doubtnut
India's Number 1 Education App

CHEMISTRY

AAKASH INSTITUTE ENGLISH

HYDROCARBONS

Example

1. What would be the formula of the next alkane if one hydrogen from butane is replaced by a methyl group?

Watch Video Solution

2. Write structures of different chain isomers of alkanes corresponding to the molecular formula C_6H_{14}. Also write their IUPAC names.

Watch Video Solution

3. Write the structure of the compound 3,4-Diethyl-3,4-dimethyl heptane

Watch Video Solution

4. Which salt of carboxylic acid will be required to prepare ethane by sodalime decarboxylation? Give equation for the reaction.

Watch Video Solution

5. Assertion: Iodination of alkanes is carried out in the presence of oxidising agents like HIO_3 or HNO_3.

Reason: Iodination of alkanes is an irreversible reaction.

Watch Video Solution

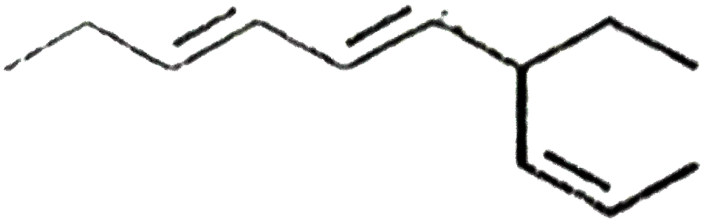
6. Name few catalysts used in aromatization reaction.

Watch Video Solution

7. On change from the staggered form to the eclipsed form in the ethane molecule conformation, what happens to the electron cloud of carbon-hydrogen bonds?

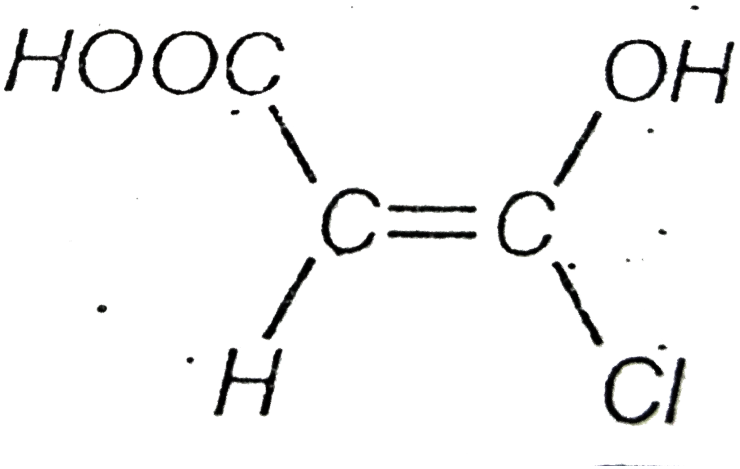
Watch Video Solution

8. Write IUPAC name of the following



Watch Video Solution

9. Give the E-Z designation of the following compound



Watch Video Solution

10. What will be the major product obtained when 2-bromobutane reacts with alcoholic potassium hydroxide ? State the type of reaction involved in it.

Watch Video Solution

11. What will be the major product obtained when isobutene under goes reaction with HBr?

$$CH_3 - \underset{\underset{CH_3}{|}}{C} = CH_2 + HBr \rightarrow ?$$

Watch Video Solution

12. What are the product obtained when butene undergoes addition reaction of HBr in different conditions.

(i) In absence of peroxide

(ii) In presence of peroxide

Watch Video Solution

13. What is the kind of isomerism exhibited by the compounds given below?

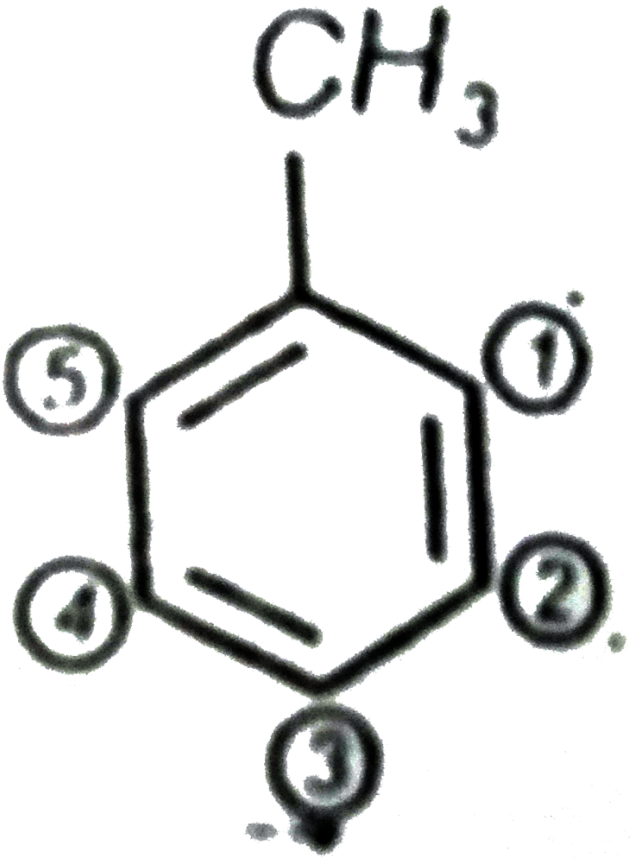
$$CH_3 - C \equiv C - CH_2 - CH_2 - CH_3, CH_3 - CH_2 - C \equiv C - CH_2 - C$$

Watch Video Solution

14. What is the product obtained when two molecules of ethyne and one molecule of propyne undergoes cyclic polymeristion when the mixture is passed through red hot iron tube?

Watch Video Solution

15. What are the marked positions known in the disubstituted benzene compounds?



Watch Video Solution

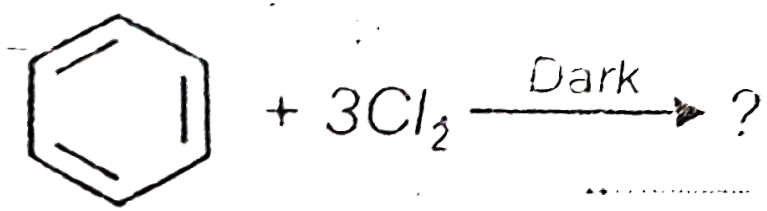
16. Why benzene is reluctant to show addition reaction?

Watch Video Solution

17. What happens when Propyne is passed through a red hot iron tube?

Watch Video Solution

18. Complete the following reaction.



Watch Video Solution

19. What would be the formula of the next alkane if one hydrogen from butane is replaced by a methyl group?

Watch Video Solution

20. Write structure of different chain isomers of alkanes corresponding to the molecular formula C_6H_{14} Also write IUPAC names.

Watch Video Solution

21. Write the structure of the compound 3,4-Diethyl-3,4-dimethyl heptane

Watch Video Solution

22. Which salt of carboxylic acid will be required to prepare ethane by sodalime decarboxylation? Give equation for the reaction.

Watch Video Solution

23. Why iodination of alkanes is carried out in the presence of oxidizing agents?

Watch Video Solution

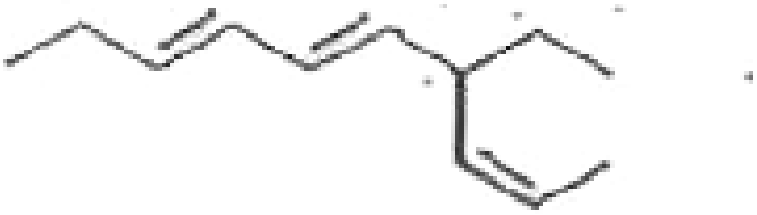
24. Name few catalysts used in aromatization reaction.

Watch Video Solution

25. On change from the staggered form to the eclipsed form in the ethane molecule conformation, what happens to the electron cloud of carbon-hydrogen bonds?

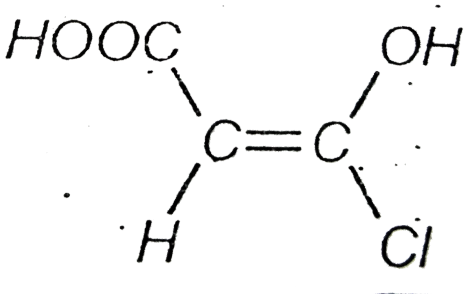
Watch Video Solution

26. Write IUPAC name of the following



Watch Video Solution

27. Give the E-Z designation of the following compound



Watch Video Solution

28. What is the major product obtained when 2-bromobutane is heated with alcoholic KOH? Write only the major product expected to be obtained.

Watch Video Solution

29. What will be the major product obtained when isobutene under goes reaction with HBr?

$$CH_3 - \underset{\underset{CH_3}{|}}{C} = CH_2 + HBr \rightarrow ?$$

Watch Video Solution

30. What are the product obtained when butene undergoes addition reaction of HBr in different conditions.

(i) In absence of peroxide

(ii) In presence of peroxide

Watch Video Solution

31. What is the kind of isomerism exhibited by the compounds given below?

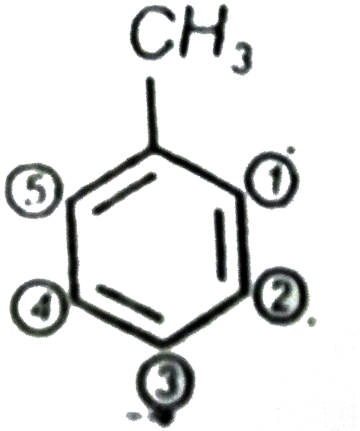
$CH_3 - C \equiv C - CH_2 - CH_2 - CH_3, CH_3 - CH_2 - C \equiv C - CH_2 - C$

Watch Video Solution

32. What is the product obtained when two molecules of ethyne and one molecule of propyne undergoes cyclic polymeristion when the mixture is passed through red hot iron tube?

Watch Video Solution

33. What are the marked positions known in the disubstituted benzene compounds?



Watch Video Solution

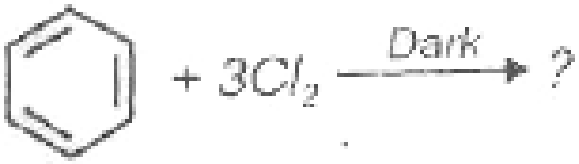
34. Why benzene is reluctant to show addition reaction?

Watch Video Solution

35. Propyne when passed through a hot iron tube at $400^{\circ} C$ produces

Watch Video Solution

36. Complete the following reaction,



Watch Video Solution

Additional Information

1. Which of the following is least stable

A. NH_4^+

B. SbH_4^+

C. PH_4^+

D. AsH_3^+

Answer:

Watch Video Solution

2. calculate E° of the following half -cell reaction at 298 K:

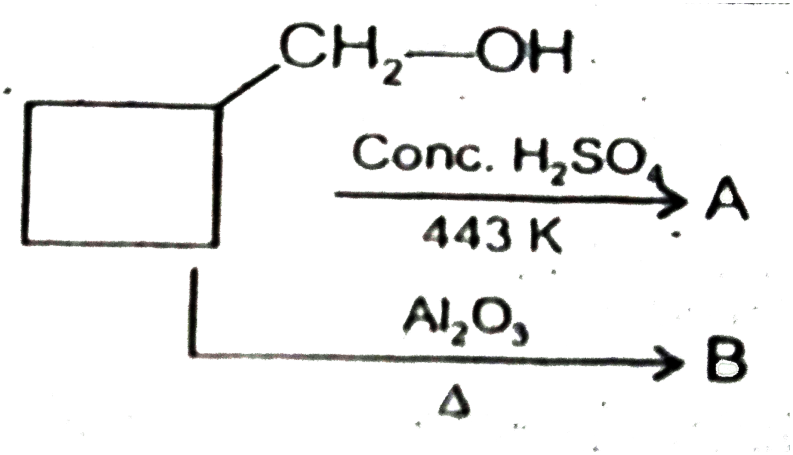
$Ag(NH_3)_2^+ + e^- \rightarrow Ag + 2NH_3$

$\left(Ag^+ + e^- \rightarrow Ag, E^\circ_{Ag^+/Ag} = 0.80V\right.$

$Ag(NH_3)_2^+ \Leftrightarrow Ag^+ + 2NH_3 \; K = 6 \times 10^{-8}$

Watch Video Solution

3. Complete the following reaction



Watch Video Solution

Assignment Section A Competition Level Differ By

1. In a homologous series, two successive members differ by a ..... group and a molecular mass of ..... amu.

A. CH_2

B. CH_3

C. CH

D. CH_4

Answer: A

Watch Video Solution

2. Alcoholic solution of caustic potash is a specific reagent for

A. Dehydration

B. Dehydrohalogenation

C. Dehydrogenation

D. Hydration.

Answer: B

Watch Video Solution

3. When two possible alkenes can be formed in a reaction the most stable alkene is the preferred product This generation is known as

A. Markovnikov rule

B. Anti-markovnikov rule

C. Saytzeff rule

D. Huckel's rule

Answer: C

Watch Video Solution

4. When an alkyl chloride is treated with Na in dry ether, a symmetrical alkane is obtained. The reaction is known as

A. Birch redcuction

B. Frankland reaction

C. Wurtz reaction

D. Halogenation reaction.

Answer: C

Watch Video Solution

5. Which method cannot be employed for production of an alkane?

A. Heating sodium salts of carboxylic acids with soda lime

B. Treating alkyl halides with Na in ethereal solution.

C. Electrolysis of aqueous solution of sodium or potassium salt of carboxylic acid

D. Dehydrohalogenation of alkyl halides .

Answer: D

Watch Video Solution

6. Which one of the following cannot be prepared by Wurtz reaction ?

A. CH_4

B. C_2H_6

C. C_3H_8

D. C_4H_{10}

Answer: A

Watch Video Solution

7. Which among the following alkane has the highest melting point?

A. n-Pentane

B. n-Hexane

C. n_Heptane

D. n-Octane

Answer: D

Watch Video Solution

8. Which one is the appropriate reaction conditions leading to the formation of C_2H_5Cl?

A. C_2H_6 (excess) $+ Cl_2 \xrightarrow{\text{UV light}}$

B. $C_2H_4 + Cl_2 \xrightarrow{\text{dark room temperature}}$

C. $C_2H_4 + HCl \rightarrow$

D. Both 1 and 3

Answer: D

Watch Video Solution

9. To which of the following compounds H_2 adds most readily?

A. $CH_2 = CH_2$

B. $CH_3 - CH = CH_2$

C. $CH_3 - CH = CH - CH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3$

Answer: A

Watch Video Solution

10. Reaction of alkenes with halogens is explosive in the case of

A. F_2

B. Cl_2

C. Br_2

D. I_2

Answer: A

Watch Video Solution

11. When HBr adds to 1-butene in the presence of benzoyl peroxide, the product obtained is

A. 1-Bromobutene

B. 2-Bromobutene

C. 1-Bromobutane

D. 2-Bromobutane

Answer: C

Watch Video Solution

12. An alekene on ozonolysis and hydrolysis in presence of zinc dust produced one molecule of CH_3CHO and one molecule of HCHO. What is the alkene used in the reaction?

A. $CH_3 - CH = CH_2$

B. $CH_3 - CH = CH - CH_3$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} = CH_2$

D. $CH_3 - CH_2 - CH = CH$

Answer: A

Watch Video Solution

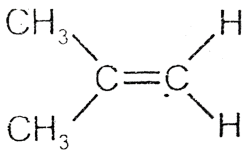
13. Markovnikov rule is applicable to

A. $CH_2 = CH_2$

B. $CH_3 - CH_2 - CH_3$

C. $CH_3 - CH = CH - CH_3$

D.



Answer: D

Watch Video Solution

14. Which one of the following compounds can decolourise alkanes $KMnO_4$ solution?

A. C_2H_6

B. C_2H_4

C. C_4H_{10}

D. CH_2Cl_2

Answer: B

Watch Video Solution

15. Benzene on ozonolysis yields

A. Glyoxal

B. Acetone

C. Propanol

D. Butanone

Answer: A

Watch Video Solution

16. Benzene reacts with excess of chlorine in presence of ultraviolet light to produce

A. Hexachlorobenzene

B. p-Dichlorobenzene

C. Hexachlorocyclohexane

D. Chlorobenzene

Answer: C

Watch Video Solution

17. Which among the following is not a mets directing group?

A. $-NO_2$

B. $-SO_3H$

C. $-COOH$

D. $-OH$

Answer: D

Watch Video Solution

18. How many σ-bonds and $\pi-$ bonds are present in the given compound?

$CH_3-CH_2-CH=CH-C\equiv CH$

A. $\sigma-14, \pi-5$

B. $\sigma-12, \pi-1$

C. $\sigma-13, \pi-3$

D. $\sigma - 14, \pi - 3$

Answer: C

Watch Video Solution

19. Arrange the following conformations of ethane in the order of decreasing stability

A. Eclipsed $>$ Staggered $>$ Skewed

B. Eclipsed $>$ Skewed $>$ Staggered

C. Staggered $>$ Eclipsed $>$ Skewed

D. Staggered $>$ Skewed $>$ Eclipsed

Answer: D

Watch Video Solution

20. Maximum potential energy of the molecule of ethane will be in the case when the dihederal angle will be

A. 60°

B. 30°

C. 10°

D. 0°

Answer: D

Watch Video Solution

21. Which among the following is not an activating group of the benzene ring?

A. $-NH_2$

B. $-OCH_3$

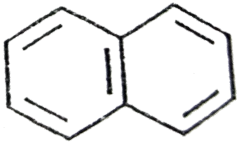
C. $-Cl$

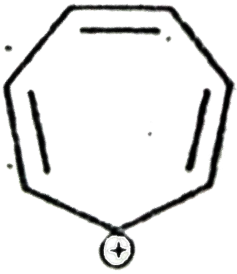
D. $-CH_3$

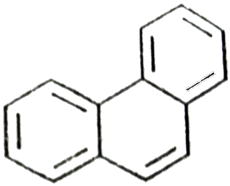
Answer: C

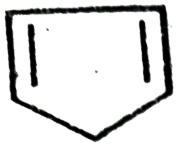
Watch Video Solution

22. Which among the following is not expected to be an aromatic species?

A. 

B. 

C. 

D. 

Answer: D

Watch Video Solution

23. In the nitration of benzene with conc. HNO_3 and conc H_2SO_4 the electrophile acting group is

A. NO_2

B. NO

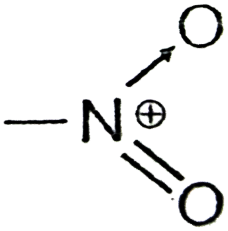
C. $\overset{+}{N}O_2$

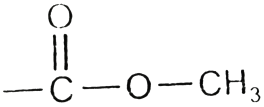
D. NO_3^-

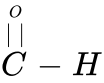
Answer: C

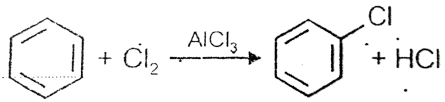
Watch Video Solution

24. Among the following groups, which one is ortho and para directing?

A. 

B. 

C. 

D. 

Answer: D

Watch Video Solution

25. Which among the following is a meta directing group?

A. $-CH_3$

B. $-\overset{\overset{O}{||}}{\underset{\underset{O}{||}}{S}}-O-H$

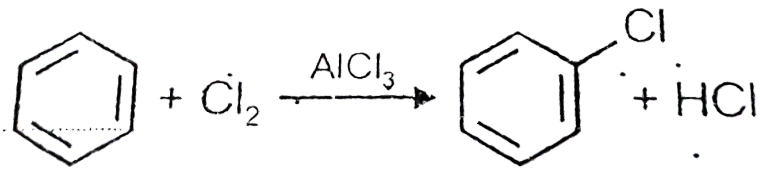
C. $-O-CH_3$

D. $-NH_2$

Answer: B

Watch Video Solution

26. In the reaction



the attacking species is

A. Cl

B. Cl^+

C. Cl^-

D. $AlCl_4^-$

Answer: B

Watch Video Solution

27. Benzene reacts with CH_3COCl in the presence of anhy $AlCl_3$ to give

A. C_6H_5Cl

B. C_6H_5COCl

C. $C_6H_5CH_3$

D. $C_6H_5COCH_3$

Answer: D

Watch Video Solution

28. Baeyer's reagent is used in laboratory for

A. Detection of unsaturation

B. Detection of glucose

C. Reduction

D. Preparation of aldehyde

Answer: A

Watch Video Solution

29. Match Column I with Column II and select the correct answer from the given codes

Column I Reaction	Column II Catalyst
(a) Wurtz reaction	(i) Anhy. $AlCl_3$
(b) Sabatier Senderen's reaction	(ii) Mo_2O_3
(c) Friedel Craft's reaction	(iii) Na
(d) Aromatization or reforming	(iv) Ni

A. a-i,b-ii,c-iii,d-iv

B. a-ii,b-iii,c-iv,d-i

C. a-iii-b-iv,c-i,d-ii

D. a-iv,b-iii,c-i,d-ii

Answer: C

Watch Video Solution

30. Kolbe's electrolytic method can be applied on

A. CH_3COONa

B. $(KOOC - CH_2 - CH_2 - COOK)$

C. $KOOC - CH = HC - COOK$

D. All of these

Answer: D

Watch Video Solution

31. $CH_3 - C \equiv CH \xrightarrow[\text{catalyst}]{\text{Linddar's}} (A) \xrightarrow[H_2O]{\text{Conc}H_2SO_4} (B)$

What are the products (A) and (B) in the given reaction?

A. $CH_3 - CH = CH_2, CH_3 - \underset{\underset{OH}{|}}{CH} - CH_3$

B. $CH_2 = CH - CH_3, CH_3 - \underset{\underset{OH}{|}}{CH} - CH_3$

C. $CH_2 = CH - CH_3. CH_3 - C \equiv CH$

D. $CH_3 - CH = CH_2. CH_3 - \underset{\underset{OSO_2OH}{|}}{CH} - CH_3$

Answer: B

Watch Video Solution

32. What is the product obtained when ethene reacts with cold, dilute, aqueous solution of potassium permanganate?

A. Ethyl hydrogen sulphate

B. Ethylene glycol

C. Ethanal

D. Ethanol

Answer: B

Watch Video Solution

33. (A) $\xrightarrow{Alc.KOH} CH_3 - CH = CH_2 \xrightarrow[(\text{Peroxide})]{HBr} (B)$ Find the product (A) and (B) in the given reaction

A. $CH_3 - \underset{\underset{Br}{|}}{CH} - CH_3, CH_3 - CH_2 - CH_2 - Br$

B. $CH_3 - CH - CH_2 - Br, CH_3 - \underset{\underset{Br}{|}}{CH} - CH_3$

C. $Br - CH_2 - CH = CH_2, CH_3 - CH = CH - Br$

D. $\underset{\underset{Br}{|}}{CH_2} - CH = CH_2, CH_3 - \underset{\underset{Br}{|}}{C} = CH_2$

Answer: A

Watch Video Solution

34. Which among the following represents the correct reaction of general combustion?

A. $C_xH_y + \left(x + \frac{Y}{4}\right)O_2 \rightarrow xCO_2 + \frac{Y}{2}H_2O$

B. $C_xH_y + \left(2x + \frac{y}{4}\right)O_2 \rightarrow xCO_2 + \frac{Y}{2}H_2O$

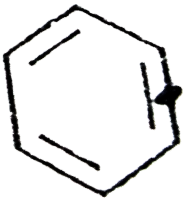
C. $C_xH_y + \left(x + \frac{Y}{2}\right)O_2 \rightarrow xCO_2 + \frac{Y}{2}H_2O$

D. $C_xY_y + \left(x + \frac{Y}{4}\right)O_2 \rightarrow xCO_2 + \frac{Y}{4}H_2O$

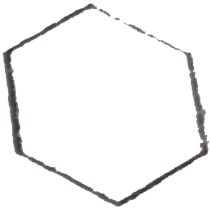
Answer: A

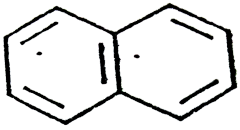
Watch Video Solution

35. Which among the following is a non-planar molecule?

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

36. Those groups which activate the benzene ring are generally

A. o-directing

B. p-directing

C. o-and m-directing

D. o-and p-directing.

Answer: D

Watch Video Solution

37. When an aqueous solution of sodium propionate is electrolysed the gas liberated at anode is/are

A. Propane

B. CO_2

C. Butane and CO_2

D. Hexane and CO_2

Answer: C

Watch Video Solution

38. Which among the following will yield 2,2-dibromo butane?

A. $HC \equiv CH + 2HBr \rightarrow$

B. $CH_3C \equiv CH + 2HBr \rightarrow$

C. $CH_3 - CH = CH - CH_3 + 2HBr \rightarrow$

D. $CH_3 - CH_2 - C \equiv CH + 2HBr \rightarrow$

Answer: D

Watch Video Solution

39. On chlorination, nitrobenzene will produce_____

A. o-chloronitrobenzene

B. p-chloronitrobenzene

C. m-chloronitrobenzene

D. All of these

Answer: C

Watch Video Solution

40. In the chlorination of benzene the catalyst used is

A. $FeCl_3$

B. V_2O_5

C. Al_2O_3

D. Cr_2O_3

Answer: A

Watch Video Solution

41. Which one of the following compounds can be used to distinguish propane from propene?

A. Aqueous $KMnO_4$

B. Dil H_2SO_4

C. $Br_2 - H_2O$

D. Ammonical $AgNO_3$

Answer: D

Watch Video Solution

42. Which one of the following compounds can be used to distinguish propane from propene?

A. (a) Aqueous $KMnO_4$

B. (b) Dil. H_2SO_4

C. (c) $Br_2 - H_2O$

D. (d) Ammoniacal $AgNO_3$

Answer: A

Watch Video Solution

43. 3-Hexyne reacts with Na/liq. NH_3 to produce

A. cis-3-Hexene

B. trans-3-Hexene

C. 3-Hexylamine

D. 2-Hexylamine

Answer: B

Watch Video Solution

44. Ethylene reacts with 1% cold alkaline $KMnO_4$ to form

A. Oxalic acid

B. Ethylene glycol

C. Ethyl alcohol

D. HCHO

Answer: B

Watch Video Solution

45. Which gas is liberated when CaC_2 is hydrolysed?

A. CH_4

B. C_2H_6

C. C_2H_4

D. C_2H_2

Answer: D

Watch Video Solution

46. Pick the compound having only primary hydrogen

A. Cyclohexene

B. Propyne

C. But-2-ene

D. Propene

Answer: B

Watch Video Solution

47. Which among the following is expected to have the highest boiling point?

A. 2-Methylpropane

B. n-Hexane

C. 2-Methylpentane

D. 2,2-Dimethylbutane

Answer: B

Watch Video Solution

48. Which of the following alkane can be easily oxidized to alcohol by $KMnO_4$?

A. CH_4

B. $CH_3 - CH_3$

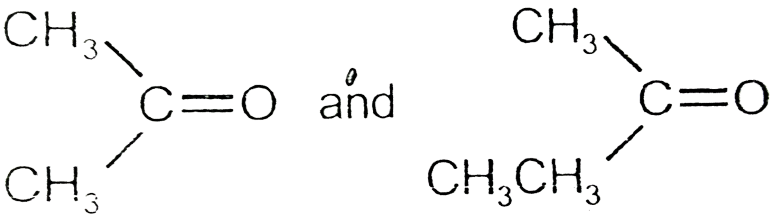
C. $CH_3 - \underset{\underset{CH_3}{|}}{CH_2}$

D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_3$

Answer: D

Watch Video Solution

49. An alkene having molecular formula C_7H_{14} was subjected to ozonolysis in the presence of zinc dust. An equimolar amount of the following two compounds was obtained.



The IUPAC name of alkene is

A. 3,4-Dimethyl-3-pentene

B. 3,4-Dimethyl-2-pentene

C. 2,3-Dimethyl-3-pentene

D. 2,3-Dimethyl-2-pentene

Answer: D

Watch Video Solution

50. Aromatic hydrocarbons undergo

A. Nucleophilic addition reactions

B. Electrophilic addition reactions

C. Electrophilic substituion reactions

D. All of these.

Answer: C

Watch Video Solution

Section B Objective Type Questions One Option Is Correct

1. What is the minimum number of carbon atoms of an alkane must have to form an isomer?

A. 2

B. 3

C. 4

D. 5

Answer: C

Watch Video Solution

2. Alkanes can be iodinated in the presence of

A. HI

B. I_2 and P

C. $I_2 + HIO_3$

D. Pl_3

Answer: C

Watch Video Solution

3. In the complete combustion of hydrocarbon (C_nH_{2n+2}) the number of oxygen molecules required per mole of hydrocarbon is

A. $\frac{n}{2}$

B. $\frac{(n+1)}{2}$

C. $\frac{(3n+1)}{2}$

D. $\left(n+\frac{1}{2}\right)$

Answer: C

Watch Video Solution

4. Highest boiling point is expected for

A. 2,2-dimethyl butane

B. 3-methyl pentane

C. 2-methyl pentane

D. n-heptane

Answer: D

Watch Video Solution

5. $(CH_3)_3CMgCl$ on reaction with D_2O produces

A. $(CH_3)_3CD$

B. $(CH_3)_3COD$

C. $(CD_3)_3CD$

D. $(CD_3)_3CD$

Answer: A

Watch Video Solution

6. Consider the following reaction:

$$CH_3\underset{\underset{D}{|}}{CH} - \underset{\underset{CH_3}{|}}{CH}CH_3 + \dot{B}r \rightarrow X + HBr$$

Identify the structure of the major products (X) from among the following :

A. $CH_3 - \underset{\underset{D}{|}}{CH} - \underset{\underset{CH_3}{|}}{CH} - \dot{C}H_2$

B. $CH_3 - \underset{\underset{D}{|}}{CH} - \underset{\underset{CH_3}{|}}{\dot{C}} - CH_3$

C. $CH_3 - \underset{\underset{D}{|}}{CH} - CH_3$

D. $CH - \dot{C}H - \underset{\underset{CH_3}{|}}{CH} - CH_3$

Answer: B

Watch Video Solution

7. In the given reaction

$$CH_3 - \overset{O}{\overset{||}{C}} - C_2H_5 \xrightarrow{X} CH_3 - CH_2 - C_2H_5$$

'X' will be

A. $LiAlH_4$

B. $NaBH_4$

C. BCl_3SnH

D. $NH_2 - NH_2/OH^-$, glycol

Answer: D

Watch Video Solution

8. 

The most suitable sequence of reagents to perform this conversion is

A. HBr then $(CH_3)_3COK/(CH_3)_3C-OH$

B. NBs then alcoholic KOH

C. HBr-peroxide then CH_3CH_2OK/CH_3CH_2OH

D. HBr-peroxide then $(CH_3)_3COK/(CH_3)_3COH$

Answer: D

Watch Video Solution

9. The compound having only primary hydrogen atoms is

A. Isobutane

B. 2,3-dimethyl butene

C. Cyclohexane

D. Propyne

Answer: B

Watch Video Solution

10. Which equation does not represent an example of Friedal-crafts reaction?

A. $C_6H_6 + C_2H_5Cl \xrightarrow[(\text{Anhy})]{AlCl_3} C_6H_5C_2H_5 + HCl$

B. $C_2H_5OH + HCl \xrightarrow{ZnCl_2} C_2H_5Cl + H_2O$

C. $C_6H_6 + CHCl_3 \xrightarrow[(\text{Anhy})]{AlCl_3} (C_6H_5)_3CH$

D. $C_6H_6 + CH_3CH_2COCl \xrightarrow[AlCl_3]{\text{Anhy}}$

Answer: B

Watch Video Solution

11. In the reactions

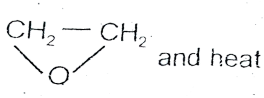
$$\begin{matrix} CH_2 \\ \| \\ CH_2 \end{matrix} \xrightarrow[\text{acid}]{\text{Hypochlorous}} M \xrightarrow{R} \begin{matrix} CH_2OH \\ | \\ CH_2OH \end{matrix}$$

M and R are respectively

A. CH_3CH_2Cl and NaOH

B. $CH_2Cl - CH_2OH$ and aq $NaHCO_3$

C. CH_3CH_2OH and HCl

D.  and heat

Answer: B

Watch Video Solution

12. Arrange the following compounds in increasing order of reactivity towards the addition of HBr

$$RCH = CHR, \overset{\overset{CH_2}{||}}{C}H_2, R_2C = CHR, R_2C = CR_2$$

A. $\overset{\overset{CH_2}{||}}{CH_2} < RCH = CHR < R_2C = CHR < R_2C = CR_2$

B. $R_2C = CHR < RCH = CHR < CH_2 = CR_2 < R_2C = CR_2$

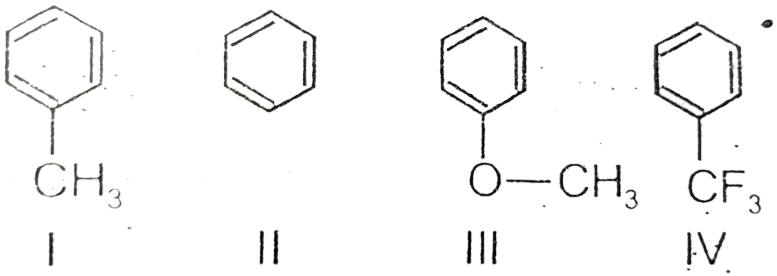
C. $R_2C = CR_2 < R_2C = CHR < RCH = CHR < CH_2 = CH_2$

D. $R_2C = CR_2 < CH_2 = CH_3 < RCH = CHR < R_2C = CHR$

Answer: A

Watch Video Solution

13. Among the following compounds, the decreasing order of reactivity towards electrophilic substitution is



A. $III > I > II > IV$

B. $IV > I > II > III$

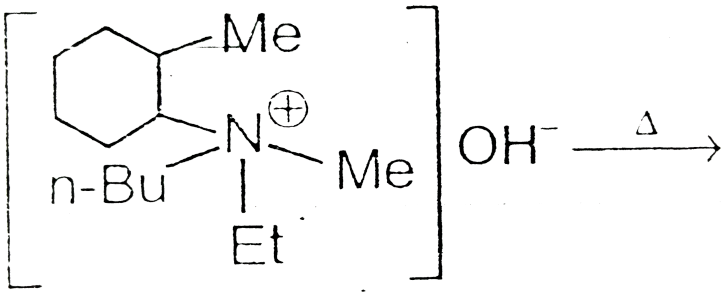
C. $I > II > III > IV$

D. $II > I > III > IV$

Answer: A

Watch Video Solution

Watch Video Solution

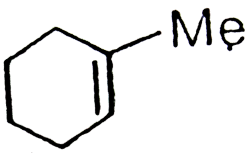


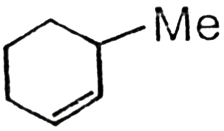
14.

The alkene formed as a major product in the above elimination reaction is

A. 

B. $\begin{matrix} CH_2 \\ \| \\ CH_2 \end{matrix}$

C. 

D. 

Answer: B

Watch Video Solution

15. HBr reacts with $CH_2 = CH - OCH_3$ under anhydrous conditions at room temperature to give?

A. CH_3CHO and CH_3OH

B. $BrCH_2CHO$ and CH_3OH

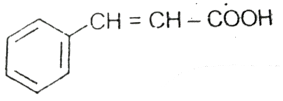
C. $BrCH_2 - CH_2 - O - CH_2$

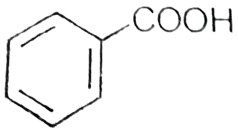
D. $H_3C - CHBr - OCH_3$

Answer: D

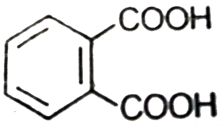
Watch Video Solution

16. Colouration of Br_2 / CCl_4 will be discharged by

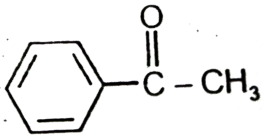
A. 

B. 

Benzoic acid

C. 

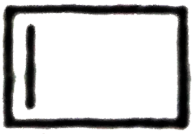
Pthalic acid

D. 

Answer: A

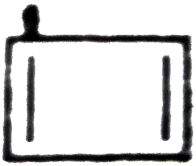
Watch Video Solution

17. $\underset{Br}{\underset{|}{CH_2}} - CH = CH - \underset{Br}{\underset{|}{CH_2}} \xrightarrow{Z\frac{n}{C}H_3OH}$ Product The predominating product is

A. 

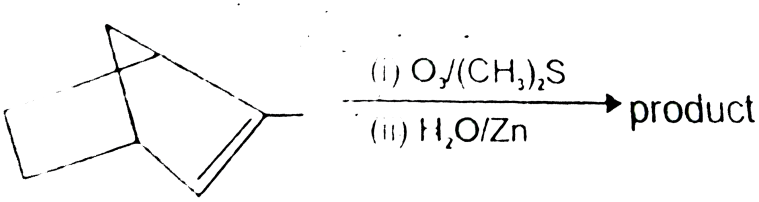
B. $CH_2 = C = C = CH_2$

C. $CH_2 = CH - CH = CH_2$

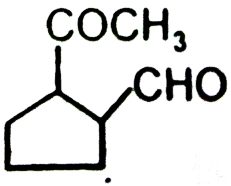
D. 

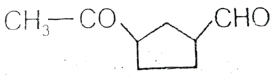
Answer: C

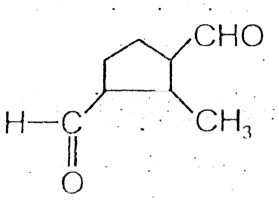
Watch Video Solution

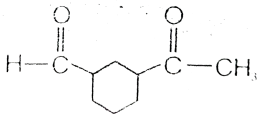
18. 

The ozonolysis product is

A. 

B. 

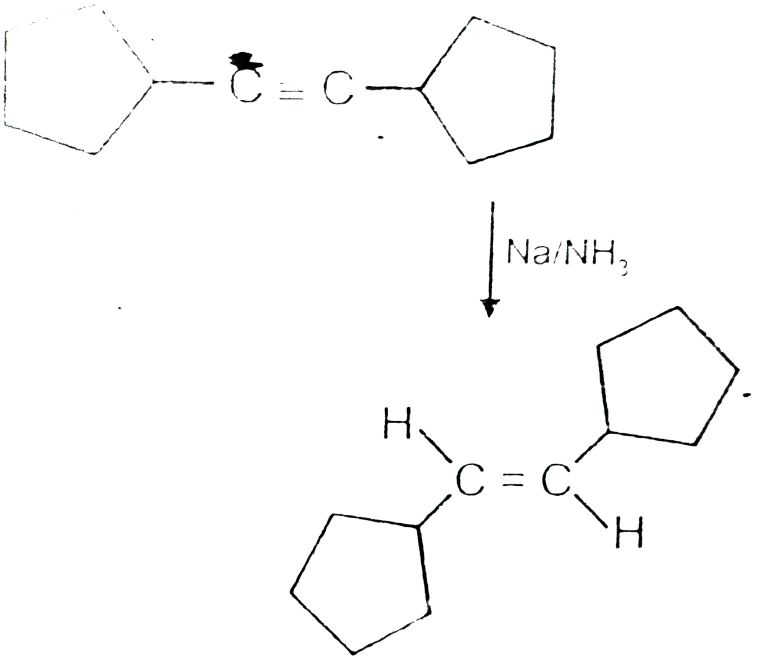
C. 

D. 

Answer: B

Watch Video Solution

19. Consider the following reaction



The reactive intermediate invovled in this reaction is

A. carbanion

B. Carbocation

C. Free radical anion

D. Free radical cation.

Answer: C

Watch Video Solution

20. Reaction of HBr with propene in the presence of peroxide gives :-

A. $CH_3 - CH - CH_2Cl$

B. $CH_3 - \overset{\oplus}{C}H + CH_3$

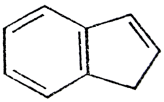
C. $CH_3 - CH_2 - \overset{\oplus}{C}H_2$

D. $CH_3 - CH_2 - \overset{+}{C}H_2$

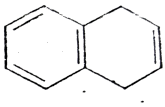
Answer: B

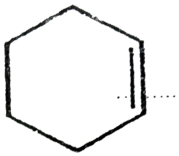
Watch Video Solution

21. Which of the following compound is most reactive towards an electrophite $\left(E^+\right)$?

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

22. The reaction is :

$$CH_3CHBr - CH_2Br + 2KOH(\text{alc.}) \xrightarrow{\Delta} CH_3 - C \equiv CH + 2KBr + 2H$$

A. Dehalogenation

B. Dehydrohalogenation

C. Decarboxytation

D. Dehydration

Answer: B

Watch Video Solution

23. Which of the following alkene in acid catalysed hydration form $2-$ methyl propan $-2-ol$?

A. $(CH_3)_2-C=CH_2$

B. $CH_3-CH=CH_2$

C. $CH_3-CH=CH-CH_3$

D. $CH_3-CH_2-CH=CH_2$

Answer: A

Watch Video Solution

24. The reaction of chlorine water with propene gives

A. $ClCH_2 - CH(OH)CH_3$

B. $CH_2(OH)CH(Cl)CH_3$

C. $ClCH_2CH_2CH_2OH$

D. $ClCH(OH)CH_2CH_3ClCH(OH)CH_2CH_3$

Answer: A

Watch Video Solution

25. Point out A in the given reaction sequence

$$A \xrightarrow{O_3/H_2O_2} B \xrightarrow{\Delta} 2CH_3COOH + CO_2$$

A. 

B. 

C. 

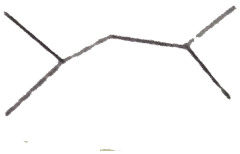
D. 

Answer: C

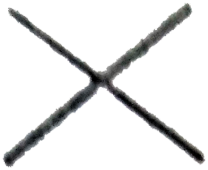
Watch Video Solution

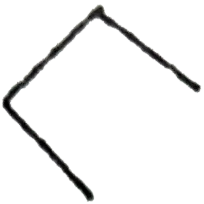
Section C Objective Type Questions More Than One Options Are Correct

1. Which of the folloiwng alkanes will give more than one monochloro product?

A. 

B. 

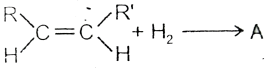
C. 

D. 

Answer: A::B

Watch Video Solution

2. In which of the following cases product will contain more number of carbon atoms than do present in reactant molecule?

A. 

B. $RCOOK + OH^- \xrightarrow[CaO]{\text{heat}} B$

C. $RCOOK + H_2O \xrightarrow{\text{Electrolysis}} C$

D. $RX + Na \xrightarrow{Dryether} D$

Answer: C::D

Watch Video Solution

3. Which of the following name reaction is used to prepare alkane containing new carbon-carbon bond?

A. Wurtz reaction

B. Corey House synthesis

C. Sabatier and Senderens reaction

D. Clemmensen's reduction

Answer: A::B

Watch Video Solution

4. The photochemical chlorination of paraffins occurs by a free radical mechanism. From the following set of reactions pick out the chain propogation steps.

A. $Cl_2 \xrightarrow{hv} 2Cl$

B. $CH_4 + Cl \rightarrow CH_3 + HCl$

C. $H_3C + Cl_2 \rightarrow H_3C - Cl + Cl$

D. $Cl + Cl \rightarrow Cl_2$

Answer: B::C

Watch Video Solution

5. The concentration aqueous solution of potassium salts of acetic acid and propanoic acid are electrolysed. Which of the following hydrocarbons is/are produced ?

A. $CH_3CH_2CH_2CH_2CH_3$

B. $CH_3CH_2CH_2CH_3$

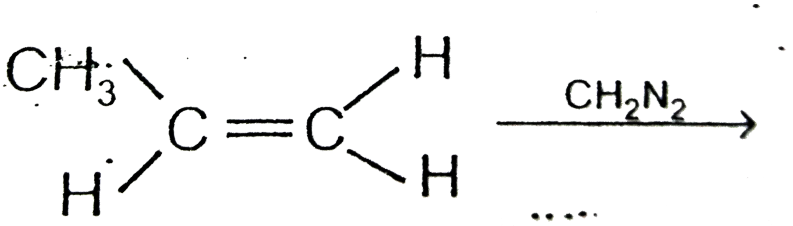
C. $CH_3CH_2CH_3$

D. CH_3CH_3

Answer: B::C::D

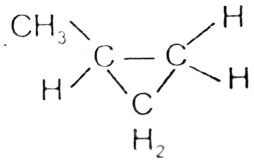
Watch Video Solution

6. Predict the product of tiven reaction

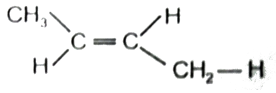


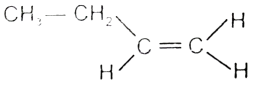
A. $CH_3CH_2CH_2CH_3$

B.



C.



D. 

Answer: B::C::D

Watch Video Solution

7. Which of the following reagents on reaction with acetylene yeild same product?

A. $O_3 / H_2O + H^+$

B. $KMnO_4 / OH^- / H_2O$ (cold)

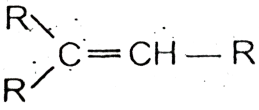
C. SeO_2

D. $O_3 + Zn + H_2O$

Answer: B::C::D

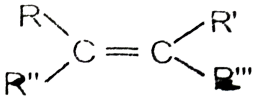
Watch Video Solution

8. In which of the following case product case product of oxidative and reductive ozonolysis is/are different?

A. 

B. C_6H_{10} (Cyclohexene)

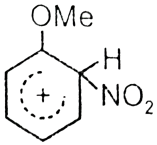
C. $CH_2 = CH_2$

D. 

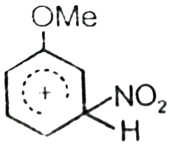
Answer: A::B::C

Watch Video Solution

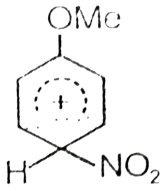
9. Structures of σ-complex formed during nitration of Anisole would be

A. (a) 

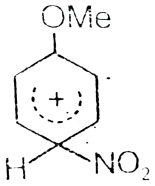
B. (b)



C. (c)



D. (d)

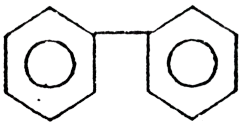


Answer: A::C

Watch Video Solution

10. Which of the following reagents can be used to prepare 2-butyne by simple organic transformations?

A.



B. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_3$

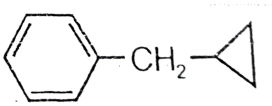
C. $CH_3CH_2 - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - CH_3$

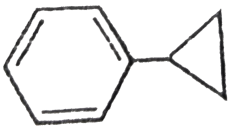
D. $CH_3 - CCl_3$

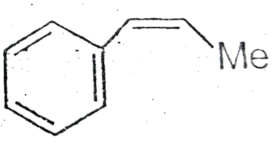
Answer: B::C::D

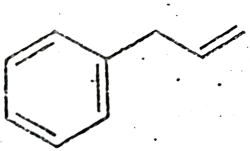
Watch Video Solution

11. Friedel-Crafts alkylation is expected to proceed through carbocationic intermediate. What would be the alkylation products when Benzene reacts with cyclopropyl chloride under the presence of anhydrous $AlCl_3$?

A. 

B. 

C. 

D. 

Answer: B::D

Watch Video Solution

12. Which of the following statements is/are correct regarding catalytic hydrogenation?

A. It is an exothermic reaction

B. It is syn addition

C. Reactive intemediate is carbocation

D. Reactive intermediate is free radical.

Answer: A::B

Watch Video Solution

Section D Linked Comprehension Type Questions

1. It we see the reaction of methane with halogen, the rate determining step for chlorination is, endothermic reaction of the chlorine atom with methane to form methyl radical and a molecule of HCl. So free radical is the intermediate of the reaction. Formation of free radical depends upon the energy required to break a bond between a hydrogen atom and a carbon atom. Chlorination of propane and Bromination of propane. when compared it is found that bromination is more selective than chlorination. The probability factor for $3^{\circ}, 2^{\circ}, 1^{\circ} H$ atom is $5.0: 3.8: 1.0$ at $25^{\circ} C$ for chlorination.

Isobutane when reacts with chlorine in presence of ultra violet radiations yield 2 products primary hydrogen substituted and 3° hydrogen substituted Find their % in product mixture

A. 64% 36%

B. 72% 28%

C. 36% 64%

D. 30% 70%

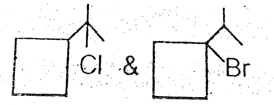
Answer: A

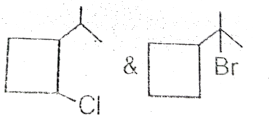
Watch Video Solution

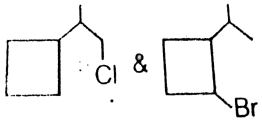
2. If we see the reaction of methane with halogen, the rate determining step for chlorination is, endothermic reaction of the chlorine atom with methane to form methyl radical and a molecule of HCl. So free radical is the intermediate of the reaction. Formation of free radical depends upon the energy required to break a bond between a hydrogen atom and a carbon atom. Chlorination of propane and Bromination of propane. when compared it is found that bromination is more selective than chlorination. The probability factor for $3^{\circ}, 2^{\circ}, 1^{\circ} H$ atom is $5.0: 3.8: 1.0$ at $25^{\circ} C$ for chlorination.

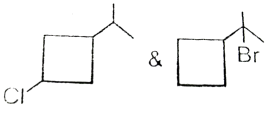
Isobutane when reacts with chlorine in presence of ultra violet radiations

yield 2 products primary hydrogen substituted and 3° hydrogen substituted Find their % in product mixture

A. 

B. 

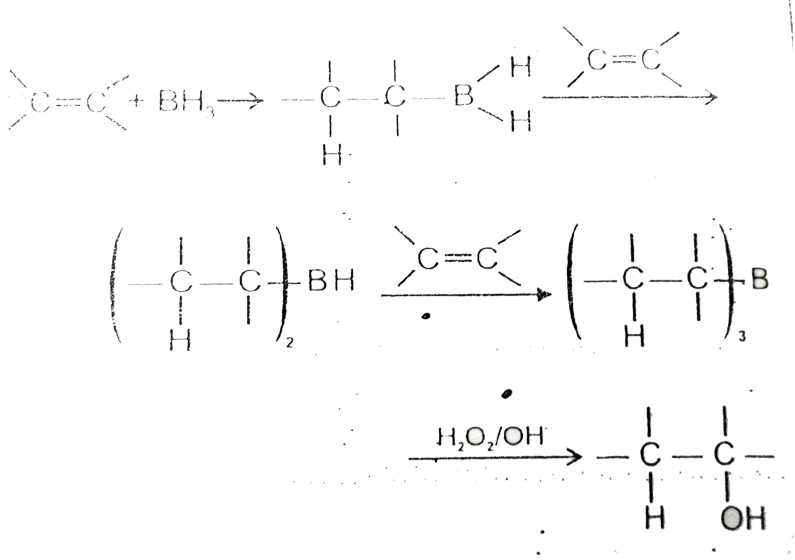
C. 

D. 

Answer: C

Watch Video Solution

3. Addition of water molecule across double bond to yield Antimarkownikov's product. Can be accomplished by Hydroboration followed by oxidation. Reaction follows as:



Product of hydroboration oxidation of 1-methyl cyclopentene is

A. cis-1-methyl cyclopentanol

B. cis-2-methyl cyclopentanol

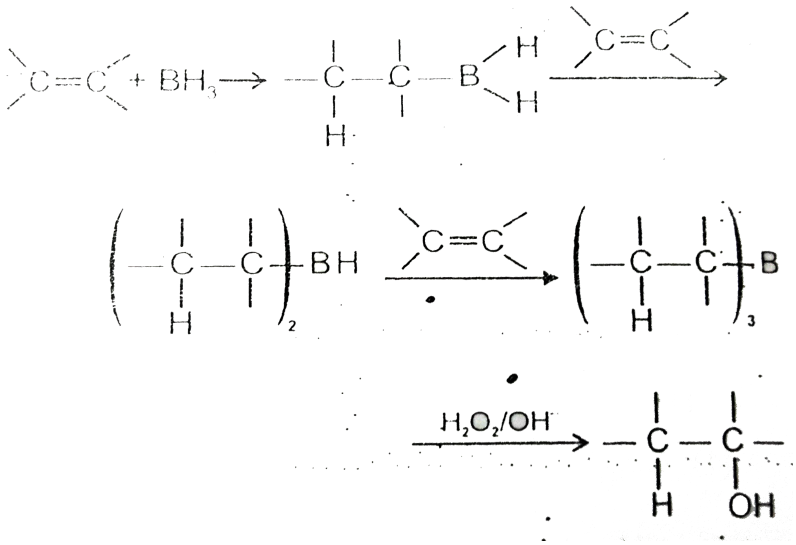
C. trans-1-methyl cyclopentanol

D. trans-2-methyl cyclopentanol

Answer: D

Watch Video Solution

4. Addition of water molecule across double bond to yield Antimarkownikov's product. Can be accomplished by Hydroboration followed by oxidation. Reaction follows as:



Which of the following statement is true about the given reaction?

A. Hydroboration step of the reaction proceed through Markovikoff's additions

B. The reaction is neither stereoselective nor regioselective

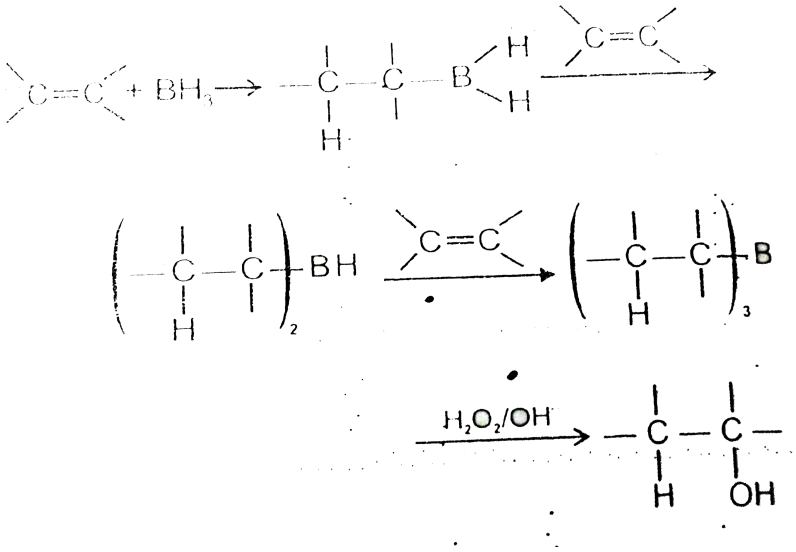
C. It is stereoselective but non regioselective

D. Hydroboration step of the reaction proceeds through Anti-markovnikoff's addition.

Answer: A

Watch Video Solution

5. Addition of water molecule across double bond to yield Antimarkownikov's product can be accomplished by Hydroboration followed by oxidation. Reaction follows as:



BH_3 is behaving as

A. Electrophile

B. Nucleophile

C. Catalyst

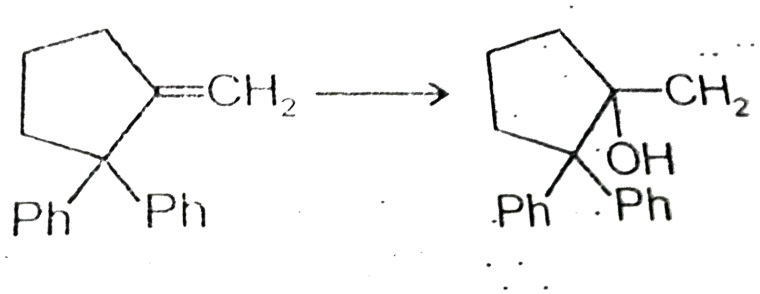
D. Substrate

Answer: A

Watch Video Solution

6. Hydration reaction of alkene is catalyzed by dilute acid. Selection of acid is important . Conjugate base of the acid should not interfere in the reaction. There are other means by which alkenes can be converted to alcohols. Oxymercuration demercuration gives Markovnikoff's alcohols while hydroboration oxidation give Anti Markovnikoff's alcohol.

The reagent required to perform the given transformation is



A. H_2SO_4 / H_2O

B. HCl / H_2O

C. $Hg(OAc)_2 / H_2O$ then $NaBH_4$

D. BH_3 / THF then OH / H_2O_2

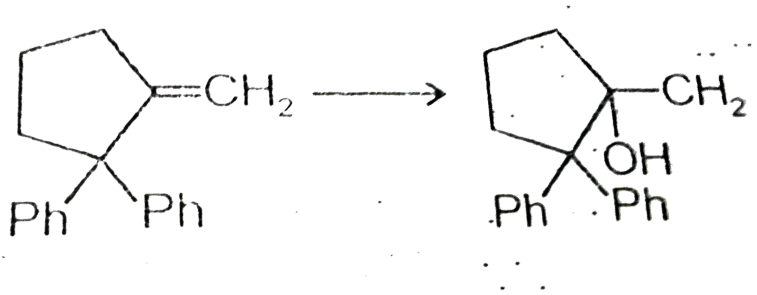
Answer: C

Watch Video Solution

7. Hydration reaction of alkene is catalyzed by dilute acid. Selection of acid is important . Conjugate base of the acid should not interfere in the reaction. There are other means by which alkenes can be converted to alcohols. Oxymercuration demercuration gives Markovnikoff's alcohols

while hydroboration oxidation give Anti Markovnikoff's alcohol.

The reagent required to perform the given transformation is



A. HBr / H_2O

B. H_2SO_4 / H_2O

C. H_3PO_4 / H_2O

D. $Hg(Oac) / H_2O$ then $NaBH_4$

Answer: A

Watch Video Solution

Section E Assertion Reason Type Questions

1. Statement-1: Alkynes are more reactive than alkene towards HBr

and Statement-2: Alkynes have higher degree of unsaturation than alkenes.

Watch Video Solution

2. Statement-1: n-pentane has higher boiling point than neopentane

and

Statement-2: Larger surface area is responsible for greater van der Waal's force of attraction.

Watch Video Solution

3. Statement-1: Addition of HBr of $CH_2 = CH - NO_2$ follows anti-Markovnikoff's rule

and

Statement-2: Electron withdrawing NO_2 group destabilizes carbocation on the adjacent carbon.

Watch Video Solution

4. Statement-1: Hydroboration by oxidation of propene gives anti-Markovnikoff's alcohol.

and

Statement-2: Hydroboration reaction proceeds through Markovnikoff's addition

Watch Video Solution

5. Statement-1: Ethyne is stronger acid than ethene.

and

Statement-2 Introduction of alkyl group activates benzene ring

A. (a) Statement-1 is True , Statement-2 is True , Statement-2 is a correct explanation for Statement-2

B. (b) Statement-1 is True , Statement-2 is True , Statement-2 is NOT a correct explanation for Statement-2

C. (c) Statement-1 is True , Statement-2 is False

D. (d) Statement-1 is False , Statement-2 is True

Answer: C

Watch Video Solution

6. Statement-1: In Friedel-Craft's acylation reaction multiple acyclation product is obtained

and Statement-2 Introduction of alkyl group activates benzene ring.

Watch Video Solution

7. Statement-1: Vinyl chloride is more reactive than ethylene.

and

Statement-2: Addition of HBr on vinyl chloride follows Markovnikoff's addition.

(a) Statement-1 is true, Statement-2 is true, Statement-2 is a correct

explanation for Statement-1

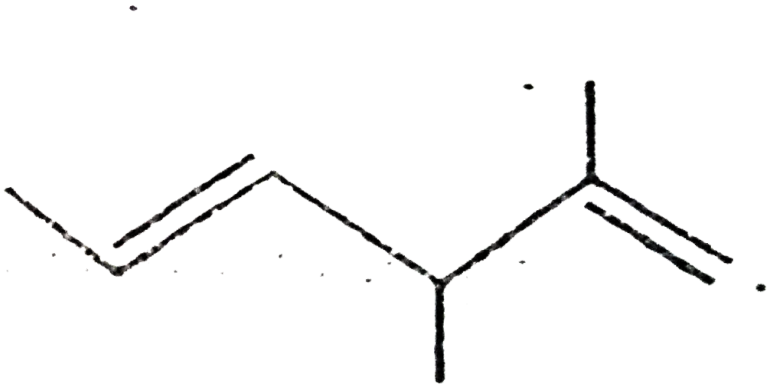
(b) Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for Statement -1

(c) Statement -1 is true, Statement -2 is false

(d) Statement -1 is false, Statement -2 is true

Watch Video Solution

8. Statement-1: Acid catalyzed hydration of (1) involves rearrangement



and

Statement-2 The formed intermediate has potential for rearrangement.

Watch Video Solution

9. Statement-1: Among isomeric pentanes 2,2-dimethyl propane has highest melting point

and

Statement-2: Due to lowest surface area it will involve weakest van der Waal's interaction.

Watch Video Solution

Section F Matrix Match Type Questions

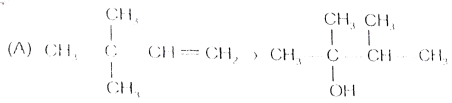
1. Match the given compound in Column -I to their total possible monohalogenated product (number) in Column-II (excluding stereoisomers)

Column-I	Column-II
(A) 2 methyl butane	(p) 1
(B) Toluene	(q) 3
(C) 2-methyl propane	(r) 4
(D) 2, 2-dimethylpropane	(s) 2

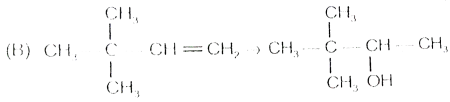
Watch Video Solution

2. Match the reaction given in Column-I to its name in Column-II

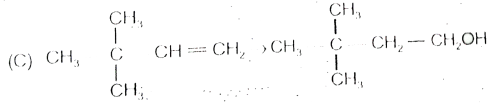
Column-I

(A) 

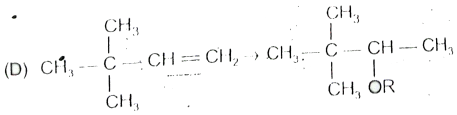
(p) Oxymercuration-demercuration

(B) 

(q) Alkoxymercuration-demercuratio

(C) 

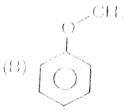
(r) Acid catalysed hydration

(D) 

(s) Hydroboration oxidation

Watch Video Solution

3. Match the following

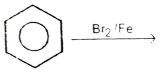
Column-I (Compounds)	Column-II (Effect exerted by substituent)
(A) 	(p) –I effect
(B) 	(q) Deactivating group
(C) 	(r) + R effect
(D) 	(s) Activating group

Watch Video Solution

4. Determine the concentration of NH_3 solution whose one litre can dissolve 0.10 mole AgCl. K_{sp} of AgCl and K_f of $Ag(NH_3)_2^+$ are $1.0 \times 10^{-10} M^2$ and $1.6 \times 10^7 M^{-2}$ respectively.

Watch Video Solution

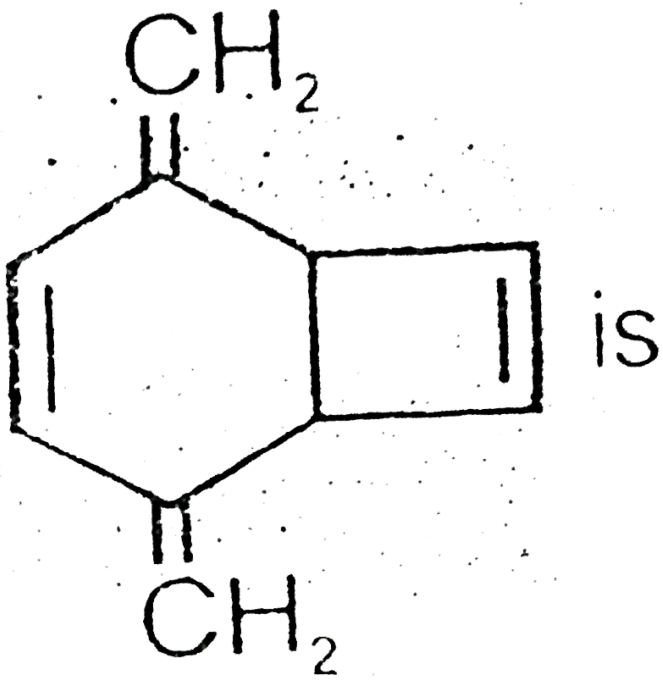
5. Match the following

Column-I	Column-II
(A) $CH_3-C\equiv CH \xrightarrow{Hg^{+2}/H^+}$	(p) Electrophilic addition
(B) $CH_3-\underset{\displaystyle CH_3}{\underset{\vert}{CH}}-CH=CH_2 \xrightarrow{HCl}$	(q) Nucleophilic addition
(C) 	(r) Rearrangement takes place
(D) $CH_3-\underset{\displaystyle CH_3}{\underset{\displaystyle CH_3}{\underset{\vert}{\overset{\vert}{C}}}}-CH_2-Cl \xrightarrow{OH^-(aq)}$	(s) Carbocation is formed

Watch Video Solution

Section G Integer Answer Type Questions

1. The unsaturation factor of



is

Watch Video Solution

2. Total number of isomeric alkene possible with compound having molecular formula C_4H_8 is

Watch Video Solution

Section H Multiple True False Type Questions

1. Statement-1: Benzene can decolourise Baeyer's reagent

Statement-2: CO_2 can never be formed by reductive ozonolysis of hydrocarbons.

Statement-3: Acetylene forms musturd gas with sulphurmonochloride

A. T T T

B. F F T

C. F F F

D. T T F

Answer: C

Watch Video Solution

2. Statement-1: Ethyne is more reactive than ethene towards hydrogenation

Statement-2: H_2 in presence of Lindlar catalyst is more reactive than H_2 with Pd in hydrogenation reaction

Statement-3: Dipole moment of o-xylene is greater than m-xylene

A. T F T

B. F T F

C. F F T

D. T T F

Answer: A

Watch Video Solution

Section I Subjective Questions

1. During pyrolysis of alkanesC-C bonds break rather than C-H bonds Why?

Watch Video Solution

2. Propane is brominated in presence of UV light. All the isomeric product formed, if brought under Wurtz's syntheis, what products are expected?

Watch Video Solution

3. Phenyl subsituted hydrocarbon (A) molecular mass 120 on monobromination can give 3 isomeric products only Major product (B) on treatment with sodium gives (C). Find (A) (B) and (C)

Watch Video Solution

4. Write all the products obtained by treatment of n-hexane with diazomethane.

Watch Video Solution

5. Three compounds A,B and C all have molecular formula C_5H_8 All the compound rapidly decolourise Br_2 in CCl_4. All three give a position test

with Baeyer's reagent. And all the three are soluble in cold conc. H_2SO_4. Compound A gives a precipitate when treated with ammonical $AgNO_3$ solution. but compounds B and C do not compounds A and B both yield pentane (C_5H_{12}) when they are treated with excess H_2 in the presence of Pt catalyst. Under these conditions, compound C absorbs only one mole of H_2 and gives a product with the formula C_5H_{10} On oxidation with hot acidified KMnO_4, B gave acetic acid and CH_3CH_2COOH. Identify compounds A, B, and C.

Watch Video Solution

6. An organic compound (A) of molecular formula C_5H_8 when treated with Na in liquid ammonia followed by reaction with -Propyl iodide yeidls (B) C_8H_{12} (A) gives a ketone $C_5H_{10}O$ (e) when treated with dil H_2SO_4 and $HgSO_4$ (B) on oxidation with alkaline $KMnO_4$ gives two isomeric acids (D) and (E) $C_4H_8O_2$. Give structures of compounds (A) to (E) with proper reasoning .

Watch Video Solution

7. A certain compound 'A' has a molecular formula $C_5H_{11}Br$. It reacts with Mg metal in anhydrous ether to form compound B which upon hydrolysis gives n-pentane when compound A was reacted with na metal in dry ether gave 4,5- dimethyl octane. What is A B and draw their structures?

Watch Video Solution

8. The hydrocarbon [A] adds one mole of hydrogen in the presence of a platinum catalyst to form n-hexane. When [A] is oxidised vigorously with $KMnO_4$, a single carboxylic acid containing three carbon atoms is isolated. Give the strucure of [A] and explain the reactions.

Watch Video Solution

9. The melting points and boiling points for two C_8H_{18} isomers are given Explain why $CH_3(CH_2)_6CH_3$ has a lower melting point but higher

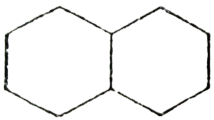
boiling point

	mp (°C)	bp (°C)
	– 57	126
	102	106

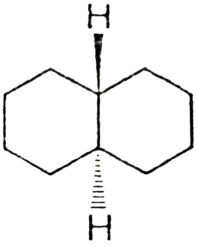
Watch Video Solution

Section J Aakash Challengers Questions

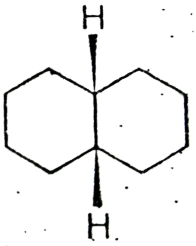
1. Decalin is an example of fused bicyclic systems where two six membered rings share common C-C bond. There are two possible arrangements : trans and cis-decalin.



Decalin



Trans-decalin



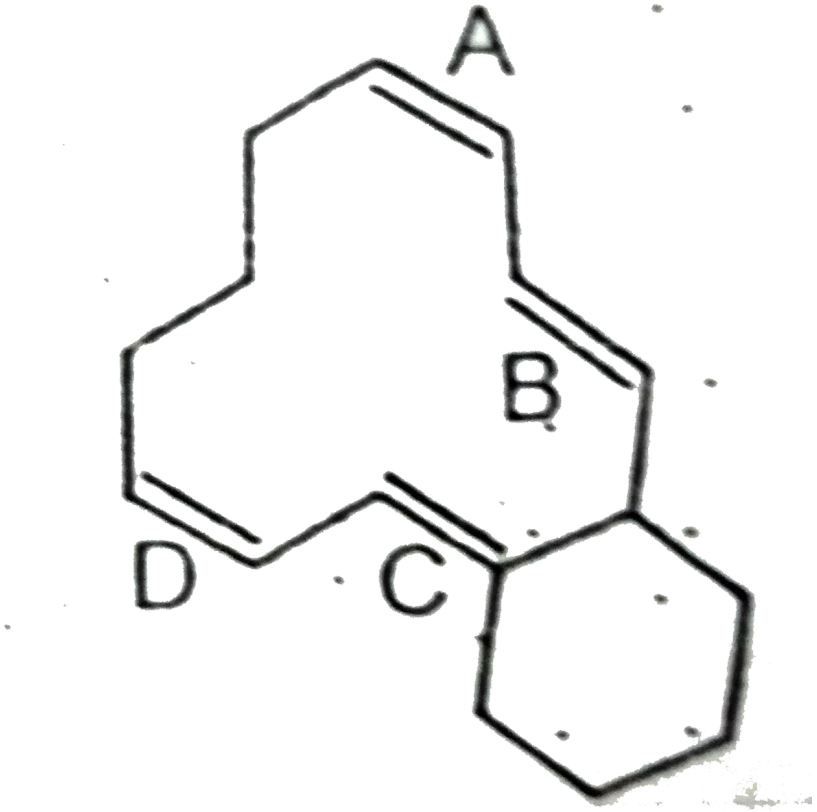
Cis-decalin

(i) Draw cis and trans decalin using the chair form for these species

(ii) Which isomer is more stable? Give explanation.

Watch Video Solution

2. Which double bond in the given molecule is most reactive towards an electrophile?



A. (1) A

B. (2) B

C. (3) C

D. (4) D

Answer: 4

Watch Video Solution

3. What product would be obtained from the reaction of cyclopropane with Cl_2 in the presence of $FeCl_3$?

A. 1,2-dichloropropane

B. 1,2-dichlorocyclopropane

C. 1,3-dichloropropane

D. 1,1-dichlropropane

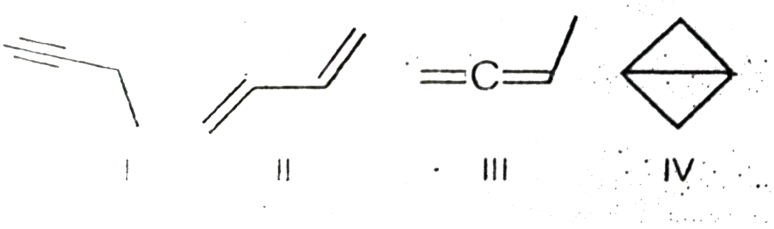
Answer: 3

Watch Video Solution

4. Assuming that no rearrangement is taking place, then how many hydrocarbons are obtained from the reaction of 2-chloropentane with isopropyl chloride in the presence of sodium. Do not include stereoisomers.

Watch Video Solution

5. Arrangte the following hydrocarbons in the increasing order of enthalpy of combustion.



Watch Video Solution

Try Yourself

1. What is the state of hybridization of carbon in butane?

Watch Video Solution

2. What is the type of bond present between the two carbon atoms in ethane?

Watch Video Solution

3. What is the common name of the compound given below?

$$CH_3 - CH_2 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$$

Watch Video Solution

4. Write the common name of the given compound.

$$CH_3 - \overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}} - CH_2 - CH_2 - CH_3$$

Watch Video Solution

5. Write the structure of 3,5,7-Trimethyl decane.

Watch Video Solution

6. Write the name of the given compound

$$CH_3 - CH_2 - CH_2 - \underset{\underset{\underset{CH_3}{|}}{CH - CH_3}}{\overset{|}{C}} H - CH_2 - CH_2 - \overset{CH_3}{\overset{|}{C}} H - CH_3$$

Watch Video Solution

7. Complete the following reaction $CH_3 - \underset{CH_3}{\overset{|}{C}} = CH - CH_3 \xrightarrow{H_2, Ni} ?$

Watch Video Solution

8. Sodium salt of which acid will be needed for the the preparation of butane? Write chemical equation for the reaction.

Watch Video Solution

9. How butane can be obtained from salt of propanoic acid? Give equation.

Watch Video Solution

10. What is the mechanism involved in the halogenation reaction of alkanes?

Watch Video Solution

11. What is the mechanism involved in the halogenation reaction of alkanes?

Watch Video Solution

12. What will be product in the following reaction

$CH_3 - CH_2 - CH_2 - CH_3 \xrightarrow{KMnO_4}$?

Watch Video Solution

13. How can propane be oxidized to propionic acid?

Watch Video Solution

14. What is the energy difference between the staggered and eclipsed conformations of ethane?

Watch Video Solution

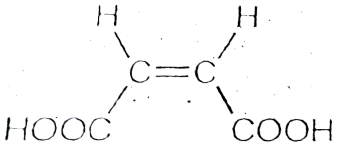
15. What is the number of sigma (σ) bonds and pi (π) bonds in 4-Ethyl-2,5,7-decatriene?

Watch Video Solution

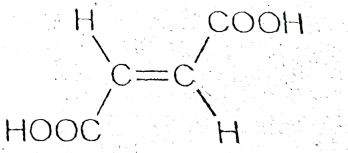
16. Why alkenes are known as olefins?

Watch Video Solution

17. Which isomer is expected to have a higher melting point?



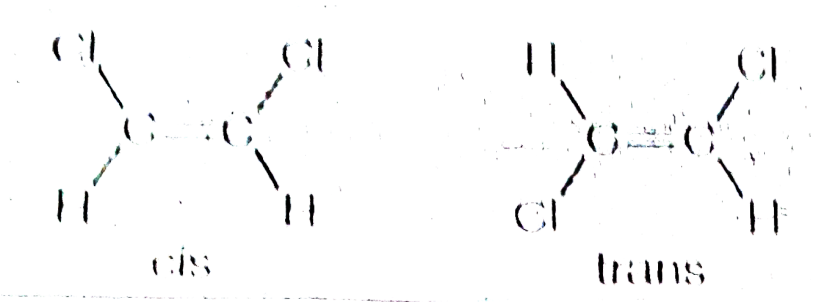
Maleic acid (cis)



Fumaric acid (trans)

Watch Video Solution

18. Which isomer will have a higher boiling point?



Watch Video Solution

19. $H_3C - C \equiv C - CH_3 \xrightarrow{Na/Liq.NH_3} X$ In the above reaction X is

Watch Video Solution

20. Arrange the given alkyl halides in the order of decreasing rate of dehydrohalogenation reaction i.e., when heated in presence of alc. KOH

$CH_3 - CH_2 - Cl, CH_3 - CH_2 - Br, CH_3 - CH_2 - I$

Watch Video Solution

21. Through which mechanism does HBr undergo reaction with unsymmetrical alkenes?

Watch Video Solution

22. Why do alkenes show addition reactions?

Watch Video Solution

23. Complete the given reaction of alkene with $KMnO_4$ in different condition.

(i) $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{C} = CH_2 \xrightarrow[273K]{\text{Alkaline}KMnO_4}$

Watch Video Solution

24. Addition of water to alkenes in presence of conc. H_2SO_4 produces alcohol Which rule is followed in this reaction?

Watch Video Solution

25. What is the unit called from which polymers are made?

Watch Video Solution

26. What is the monomer used in the manufacture of TV cabinets?

Watch Video Solution

27. How many sigma bonds and pi bonds are there in the compound pent-1-yne?

Watch Video Solution

28. Which is the first stable member of alkyne series and what is its common name?

Watch Video Solution

Watch Video Solution

29. Which polymer is used as electrodes in batteries?

Watch Video Solution

30. How many moles of dihydrogen is required for one mole of ethyne to convert it into a saturated compound ?

Watch Video Solution

31. What is the type of isomerism shown by dichlorobenzene ?

Watch Video Solution

32. How many oxygen atoms are required to form ozonide in benzene ?

Watch Video Solution

33. Which p - orbital froms π - bond ?

Watch Video Solution

34. Benzene's extraordinary stability is related to

A. the presence of alternate single and double bond

B. the planar hexagonal structure

C. an extended π system in which the electrons are symmetrical delocalised over all six carbon atoms

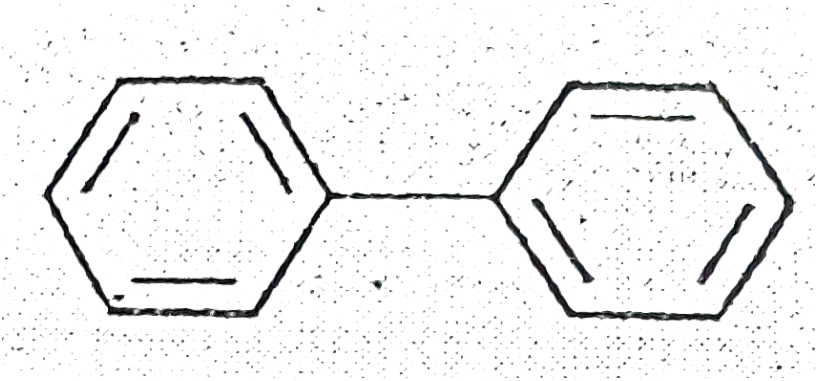
D. its symmetrical structure

Answer:

Watch Video Solution

35. What is the product obtained when sodium benzoate is subjected to decarboxylation ?

Watch Video Solution

36. 

State whether the given compound is aromatic or not.

Watch Video Solution

37. What is the common name of benzene hexachloride ?

Watch Video Solution

38. How many moles of CO_2 is produced when one mole of benzene undergoes combustion ?

Watch Video Solution

39. What is the state of hybridization of carbon in butane?

Watch Video Solution

40. What is the type of bond present between the two carbon atoms in ethane?

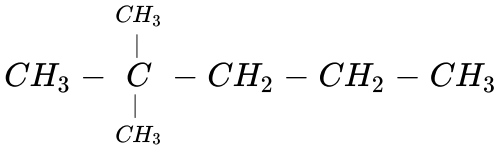
Watch Video Solution

41. What is the common name of the compound given below?

$$CH_3 - CH_2 - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_3$$

Watch Video Solution

42. Write the common name of the given compound.

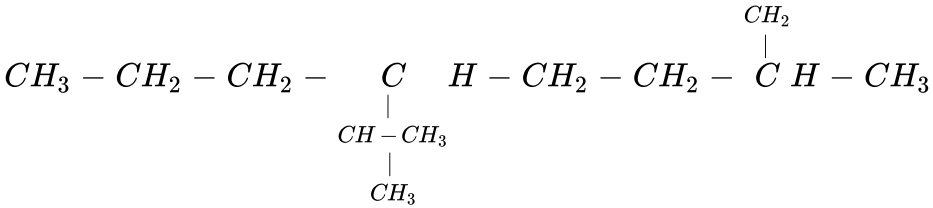


Watch Video Solution

43. Write the structure of 3,5,7-Trimethyl decane.

Watch Video Solution

44. Write the name of the given compound



Watch Video Solution

45. Complete the following reaction $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3 \xrightarrow{H_2, Ni}$?

Watch Video Solution

46. What is used as a medium in Wurtz reaction ?

Watch Video Solution

47. Sodium salt of which acid will be needed for the preparation of propane ? Write chemical equation for the reaction.

Watch Video Solution

48. How butane can be obtained from salt of propanoic acid? Give equation.

Watch Video Solution

49. What is the mechanism involved in the halogenation reaction of alkanes?

Watch Video Solution

50. How does the chain termination occurs in the halogenation reaction of alkanes?

Watch Video Solution

51. What will be product in the following reaction

$CH_3 - CH_2 - CH_2 - CH_3 \xrightarrow{KMnO_4}$?

Watch Video Solution

52. How can propane be oxidized to propionic acid?

Watch Video Solution

53. What is the energy difference between the staggered and eclipsed conformations of ethane?

Watch Video Solution

54. How many sawhorse projections of ethane are possible ?

Watch Video Solution

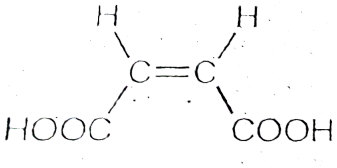
55. What is the number of sigma (σ) bonds and pi (π) bonds in 4-Ethyl-2,5,7-decatriene?

Watch Video Solution

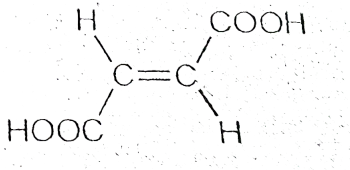
56. Why alkenes are known as olefins?

Watch Video Solution

57. Which isomer is expected to have a higher melting point?



Maleic acid (cis)

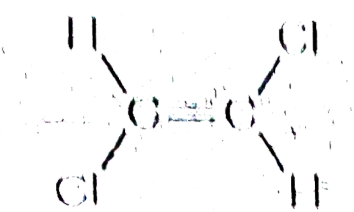


Fumaric acid (trans)

Watch Video Solution

58. Which isomer will have a higher boiling point?


cis


trans

Watch Video Solution

59. Complete the reaction

$$\underset{\text{But-2-yne}}{CH_3 - C \equiv C - CH_3} \xrightarrow[H_2]{Na/liq.NH_3} ?$$

Watch Video Solution

60. Arrange the given alkyl halides in the order of decreasing rate of dehydrohalogenation reaction i.e., when heated in presence of alc. KOH

$CH_3 - CH_2 - Cl, CH_3 - CH_2 - Br, CH_3 - CH_2 - I$

Watch Video Solution

61. Through which mechanism does HBr undergo reaction with unsymmetrical alkenes?

Watch Video Solution

62. Why do alkenes show addition reactions?

Watch Video Solution

63. Complete the given reaction of alkene with $KMnO_4$ in different condition.

(i) $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{C} = CH_2 \xrightarrow[273K]{\text{Alkaline}KMnO_4}$

Watch Video Solution

64. Addition of water to alkenes in presence of conc. H_2SO_4 produces alcohol Which rule is followed in this reaction?

Watch Video Solution

65. What is the unit called from which polymers are made?

Watch Video Solution

66. What is the monomer used in the manufacture of TV cabinets?

Watch Video Solution

67. How many sigma bonds and pi bonds are there in the compound pent-1-yne?

Watch Video Solution

68. Which is the first stable member of alkyne series and what is its common name?

Watch Video Solution

69. Which polymer is used as electrodes in batteries?

Watch Video Solution

70. How many moles of dihydrogen is required for one mole of ethyne to convert it into a saturated compound ?

Watch Video Solution

71. What is the type of isomerism shown by dichlorobenzene ?

Watch Video Solution

72. How many oxygen atoms are required to form ozonide in benzene ?

Watch Video Solution

73. Which p - orbital froms π - bond ?

Watch Video Solution

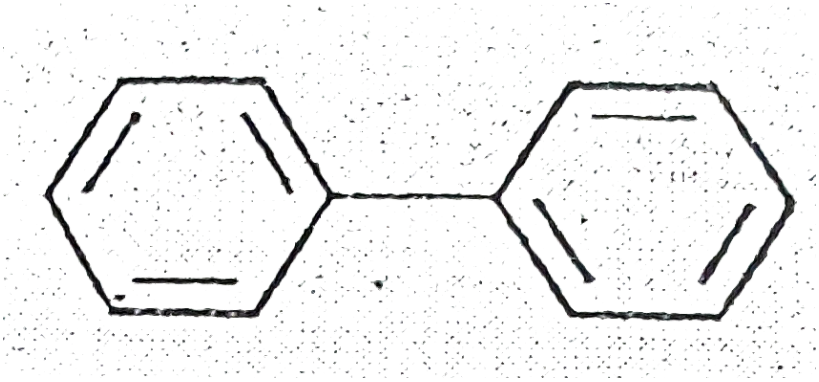
74. What accounts for the unusual stablitiy of the benzene ring ?

View Text Solution

75. What is the product obtained when sodium benzoate is subjected to decarboxylation ?

Watch Video Solution

76.



State whether the given compound is aromatic or not.

Watch Video Solution

77. What is the common name of benzene hexachloride ?

Watch Video Solution

78. How many moles of CO_2 is produced when one mole of benzene undergoes combustion ?

Watch Video Solution

Exercise

1. Which of the following reaction will not give methane?

A. $CH_3COONa \xrightarrow[\Delta]{NaOH+CaO}$

B. $BeC_2 + H_2O \xrightarrow{\Delta}$

C. $Al_4C_3 + H_2O \xrightarrow{\Delta}$

D. All of those

Answer: 2

Watch Video Solution

2. Which of the following isomer having molecular formula C_6H_{14} will give minimum number of mono-chloro derivatives?

A. Hexane

B. 2-Methylpentane

C. 3-Methylpentane

D. 2, 3-Dimethyl butane

Answer: 4

Watch Video Solution

3. Methane cannot be prepared by

A. Corey-house synthesis

B. Wurtz reaction

C. Fittig reaction

D. All of these

Answer: 4

Watch Video Solution

4. Which of the following alkane is not liquid at room temperature?

A. C_5H_{12}

B. $C_{17}H_{36}$

C. $C_{10}H_{22}$

D. C_4H_{10}

Answer: 4

Watch Video Solution

5. Which of the following compound can form during the free radical chlorination of methane?

A. CH_3Cl

B. C_2H_6

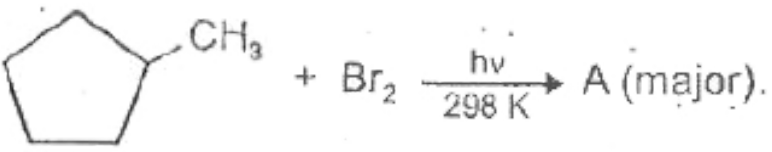
C. CCl_4

D. All of these

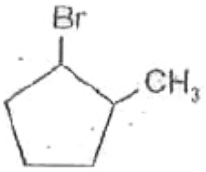
Answer: 4

Watch Video Solution

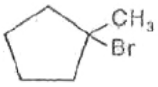
6. Identify A

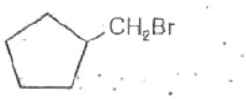


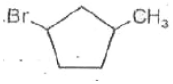
A.



B.



C. 

D. 

Answer: 2

Watch Video Solution

7. Which of the following reaction cannot be used for the preparation of alkane?

A. Corey-House synthesis

B. Frankland reaction

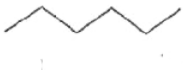
C. Clemmenson's reduction

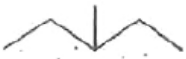
D. Aromatization

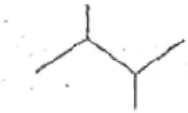
Answer: 4

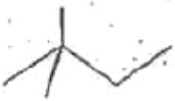
Watch Video Solution

8. Which of the following has maximum boiling point?

A. 

B. 

C. 

D. 

Answer: 1

Watch Video Solution

9. Which of the following halogens is the most reactive?

A. F_2

B. Cl_2

C. Br_2

D. I_2

Answer: 1

Watch Video Solution

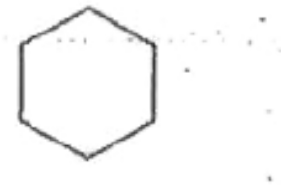
10. Which of the following alkane upon dichlorination can give only two products ?

A. $CH_3 - CH_2 - CH_3$

B. CH_4

C. $C(CH_3)_4$

D.

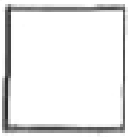


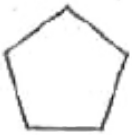
Answer: 3

Watch Video Solution

11. Which of the following has maximum angle strain ?

A. 

B. 

C. 

D. 

Answer: 1

Watch Video Solution

12. Total number of conformations possible in cyclohexane is

A. Zero

B. Infinite

C. Four

D. Two

Answer: 2

Watch Video Solution

13. Conformations arise due to rotation around

A. Carbon-Carbon double bond

B. Carbon-Carbon triple bond

C. Carbon-Carbon single bond

D. All of these

Answer: 3

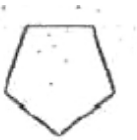
Watch Video Solution

14. Which of the following is the most stable cycloalkane ?

A. 

B. 

C. 

D. 

Answer: 1

Watch Video Solution

15. Bond angle in chair form of cyclohexane is

A. $109^\circ 28'$

B. 120°

C. 60°

D. 108°

Answer: 1

Watch Video Solution

16. Most stable conformation of n-butane is :

A. Gauche-form

B. Partially eclipsed form

C. Anti-form

D. Eclipsed form

Answer: 3

Watch Video Solution

17. Torsion strain is the repulsive interaction between

A. Electron cloud of two bonds

B. Electron cloud of two σ-bonds

C. Electron cloud of two pie-bonds

D. Electron cloud of two σ-bonds on adjacent atoms

Answer: 4

Watch Video Solution

18. Which form (s) of cyclohexane is/are free from angle strain?

A. Boat-form

B. Chair form

C. Twist boat

D. All of these

Answer: 4

Watch Video Solution

19. The number of axial hydrogen atoms in chair form of cyclohexane is

A. 3

B. 6

C. 12

D. 2

Answer: 2

Watch Video Solution

20. Consider the given reaction

$$CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - OH \xrightarrow[\Delta]{\text{conc.}H_2SO_4} \text{Alkene(major)}$$

Identify alkene.

A. $CH_3 - CH_2 - CH = CH_2$

B. $CH_3 - CH = CH - CH_3$

C. $(CH_3)_2C = C(CH_3)_2$

D. $CH_3 - CH = \underset{\underset{CH_3}{|}}{C} - CH_3$

Answer: 4

Watch Video Solution

21. Ethylene reacts with S_2Cl_2 to give

A. Mustard gas

B. Lewisite

C. Thiophene

D. Ethanethiol

Answer: 1

Watch Video Solution

22. Actylene reacts with ammonical Cu_2Cl_2 to give precipitate of

A. Red colour

B. Yellow colour

C. White colour

D. Blue colour

Answer: 1

Watch Video Solution

23. Identify the product in the reaction

$$HC \equiv CH \xrightarrow[[O]]{K_2Cr_2O_7 + H_2SO_4} \text{Product}$$

A. CH_3CHO

B. CH_3CH_2OH

C. CH_3COOH

D. CH_3OH

Answer: 3

Watch Video Solution

24. Which of the following compound gives CO_2 on reductive ozonolysis-

A. $CH_2 = CH_2$

B. $CH_2 = CH - CH = CH_2$

C. $CH_3\underset{\underset{H}{|}}{C} = C = CH - CH_3$

D. All of these

Answer: 3

Watch Video Solution

25. The carbon-carbon bond length in benzene molecule is:

A. 1.39 A

B. 1.09 A

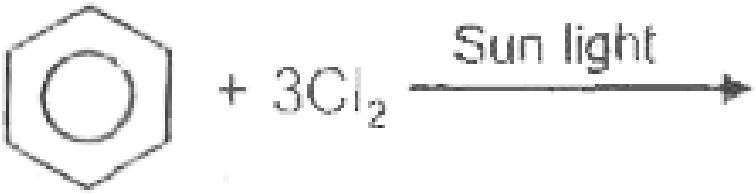
C. 1.54 A

D. 1.34 A

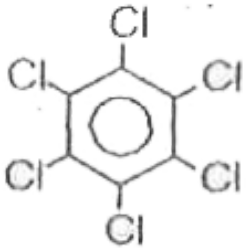
Answer: 1

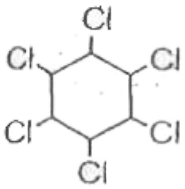
Watch Video Solution

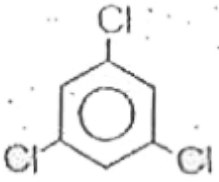
26. The product formed in the reaction,

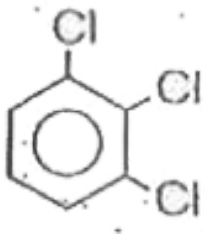


Product is

A. 

B. 

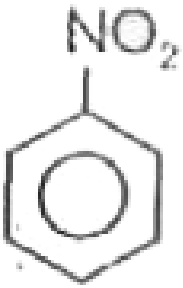
C. 

D. 

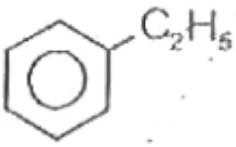
Answer: 2

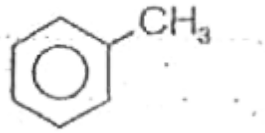
Watch Video Solution

27. Which of the following is the most reactive towards nucleophilic substitution reaction?

A. 

B. 

C. 

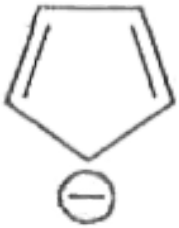
D. 

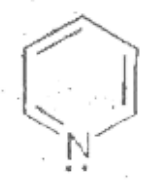
Answer: 4

Watch Video Solution

28. Which of the following is aromatic in nature ?

A. 

B. 

C. 

D. All of these

Answer: D

Watch Video Solution

29. Which of the following is used for the preparation of benzene ?

A. Phenol

B. Ethyne

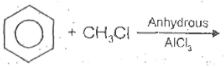
C. Furan

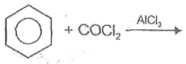
D. Both (1) and (2)

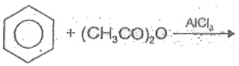
Answer: 4

Watch Video Solution

30. Which of the following is an examples of Friedel Crafts reaction ?

A. 

B. 

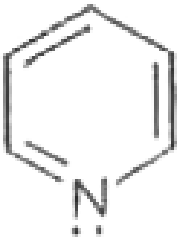
C. 

D. All of these

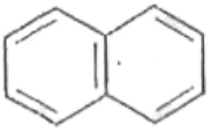
Answer: 4

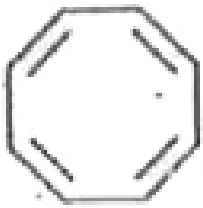
Watch Video Solution

31. Which of the following is aromatic hydrocarbon ?

A. 

B. 

C. 

D. 

Answer: 3

Watch Video Solution

32. The following of πe and σ bonds in touleneis repectively

A. 3 and 6

B. 6 and 12

C. 3 and 10

D. 6 and 10

Answer: 3

Watch Video Solution

33. The $C-C-C$ bond angle in benzene is

A. 120°

B. 60°

C. 45°

D. 135°

Answer: 1

Watch Video Solution

Assignment Section A Obejctive Type Question

1. Which one is most stable ?

A. Cyclopropane

B. Cyclobutane

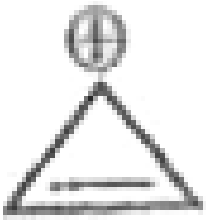
C. Cyclopentane

D. Cyclohexane

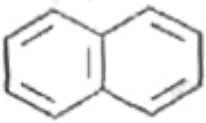
Answer: 4

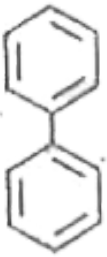
Watch Video Solution

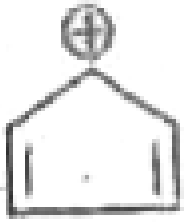
2. Which one is not aromatic compound ?



A.

B. 

C. 

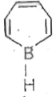
D. 

Answer: 4

Watch Video Solution

3. The incorrect match is

A.  – Anti-aromatic

B.  – Anti-aromatic

C.  – Non-aromatic

D.  – Aromatic

Answer: 2

Watch Video Solution

4. Which of the following statement is not correct for sigma and pi-bonds formed between two carbon atoms ?

A. Sigma-bond is stronger than a pi-bond

B. Bond energies of sigma- and pi-bonds are of the order of 264 kJ/mol and 317 kJ/mol, respectively

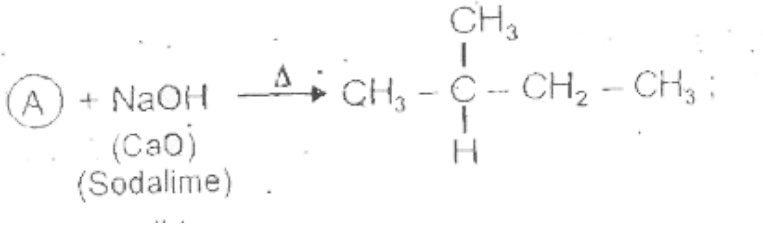
C. Free rotation of atoms about a sigma-bond is allowed but not in case of a pi-bond

D. Sigma-bond determines the direction between carbon atoms but a pi-bond has no primary effect in this regard

Answer: 2

Watch Video Solution

5. The possible compound A is



A. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{H}{|}}{C}} - CH_2COONa$

B. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{H}{|}}{C}} - CH_2 - CH_2 - COONa$

C. $CH_3 - CH_2 - \overset{\overset{CH_3}{|}}{C}H - CH_2 - COONa$

D. Both (2) and (3)

Answer: 4

Watch Video Solution

6. Which one of the following cannot be prepared by Wurtz reaction?

A. C_2H_6

B. $n - C_4H_{10}$

C. CH_4

D. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - \overset{CH_3}{\underset{|}{C}}H - CH_3$

Answer: 3

Watch Video Solution

7. The reaction of $CH_3CH = CH_2$ with HOCl will yield

A. 2-chloro-1-propanol

B. 3-chloro-2-propanol

C. 1-chloro-2-propanol

D. 1-chloro-1-propanol

Answer: 3

Watch Video Solution

8. $C_6H_5CH_2CH_2CH_3$ is when oxidised in the presence of alk. $KMnO_4$ the product obtained is

A. C_6H_5CHO

B. C_6H_5COOH

C. $C_6H_5CH_2CH_2CHO$

D. $C_6H_5COCH_3$

Answer: 2

Watch Video Solution

9. Toulene $\xrightarrow[H_2SO_4]{K_2Cr_2O_7}$ Y. Here Y is

A. Benzaldehyde

B. Toulene

C. Benzoic acid

D. Ethylbenzene

Answer: 3

Watch Video Solution

10. $C_6H_6 + Z \xrightarrow{Anhy.\,AlCl_3}$ Toluene

The compound Z is

A. Acetic acid

B. Acetic anhydride

C. Acetone

D. Chloromethane

Answer: 4

Watch Video Solution

11. $C_6H_6 \xrightarrow[V_2O_5\ /\ \Delta]{\text{Oxidation}} X$. Here, X is

A. Maleic anhydride

B. Acetic acid

C. Propanoic acid

D. Succinic acid

Answer: 1

Watch Video Solution

12. In kharash effect,reaction follows

A. Free radical substituion

B. Electrohilic addition

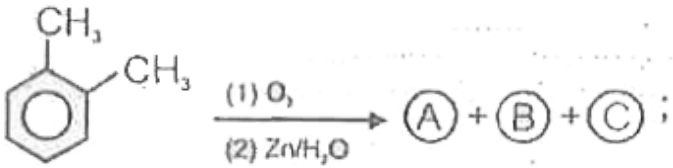
C. Free radical addition

D. Nucleophillic addition

Answer: 3

Watch Video Solution

13. A,B and C can be



A. $CH_3 - \overset{O}{\overset{||}{C}} - \overset{O}{\overset{||}{C}} - CH_3$

B. $\overset{CHO}{\underset{|}{C}}\ HO$

C. $CH_3 - \overset{O}{\overset{||}{C}} - CHO$

D. All of these

Answer: 4

Watch Video Solution

14. Benzene undergoes substituion reaction more easily than addition because

A. It has a cyclic structure

B. It has three double bonds

C. Of decarboxylation of πe-electrons

D. It has six hydrogen atoms

Answer: 3

Watch Video Solution

15. A mixture of C_2H_6, C_2H_4 and C_2H_2 is bubbled through alkaline solution of copper (I) chloride, contained in Woulf's bottle. The gas coming out is:

A. Original mixture

B. C_2H_6

C. $C_2H_6 \text{and} C_2H_4$ mixture

D. $C_2H_4 \text{and} C_2H_2$

Answer: 3

Watch Video Solution

16. Ethylene reacts with S_2Cl_2 to give

A. Lewisite

B. Mustard oil

C. Mustard gas

D. Insecticide

Answer: 3

Watch Video Solution

17. $Ph - C \equiv CH \xrightarrow{Hg^+, H^+ / H_2O} A$

Aditon of H_2O in the reaction is an example of

A. Electrophlic addition

B. Nucleophillic addition

C. Free radical addition

D. Electrophillic additon

Answer: 2

Watch Video Solution

18. Monomer of neoprene is

A. Chloroprene

B. Acetylene

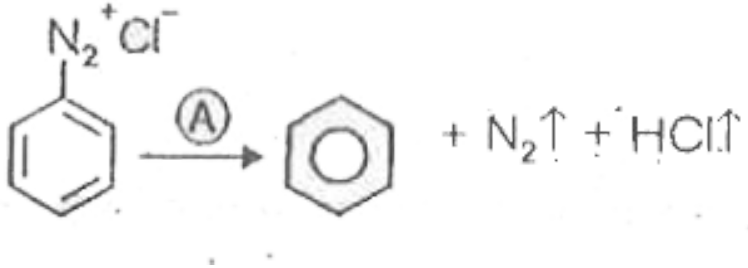
C. Vinyl Acetlylene

D. Both (2) and (3)

Answer: 1

Watch Video Solution

19. Compound A is :



A. H_3PO_2

B. H_3PO_3

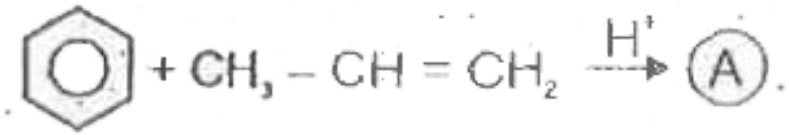
C. H_3PO_4

D. Both (1) and (2)

Answer: 4

Watch Video Solution

20. Compound A is :



A. Isopropyl benzene

B. Cumene

C. An alkyl derivative of benzene

D. All of these

Answer: 4

Watch Video Solution

21. Which of the following is active species in sulphonation of benzene ?

A. $\overset{\oplus}{S}O_3H$

B. SO_3

C. $O=\underset{\oplus}{\overset{O}{\overset{||}{S}}}=O$

D. $\overset{\oplus}{S}O_2\bar{O}H$

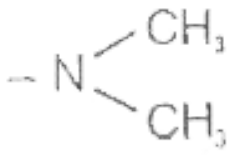
Answer: 2

Watch Video Solution

22. Which one is o, p-directiong group for electrophliic substitution reaction ?

A. $-\overset{\overset{O}{||}}{C}-OH$

B. $-\overset{\overset{O}{||}}{C}-NH_2$

C. 

D. $-NO_2$

Answer: 3

Watch Video Solution

23. In $\underset{(I)}{\text{Chlorobenzene}}$, $\underset{(II)}{\text{2,4-dinitrochlorobenzene}}$, $\underset{(III)}{\text{p- nitrochlorobenzene}}$

The decreasing order of reactivity towards electrophliic substitution reaction is

A. (I) gt (II) gt (III)

B. (I) gt (III) gt (II)

C. (II) gt (I) gt (III)

D. (III) gt (I) gt (II)

Answer: 2

Watch Video Solution

24. $CH_3 - CH = CH - CH_2 - CH_3 \xrightarrow{HI} \underset{\text{major}}{A}$

Compound A is

A. $CH_3 - CH_2 - \underset{\displaystyle}{\overset{\displaystyle}{CH}} - CH_2 - CH_3$

B. $CH_3 - \underset{\displaystyle CH_2}{\overset{\displaystyle}{CH}} - CH_2 - CH_2 - CH_3$

C. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle}{C}} - CH_2 - CH_3$

D. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle}{C}} - CH_2I$

Answer: 2

Watch Video Solution

25. The electrophilie which attacks in Friedel-Craft acylation is

A. $R-\overset{\oplus}{\underset{||}{C}}-O$

B. $R-\overset{||}{C}-\overset{\oplus}{O}$

C. $R-\underset{+}{\overset{|}{C}}-\overset{-}{O}$

D. $\overset{\oplus}{S}O_2\overset{-}{O}H$

Answer: 1

Watch Video Solution

26. Which of the folllowing shows geometrical isomerism ?

A. But-1-ene

B. But-2-ene

C. Prop-1-ene

D. Pent-1-ene

Answer: 2

Watch Video Solution

Assignment Section B Obejctive Type Question

1. $CH_3 - CH = CH - CHO \xrightarrow{A} CH_3 - CH = CH - CH_3$

The best suitable reagent A is

A. $C_3H_8S_2 / H_2 / Ni$

B. N_2H_4 / KOH

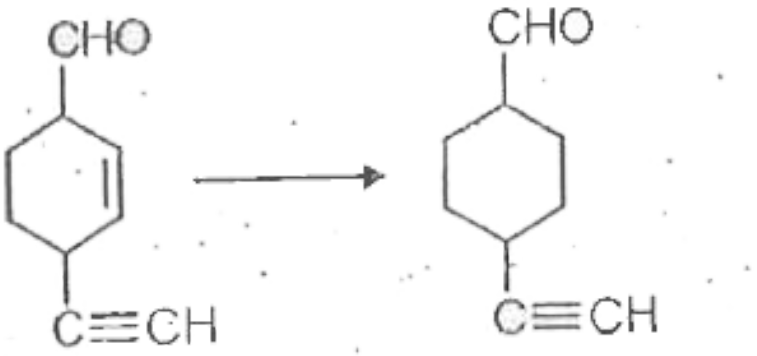
C. $Zn - Hg / conc.\ HCl$

D. HI/P(red)

Answer: 2

Watch Video Solution

2. The most suitable reagent for given conversion is



A. Diimide

B. H_2 / Ni_2B

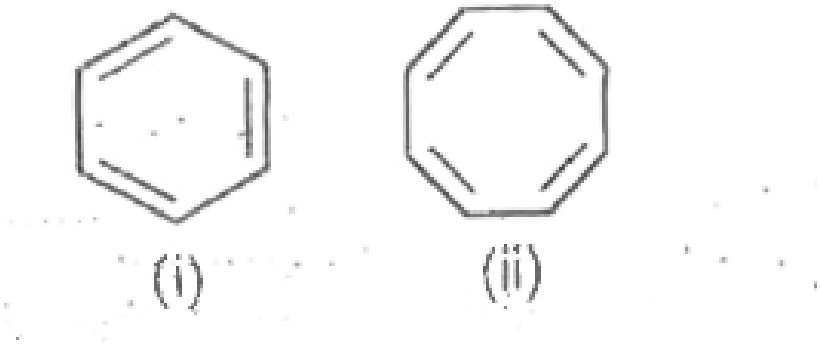
C. Zn/dil.HCl

D. $LiAlH_4$

Answer: 1

Watch Video Solution

3. Choose the corrrect option



A. Both (i) and (ii) are conjugated system

B. (i) and (ii) both show resonance

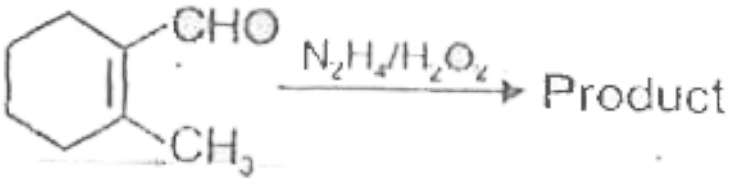
C. (i) and (ii) both are aromatic

D. (i) is less stable than (ii)

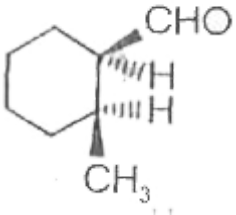
Answer: 1

Watch Video Solution

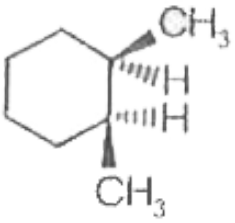
4. The product will be



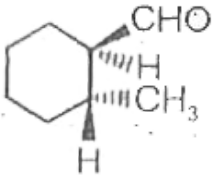
A.



B.



C.

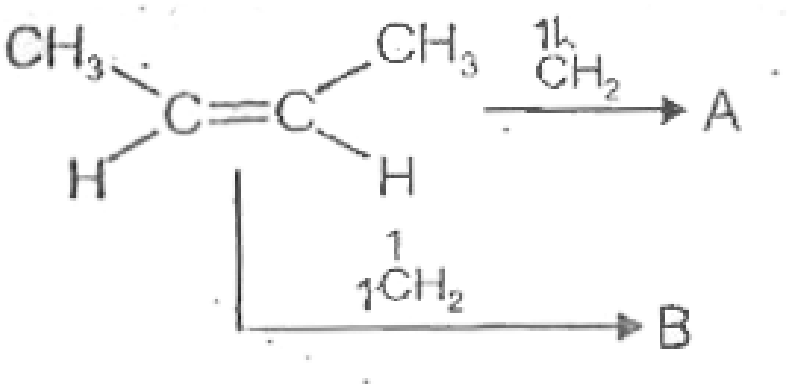


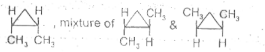
D. Mixture of 1 and 2

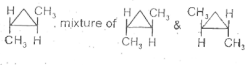
Answer: 1

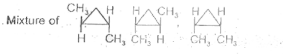
Watch Video Solution

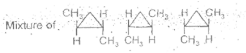
5. A and B are respectively



A. 

B. 

C. 

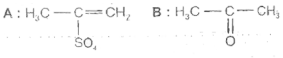
D. 

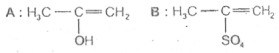
Answer: 1

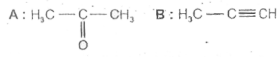
Watch Video Solution

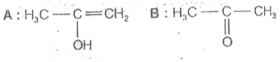
Assignment Section C Previous Years Questions

1. $H_3C - C \equiv CH \xrightarrow[HgSO_4]{H_2O, H_4SO_4} \underset{A}{\text{intermediate}} \rightarrow \underset{B}{\text{product}}$

A. 

B. 

C. 

D. 

Answer: 4

Watch Video Solution

2. Which one is the correct order of acidity ?

A.

$$CH_2 = CH_2 > CH_3 - CH = CH_2 > CH_3 - C \equiv CH > CH \equiv C$$

B. $CH \equiv CH > CH_3 - C \equiv CH > CH_2 = CH_2 > CH_3CH_3$

C. $CH \equiv CH > CH_2 = CH_2 > CH_3 - C \equiv CH > CH_3CH_3$

D. $CH_3CH_3 > CH_2 = CH_2 > CH_3 - C \equiv CH > CH \equiv CH$

Answer: 2

Watch Video Solution

3. With respect to the conformers of ethane, which of the following statements is true ?

A. Bond angle remains same-but bond length changes

B. Bond angle changes same-but bond length remains

C. Both bond angle and bond length change

D. Both bond angles and bond length remains same.

Answer: 4

Watch Video Solution

4. Which of the following can be used as the halide component for Friedel Crafts reaction ?

A. Chlorobenzene

B. Bromobenzene

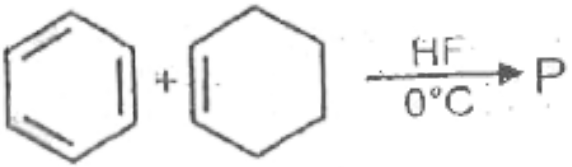
C. Chlorobenzene

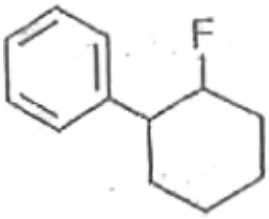
D. Isopropyl chloride

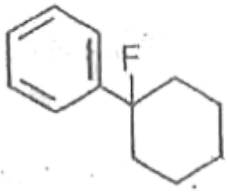
Answer: 4

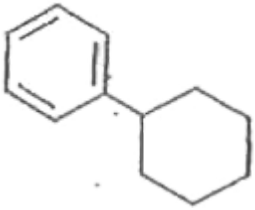
Watch Video Solution

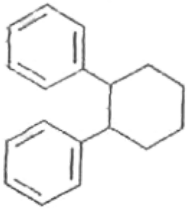
5. The product P is



A. 

B. 

C. 

D. 

Answer: 3

Watch Video Solution

6. Which is expected to react most readily with bromine

A. C_3H_6

B. C_2H_2

C. C_4H_{10}

D. C_2H_4

Answer: 1

Watch Video Solution

7. In the reactions $HC \equiv CH \xrightarrow[(2)\,CH_3CH_2Br]{(1)\,NaNH_2/liq.NH_3} X$

$X \xrightarrow[(2)\,CH_3CH_2Br]{(1)\,NaNH_2/liq.NH_3} Y$, X and Y are :

A. X = 1-Butyne, Y = 2-Hexyne

B. X = 1-Butyne, Y = 3-Hexyne

C. X = 2-Butyne, Y = 3-Hexyne

D. X = 2-Butyne, Y = 2-Hexyne

Answer: 2

Watch Video Solution

8. Consider the nitration of benzene using mixed conc. H_2SO_4 and HNO_3. If a large amount of $KHSO_4$ is added to the mixture, the rate of nitration will be :

(a)slower

(b)unchanged

(c)doubled

(d)faster

A. Doubled

B. Faster

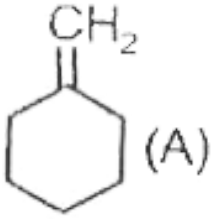
C. Slower

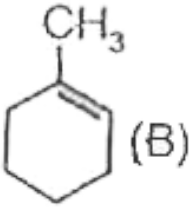
D. Unchanged

Answer: 3

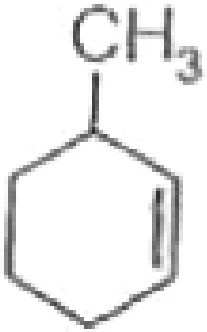
Watch Video Solution

9. In the reaction with HCl, an alkene reacts in accordance with Markownikoff's rule to give a product 1-chloro-1-methylcyclohexane. The possible alkene is:

A. 

B. 

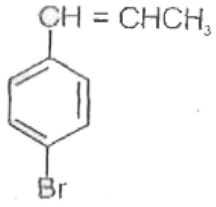
C. (A) and (B)

D. 

Answer: 3

Watch Video Solution

10. The reaction of $C_6H_5CH = CHCH_3$ with HBr produces :

A. 

B. $C_6H_5\underset{\underset{Br}{|}}{C}HCH_2CH_3$

C. $C_6H_5CH_2\underset{\underset{Br}{|}}{C}HCH_3$

D. $C_6H_5CH_2CH_2CH_2Br$

Answer: 2

Watch Video Solution

11. Which of the following organic compounds has same hybridisation as its combustion product $-(CO_2)$?

A. Ethane

B. Ethyne

C. Ethene

D. Ethanol

Answer: 2

Watch Video Solution

12. Which of the following reagents will be able to distinguish between $1-$ butyne and $2-$ butyne ?

A. $NaNH_2$

B. HCl

C. O_2

D. Br_2

Answer: 1

Watch Video Solution

13. Liquid hydrocarbon is converted to a mixture of gaseous hydrocarbons by

A. Oxidation

B. Cracking

C. Distillation under reduced pressure

D. Hydrolysis

Answer: 2

Watch Video Solution

14. The reaction of toluene with CI_2 in presence of $FeCI_3$ gives X and reaction in presence of light gives Y Thus X and Y are .

A. X = Benzal chloride, Y = o-chlorotoluene

B. X=m-chlorotoluene, Y =p-chlorotoluene

C. X = o and p-chlorotoluene, Y = Trichloromethyl benzene

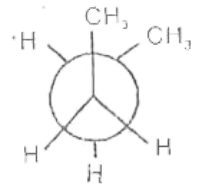
D. X = Benzyl chloride, Y = m-chlorotoluene

Answer: 3

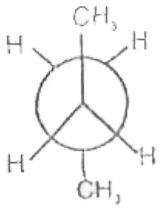
Watch Video Solution

15. In the following the most stable conformation of n-butane is

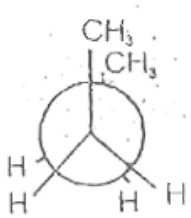
A.



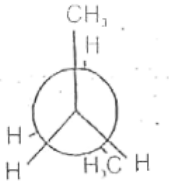
B.



C.



D.



Answer: 2

Watch Video Solution

16. Benzene reacts with CH_3Cl in the presence of anhydrous $AlCl_3$ to form -

A. Chlorobenzene

B. Benzylchloride

C. Xylene

D. Toulene

Answer: 4

Watch Video Solution

17. Nitrobenzene can be prepared from benzene by using a mixture of conc. HNO_3 and conc. H_2SO_4 . In the mixture, nitric acid acts as a/an -

A. Acid

B. Base

C. Catalyst

D. Reducing agent

Answer: 2

Watch Video Solution

18. How many stereoisomers does this molecule have ?

$CH_3CH = CHCH_2CHBrCH_3$

A. 2

B. 4

C. 6

D. 8

Answer: 2

Watch Video Solution

19. The order decreasing reactivity towards an electrophilic reagent, for the following:

(a) Benzene

(b) Toluene

(c) Chlorobenzene and

(d) Phenol

Would be:

A. $d > b > a > c$

B. agtbgtcgtd

C. bgtdgtagtc

D. dgtcgtbgta

Answer: 1

Watch Video Solution

20. Predict the product C obtained in the following reaction of butyne-1:

$$CH_3 - CH_2 - C \equiv CH + HCl \rightarrow B \xrightarrow{HI} C$$

A. $CH_3CH_2 - \overset{\overset{I}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_3$

B. $CH_3 - \underset{\underset{CH}{|}}{C\,H} - CH_2CH_2I$

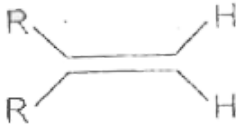
C. $CH_3 - CH_2 - CH_2 - \overset{\overset{I}{|}}{\underset{\underset{Cl}{|}}{H}}$

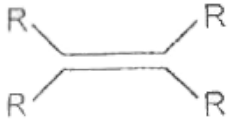
D. $CH_3 - CH_2 - \overset{\overset{I}{|}}{CH} - CH_2Cl$

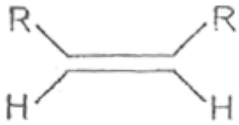
Answer: 1

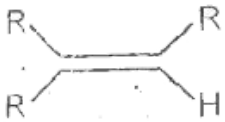
Watch Video Solution

21. Which one of the following alkenes will react faster with H_2 under catalytic hydrogenation conditions :-

A. 

B. 

C. 

D. 

Answer: 1

Watch Video Solution

22. Which is maximum stable ?

A. But-1-ene

B. cis-but-2-ene

C. trans-but-2-ene

D. All have equal

Answer: 3

Watch Video Solution

23. Geometrical isomers differ in:

A. Position of functional group

B. Position of atoms

C. Spatial arrangement of atoms

D. Length of carbon chain

Answer: 3

Watch Video Solution

24. The correct order of reactivity towards the electrophilic substitiution of the compounds aniline(I),benzene(II) and nitro-benzene(III) is

A. IIIgtIIgtI

B. IIgtIIIgtI

C. IItIIgtIII

D. IgtIIgtIII

Answer: 4

Watch Video Solution

25. The reactive species in the nitration of benzene is

A. NO_3

B. NHO_3

C. NO_2^+

D. NO_2^-

Answer: 3

Watch Video Solution

26. $CH_3 - \underset{\underset{CH_3}{|}}{C}\ H - CH = CH_2 + HBr \rightarrow$ (product) which is predominate , X is -

A. $CH_3 - \underset{\underset{CH_3}{|}}{C}\ H - \underset{\underset{Br}{|}}{CH} - CH_3$

B. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{Br}{|}}{C}}\ H - CH_2 - CH_2Br$

C. $CH_3 - \underset{\underset{CH_3}{|}}{C}\ - CH_2CH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C}\ H - \underset{\underset{CH_3}{|}}{C}\ H - CH_3$

Answer: 3

Watch Video Solution

27. An alkene $CH_3CH = CH_2$ is treated with B_2H_6 in presence of H_2O_2 . The final product formed is

A. $R - \underset{\underset{CH_3}{|}}{C} = O$

B. $R - \underset{\underset{OH}{|}}{C}H - \underset{\underset{OH}{|}}{C}H_2$

C. $R - CH_2 - CHO$

D. $R - CH_2 - CH_2 - OH$

Answer: 4

Watch Video Solution

28. The bond length between central carbon atom and other carbon atom is minimum in

A. Propene

B. Propyne

C. Propane

D. pentane

Answer: 2

Watch Video Solution

29. Which of the following is used as an anti-knocking material ?

A. Glyoxal

B. Freon

C. T.E.L.

D. Ethyl alcohol

Answer: 3

Watch Video Solution

30. Which of the following reactions would give a good yield of hydrocarbon product ?

A. $CH_3CH_3 \xrightarrow[v]{Cl_2}$

B. $(CH_3)_3\mathbb{C}l \xrightarrow{C_2H_5Cl}$

C. $RCOOK \xrightarrow[\text{Oxidation}]{\text{Electrolysis}}$

D. $RCOOAg \xrightarrow[hv]{I_2}$

Answer: 3

Watch Video Solution

31. The cylindrical shape of alkynes is due to

A. Two sigma C-C and one πe C-C bonds

B. One sigma C-C and two πe C-C bonds

C. Three sigma C-C bonds

D. Three πe C-C bonds

Answer: 2

Watch Video Solution

32. In the commercial gasolines, the type of hydrocarbons which are more desirable is

A. Linear unsaturated hydrocarbon

B. Toulene

C. Branced hydrocarbon

D. Straight-chain hydrocarbon

Answer: 3

Watch Video Solution

33. The most stable conformation of Butane is

A. Gauche

B. Staggered

C. Skew-boat

D. Eclipsed

Answer: 2

Watch Video Solution

34. Which of the following statements is not compatible with arenes?

A. Electrophilic additions

B. Delocalisation of πe-electrons

C. Greater stability

D. Resonance

Answer: 1

Watch Video Solution

35. When acetylene is passed through dil. H_2SO_4 in the presence of $HgSO_4$, the compound formed is

A. Acetic acid

B. Ketone

C. Ether

D. Acetaldehyde

Answer: 4

Watch Video Solution

36. In Friedel-Crafts acylation, besides $AlCl_3$, the other reactants are

A. $C_6H_6 + CH_3Cl$

B. $C_6H_6 + CH_4$

C. $C_6H_6 + NH_2 - NH_2$

D. $C_6H_6 + CH_3COCl$

Answer: 1

Watch Video Solution

37. Gammaexane is

A. Bromobenzene

B. Benzylchloride

C. Chlorobenzene

D. Benzene hexachloride

Answer: 4

Watch Video Solution

38. In Friedal craft reaction Toluene can be prepared by:

A. $C_6H_6 + CH_3Cl$

B. $C_6H_6 + CH_4$

C. $C_6H_6 + CH_2Cl_2$

D. $C_6H_6 + CH_3COCl$

Answer: 1

Watch Video Solution

39. 2-butene shows geometrical isomerism due to:

A. Restricted rotation about double bond

B. Free rotation about double bond

C. Free rotation about single bond

D. Chiral carbon

Answer: 1

Watch Video Solution

40. Dihedral angle in staggerred form of ethane is

A. 0°

B. 120°

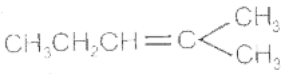
C. 60°

D. 180°

Answer: 3

Watch Video Solution

41. Which alkene on ozonolysis gives CH_3CH_2CHO and $CH_3\underset{\underset{O}{||}}{C}CH_3$?

A. 

B. $CH_3CH_2CH = CHCH_2CH_3$

C. $CH_3CH_2CH = CHCH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C} = CHCH_3$

Answer: 1

Watch Video Solution

42. Products of the following reaction :

$CH_3C \equiv CCH_2CH_3 \xrightarrow[(2)\text{Hydrolysis}]{(i)\, O_3}$ are -

A. $CH_3 - \overset{\overset{O}{||}}{C} - \overset{\overset{O}{||}}{C} - CH_2 - CH_3$

B. $CH_3COOH + HOOC.\, CH_2CH_3$

C. $CH_3CHO + CH_3CH_2CHO$

D. $CH_3COOH + CH_3COCH_3$

Answer: 1

Watch Video Solution

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

A. 3-methylbut-1-ene

B. Cyclopentane

C. 2-methylbut-1-ene

D. 2-methylbut-2-ene

Answer: 4

Watch Video Solution

44. Anti-Markownikoff's addition of HBr is not observed in

A. Pent-2-ene

B. Propane

C. But-2-ene

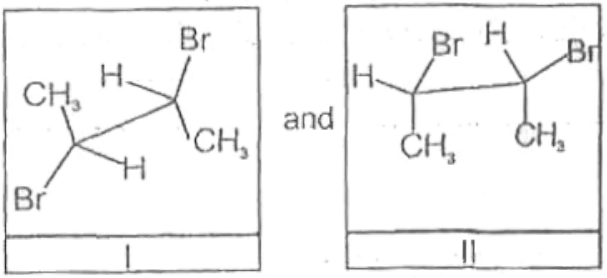
D. But-1-ene

Answer: 3

Watch Video Solution

45. Given

I and II are



A. A pair of optical isomers

B. Identical

C. A pair of conformers

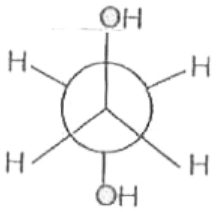
D. A pair of geometrical isomers

Answer: 3

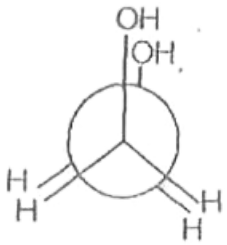
Watch Video Solution

46. Which of the following conformers for ethylene glycol is most stable ?

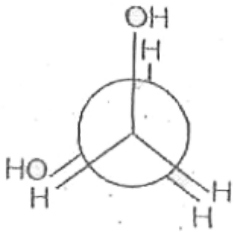
A.



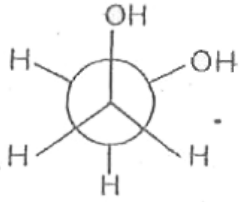
B.



C.



D.



Answer: 4

Watch Video Solution

47. Reaction of HBr with propene in the presence of peroxide gives :-

A. Isopropyl bromide

B. 3-bromo propane

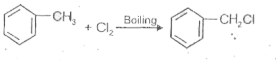
C. Allyl bromide

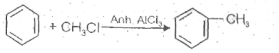
D. n-propyl bromide

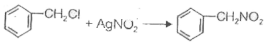
Answer: 4

Watch Video Solution

48. Which one of the following is a free-radical substitution reaction :

A. 

B. 

C. 

D. $CH_3CHO + HCN \rightarrow CH_3CH(OH)CN$

Answer: 1

Watch Video Solution

49. Using anhydrous $AlCl_3$ as catalyst, which one of the following reactions produces ethylbenzene (PhEt) :-

A. $H_3C - CH_2OH + C_6H_6$

B. $CH_3 - CH = CH_2 + C_6H_6$

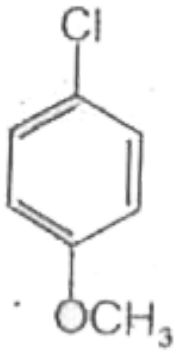
C. $H_2C = CH_2 + C_6H_6$

D. $H_3C - CH_3 + C_6H_6$

Answer: 3

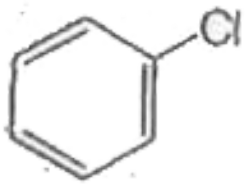
Watch Video Solution

50. Which of the following compounds undergoes nucleophilic substitution reaction most easily ?

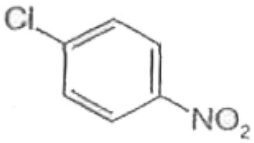


A.

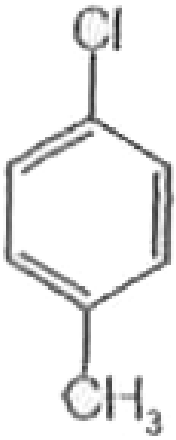
B.



C.



D.



Answer: 3

Watch Video Solution

51. Which will undergo fastest S_N2 substitution reaction when treated with NaOH ?

A. $H_5C_2 - \underset{\underset{H}{|}}{\overset{\overset{CH_3}{|}}{C}} - Br$

B. $H_3C - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - Br$

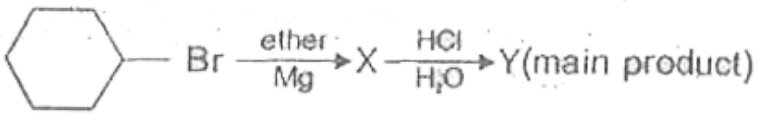
C. $H - \underset{\underset{C_2H_5}{|}}{\overset{\overset{CH_3}{|}}{C}} - Br$

D. $H - \underset{\underset{Br}{|}}{\overset{\overset{H}{|}}{C}} - CH_2 - CH_2 - CH_3$

Answer: 4

Watch Video Solution

52. Y in the reaction is



A. Hexane

B. Cyclohexane

C. Cyclohexylcyclohexane

D. Cyclohexaylether

Answer: 2

Watch Video Solution

53. How many chiral compounds are possible on monochlorination of 2-methyl butane?

A. one

B. two

C. three

D. four

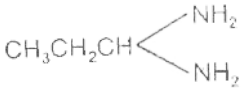
Answer: 4

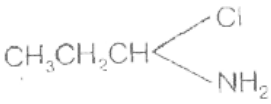
Watch Video Solution

54. When $CH_3CH_2CHCl_2$ is treated with $\mathrm{NaNH_2}$, the product formed is

A. $CH_3 - CH = CH_2$

B. $CH_3 - C \equiv CH$

C. 

D. 

Answer: 2

Watch Video Solution

55. 2-Bromopentane is heated with potassium ethoxide in ethanol. The major product obtained is

A. trans-pent-2-ene

B. Pent-1-ene

C. 2-ethoxypentane

D. cis-pent-2-ene

Answer: 1

Watch Video Solution

56. In the following reaction $C_6H_5CH_2Br \xrightarrow[2.H_3O^+]{1.\text{ Mg. Ether}} X$,

The product 'X' is -

A. $C_6H_5CH_2OCH_2C_6H_5$

B. $C_6H_5CH_2OH$

C. $C_6H_5CH_3$

D. $C_6H_5CH_2CH_2C_6H_5$

Answer: 3

Watch Video Solution

57. When $3, 3 -$ dimethyl$- 2 -$ butanol is heated with H_2SO_4 the major product obtained is

A. 2, 3-dimethyl 2-butene

B. cis and trans isomers of 2, 3-dimethyl 2-butene

C. 2, 3-dimethyl 1-butene

D. 3, 3-dimethyl 1-butene

Answer: 1

Watch Video Solution

58. Identify Z in the sequence of reaaction

$$CH_3 - CH_2 - CH = CH_2 \xrightarrow[H_2O_2 / hv]{HBr} Z$$

A. $CH_3 - CH_2 - \underset{\underset{Br}{|}}{CH} - CH_3$

B. $CH_3 - CH_2 - CH_2 - CH_2 - Br$

C. $CH_3 - \underset{\underset{Br}{|}}{CH} - CH = CH_3$

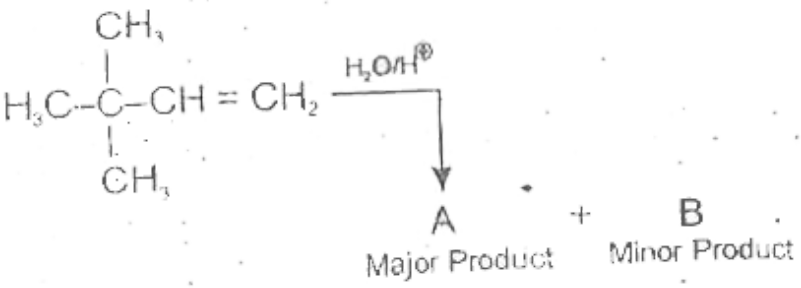
D. None of these

Answer: 2

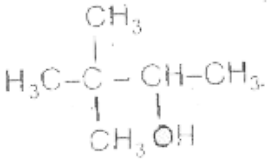
Watch Video Solution

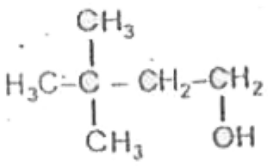
59. In the following reaction

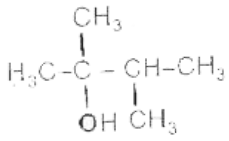
The major product is

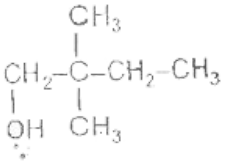


A.



B. 

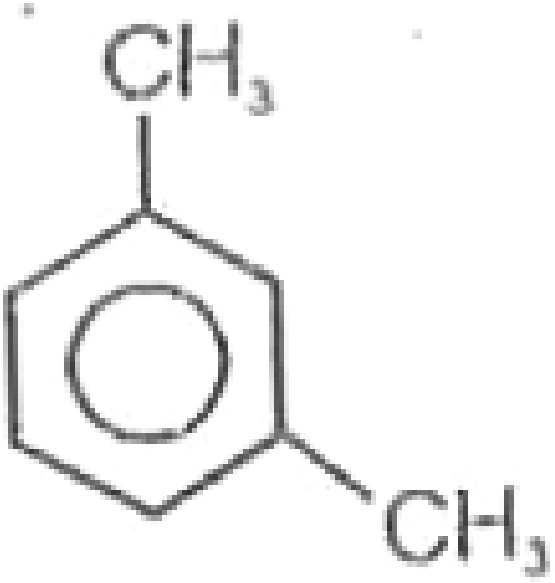
C. 

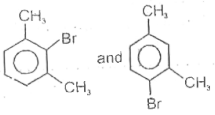
D. 

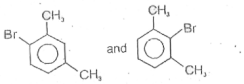
Answer: 3

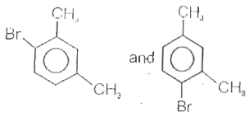
Watch Video Solution

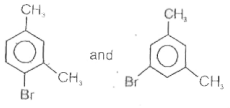
60. What products are formed when the following compound is treated with Br_2 in the presence of $FeBr_3$



A. 

B. 

C. 

D. 

Answer: 3

Watch Video Solution