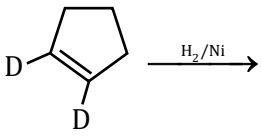
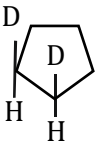
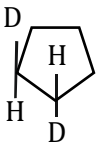
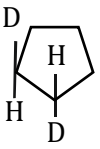
EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

Preparation of Alkane

1.  A. identify (A)

(A) $CH_3-(CH_2)_4-CH_3$ (B)  (C)  (D) 

CHC087

2. Which of the following compound cannot be produced by hydrogenation of alkene :-

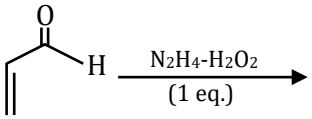
(A) Propane (B) Isobutane (C) Neopentane (D) Iso-octane

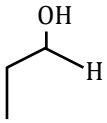
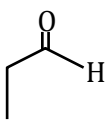
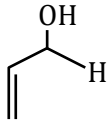
CHC088

3. $CH_3-C\equiv CH + 2H_2 \xrightarrow{Pt}$ P (major). Identify (P)

(A) $CH_3CH = CH_2$ (B) $CH_3CH_2CH_3$ (C) Both A and B (D) None of these

CHC089

4. 

(A)  (B)  (C)  (D) All of these

CHC091

5. By wurtz reaction, a mixture of methyl iodide and ethyl iodide gives -

(A) Propane (B) Ethane

(C) butane (D) a mixture of the above three

CHC093

6. $C_2H_5Br + CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-Br \xrightarrow{Na/\text{dry ether}}$ 'P ' (major)

Which is not product 'P' –

(A) $CH_3-CH_2-CH_2-CH_3$

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

(C) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_3$

(D) $CH_3-CH_2-CH_2-CH_2-CH_3$

CHC094

7. $CH_3CH_2CH_2Cl \xrightarrow{Zn/H^{\oplus}} (P)$

Product (P) of the above reaction is : -

(A) $CH_3CH_2CH_2CH_2CH_2CH_3$ (B) $CH_3CH = CH_2$

(C) $CH_3CH_2CH_3$ (D) Both (i) and (iii)

CHC096

8. The Corey-House synthesis is carried out by treating an alkyl halide with

(A) Lithium metal

(B) Copper metal

(C) Lithium metal followed by reaction with cuprous iodide

(D) Cuprous iodide followed by reaction with alkyl halide

CHC097

9. Which of the following reactions does not involve a C—C bond formation

(A) Hydrolysis of a Grignard reagent (B) Combination of two alkyl free radicals

(C) Corey-House synthesis of alkanes (D) RNa + R–Br $\longrightarrow$ R–R + NaBr

CHC099

10. During the preparation of ethane by Kolbe's electrolytic method using inert electrodes the pH of the electrolyte –

(A) Increases progressively as the reaction proceeds

(B) Decreases progressively as the reaction proceeds

(C) Remains constant throughout the reaction

(D) May decrease of the concentration of the electrolyte is not very high

CHC101

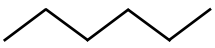
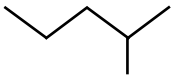
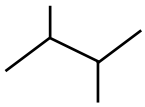
11. The number of isomeric monocarboxylic acids which on decarboxylation form isopentane is :

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

CHC103

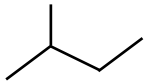
Physical properties of Alkane

12. Which of the following has the lowest boiling point?

(A)  (B)  (C)  (D) 

CHC108

13. Arrange the following alkanes in decreasing order of their heat of combustion.

(i)  (ii)  (iii) 

(A) (i) > (ii) > (iii) (B) (iii) > (i) > (ii) (C) (iii) > (ii) > (i) (D) (i) > (iii) > (ii)

CHC109

14. Arrange the following in the decreasing order of their melting points:

(i) Decane (ii) Nonane (iii) Octane (iv) Heptane

(A) (i) > (ii) > (iii) > (iv) (B) (iv) > (iii) > (ii) > (i)

(C) (i) > (iii) > (ii) > (iv) (D) (iv) > (ii) > (iii) > (i)

CHC111

15. Hydrocarbon that is liquid at room temperature is:
(A) Ethane (B) Propane (C) Butane (D) Pentane

CHC112

Chemical reaction of Alkane

16. Which of the following has the highest knocking property?
(A) Olefins (B) Straight-chain paraffins
(C) Branched-chain parafins (D) Aromatic hydrocarbons

CHC114

17. Photochemical chlorination of alkane is initiated by a process of
(A) pyrolysis (B) substitution
(C) Homolysis (D) Peroxidation

CHC115

18. Arrange the following in correct order of reactivity towards $Br_2/h\nu$ -

(i) CH_4 (ii) CH_3CH_3 (iii) $CH_3CH_2CH_3$ (iv) $CH_3-\overset{\overset{CH_3}{|}}{CH}-CH_3$

(A) i > ii > iii > iv (B) iv > iii > ii > i (C) ii > iii > i > iv (D) iii > ii > iv > i

CHC116

19. The reactivity order of halogens during halogenation of alkane decreases in the order -
(A) $F_2 > Cl_2 > Br_2 > I_2$ (B) $I_2 > Br_2 > Cl_2 > F_2$
(C) $F_2 > Cl_2 > I_2 > Br_2$ (D) $Cl_2 > F_2 > Br_2 > I_2$

CHC117

20. Reaction $CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$ follows free radical mechanism. The chain termination step would not include the process :-

(A) $\dot{C}H_3 + \dot{C}H_3 \longrightarrow CH_3 - CH_3$ (B) $\dot{C}H_3 + \dot{C}l \longrightarrow CH_3 - Cl$

(C) $\dot{H} + \dot{C}l \longrightarrow HCl$ (D) $\dot{C}l + \dot{C}l \longrightarrow Cl_2$

CHC119

21. A mixture of propene and methane is obtained by the cracking of :-
(A) 1-butene (B) 2-butene (C) n- butane (D) Isobutane

CHC120

22. The final product of complete oxidation of hydrocarbon is:-
(A) Acid (B) Aldehyde (C) $H_2O + CO_2$ (D) Dihydric alcohol

CHC121

23. n-hexane $\xrightarrow[600°C]{Cr_2O_3/Al_2O_3}$ Cyclic compound. The wrong title of the reaction would be :-
(A) Aromatization (B) Hydroformation (C) Cyclisation (D) Isomerisation

CHC122

24. When n-butane is heated in the presence of $AlCl_3/HCl$ it will be converted into –
(A) Ethane (B) Propane (C) Butene (D) Isobutane

CHC124

25. Pyrolysis of alkanes is a
(A) Nucleophilic addition reaction (B) Free radical substitution reaction
(C) Electrophilic addition reaction (D) Free radical elimination reaction

CHC126

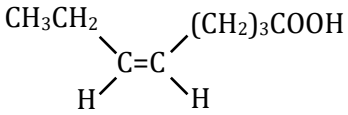
26. Which of the following reactions of methane is complete combustion :-

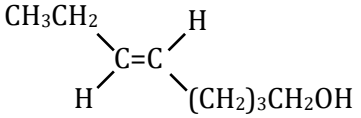
(A) $2CH_4 + O_2 \xrightarrow{Cu/523K/100atm.} 2CH_3OH$ (B) $CH_4 + O_2 \xrightarrow[\Delta]{Mo_2O_3} HCHO + H_2O$

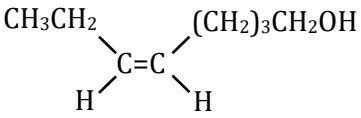
(C) $CH_4 + O_2 \longrightarrow C(s) + 2H_2O(\ell)$ (D) $CH_4 + 2O_2 \longrightarrow CO_2(g) + 2H_2O(\ell)$

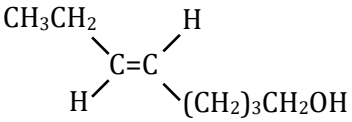
Preparation of Alkene

27. $CH_3CH_2{-}C{\equiv}C{-}(CH_2)_3{-}COOH \xrightarrow[S\text{-quinoline}]{H_2,Pd\text{-}BaSO_4}$ P (Major Product). Identify P

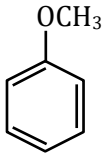
(A) 

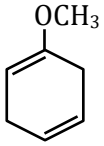
(B) 

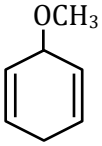
(C) 

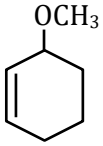
(D) 

CHC131

28.  $\xrightarrow[C_2H_5OH]{Na/Liq.NH_3}$?

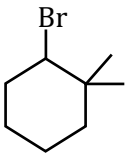
(A) 

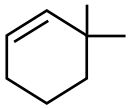
(B) 

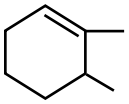
(C) 

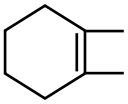
(D) Both (A) & (B)

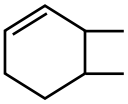
CHC132

29.  $\xrightarrow[\Delta]{\text{alcoholic KOH}}$ Product ; Product is:

(A) 

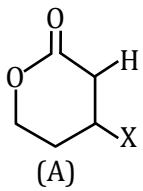
(B) 

(C) 

(D) 

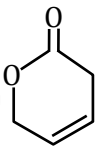
CHC133

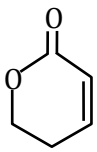
30. When the compound (A) is treated with KOH/Δ, the major product formed is B.

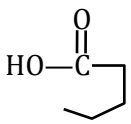
 $\xrightarrow[\Delta]{KOH}$ (B)

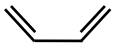
(A)

The product 'B' is :

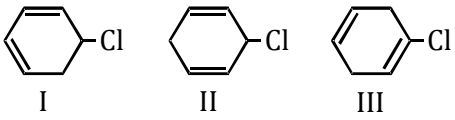
(A) 

(B) 

(C) 

(D) 

CHC134

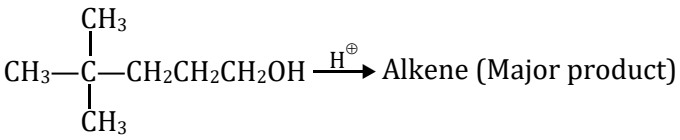
31. 

I II III

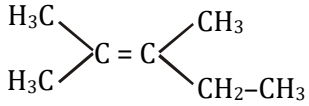
Which one is most easily dehydrohalogenated?

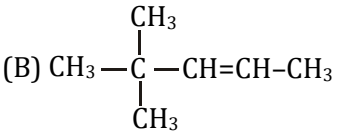
(A) I (B) II (C) III (D) Both A and B

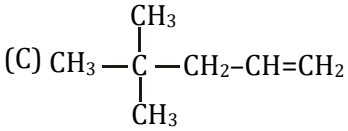
CHC135

32. 

The major product formed in the above reaction will be:-

(A) 

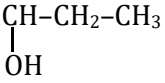
(B) 

(C) 

(D) None of these

CHC136

33. The order of reactivity of alcohols with respect to acid catalysed elimination will be :

(a) $(CH_3)_3C–OH$ (b) $CH_3CH_2CH_2CH_2OH$ (c) 

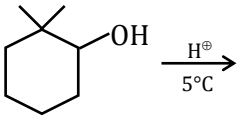
(A) a > b > c (B) a > c > b (C) b > a > c (D) b > c > a

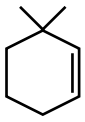
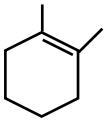
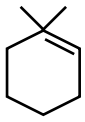
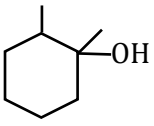
CHC137

34. Sec. butyl alcohol on dehydration gives the predominant product :-

(A) 2-Butene (B) 1-Butene (C) Isobutene (D) All of the these

CHC138

35.  P. The product P is :

(A)  (B)  (C)  (D) 

CHC139

36. Which will dehydrate at fastest rate by H_3PO_4 :

(A) 2-methyl butan-2-ol (B) 3-methyl butan-2-ol

(C) Butan-1-ol (D) 2-methyl butan-1-ol

CHC144

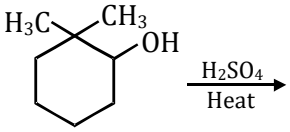
37. The reaction of tert. butyl bromide with sodium methoxide gives :-

(A) isobutane (B) tert. butylmethyl ether

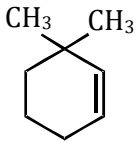
(C) isobutylene (D) sodium tert. Butoxide

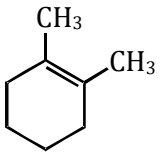
CHC145

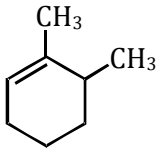
38. Consider the reaction

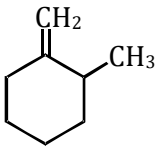


The alkene formed in major amount is

(A) 

(B) 

(C) 

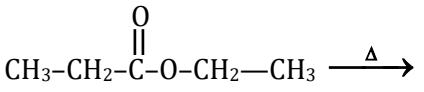
(D) 

CHC146

39. In pyrolysis of ester, _____membered cyclic transition state is formed.

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

CHC147

40. 

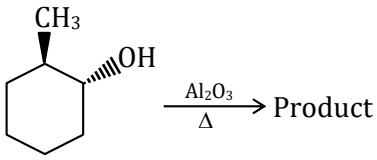
B (Major Alkene)

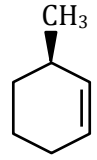
The B formed is:

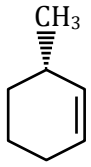
(A) $CH_3–CH=CH_2$ (B) $CH_2=CH_2$

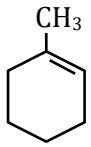
(C) $CH_3–CH=CH–CH_3$ (D) None of these

CHC149

41. 

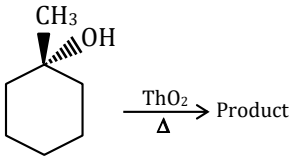
(A) 

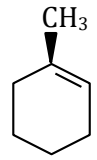
(B) 

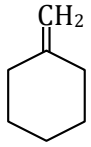
(C) 

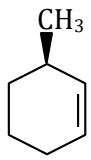
(D) Both (A) & (B)

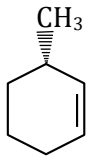
CHC150

42. 

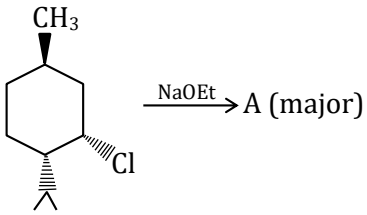
(A) 

(B) 

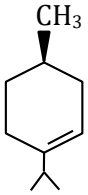
(C) 

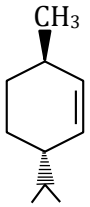
(D) 

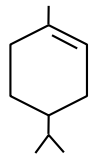
CHC151

43. 

Identify product 'A'

(A) 

(B) 

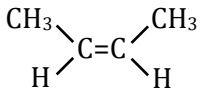
(C) 

(D) None of these

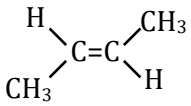
CHC155

Physical properties of Alkene

44. Which one is correct about the boiling point of Cis-But-2-ene and trans-But-2-ene :-



(A)



(B)

(A) (A) > (B) (B) (B) > (A) (C) (A) = (B) (D) Cannot compare

CHC156

45. Out of o-xylenes, m-xylenes, p-xylenes, which have highest melting point.

(A) o-xylenes (B)m-xylenes (C) p-xylenes (D) All have same M.P.

CHC157

46. Which one is the correct order of solubility in non-polar solvents :-

(A) alkane > alkynes > alkene (B) alkane > alkene > alkynes

(C) alkenes > alkynes > alkane (D) alkynes > alkenes > alkane

CHC158

47. Which one is an correct statement regarding physical property of alkene :-

(A) The first members are gases, the next fourteen are liquids and the higher ones are solid.

(B) Ethene is a colourless gas with faint sweet smell.

(C) They are insoluble in water but fairly soluble in non-polar solvents.

(D) Straight chain alkene have lower boiling point than Isomeric branched chain compounds.

CHC159

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

(A) 1–butene (B) Trans–2–butene

(C) Cis–2–butene (D) Propene

CHC162

Chemical reaction of Alkene

49. Anti–Markovnikov addition of HBr is not observed in –

(A) Propene (B) But–2–ene (C) But–1–ene (D) Pent–2–ene

CHC160

50. The addition of HCl to 3, 3, 3–trichloropropene gives

(A) $Cl_3CCH_2CH_2Cl$ (B) $Cl_3CCH(Cl)CH_3$

(C) $Cl_2CHCH(Cl)CH_2Cl$ (D) $Cl_2CHCH_2CHCl_2$

CHC161

51. 2,3–Dimethyl–2–butene can be prepared by heating which of the following compounds with a strong acid?

(A) $(CH_3)_2C=CH-CH_2-CH_3$ (B) $(CH_3)_2CH-CH_2-CH=CH_2$

(C) $(CH_3)_2CH-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH=CH_2$ (D) $(CH_3)_3C-CH=CH_2$

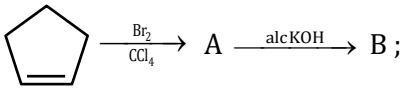
CHC163

52. $CH_3CH=CH-C_6H_4-OCH_3$ on reaction with HBr gives :-

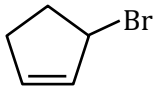
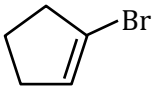
(A) $CH_3\underset{\displaystyle Br}{\underset{|}{CH}}-\underset{\displaystyle H}{\underset{|}{CH}}-C_6H_4-OCH_3$ (B) $CH_3\underset{\displaystyle H}{\underset{|}{CH}}-\underset{\displaystyle Br}{\underset{|}{CH}}-C_6H_4-Br$

(C) $CH_3\underset{\displaystyle H}{\underset{|}{CH}}-\underset{\displaystyle Br}{\underset{|}{CH}}-C_6H_4-OCH_3$ (D) $CH_3-\underset{\displaystyle Br}{\underset{|}{CH}}-C_6H_4-Br$

CHC165

53. 

What is the structure of B

(A)  (B)  (C)  (D) 

CHC167

54. $CH_3-CH=CH_2 \xrightarrow[CCl_4]{Br_2}$ Product

True statement is :-

(A) Reaction completes with anti addition mechanism.

(B) Reaction can be used as a test for unsaturation

(C) Product is optically inactive due to external compensation

(D) All above these

CHC169

55. The predominant product formed, when 3-methyl-2-pentene reacts with HOCl, is :-

(A) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle Cl}{\overset{|}{C}}}}-\overset{\displaystyle OH}{\overset{|}{CH}}-CH_3$ (B) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle Cl}{\overset{|}{C}}}}-\overset{\displaystyle Cl}{\overset{|}{CH}}-CH_3$

(C) $CH_3-CH_2-\underset{\displaystyle H_3C}{\underset{|}{\overset{\displaystyle OH}{\overset{|}{C}}}}-\overset{\displaystyle Cl}{\overset{|}{CH}}-CH_3$ (D) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle H_3C}{\overset{|}{C}}}}-\overset{\displaystyle OH}{\overset{|}{CH}}-CH_3$

CHC170

56. $CH_3 - CH = CH_2 + NOCl \rightarrow P$. Identify the adduct:-

(A) $CH_3-\underset{\underset{Cl}{|}}{CH} - \underset{\underset{NO}{|}}{CH_2}$

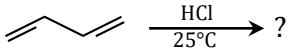
(B) $CH_3-\underset{\underset{NO}{|}}{CH} - \underset{\underset{Cl}{|}}{CH_2}$

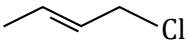
(C) $CH_3-CH_2 - \underset{\underset{Cl}{|}}{\overset{\overset{NO}{|}}{CH}}$

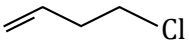
(D) $\underset{\underset{NO}{|}}{CH_2} - CH_2 - \underset{\underset{Cl}{|}}{CH_2}$

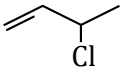
CHC171

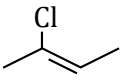
57. Identify the major product ?



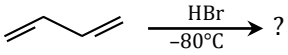
(A) 

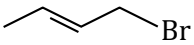
(B) 

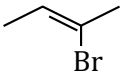
(C) 

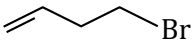
(D) 

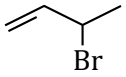
CHC172

58. 

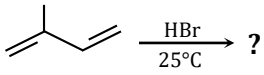
(A) 

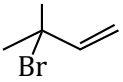
(B) 

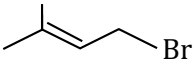
(C) 

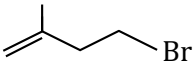
(D) 

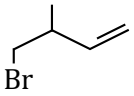
CHC173

59. 

(A) 

(B) 

(C) 

(D) 

CHC174

60. Reductive ozonolysis of 3–Methyl–1–butene gives a mixture of

(A) Propanal and ethanal

(B) Propanone and ethanal

(C) 2–Methylpropanal and methanal

(D) Butanone and methanal

CHC180

61. Which of the following reactions is used for locating the position of double bond in an alkene

(A) Hydroboration

(B) Hydroxylation

(C) Chlorohydroxylation

(D) Ozonolysis

CHC181

62. Which of the following is maximum reactive for NBS ?

(A) $PhCH_3$

(B) $PhCH_2—CH_3$

(C) $PhCH_2—CH=CH_2$

(D) $Ph—\underset{\underset{CH_3}{|}}{CH}— CH=CH_2$

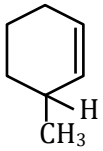
CHC184

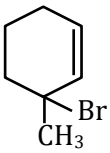
63. Which of the compounds with molecular formula C_5H_{10} yields acetone on reductive ozonolysis

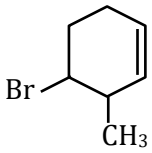
(A) 3-Methyl-1-butene (B) Cyclopentene

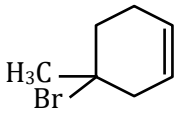
(C) 2-Methyl-1-butene (D) 2-Methyl-2-butene

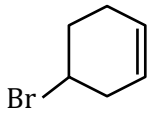
CHC185

64.  $\xrightarrow[CCl_4/h\nu]{NBS}$ major product will be :-

(A) 

(B) 

(C) 

(D) 

CHC186

65. Reductive ozonolysis of acetylene gives-

(A) Oxalic acid (B) Ethylene glycol (C) Glyoxal (D) CH_3CHO

CHC189

66. The treatment of $(CH_3)_2CCHCH_3$ with boiling $KMnO_4$ produces

(A) $CH_3COCH_3 + CH_3COOH$ (B) $CH_3COCH_3 + CH_3CHO$

(C) $CH_3CHO + CO_2$ (D) CH_3COCH_3 only

CHC199

Preparation of Alkyne

67. Kolbe's electrolysis of sodium maleate at anode gives.

(A) Only acetylene (B) Only CO_2

(C) Acetylene + CO_2 (D) $CO_2 + H_2$

CHC217

Chemical reaction of Alkyne

68. Which of the following decolourise 1% alkaline $KMnO_4$

(A) Propene (B) Propyne (C) 2-butyne (D) All of them

CHC219

69. When treated with ammonical cuprous chloride, which one among the following forms red precipitate?

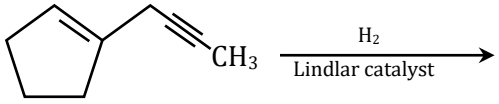
(A) C_2H_6 (B) C_2H_4 (C) C_2H_2 (D) C_6H_6

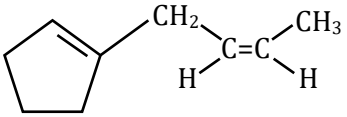
70. Which of the following reagents cannot be used to locate the position of triple bond in $CH_3-C\equiv C-CH_3$

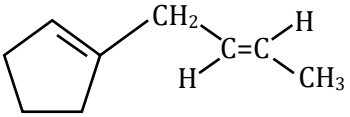
(A) Br_2/CCl_4 (B) O_3/H_2O

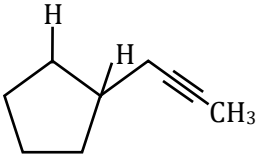
(C) Cu_2Cl_2/NH_4OH (D) $KMnO_4/H^{\oplus}$

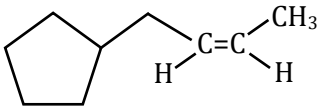
CHC222

71.  Product will be :

(A) 

(B) 

(C) 

(D) 

CHC225

72. In the following reaction,

$H_3C—C\equiv CH \xrightarrow[873\ K]{\text{red hot iron tube}} A,$

the number of sigma(σ) bonds present in the product A is :

(A) 21 (B) 9 (C) 24 (D) 18

CHC226

73. The product formed when acetylene is passed through red hot tube is :

(A) Benzene (B) Cyclohexane (C) Neoprene (D) Ethane

CHC227

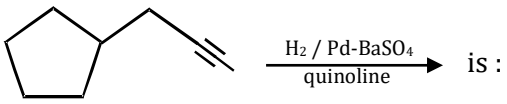
74. When 2- butyne is treated with H_2, Pd–$BaSO_4$; the product formed will be :

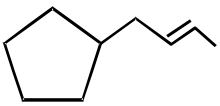
(A) Cis –2– butene (B) Trans –2– butene

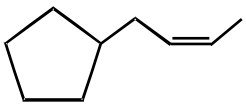
(C) 1 – butene (D) 2– hydroxy butane

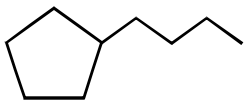
CHC229

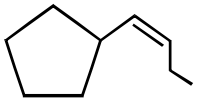
75. The product formed in the reaction

 is :

(A) 

(B) 

(C) 

(D) 

CHC230

Aromatic Hydrocarbon

76. Benzene is a resonance hybrid mainly of two Kekule's structures. Hence :

(A) Half of the molecules correspond to one structure, and half of the second structure

(B) At low temperatures benzene can be separated into two structures

(C) Two structures make equal contribution to resonance hybrid

(D) An individual benzene molecule changes back and forth between two structures

CHC236

77. Ethylbenzene + $Cl_2 \xrightarrow{\text{Light}}$ (P). Compound P is :

(A) o– & p– Chloroethylbenzene (B) 1–Chloroethylbenzene

(C) 2–Chloroethylbenzene (D) m–Chloroethylbenzene

CHC238

78. Which of the following is not o, p-directing group

(A) $-NH_2$ (B) $-OH$

(C) –X(halogens) (D) $-CHO$

CHC239

79. In the compound C_6H_5Z which of the following is predominantly ortho/para directing?

(A) Z = $-NO_2$, —Cl, —OH (B) Z = –OMe, —CN, $—NH_2$

(C) Z = $-NHCOCH_3$, —Cl, —COOH (D) Z = $-NHCOCH_3$, $—CH_3$

CHC240

80. In a reaction of C_6H_5Y, the major product (>60%) is m-isomer, so the group Y is:

(A) –COOH (B) –Cl

(C) –OH (D) $-NH_2$

CHC242

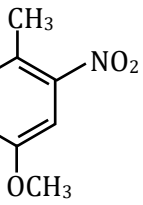
81. Reaction of SO_3 is easier in:

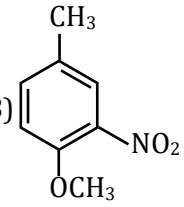
(A) Benzene (B) Toluene

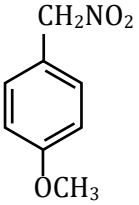
(C) Nitrobenzene (D) chlorobenzene

CHC243

82. If p-methoxy toluene is nitrated, the major product is:

(A) 

(B) 

(C) 

(D) No reaction

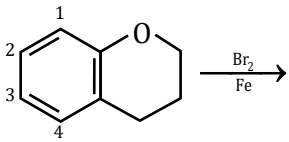
CHC246

83. Reaction of benzene with [Cl_2 + $AlCl_3$] is an example of :

(A) Electrophilic substitution reaction (B) Nucleophilic substitution reaction

(C) Electrophilic addition reaction (D) Nucleophilic addition reaction

CHC247

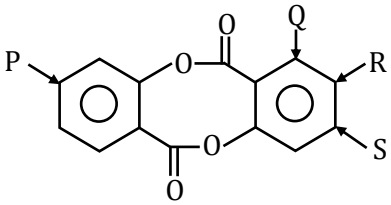
84. 

substitution take place at the position.

(A) 1 (B) 2 (C) 3 (D) both (A) & (C)

CHC248

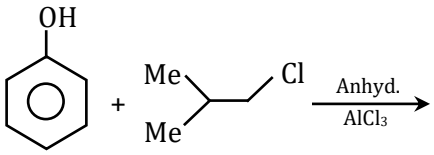
85. The most favourable site for electrophilic substitution in the given compound is:

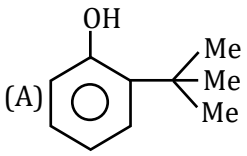


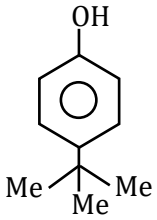
(A) P (B) Q (C) R (D) S

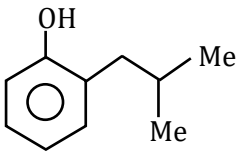
CHC252

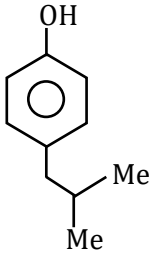
86. What will be the major product of the following reaction?



(A) 

(B) 

(C) 

(D) 

CHC253

87. Which of the following is the correct order of the rate of reaction of C_6H_6, C_6D_6 and C_6T_6 towards sulphonation?

(A) Same rates of reactions of C_6H_6, C_6D_6 and C_6T_6

(B) $C_6T_6 > C_6D_6 > C_6H_6$

(C) $C_6H_6 > C_6D_6 > C_6T_6$

(D) $C_6H_6 > C_6D_6 = C_6T_6$

CHC254

88. Which of the following is the correct order of the rate of reaction of C_6H_6, C_6D_6 and C_6T_6, towards nitration?

(A) $C_6H_6 > C_6D_6 > C_6T_6$ (B) $C_6H_6 = C_6D_6 = C_6T_6$

(C) $C_6H_6 > C_6D_6 = C_6T_6$ (D) $C_6T_6 > C_6D_6 > C_6H_6$

CHC255

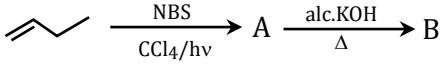
Miscellaneous

89. Which is expected to react most readily with bromine ?

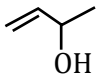
(A) $CH_3CH_2CH_3$ (B) $CH_2{=}CH_2$

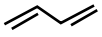
(C) $CH{\equiv}CH$ (D) $CH_3{-}CH{=}CH_2$

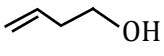
CHC166

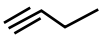
90. 

Identify 'B' product :-

(A) 

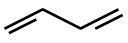
(B) 

(C) 

(D) 

CHC188

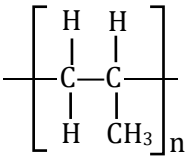
91. Which of the following will be most reactive in the addition reaction with HBr?

(A) $CH_3 - C \equiv C - CH_3$ (B) 

(C)  (D) None of these

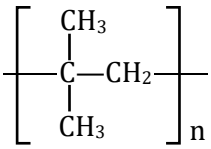
CHC190

92. The polymer represented by given formula is:



(A) PVC (B) Polypropylene (C) Polyethene (D) Polystyrene

CHC207

93. Monomer of given polymer  is

(A) Styrene (B) Propylene
(C) 2-methylpropene (D) But-1-ene

CHC208

94. Which of the following contains isoprene unit ?

(A) Polyethylene (B) Teflon
(C) Polystyrene (D) Natural rubber

CHC209

95. The catalyst used in the manufacture of polyethene by Zeigler-Natta method is :

(A) Titanium oxide
(B) Titanium isoperoxide
(C) Titanium tetra chloride and triethyl aluminium
(D) Lithium tetra chloride and triphenyl aluminium

CHC210

96. The simplest monomer that has a double bond is

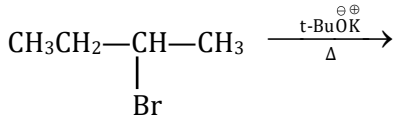
(A) propene (B) Ethylene
(C) Butene (D) 2-methyl propene

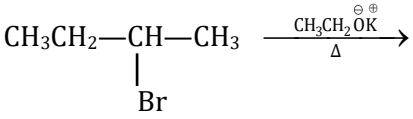
CHC212

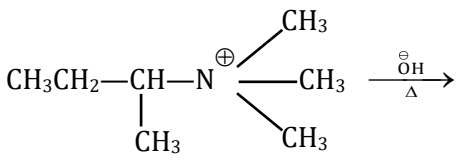
MULTIPLE CORRECT TYPE QUESTIONS

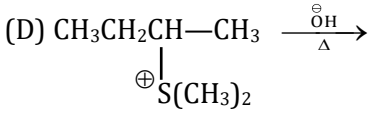
Preparation of Alkene

97. In which of the following reaction, product formed is according to Hoffmann's rule ?

(A) 

(B) 

(C) 

(D) 

CHC176

Chemical reaction of Alkene

98. An alkene on ozonolysis yields only ethanal. The ozonolysis of isomer of this alkene yields :

(A) Propanone (B) Ethanal (C) Methanal (D) Only propanal

CHC191

Preparation of alkyne

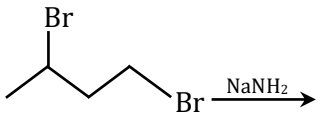
99. CH_4 can be prepared by the reaction of H_2O with :-

(A) Mg_2C_3 (B) CaC_2 (C) Be_2C (D) Al_4C_3

CHC234

100. In which of the following reactions(s), an alkyne product is formed?

(A) $Al_4C_3 + H_2O \longrightarrow$ (B) $CaC_2 + H_2O \longrightarrow$

(C) $Mg_2C_3 + H_2O \longrightarrow$ (D) 

CHC235

EXERCISE - S

Preparation of Alkane

1. How many product will formed in the following reaction?

$CH_3-Cl+CH_3-CH_2-Cl \xrightarrow[\text{dry ether}]{Na}$

CHC106

2. How many Grigand reagent reacts with alcohol to give *n*-butane? (Excluding steroisomer)

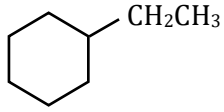
CHC107

Chemical reaction of Alkane

3. How many moles of O_2 required for complete combustion of one mole of propane –

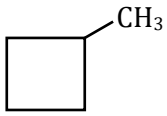
CHC125

4. How many product are formed from the monobromination of ethylcyclohexane (excluding stereoisomers)?

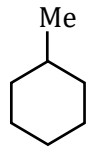


CHC128

5. How many distinct monobromination products, including stereoisomers, can result when the alkane below is heated in the presence of Br_2?



CHC129

6. 

$\xrightarrow{Br_2/h\nu}$ Monobromo derivatives

The number of possible monobromo products is (excluding stereoisomers):

CHC130

Chemical reaction of Alkene

7. In pyrolysis of (tri-alkyl amine oxide) ____ membered cyclic transition state is formed

CHC148

8. The total number of alkenes possible by dehydrobromination of 3-bromo-3 cyclopentylhexane using alcoholic KOH is .....

CHC178

9. How many products will be formed excluding stereo when 1,3,5-trimethyl cyclohexene reacts with NBS?

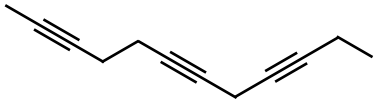
CHC187

10.  $\xrightarrow{NBS}$ Product(s).

Number of allyl bromo derivatives formed during reaction will be :

CHC192

11. How many compounds are formed upon the ozonolysis of the following triyne?



CHC193

Preparation of Alkyne

12. Calculate degree of unsaturation upon hydrolysis of Mg_2C_3.

CHC218

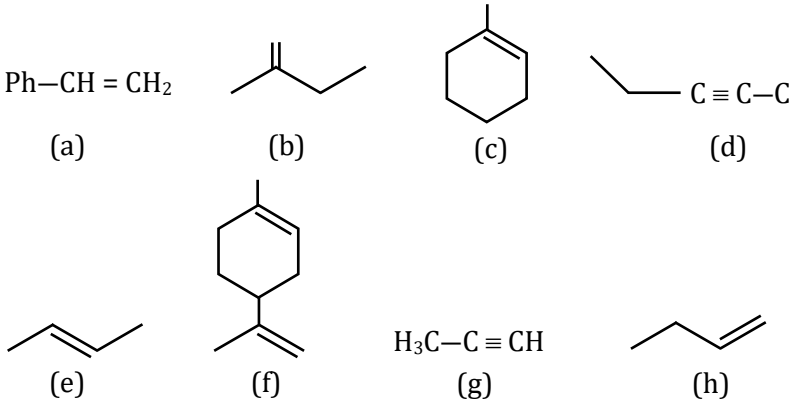
Aromatic Hydrocarbon

13. How many isomers of C_8H_{10} when reacts with hot alkaline $KMnO_4$ give di-carboxylic acid as a product?

CHC215

Misllaneous

14. How many of the following compounds will produce CO_2 on oxidative ozonolysis?



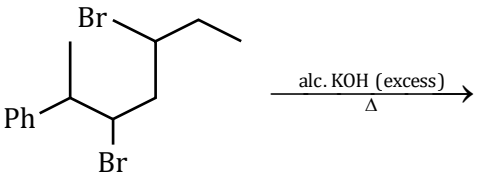
(a) (b) (c) (d)

(e) (f) (g) (h)

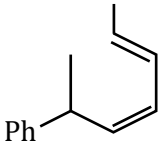
CHC194

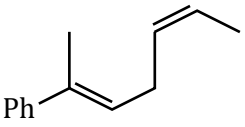
EXERCISE - JEE (Main) PYQ

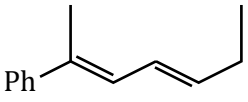
1. The major product of the following reaction is

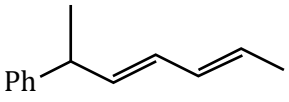


[JEE (Main) 2019]

(1) 

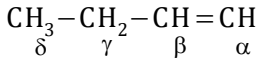
(2) 

(3) 

(4) 

CHC031

2. Which hydrogen in compound (E) is easily replaceable during bromination reaction in presence of light :

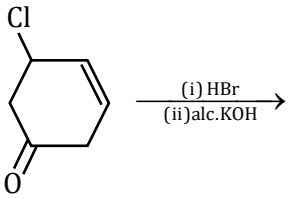


[JEE (Main) 2019]

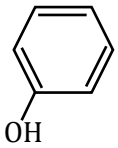
(1) β – hydrogen (2) γ – hydrogen (3) δ – hydrogen (4) α – hydrogen

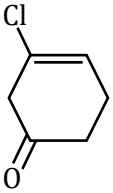
CHC032

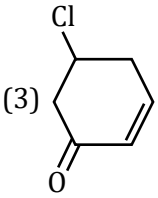
3. The major product of the following reaction is:

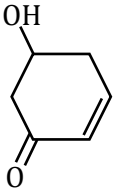


[JEE (Main) 2019]

(1) 

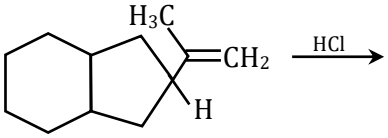
(2) 

(3) 

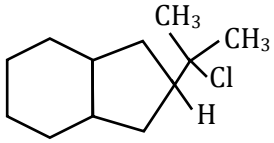
(4) 

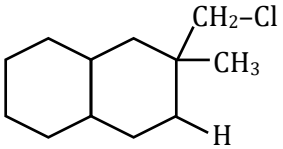
CHC033

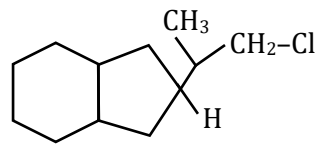
4. The major product of the following reaction is:

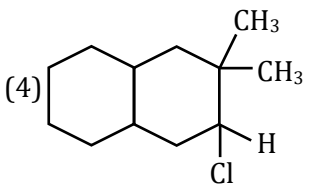


[JEE (Main) 2019]

(1) 

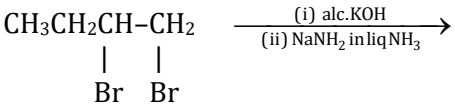
(2) 

(3) 

(4) 

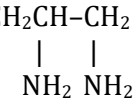
CHC034

5. The major product of the following reaction is:



[JEE (Main) 2019]

(1) $CH_3CH_2C{\equiv}CH$

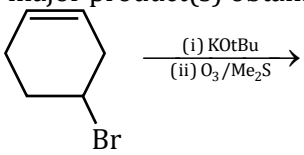
(2) 

(3) $CH_3CH{=}C{=}CH_2$

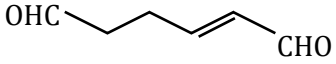
(4) $CH_3CH{=}CHCH_2NH_2$

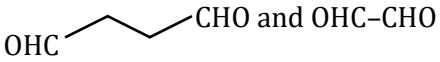
CHC035

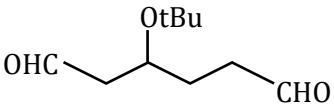
6. The major product(s) obtained in the following reaction is/are :

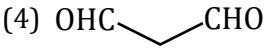


[JEE (Main) 2019]

(1) 

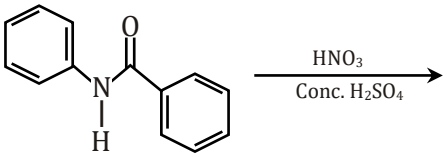
(2) 

(3) 

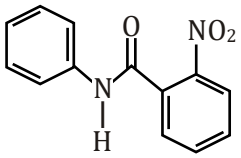
(4) 

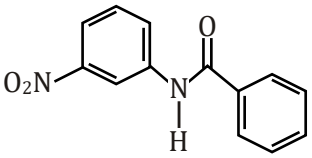
CHC036

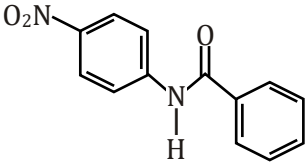
7. What will be the major product in the following mononitration reaction ?

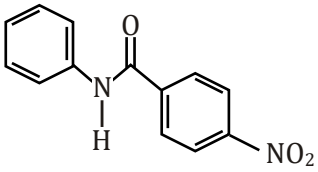


[JEE (Main) 2019]

(1) 

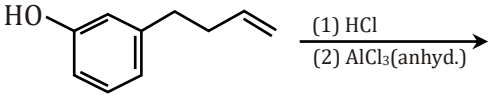
(2) 

(3) 

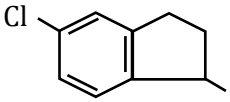
(4) 

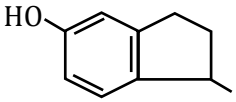
CHC037

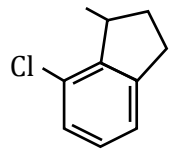
8. The major product of the following reaction is :-

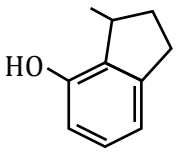


[JEE (Main) 2019]

(1) 

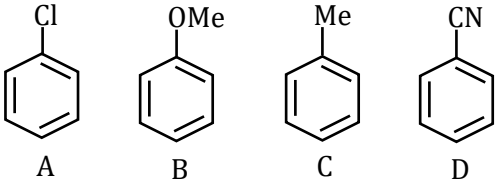
(2) 

(3) 

(4) 

CHC038

9. The increasing order of reactivity of the following compounds towards aromatic electrophilic substitution reaction is :

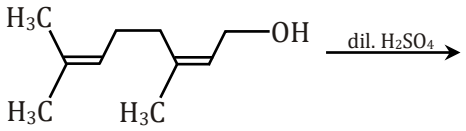


[JEE (Main) 2019]

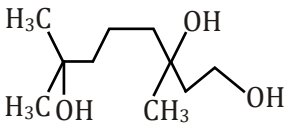
(1) D < B < A < C (2) A < B < C < D (3) D < A < C < B (4) B < C < A < D

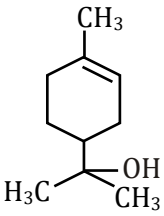
CHC039

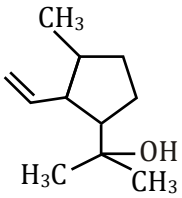
10. The major product of the following reaction is :

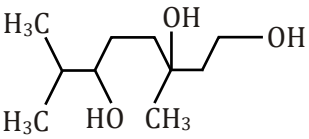


[JEE (Main) 2020]

(1) 

(2) 

(3) 

(4) 

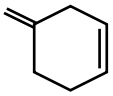
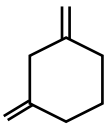
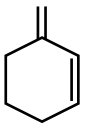
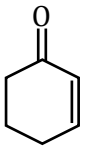
CHC040

11. An unsaturated hydrocarbon X absorbs two hydrogen molecules on catalytic hydrogenation, and also gives following reaction :

$$X \xrightarrow[Zn/H_2O]{O_3} A \xrightarrow{[Ag(NH_3)_2]^{\oplus}} B(3\text{-oxo-hexanedicarboxylic}$$

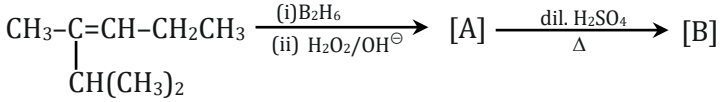
X will be :-

[JEE (Main) 2020]

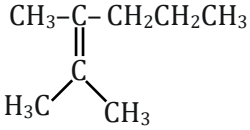
(1)  (2)  (3)  (4) 

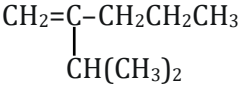
CHC041

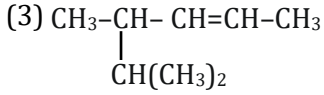
12. The major product [B] in the following sequence of reactions is :-

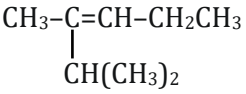


[JEE (Main) 2020]

(1) 

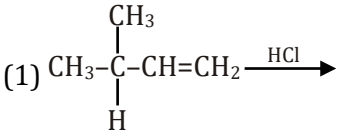
(2) 

(3) 

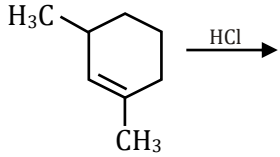
(4) 

CHC042

13. Which of the following reactions will not produce a racemic product ? **[JEE (Main) 2020]**

(1) 

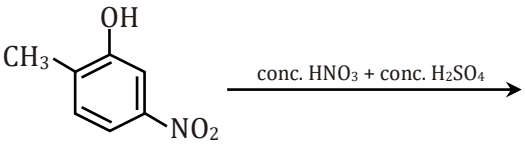
(2) 

(3) 

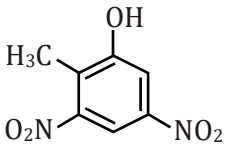
(4) $CH_3CH_2CH=CH_2 \xrightarrow{HBr}$

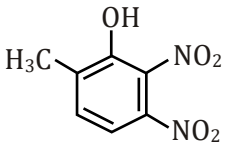
CHC043

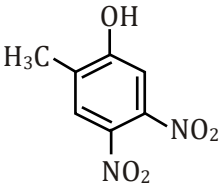
14. The major product of the following reaction is:

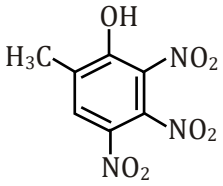


[JEE (Main) 2020]

(1) 

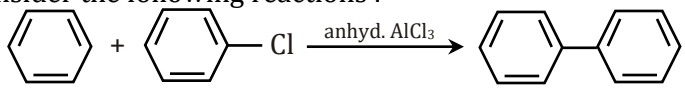
(2) 

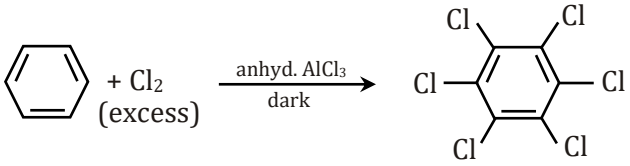
(3) 

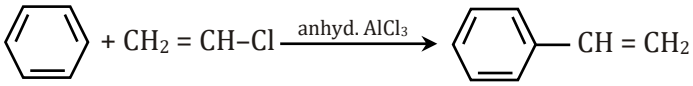
(4) 

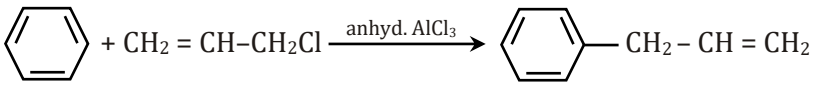
CHC044

15. Consider the following reactions :

(a) 

(b) 

(c) 

(d) 

Which of these reactions are possible ? **[JEE (Main) 2020]**

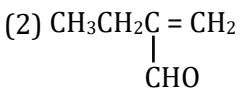
(1) (a) and (d) (2) (b) and (d) (3) (a) and (b) (4) (b), (c) and (d)

CHC045

16. The major product of the following reaction is:

$CH_3CH_2CH=CH_2 \xrightarrow[\text{Rh catalyst}]{H_2/CO}$ **[JEE (Main) 2021]**

(1) $CH_3CH_2CH=CH-CHO$

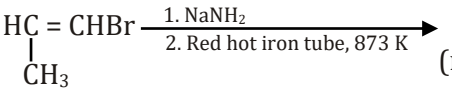
(2) 

(3) $CH_3CH_2CH_2CH_2CHO$

(4) $CH_3CH_2CH_2CHO$

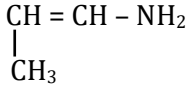
CHC046

17. For the given reaction :

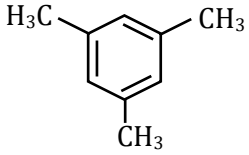


[JEE (Main) 2021]

(1) $CH_3CH_2CH_2NH_2$

(2) 

(3) 

(4) 

CHC047

18. Which of the following is Lindlar catalyst ? **[JEE (Main) 2021]**

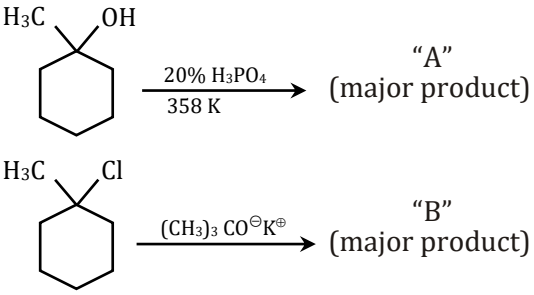
(1) Zinc chloride and HCl

(2) Cold dilute solution of $KMnO_4$

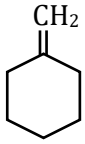
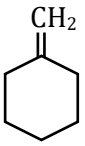
(3) Sodium and Liquid NH_3

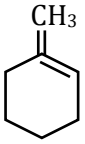
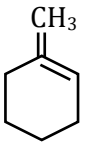
(4) Partially deactivated palladised charcoal

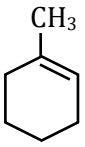
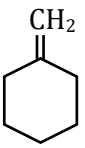
CHC048

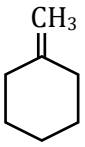
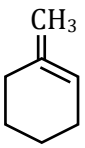
19. 

The product "A" and "B" formed in above reactions are : **[JEE (Main) 2021]**

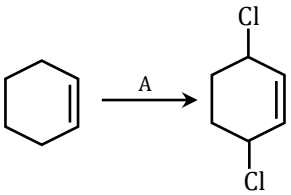
(1) A-  B- 

(2) A-  B- 

(3) A-  B- 

(4) A-  B- 

CHC049

20. 

Identify the reagent(s) 'A' and condition(s) for the reaction : **[JEE (Main) 2021]**

(1) A = HCl; Anhydrous $AlCl_3$

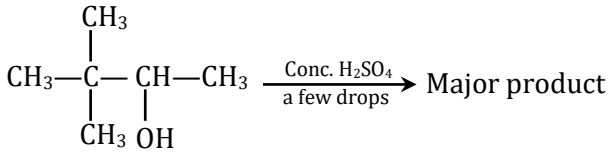
(2) A = HCl, $ZnCl_2$

(3) A = Cl_2; UV light

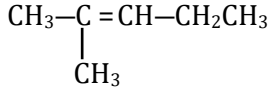
(4) A = Cl_2; dark, Anhydrous $AlCl_3$

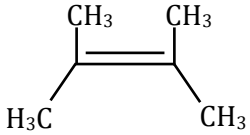
CHC050

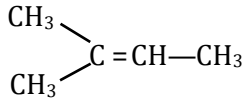
21. The major product formed in the following reaction is :

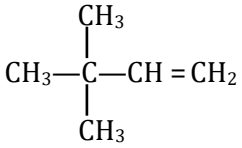


[JEE (Main) 2021]

(1) 

(2) 

(3) 

(4) 

CHC051

22. Given below are two statements. **[JEE (Main)-2022]**

Statement I : The presence of weaker π- bonds make alkenes less stable than alkanes.

Statement II : The strength of the double bond is greater than that of carbon-carbon single bond.

In the light of the above statements, choose the *correct* answer from the options given below.

(1) Both Statement I and Statement II are correct.

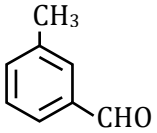
(2) Both Statement I and Statement II are incorrect.

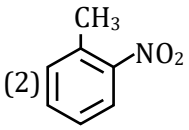
(3) Statement I is correct but Statement II is incorrect.

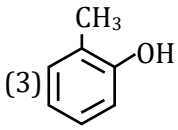
(4) Statement I is incorrect but Statement II is correct.

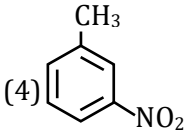
CHC256

23. Halogenation of which one of the following will yield m-substituted product with respect to methyl group as a major product? **[JEE (Main) 2022]**

(1) 

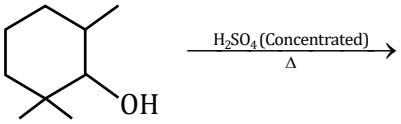
(2) 

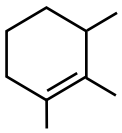
(3) 

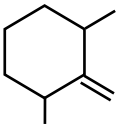
(4) 

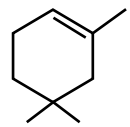
CHC257

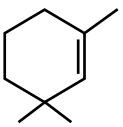
24. Find out the major product from the following reaction. **[JEE (Main) 2023]**



(1) 

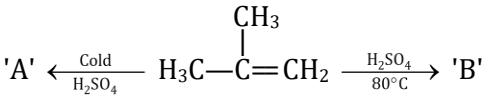
(2) 

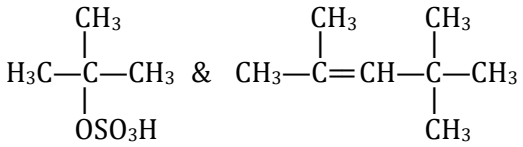
(3) 

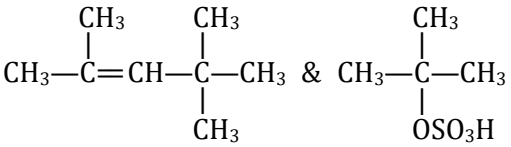
(4) 

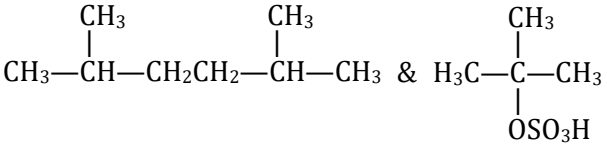
CHC258

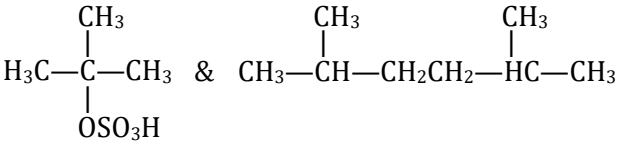
25. The major products 'A' and 'B', respectively, are **[JEE (Main) 2023]**



(1) 

(2) 

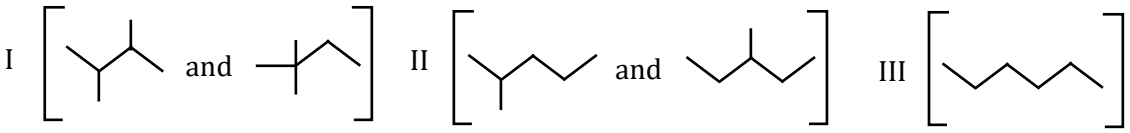
(3) 

(4) 

CHC259

EXERCISE - JEE (Advanced) PYQ

1. Isomers of hexane, based on their branching, can be divided into three distinct classes as shown in the figure.



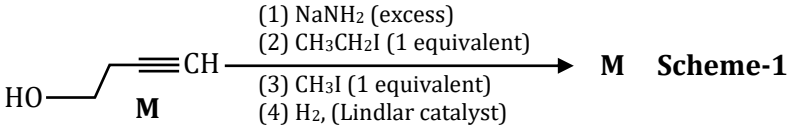
The correct order of their boiling point is **[JEE (Advanced) 2014]**

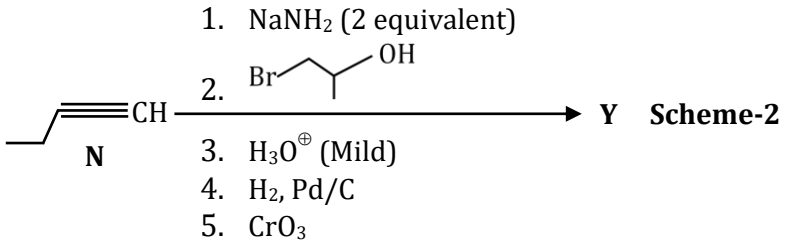
(A) I > II > III (B) III > II > I (C) II > III > I (D) III > I > II

CHC072

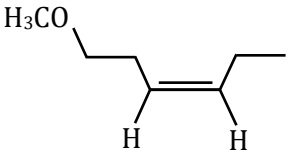
Paragraph for Question 2 and 3

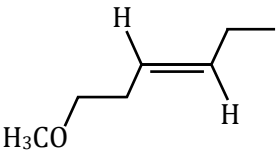
Schemes 1 and 2 describe sequential transformation of alkynes M and N. Consider only the major products formed in each step for both the schemes.

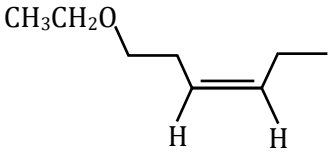


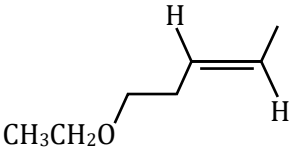


2. The product X is - **[JEE (Advanced) 2014]**

(A) 

(B) 

(C) 

(D) 

CHC073

3. The correct statement with respect to product Y is - **[JEE (Advanced) 2014]**

(A) It gives a positive Tollens test and is a functional isomer of X

(B) It gives a positive Tollens test and is a geometrical isomer of X

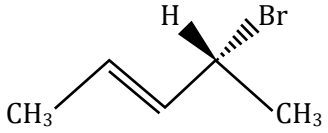
(C) It gives a positive Iodoform test and is a functional isomer of X

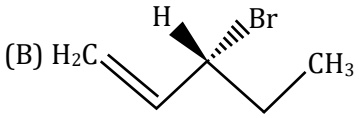
(D) It gives a positive Iodoform test and is a geometrical isomer of X

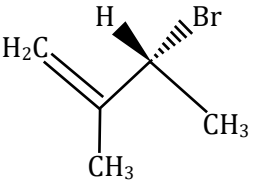
CHC074

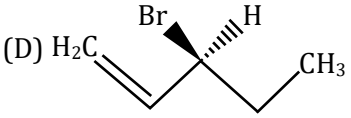
4. Compound(s) that on hydrogenation produce(s) optically inactive compound(s) is (are)

[JEE (Advanced) 2015]

(A) 

(B) 

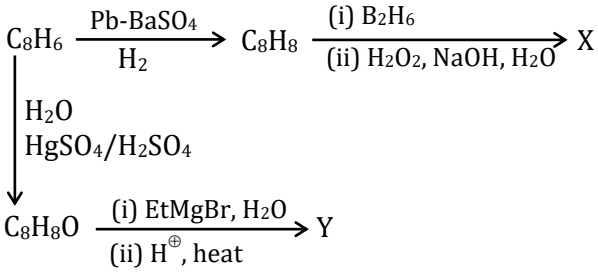
(C) 

(D) 

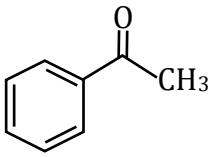
CHC075

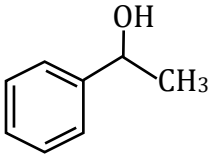
Paragraph for Questions 5 and 6

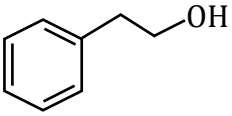
In the following reaction

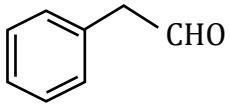


5. Compound X is : **[JEE (Advanced) 2015]**

(A) 

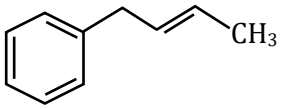
(B) 

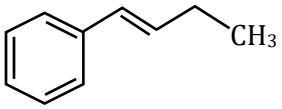
(C) 

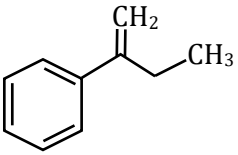
(D) 

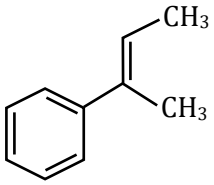
CHC076

6. The major compound Y is : **[JEE (Advanced) 2015]**

(A) 

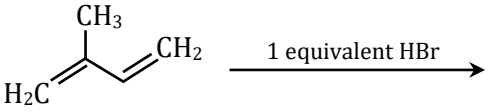
(B) 

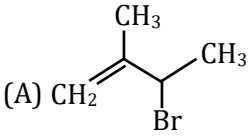
(C) 

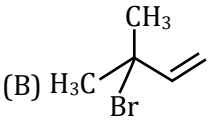
(D) 

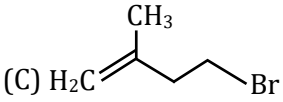
CHC077

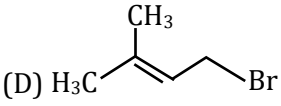
7. In the following reaction, the major product is - **[JEE (Advanced) 2015]**



(A) 

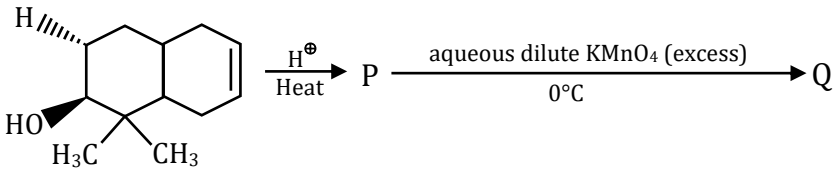
(B) 

(C) 

(D) 

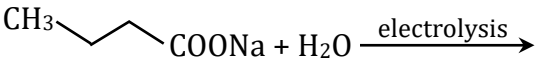
CHC078

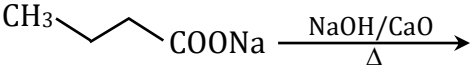
8. The number of hydroxyl group(s) in **Q** is **[JEE (Advanced) 2015]**

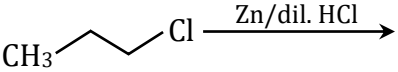


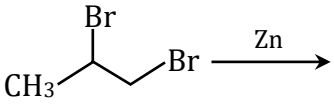
CHC079

9. Which of the following reactions produce(s) propane as a major product? **[JEE (Advanced) 2019]**

(A) 

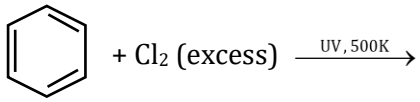
(B) 

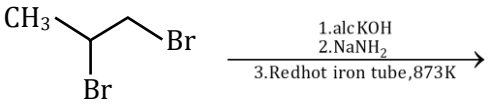
(C) 

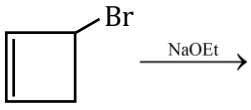
(D) 

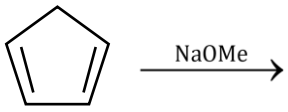
CHC081

10. Choose the correct option(s) that give(s) an aromatic compound as the major product. **[JEE (Advanced) 2019]**

(A) 

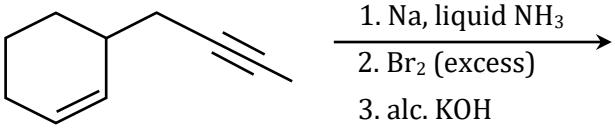
(B) 

(C) 

(D) 

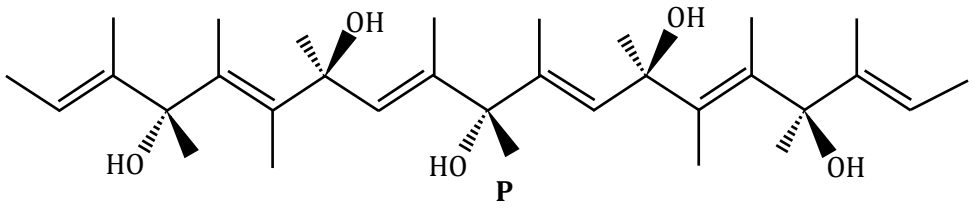
CHC082

11. The number of isomeric tetraenes (**NOT** containing *sp*-hybridized carbon atoms) that can be formed from the following reaction sequence is _____. **[JEE (Advanced) 2022]**



CHC085

12. The total number of chiral molecules formed from one molecule of **P** on complete ozonolysis (O_3, Zn/H_2O) is _____. **[JEE (Advanced) 2022]**



P

CHC086

JEE (Main) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

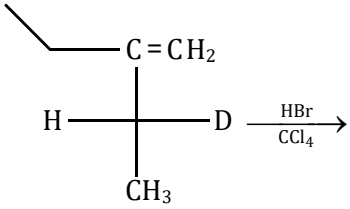
SECTION–A

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

Full Marks : +4, if only the bubble corresponding to the correct option is darkened.

Zero Marks : 0, if none of the bubbles is darkened.

Negative Marks : –1 in all other cases

1. 

Product (without rearrangement of carbocation)

What is the stereochemistry of product formed :

(1) Racemic mixture (2) Optically inactive

(3) Mixture of diastereomers (4) Meso product

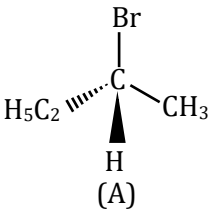
CHC001

2. The intermediate formed during the addition of HCl to propene in the presence of peroxide is

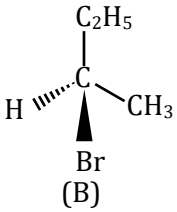
(1) $CH_3\dot{C}HCH_2Cl$ (2) $CH_3\overset{\oplus}{C}HCH_3$ (3) $CH_3CH_2\dot{C}H_2$ (4) $CH_3CH_2\overset{\oplus}{C}H_2$

CHC002

3. The addition of HBr to 1-butene gives a mixture of products A, B and C



(A)



(B)

$CH_3CH_2CH_2CH_2Br$

(C)

The mixture consists of

(1) A and B as major and C as minor products

(2) B as major, A and C as minor products

(3) B as minor, A and C as major products

(4) A and B as minor and C as major products

CHC003

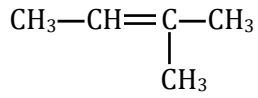
4. When propyne is treated with aqueous H_2SO_4 in presence of $HgSO_4$, the major product is

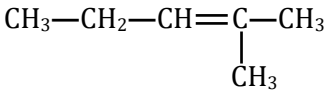
(1) propanal (2) n -propyl hydrogen sulphate

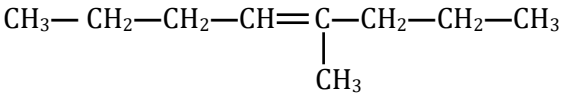
(3) acetone (4) propanol

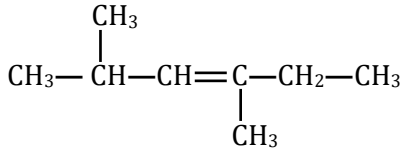
CHC004

5. Hydrocarbon 'A' on reductive ozonolysis gives two isomeric forms 'B' and 'C'. B on oxidation using tollen's reagent gives 'D'. Structure of hydrocarbon is

(1) 

(2) 

(3) 

(4) 

CHC005

6. What is the best way to carry out the following transformation?

1-pentyne $\longrightarrow$ pentanal

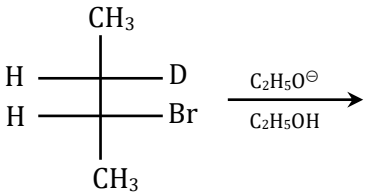
(1) $HgSO_4/H_2SO_4$

(2) H_2/Lindlar's catalyst; O_3; Zn-H_2O

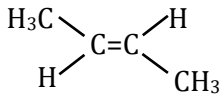
(3) HIO_4/H_2O

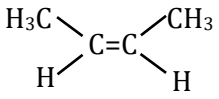
(4) BH_3; $H_2O_2/NaOH$

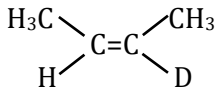
CHC006

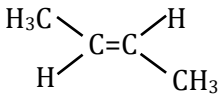
7.  ? Major product is :

The Alkene formed is mainly :

(1) 

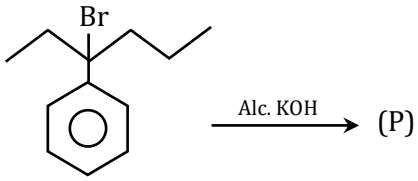
(2) 

(3) 

(4) 

CHC007

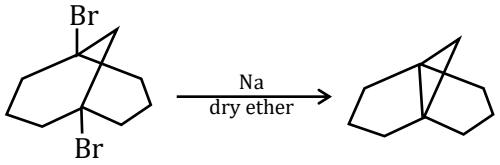
8. How many total dehydrohalogenation products are formed in following reaction.

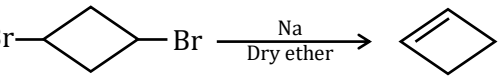


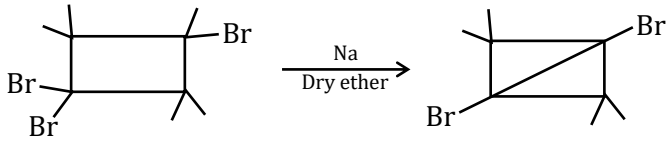
(1) 3 (2) 4 (3) 5 (4) 6

CHC008

9. Which of the following does not represent major product of the reaction?

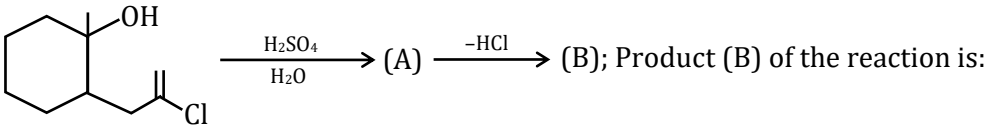
(1) 

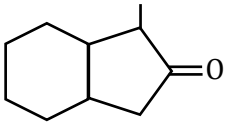
(2) 

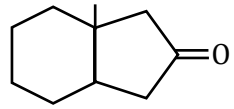
(3) 

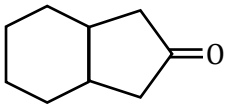
(4) None of these

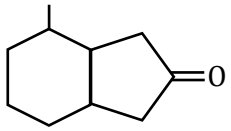
CHC009

10. 

(1) 

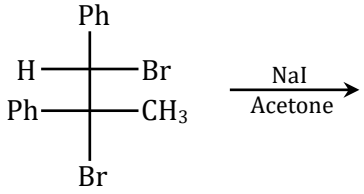
(2) 

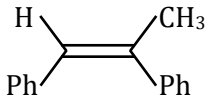
(3) 

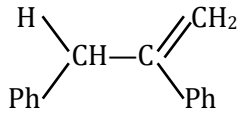
(4) 

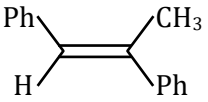
CHC010

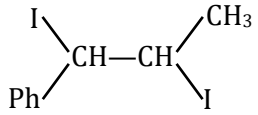
11. Identify the product of the following reaction



(1) 

(2) 

(3) 

(4) 

CHC011

12. The reaction of propene with HCl proceeds through the intermediate

(1) $CH_3-\overset{\oplus}{C}H-CH_3$

(2) $CH_3-CH_2-\overset{\oplus}{C}H_2$

(3) $CH_3-CHCl-\overset{\oplus}{C}H_2$

(4) $CH_3-\overset{\oplus}{C}H-CH_2-OH$

CHC012

13. In which of the following reaction, Markovnikov rule is violated?

(1) $CH_3—O—CH=CH_2 \xrightarrow[CCl_4]{HBr}$

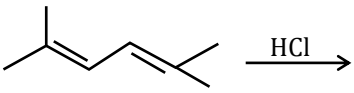
(2) $CH_3—NH—CH=CH_2 \xrightarrow[CCl_4]{HBr}$

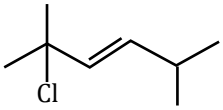
(3) $CH_3—S—CH=CH_2 \xrightarrow[CCl_4]{HBr}$

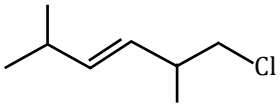
(4) $O_2N—CH=CH_2 \xrightarrow[CCl_4]{HBr}$

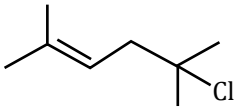
CHC013

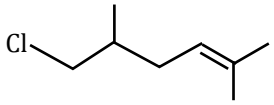
14. What is the product of 1, 4-addition in the reaction shown below?



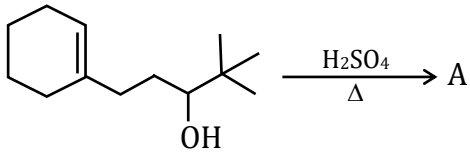
(1) 

(2) 

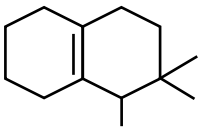
(3) 

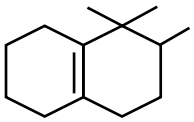
(4) 

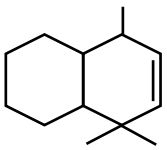
CHC014

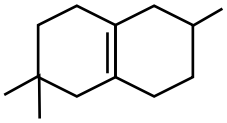
15. 

Product (A) is :

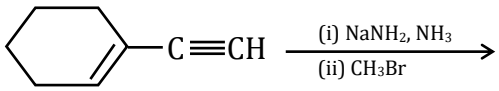
(1) 

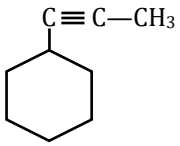
(2) 

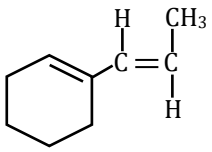
(3) 

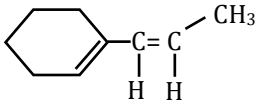
(4) 

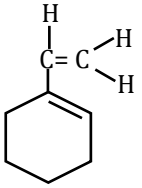
CHC015

16. 

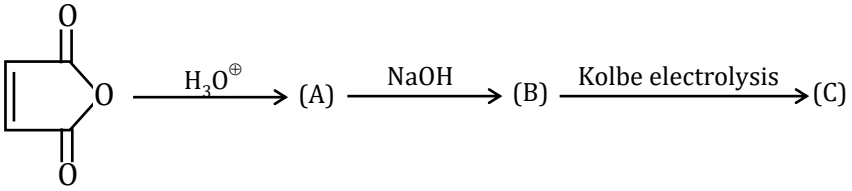
(1) 

(2) 

(3) 

(4) 

CHC016

17. 

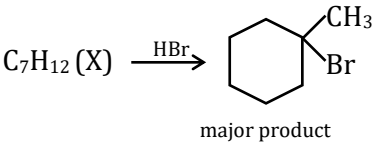
Product (C) of above reaction is:

(1) $H_2C = CH_2$ (2) $CH_3 - C \equiv C - CH_3$

(3) $HC \equiv CH$ (4) $CH_3 - CH = CH - CH_3$

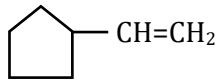
CHC017

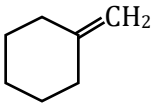
18. In the given reaction

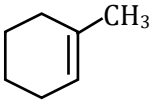


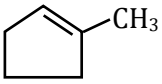
major product

(X) cannot be :

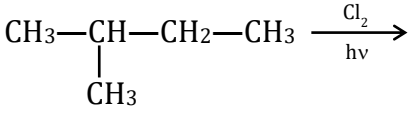
(1) 

(2) 

(3) 

(4) 

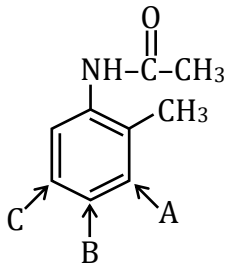
CHC018

19. 

Number of chiral centers generated during monochlorination in the above reaction :

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

CHC019

20. 

Identify the position where electrophilic aromatic substitution (EAS) is most favourable.

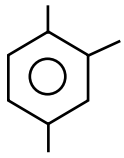
(1) A (2) B (3) C (4) A and C

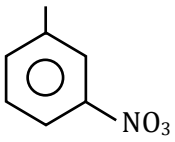
CHC020

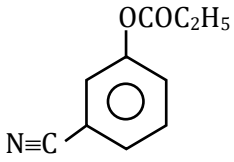
SECTION-B

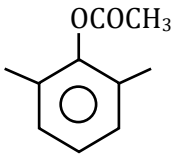
- This section contains **TEN** Questions. Attempt any five Questions. First five Questions Attempt will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (If the numerical value has more than two decimal places, **truncate/round-off** the value to **TWO** decimal places; e.g. 6.25, 7.00, –0.33, –.30, 30.27, –127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
  Full Marks : +4, if ONLY the correct numerical value is entered as answer.
  Zero Marks : 0 in all other cases.

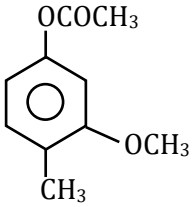
1. Number of compounds that will rearrange on heating with $AlCl_3$ + HCl are

(a) 

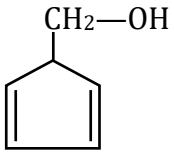
(b) 

(c) 

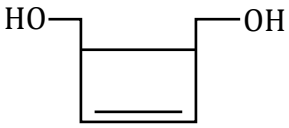
(d) 

(e) 

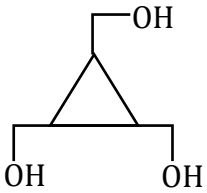
CHC021

2. (1) 

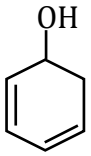
$\xrightarrow[\Delta]{H^{\oplus}}$ (A)

(2) 

$\xrightarrow[\Delta]{H^{\oplus}}$ (B)

(3) 

$\xrightarrow[\Delta]{H^{\oplus}}$ (C)

(4) 

$\xrightarrow[\Delta]{H^{\oplus}}$ (D)

Sum of molecular mass of A, B, C, D (i.e. A + B + C + D) is equal to :

CHC022

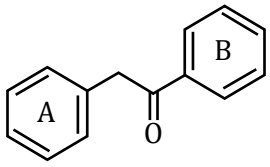
3. (1) $C_2FClBrI$ (all isomers) $\xrightarrow[Ni]{H_2}$ (A) (exclude stereoisomer)

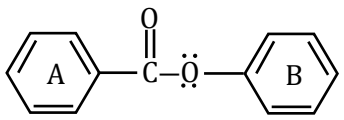
(2) C_4H_8 (alkene) (all isomers) $\xrightarrow[Ni]{H_2}$ (B) (exclude stereoisomer)

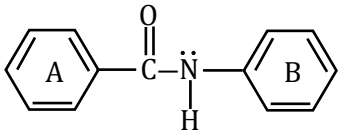
Total number of products A and B (i.e. A + B) is equal to :

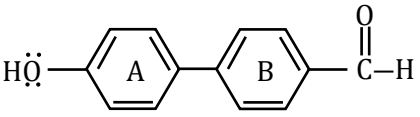
CHC023

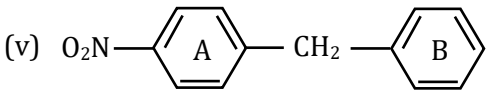
4. Each of the compounds shown below has two aromatic rings, labelled as A and B. Identify number of compounds in which ring B is more active than ring A for electrophilic aromatic substitution reaction.

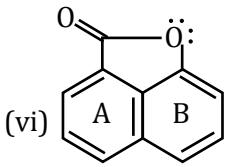
(i) 

(ii) 

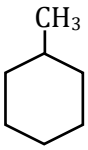
(iii) 

(iv) 

(v) 

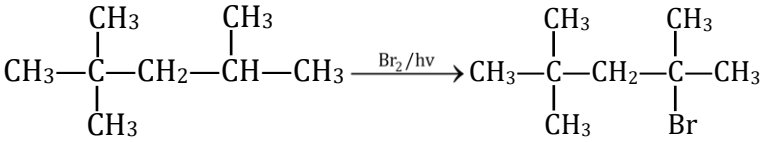
(vi) 

CHC024

5.  $\xrightarrow{Br_2/hv}$ Monobromo derivatives

The number of possible monobromo products is (excluding stereoisomers):

CHC025

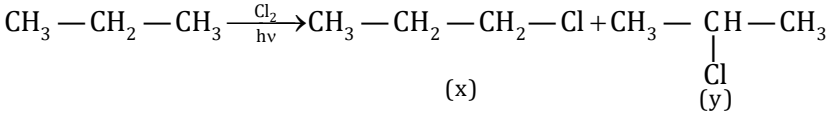
6. 

2- Bromo-2, 4, 4-trimethyl pentane (x%)

What is the value of x (% yield of product)?

CHC026

7. What would be the product ratio x/y in the chlorination of propane if all the hydrogen were abstracted at equal rate ?



(x) (y)

CHC027

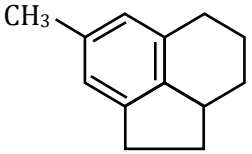
8. How many of the following compounds cannot decolourise alkaline $KMnO_4$ solution?

(a) $HC \equiv CH$ (b) CH_3CH_2OH (c) CH_3CHO (d) CH_3COOH

(e) $CH_3—O—CH_3$ (f) $CH_3 — CH_3$ (g) CH_3COOCH_3 (h) $PhCH = CH_2$

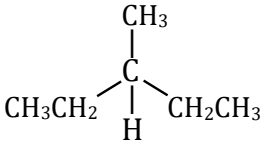
CHC028

9. Identify the number of products (excluding sterioisomers) in the following reaction.

 $\xrightarrow{NBS + hv}$ Products

CHC029

10. The maximum number of isomers (including stereoisomers) that are possible on monochlorination of the following compound is :



CHC030

JEE (Advanced) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–I

- This section contains **NINE** questions.
- Each question has FOUR options (A), (B), (C) and (D). ONLY ONE of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories:

Full Marks : +3, If only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, If none of the bubbles is darkened.
Negative Marks : –1, in all other cases

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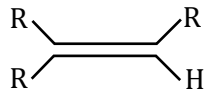
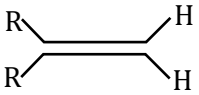
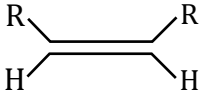
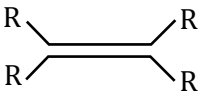
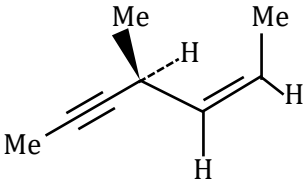
1. Which one of the following alkenes will react fastest with H_2 under catalytic hydrogenation condition

(A) 
(B) 
(C) 
(D) 

CHC052

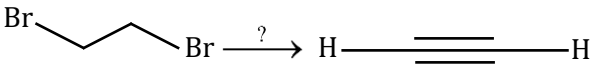
2. 

Hydrogenation of the above compound in the presence of poisoned paladium catalyst gives –

(A) An optically active compound
(B) An optically inactive compound
(C) A racemic mixture
(D) A diastereomeric mixture

CHC053

3. The reagent(s) for the following conversion,

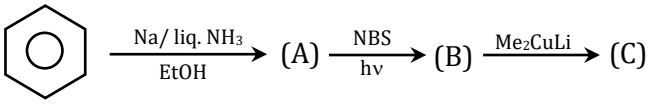


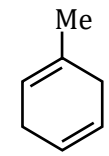
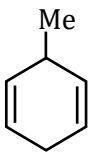
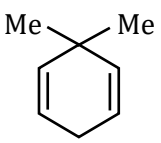
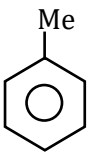
is / are

(A) alcoholic KOH
(B) alcoholic KOH followed by $NaNH_2$
(C) aqueous KOH followed by $NaNH_2$
(D) Zn / CH_3OH

CHC054

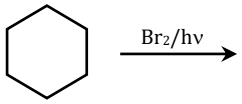
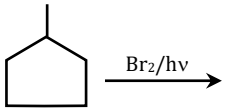
4. The final product (C) in the following reactions is:

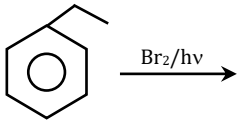
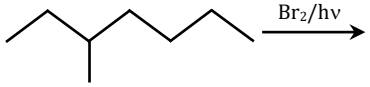


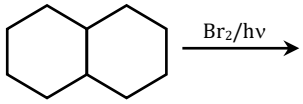
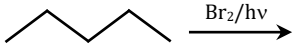
(A) 
(B) 
(C) 
(D) 

CHC055

5. Among the following free radical bromination reactions, select those in which 2° halide is the major product-

(A)  (B) 

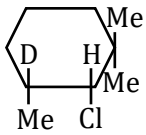
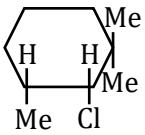
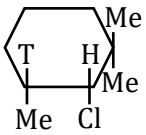
(C)  (D) 

(E)  (F) 

(A) A, B, C, D (B) A, C, F (C) A, C, D, E (D) A, B, C, D, E

CHC056

6. Identify correct reactivity order for E_2 reaction with alcoholic KOH

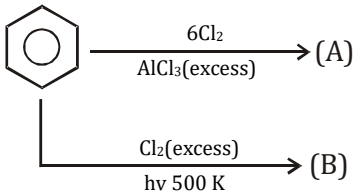
(i)  (ii)  (iii) 

(A) (i) > (ii) > (iii) (B) (ii) > (i) > (iii)

(C) (i) > (iii) > (ii) (D) (iii) > (i) > (ii)

CHC057

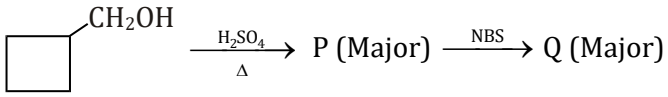
7. For the reaction



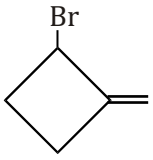
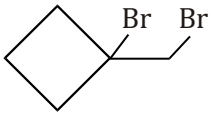
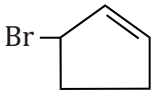
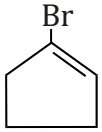
(A) A is not aromatic (B) B is aromatic

(C) A is aromatic (D) B is hexachlorobenzene

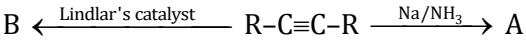
CHC058

8. 

The structure of Q is

(A)  (B)  (C)  (D) 

CHC059

9. 

A and B are geometrical isomers –

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

(C) A and B both are trans (D) A is cis, B is trans

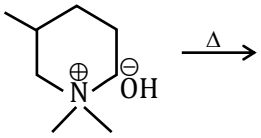
CHC060

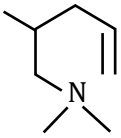
SECTION–II

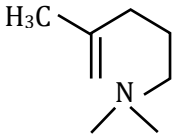
- This section contains **TWO** questions.
- In this section question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks	: +4 if only (all) the correct option(s) is (are) chosen.
Partial Marks	: +3 if all the four options are correct but ONLY three options are chosen.
Partial Marks	: +2 if three or more options are correct but ONLY two options are chosen, both of which are correct options.
Partial Marks	: +1 if two or more options are correct but ONLY one option is chosen and it is a correct option.
Zero Marks	: 0 If none of the options is chosen (i.e. the question is unanswered).
Negative Marks	: –2 In all other cases.

10. Which of following are correct for given reaction



(A) Major product of reaction is 

(B) Major product is 

(C) The reaction is thermal elimination reaction

(D) The reaction is E_2 reaction

CHC061

11. Aqueous solution of potassium propanoate is electrolysed. Possible organic products are:

(A) n-Butane (B) $C_2H_5COOC_2H_5$

(C) $CH_3–CH_3$ (D) $CH_2=CH_2$

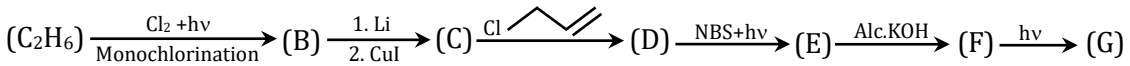
CHC062

SECTION–III

- This section contains **ONE** paragraph.
- Based on paragraph, there are **FOUR** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to all the correct option.
- For each question, marks will be awarded in <u>one of the following categories</u> :

Full Marks	: +4 if only (all) the correct option(s) is (are) chosen.
Zero Marks	: 0 if none of the options is chosen (i.e. the question is unanswered).
Negative Marks	: –1 in all other cases.

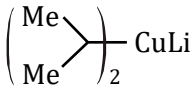
Paragraph for Q. 12 to 15

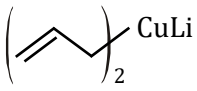


12. Compound (C) is:

(A) $(C_2H_5)_2$ CuLi

(B) $(C_3H_7)_2$ CuLi

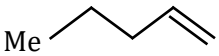
(C) 

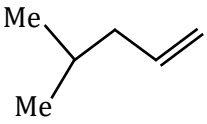
(D) 

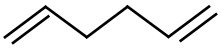
CHC063

13. Compound (D) is:

(A) 

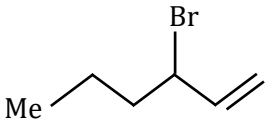
(B) 

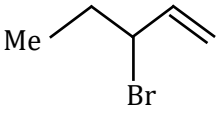
(C) 

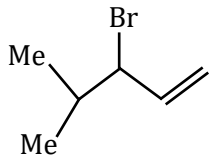
(D) 

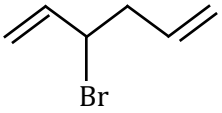
CHC064

14. Compound (E) is:

(A) 

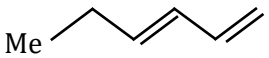
(B) 

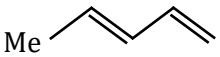
(C) 

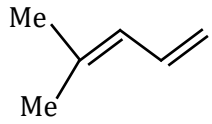
(D) 

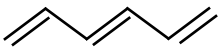
CHC065

15. Compound (F) is:

(A) 

(B) 

(C) 

(D) 

CHC066

SECTION–IV

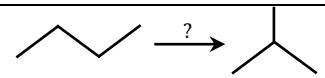
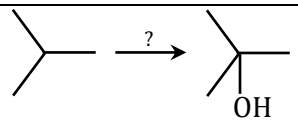
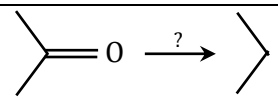
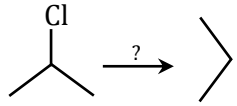
- This section contains **ONE** question.
- Each question has matching lists. The codes for the lists have choices (A), (B), (C) and (D) out of which ONLY ONE is correct
- For each question, marks will be awarded in one of the following categories :

  Full Marks : +3, If only the bubble corresponding to the correct option is darkened.

  Zero Marks : 0, If none of the bubbles is darkened.

  Negative Marks : –1, in all other cases.

16. **Match the column:**

Column-I		Column-II	
Reactant and product		Reagent	
a.		p	Alkaline $KMnO_4$
b.		q	HI + Red P
c.		r	$AlCl_3$ + HCl at 298 K
d.		s	$NH_2–NH_2 + EtO^{\ominus}$
		u	Zn – Hg/HCl

Code:-

	a	**b**	**c**	**d**
(A)	r	p	q,s,u	q
(B)	q,s,u	p	r	q
(C)	r	r	q,s,u	q
(D)	q	p	q,s,u	r

CHC067

SECTION–V

- This section contains **FOUR** questions.
- The answer to each question is a **NUMERICAL VALUE.**
- For each question, enter the correct numerical value (in decimal notation, truncated/rounded-off to the second decimal place; e.g. 6.25, 7.00, –0.33, –.30, 30.27, –127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
  Full Marks : +3, If ONLY the correct numerical value is entered as answer.
  Zero Marks : 0, In all other cases.

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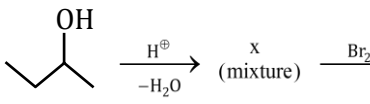
17. How much volume of air (in litre) will be needed for complete combustion of 10 lit. of ethane. (Assuming that approx. 20% O_2 is present in air)

CHC068

18.  5 compounds of molecular formula $C_4H_8Br_2$

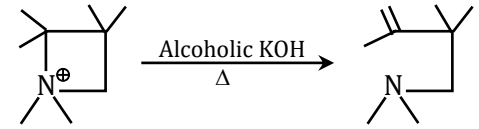
Number of compounds in X will be:

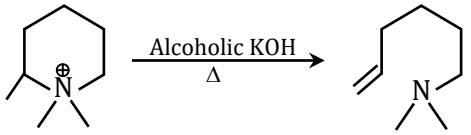
CHC069

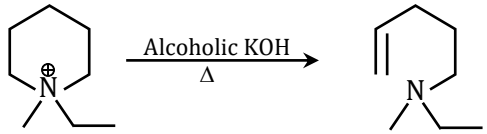
19. The number of structural isomers for C_6H_{14} is

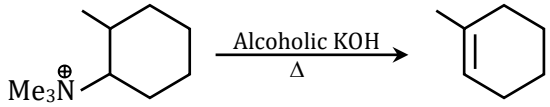
CHC070

20. Identify number of reactions that correctly match with their major products as shown below.

(a) 

(b) 

(c) 

(d) 

CHC071

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	B	C	B	B	D	D	C	C	A	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	D	C	A	C	D	B	C	B	A	C
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	C	C	D	D	D	D	A	A	A	B
Que.	31	32	33	34	35	36	37	38	39	40
Ans.	A	B	B	A	D	A	C	B	B	B
Que.	41	42	43	44	45	46	47	48	49	50
Ans.	A	B	A	A	C	B	C	B	B	A
Que.	51	52	53	54	55	56	57	58	59	60
Ans.	D	C	D	D	C	A	A	D	B	C
Que.	61	62	63	64	65	66	67	68	69	70
Ans.	D	D	D	A	C	A	C	B	C	C
Que.	71	72	73	74	75	76	77	78	79	80
Ans.	A	A	A	A	B	C	B	D	D	A
Que.	81	82	83	84	85	86	87	88	89	90
Ans.	B	B	A	C	C	B	C	B	D	B
Que.	91	92	93	94	95	96	97	98	99	100
Ans.	B	B	C	D	C	B	ACD	AC	CD	BC

EXERCISE - S

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	5	6	8	5	5	5	4	4
Que.	11	12	13	14						
Ans.	4	2	3	5						

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	1	1	1	2	3	2	3	2
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	1	1	1	3	2	3	4	4	3	3
Que.	21	22	23	24	25					
Ans.	2	1	3	1	1					

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	B	A	C	BD	C	D	D	4	BC	BD
Que.	11	12								
Ans.	2	2								

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	3	2	1	3	2	4	3	2	4	2
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	3	1	4	1	2	3	3	4	2	2
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	3	312	5	4	5	90	3	4	4	8

JEE (Advanced) Practice Paper

Section-I	Q.	1	2	3	4	5	6	7	8	9	
	A.	C	B	B	B	B	B	C	C	A	
Section-II	Q.	10	11								
	A.	ACD	ABCD								
Section-III	Q.	12	13	14	15						
	A.	A	B	B	B						
Section-IV	Q.	16									
	A.	A									
Section-V	Q.	17	18	19	20						
	A.	175	3	5	2						

Important Notes