane
C) 2-Bromopropane
D) Allyl bromide

Q149: Which hydrocarbon gives positive silver nitrate test?

A) Ethene
B) Ethyne
C) Propene
D) Benzene

Q150: The correct order of bond length is:

A) C≡≡C < C=C < C-C
B) C-C < C=C < C≡≡C
C) C=C < C-C < C≡≡C
D) C≡≡C < C-C < C=C

Q151: Which compound is most acidic?

A) Ethane
B) Ethene
C) Ethyne
D) Toluene

Q152: The major product of side-chain chlorination of toluene is:

A) o-Chlorotoluene
B) p-Chlorotoluene
C) Benzyl chloride
D) Chlorobenzene

Q153: Which compound shows maximum angle strain?

A) Cyclopropane
B) Cyclobutane
C) Cyclopentane
D) Cyclohexane

Q154: The product of ozonolysis of ethene is:

A) Methanal
B) Ethanal
C) Ethanone
D) Methanol

Q155: Which of the following hydrocarbons is planar?

A) Cyclohexane
B) Cyclobutane
C) Cyclopropane
D) Benzene

Q156: The number of constitutional isomers of C7H16 is:

A) 7
B) 8
C) 9
D) 10

Q157: Which compound undergoes fastest electrophilic aromatic substitution?

A) Benzene
B) Chlorobenzene
C) Aniline
D) Nitrobenzene

Q158: The major product formed when ethylbenzene is oxidised with alkaline KMnO4 is:

A) Acetophenone
B) Benzyl alcohol
C) Benzoic acid
D) Benzaldehyde

Q159: Which hydrocarbon has maximum percentage of carbon by mass?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q160: The reaction of benzene with propanoyl chloride/AlCl3 gives:

A) Propiophenone
B) Ethylbenzene
C) Cumene
D) Propylbenzene

Q161: The total number of distinct monochloro derivatives possible for neopentane is:

A) 1
B) 2
C) 3
D) 4

Q162: The major product formed when 1-butene reacts with HBr (no peroxide) is:

A) 1-Bromobutane
B) 2-Bromobutane
C) Butane
D) 1,2-Dibromobutane

Q163: Which of the following alkenes is least stable?

A) 2-Methylpropene
B) But-2-ene
C) But-1-ene
D) Ethene

Q164: The number of sigma bonds present in benzene is:

A) 9
B) 12
C) 15
D) 18

Q165: Which compound gives meso product on bromination in CCl4?

A) trans-But-2-ene
B) cis-But-2-ene
C) But-1-ene
D) 2-Methylpropene

Q166: Which hydrocarbon undergoes electrophilic substitution most readily?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Nitrobenzene

Q167: The major product of ozonolysis of 2-methylpropene is:

A) Two molecules of methanal
B) Acetone + methanal
C) Two molecules of acetone
D) Acetaldehyde + methanal

Q168: Which compound is aromatic?

A) Cyclobutadiene
B) Cyclopentadienyl anion
C) Cyclooctatetraene
D) Cyclobutene

Q169: The major product formed when ethyne reacts with dilute alkaline KMnO4 is:

A) Oxalic acid
B) Glyoxal
C) Ethanedioic acid
D) Ethene-1,2-diol

Q170: Which of the following alkyl halides undergoes SN1 reaction fastest?

A) CH3Cl
B) C2H5Cl
C) (CH3)2CHCl
D) (CH3)3CCl

Q171: The number of structural isomers possible for C6H6 is:

A) 1
B) 2
C) 3
D) 4

Q172: Which hydrocarbon gives a sooty flame on burning?

A) Methane
B) Ethane
C) Propane
D) Benzene

Q173: The bond angle in ethene is approximately:

A) 109.5 deg
B) 120 deg
C) 180 deg
D) 104.5 deg

Q174: Which of the following does not undergo Baeyer's test?

A) Ethene
B) Propene
C) Cyclohexene
D) Benzene

Q175: The correct order of stability of free radicals is:

A) 3 deg > 2 deg > 1 deg > CH3
B) CH3 > 1 deg > 2 deg > 3 deg
C) 2 deg > 3 deg > 1 deg > CH3
D) 3 deg > 1 deg > 2 deg > CH3

Q176: Which compound undergoes polymerisation to form Buna-S?

A) But-1,3-diene + styrene
B) Ethene + propene
C) Isoprene
D) Chloroprene

Q177: The major product formed when benzene reacts with acetyl chloride/AlCl3 is:

A) Ethylbenzene
B) Acetophenone
C) Cumene
D) Benzyl chloride

Q178: Which hydrocarbon shows maximum angle strain?

A) Cyclohexane
B) Cyclopentane
C) Cyclobutane
D) Cyclopropane

Q179: The total number of pi electrons in phenanthrene is:

A) 10
B) 12
C) 14
D) 16

Q180: Which compound undergoes fastest addition of H2?

A) Ethene
B) Propene
C) But-2-ene
D) Benzene

Q181: The product formed when ethyne reacts with excess HBr is:

A) Bromoethene
B) 1,2-Dibromoethane
C) 1,1-Dibromoethane
D) Ethyl bromide

Q182: Which compound has the highest boiling point?

A) n-Butane
B) Isobutane
C) Propane
D) Ethane

Q183: Which of the following compounds is anti-aromatic?

A) Cyclopropenyl cation
B) Cyclopentadienyl anion
C) Cyclobutadiene
D) Benzene

Q184: The major product of hydration of ethyne using HgSO4/H2SO4 is:

A) Ethanol
B) Ethanal
C) Ethene-1,2-diol
D) Ethane

Q185: Which hydrocarbon is most resistant to oxidation by KMnO4?

A) Ethene
B) Propene
C) Cyclohexene
D) Benzene

Q186: The correct order of bond length is:

A) C≡≡C < C=C < C-C
B) C-C < C=C < C≡≡C
C) C=C < C≡≡C < C-C
D) C≡≡C < C-C < C=C

Q187: Which compound gives positive silver nitrate test?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q188: The degree of unsaturation of C8H10 is:

A) 3
B) 4
C) 5
D) 6

Q189: Which compound undergoes side-chain chlorination most readily?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Nitrobenzene

Q190: The number of isomers of C8H18 is:

A) 15
B) 16
C) 17
D) 18

Q191: Which compound is planar?

A) Cyclohexane
B) Cyclobutane
C) Cyclopropane
D) Benzene

Q192: The major product of ozonolysis of trans-but-2-ene is:

A) Two molecules of ethanal
B) Ethanal + acetone
C) Two molecules of acetone
D) Methanal + propanone

Q193: Which hydrocarbon has maximum percentage of carbon by mass?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q194: Which compound shows maximum hyperconjugation?

A) Ethene
B) Propene
C) Isobutene
D) 2-Methylpropene

Q195: The product formed when benzene reacts with propanoyl chloride/AlCl3 is:

A) Propiophenone
B) Ethylbenzene
C) Cumene
D) Propylbenzene

Q196: Which hydrocarbon undergoes fastest electrophilic addition?

A) Ethene
B) Propene
C) 2-Methylpropene
D) But-2-ene

Q197: Which compound gives only one mononitration product?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Phenol

Q198: The major product formed when ethylbenzene is oxidised with KMnO4 is:

A) Acetophenone
B) Benzyl alcohol
C) Benzoic acid
D) Benzaldehyde

Q199: Which compound is least acidic?

A) Ethane
B) Ethene
C) Ethyne
D) Toluene

Q200: The reaction of benzene with $CH_3Cl/AlCl_3$ is an example of:

A) Electrophilic substitution
B) Nucleophilic substitution
C) Addition
D) Elimination

Q201: The number of different types of hydrogen atoms present in isopentane is:

A) 2
B) 3
C) 4
D) 5

Q202: Which alkene on ozonolysis gives only ketones?

A) But-1-ene
B) 2-Methylpropene
C) But-2-ene
D) Propene

Q203: The stability order of conjugated systems is best represented as:

A) Isolated < Conjugated < Aromatic
B) Conjugated < Isolated < Aromatic
C) Aromatic < Conjugated < Isolated
D) Isolated < Aromatic < Conjugated

Q204: The major product formed when 2-methylpropene reacts with cold conc. H_2SO_4 is:

A) tert-Butyl hydrogen sulphate
B) Isobutyl hydrogen sulphate
C) tert-Butyl alcohol
D) Isobutene sulphonic acid

Q205: Which of the following hydrocarbons shows maximum resonance energy?

A) Benzene
B) Naphthalene
C) Anthracene
D) Phenanthrene

Q206: The product formed when ethyne reacts with $NaNH_2$ followed by CH_3I is:

A) Propene
B) Propyne
C) Ethene
D) Butyne

Q207: Which compound undergoes fastest free radical chlorination?

A) Methane
B) Ethane
C) Propane
D) Isobutane

Q208: The number of structural isomers possible for C6H12 (alkenes only) is:

A) 5
B) 6
C) 7
D) 9

Q209: Which carbocation is least stable?

A) CH3+
B) C2H5+
C) (CH3)2CH+
D) (CH3)3C+

Q210: The major product of hydration of propene using dilute H2SO4 followed by hydrolysis is:

A) Propan-1-ol
B) Propan-2-ol
C) Propanal
D) Acetone

Q211: Which of the following species is anti-aromatic?

A) Cyclopropenyl cation
B) Cyclopentadienyl anion
C) Cyclobutadiene
D) Benzene

Q212: The number of pi bonds present in benzene is:

A) 2
B) 3
C) 4
D) 6

Q213: Which alkene gives meso compound on dihydroxylation?

A) trans-But-2-ene
B) cis-But-2-ene
C) But-1-ene
D) 2-Methylpropene

Q214: The major product formed when benzene reacts with CH3COCl/AlCl3 is:

A) Ethylbenzene
B) Acetophenone
C) Toluene
D) Cumene

Q215: Which hydrocarbon has the highest heat of combustion per mole?

A) Ethane
B) Propane
C) Butane
D) Pentane

Q216: Which compound does not decolourise bromine water in dark?

A) Ethene
B) Propene
C) Cyclohexene
D) Benzene

Q217: The total number of sigma bonds present in ethyne is:

A) 3
B) 4
C) 5
D) 6

Q218: Which compound undergoes fastest electrophilic aromatic substitution?

A) Benzene
B) Chlorobenzene
C) Nitrobenzene
D) Aniline

Q219: The product formed when ethyne reacts with excess HCl is:

A) Vinyl chloride
B) 1,2-Dichloroethane
C) 1,1-Dichloroethane
D) Ethyl chloride

Q220: Which hydrocarbon is most acidic?

A) Ethane
B) Ethene
C) Ethyne
D) Benzene

Q221: The number of possible monochloro derivatives of propane is:

A) 1
B) 2
C) 3
D) 4

Q222: Which compound undergoes polymerisation to form Buna-N?

A) Butadiene + styrene
B) Butadiene + acrylonitrile
C) Isoprene
D) Chloroprene

Q223: The bond angle in cyclobutane is approximately:

A) 60 deg
B) 88 deg
C) 109.5 deg
D) 120 deg

Q224: Which compound undergoes side-chain oxidation with KMnO4?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Nitrobenzene

Q225: The major product formed when propene reacts with Br2/CCl4 is:

A) 1,2-Dibromopropane
B) 1-Bromopropane
C) 2-Bromopropane
D) Allyl bromide

Q226: Which of the following has maximum bond dissociation energy?

A) C-C
B) C=C
C) C===C
D) C-H

Q227: The total number of pi electrons in naphthalene is:

A) 8
B) 10
C) 12
D) 14

Q228: Which alkene undergoes fastest hydrogenation?

A) Ethene
B) Propene
C) But-2-ene
D) Benzene

Q229: Which compound gives positive ammoniacal AgNO3 test?

A) Ethene
B) Propene
C) Ethyne
D) Benzene

Q230: The correct order of acidity is:

A) Ethane < Ethene < Ethyne
B) Ethene < Ethyne < Ethane
C) Ethyne < Ethene < Ethane
D) Ethane < Ethyne < Ethene

Q231: The product formed when benzene reacts with excess Cl2 in sunlight is:

A) Chlorobenzene
B) Hexachlorobenzene
C) BHC
D) Dichlorobenzene

Q232: Which hydrocarbon has lowest boiling point?

A) n-Butane
B) Isobutane
C) Propane
D) Ethane

Q233: The intermediate formed during Friedel-Crafts alkylation is:

A) Free radical
B) sigma-complex
C) pi-complex
D) Carbanion

Q234: Which compound is non-planar due to steric strain?

A) Benzene
B) Cyclobutadiene
C) Cyclooctatetraene
D) Naphthalene

Q235: The number of structural isomers of C7H16 is:

A) 7
B) 8
C) 9
D) 10

Q236: Which compound undergoes fastest free radical bromination?

A) Methane
B) Ethane
C) Propane
D) Isobutane

Q237: The major product of ozonolysis of ethene is:

A) Methanal
B) Ethanal
C) Ethanone
D) Methanol

Q238: Which compound shows maximum hyperconjugation?

A) Ethene
B) Propene
C) Isobutene
D) 2-Methylpropene

Q239: Which compound undergoes fastest electrophilic addition of HBr?

A) Ethene
B) Propene
C) 2-Methylpropene
D) But-1-ene

Q240: The degree of unsaturation of C9H12 is:

A) 3
B) 4
C) 5
D) 6

Q241: Which compound gives only one mononitration product?

A) Benzene
B) Toluene
C) Chlorobenzene
D) Phenol

Q242: The major product formed when ethylbenzene is oxidised with KMnO4 is:

A) Acetophenone
B) Benzyl alcohol
C) Benzoic acid
D) Benzaldehyde

Q243: Which compound is least acidic?

A) Ethane
B) Ethene
C) Ethyne
D) Toluene

Q244: Which hydrocarbon undergoes polymerisation to give polypropene?

A) Ethene
B) Propene
C) Butene
D) Pentene

Q245: The correct order of bond length is:

A) C≡≡C < C=C < C-C
B) C-C < C=C < C≡≡C
C) C=C < C≡≡C < C-C
D) C≡≡C < C-C < C=C

Q246: Which compound is planar?

A) Cyclohexane
B) Cyclobutane
C) Cyclopropane
D) Benzene

Q247: The major product of hydration of ethyne using HgSO4/H2SO4 is:

A) Ethanol
B) Ethanal
C) Ethene-1,2-diol
D) Ethane

Q248: Which compound undergoes fastest electrophilic aromatic substitution?

A) Benzene
B) Chlorobenzene
C) Nitrobenzene
D) Aniline

Q249: The total number of pi bonds in anthracene is:

A) 5
B) 6
C) 7
D) 8

Q250: The reaction of benzene with $CH_3Cl/AlCl_3$ is classified as:

A) Electrophilic substitution
B) Nucleophilic substitution
C) Addition
D) Elimination