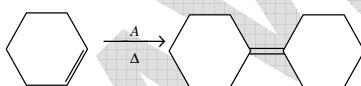
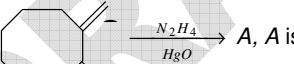
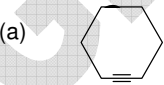
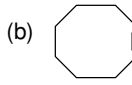




Aliphatic Hydrocarbon Assignment

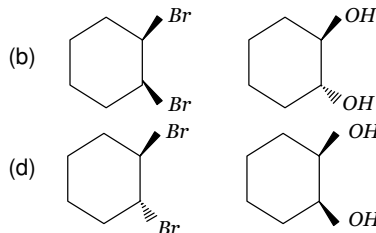
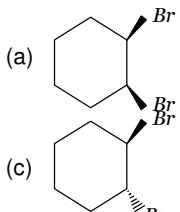
1. The C=C bond distance in an organic compound is 1.34 Å. It can be
 (a) Butene-1 (b) Butene-2 (c) Cyclohexatriene (d) Hexatriene
2. The decreasing order of the strength of bases OH^- , NH_2^- , $H-C \equiv C^-$ and $CH_3-\overset{\ominus}{C}H_2$ is
 (a) $CH \equiv C^- > CH_3-\overset{\ominus}{C}H_2 > NH_2^- > OH^-$ (b) $CH_3-\overset{\ominus}{C}H_2 > NH_2^- > H-C \equiv C^- > OH^-$
 (c) $NH_2^- > H-C \equiv C^- > OH^- > CH_3-\overset{\ominus}{C}H_2$ (d) $OH^- > NH_2^- > H-C \equiv C^- > CH_3-\overset{\ominus}{C}H_2$
3. Arrange the free radicals vinyl ($H_2\overset{\cdot}{C} = \overset{\cdot}{C}H$), allyl ($H_2\overset{\cdot}{C} = \overset{\cdot}{C}H\overset{\cdot}{C}H_2$) and benzyl ($C_6H_5-\overset{\cdot}{C}H_2$) in order of their stability.
 (a) Benzyl>allyl>vinyl (b) Allyl>vinyl>benzyl (c) Vinyl>allyl>benzyl (d) Vinyl>benzyl>allyl
4. The ease of abstraction of allylic, 3°, 2°, 1°, CH_4 and vinylic hydrogens follows the order
 (a) Allylic>3°>2°>1°> CH_4 >vinylic (b) 3°>2°>1°> CH_4 >allylic>vinylic
 (c) CH_4 >3°>1°>2°>vinylic > allylic (d) vinylic > allylic > 1°>2°>3°> CH_4
5. The amount of energy needed to form the radicals $\overset{\cdot}{C}H_3$, 1°, 2°, 3° decreases in the order.
 (a) 3°>2°>1°> $\overset{\cdot}{C}H_3$ (b) $\overset{\cdot}{C}H_3$ >1°>2°>3° (c) 1°>2°>3°> $\overset{\cdot}{C}H_3$ (d) $\overset{\cdot}{C}H_3$ >3°>2°>1°
6. Which of the following has the lowest heat of hydrogenation per mole
 (a) *cis*-2-Butene (b) *trans*-2 Butene (c) 1-Butene (d) 1,3-Butadiene
7. Which of the following are present in coal tar
 (a) Cresols (b) Alkenes (c) Cycloalkenes (d) Naphtha
8. The bond dissociation energies as indicated in following vary in the order
 (I) CH_3-H (II) CH_3CH_2-H (III) $CH_2=CH-CH_2H$ (IV) C_6H_5-H
 (a) I > II > III > IV (b) IV > III > II > I (c) IV > I > II > III (d) II > I > IV > III
9. Which of the following are obtained by the fractionation of coal tar
 (a) Light oil (b) Heavy oil (c) Mineral oil (d) Vegetable oil
10. How many structures may C_5H_8 represent
 (a) Two (b) Four (c) Five (d) Six
11. Most stable intermediate of the hydration of isopentene $CH_3\overset{\cdot}{C}H=CH_2$ is
 (a) $CH_3\overset{\oplus}{C}HCH_3$ (b) $CH_3\overset{\oplus}{C}CH_2CH_3$ (c) Both (a) and (b) (d) None of these
12.  A can be
 (a) Conc. H_2SO_4 (b) Alcoholic KOH (c) Et_3N (d) *t*-BuOK
13.  A, A is
 (a)  (b)  (c)  (d) 
14. $CH_3CH_2C \equiv CH \xrightleftharpoons[A]{B} CH_3C \equiv CCH_3$, A and B are
 (a) Alcoholic KOH and $NaNH_2$ (b) $NaNH_2$ and alcoholic KOH (c) $NaNH_2$ and Lindlar (d) Lindlar and $NaNH_2$
15. Acetylene can be converted to higher alkyne using the following sequence of reaction
 (a) Na, RX (b) $RMgX$, RX (c) Either of these two (d) None of these
16. When an aqueous solution containing sodium acetate and sodium propionate is electrolysed we get :
 (a) Ethane (b) Propane (c) Butane (d) All
17. The reduction of an alkyne to alkene using Lindlar's catalyst results into
 (a) *Cis* addition of hydrogen atoms

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- (b) Trans addition of hydrogen atoms
 (a) A mixture obtained by *cis* and *trans* additions of hydrogen which are in equilibrium with each other
 (d) A mixture obtained by *cis* and *trans* additions of hydrogen atoms which are not in equilibrium with each other
18. When CaC_2 was hydrolysed a gas was obtained. It had a garlic odour due to phosgene present as impurity. The gas was passed through ammoniacal solution of Cu_2Cl_2 , a red ppt. was obtained. The gas was
 (a) Ethylene (b) Propyne (c) Acetylene (d) Ethane
19. Decarboxylation of isobutyric acid leads to
 (a) Isobutane (b) Propane (c) Butane (d) None of these
20. The dehydrohalogenation of neopentyl bromide with alcoholic KOH mainly gives
 (a) 2-methyl-1-butene (b) 2-methyl-2-butene (c) 2,2-dimethyl-1-butene (d) 2-butene
21. The compound B formed in the following sequences of reactions is $CH_3CH_2CH_2OH \xrightarrow{PCl_3} A \xrightarrow{Alco. KOH} B$
 (a) Propyne (b) Propene (c) Propanol (d) Propane
22. CH_3MgI will give methane with
 (a) C_2H_5OH (b) $CH_3 - CH_2 - NH_2$ (c) $CH_3 - CO - CH_3$ (d) All the above
23. To synthesize the unsymmetrical alkyne $CH_3 - C \equiv C - CH_2 - CH_3$ the reagents needed would be
 (a) Ethene, iodoethane, iodomethane and potassium hydroxide
 (b) Acetaldehyde, 1-bromopropane and conc. H_2SO_4
 (c) 1,2-dichlorethane, 1-propanol and alcoholic potassium hydroxide
 (d) Ethyne, iodomethane, iodoethane and sodamide
24. Which of the following reaction is expected to readily give a hydrocarbon product in good yields
 (a) $RCOOK \xrightarrow[\text{Oxidation}]{\text{Electrolysis}}$ (b) $RCOOAg \xrightarrow{I_2}$ (c) $CH_3CH_3 \xrightarrow[h\nu]{Cl_2}$ (d) $(CH_3)_2CCl \xrightarrow{C_2H_5OH}$
25. When ethyl alcohol is heated with red phosphorus and HI , then which of the following is formed
 (a) C_2H_6 (b) CH_4 (c) C_3H_8 (d) C_2H_4
26. If acetylene is passed through an electric arc in the atmosphere of nitrogen the compound formed is
 (a) HCN (b) Pyrrole (c) Pyrazole (d) Pyridine
27. Silver acetylide when heated with HCl gives
 (a) C_2H_2 (b) H_2 (c) C_2H_4 (d) None of these
28. The alkene C_6H_{10} producing $OHC - (CH_2)_4 - CHO$ on ozonolysis is
 (a) Hexene-1 (b) Hexene-3 (c) Cyclohexene (d) 1-methylcyclohexene-
29. Which of the following compounds is used in antiknock compositions to prevent the deposition of oxides of lead on spark plug, combustion chamber and exhaust pipe
 (a) Glycerol (b) Glycol (c) 1,2-di bromo ethane (d) Benzene
30. In a reaction $CH_2 = CH_2 \xrightarrow[\text{acid}]{\text{Hypochlorous}} M \xrightarrow{R} \begin{matrix} CH_2OH \\ | \\ CH_2OH \end{matrix}$ where $M =$ molecule, $R =$ reagent, M and R are
 (a) CH_3CH_2Cl and $NaOH$ (b) $CH_2Cl - CH_2OH$ and $aq. NaHCO_3$
 (c) CH_3CH_2OH and HCl (d) $CH_2 = CH_2$ and heat
31. At low temperatures the slow addition of molecular bromine to $H_2C = CH - CH_2 - C \equiv CH$ gives
 (a) $H_2C = CH - CH_2 - CBr = CHBr$ (b) $BrCH_2 - CHBr - CH_2 - C \equiv CH$
 (c) $H_2C = CH - CH_2 - CH_2 - CBr_3$ (d) $CH_3 - CBr_2 - CH_2 - C \equiv CH$
32. An organic compound of molecular formula C_4H_6 , (A) forms precipitates with ammoniacal silver nitrate and ammoniacal cuprous chloride. 'A' has an isomer 'B', one mole of which reacts with one mole of Br_2 to form 1,4-dibromo-2-butene. 'A' and 'B' are
 (a) $CH_3CH_2C \equiv CH$ and $CH_2 = CHCH = CH_2$ (b) $CH_3C \equiv CCH_3$ and $CH_3CH = C = CH_2$
 (c) $\begin{matrix} CH_2 \\ | \\ C \\ | \\ CH_2 \end{matrix} > C = CH_2$ and $\begin{matrix} CH_2 - CH \\ | \\ C \\ || \\ CH_2 - CH \end{matrix}$ (d) $CH_3C \equiv C - CH_3$ and $CH_2 < \begin{matrix} CH \\ | \\ C \\ | \\ CH \end{matrix} > CH_2$

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33. $B \xleftarrow[\text{H}_2\text{O}_2]{\text{OsO}_4} \text{Cyclohexene} \xrightarrow{\text{Br}_2} A$; A and B are ;



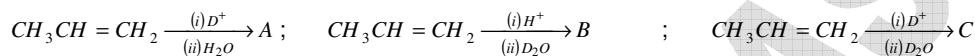
34. C_9H_{14} (A) (santene) $\xrightarrow{\text{ozonolysis}}$ Hence A is



35. Following are used as anaesthetics in surgical operations

- (a) C_2H_4 (b) N_2O (c) CHCl_3 (d) Solid CO_2

36. Identify end products A, B and C of the following



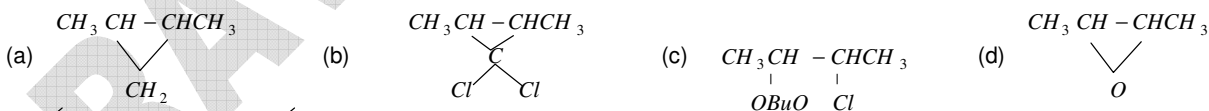
- (a) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$ in all cases
 $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{D}$, $\text{CH}_3\text{CH}(\text{OD})\text{CH}_3$, $\text{CH}_3\text{CH}(\text{OD})\text{CH}_2\text{D}$
- (c) $\text{CH}_3\text{CH}(\text{OD})\text{CH}_3$ in all cases
 $\text{CH}_3\text{CH}(\text{OD})\text{CH}_2\text{D}$ in all cases

37. $\text{RCH}=\text{CH}_2 \xrightarrow[\text{CH}_3\text{COOH}]{\text{BH}_3\cdot\text{THF}} A \xrightarrow[\text{OH}^-]{\text{H}_2\text{O}_2} B$

In this sequence of reactions A, B, C and D are

- (a) $\left(\text{RC} \begin{matrix} \text{A} \\ \text{H}_2 \\ \text{CH}_2 \end{matrix} \right)_3$, $\text{RCH}_2 \begin{matrix} \text{B} \\ \text{CH}_2 \\ \text{OH} \end{matrix}$, $\text{RCH}_2 \begin{matrix} \text{C} \\ \text{CH}_3 \\ \text{HI} \end{matrix}$, HI
- (b) $(\text{RCH}_2\text{CH}_2)_3$, $\text{RCH}(\text{OH})\text{CH}_3$, RCH_2CH_3 , HI
- (c) $\left(\text{RCH} \begin{matrix} \text{H} \\ \text{CH}_3 \end{matrix} \right)_3$, $\text{RCH}(\text{OH})\text{CH}_3$, RCH_2CH_3 , HI
- (d) None is correct

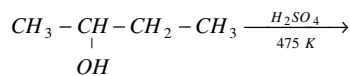
38. $\text{CH}_3\text{CH}=\text{CHCH}_3 + \text{CHCl}_3 + t\text{-BuOK} \rightarrow A$, A is



39. Reagent for this conversion is

- (a) Pt / H_2 (b) Li / NH_3 (c) Si_2BH (d) MCPBA

40. In the following reaction



- (a) $\text{CH}_3\text{CH}=\text{CHCH}_3$ predominates (b) $\text{CH}_2=\text{CH}\cdot\text{CH}_2\text{CH}_3$ predominates
- (c) Both are formed in equal amounts (d) The amount of production depends on the nature of catalyst

41. Dilute aqueous KMnO_4 at room temperature reacts with $\text{R}-\text{CH}=\text{CH}-\text{R}$ to give

- (a) $\text{R}-\text{CHO}$ (b) $\text{R}-\text{COOH}$ (c) $\text{RCHOH}-\text{CHOHR}$ (d) $\text{CO}_2 + \text{H}_2\text{O}$

