CHEMISTRY

FOR IIT JEE ASPIRANTS OF CLASS 11 FOR CHEMISTRY

ALKYNES

W E

1. $ClCH_2 - CH_2Cl \xrightarrow[?]{Alc.KOH} (A) \xrightarrow[?]{NaCH_2} (B)$

find (A) and (B)

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2. $CH_3CH_2Cl \xrightarrow{CH_3-C\equiv CH+Na \ \ \text{Liq} \ \ NH_3} (A)$

Find the product (A) and explain, why product (A) cannot react with sodium metal?

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3. Acetylene is acidic but it does not react with NaOH or KOH. Give reason.

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4. How 3-hexyne can be prepared form acetylene?

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5. Based on reductive ozonolysis reaction, how do you distinguish between an alkene and alkyne?

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6. Arrange benzene, n-hexane and ethyne in decreasing order of acidic behaviour. Also give reason for this behaviour.

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7. Explain the best feasible path for thhe preparation of compound

$CH_3 - CO - CH_2 - CH_3$

from $CH_3 - CH(Br) - CH_2 - CH_3$?

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Level 1

1. The number of possible alkynes with molecular

A. 3

B. 4

C. 5

D. 6

Answer: A

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2. The number of open chain structural isomers possible for C_4H_6

A. 6

B. 5

C. 4

D. 3

Answer: C

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3. The isomer of propyne

A. Allene

B. Propene

C. Cyclo propane

D. Propane

Answer: A

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4. The C-C bond length is shortest in

A. C_2H_6

B. C_2H_2

C. C_6H_6

D. C_2H_4

Answer: B

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5. Gem dihalides on treatment with alcoholic KOH give

A. Alkyne

B. Alkene

C. Alkane

D. Cyclo alkanes

Answer: A

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6. Which one of the following has the minimum boiling point?

A. 1-Pentyne

B. 1-Butyne

C. n-Butane

D. Isobutane

Answer: D

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7. 1-pentyne and 2-pentyne can be distinguished by

A. Silver mirror test

B. Iodoform test

C. Addition of H_2

D. Baeyers test

Answer: A

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8. Cold and dil. Alk. $KMnO_4$ will oxidise acetylene to

A. Ethylene glycol

B. Ethyl alcohol

C. Oxalic acid

D. Acetic acid

Answer: C

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9. $X + 2KOH \xrightarrow{\text{alcohol}} H - C \equiv C - H$ here 'X' is

A. 1,1-Dibromoethane

B. 1,2-Dibromoethane

C. Both 1 and 2

D. 1,1,2,2-Tetrabromoethane

Answer: C

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10. Acetylene gives white precipitate with ammonical silver nitrate but ethylene cannot give because

A. Acetylene possess sp^2 carbon

B. Acetylene posses acidic hydrogen

C. Acetylene possess low electronegative carbon

D. Acetylene possess $-C \equiv C$-priple bond.

Answer: B

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11. Which of the following possess acidic hydrogen

A. C_2H_6

B. C_2H_4

C. C_2H_2

D. CH_4

Answer: C

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12. The reagent used for obtaining trans alkene from alkyl substituted acetylene with hydrogen is

A. Na in liz. NH_3

B. $LiAlH_4$

C. $Zn + HCl$

D. H_2 in presence of Ni

Answer: A

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13. Hydrocarbon which gives oxyacetylene flame

A. Ethane

B. ethene

C. ethyne

D. ethanal

Answer: C

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Level 2

1. Which of the following method is not used in the preparation of Acetylene

A. Dehydrohalogenation

B. Dehalogenation

C. Hydrolysis

D. Dehydrogenation

Answer: D

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2. Acetylene may be prepared by electrolysis of

A. Potassium fumerate

B. Potassium succinate

C. Potassium acetate

D. Potassium formate

Answer: A

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3. The intermediate compound formed when acetylene s hydrated in presence of dil H_2SO_4 and $HgSO_4$ is

A. Acetaldehyde

B. Ethenol

C. Vinyl chloride

D. Ethenal

Answer: B

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4. The acidic nature of hydrogens in acetylene cannot be explained by the reaction with

A. Sodium metal

B. Ammonical cuprous chloride solution

C. Ammonical silver nitrate solution.

D. Ammonical silver nitrate solution.

Answer: D

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5. What is the product formed when acetylene reacts with hypochlorous acid.

A. CH_3COCl

B. $ClCH_2CHO$

C. Cl_2CHCHO

D. $ClCH_2COOH$

Answer: C

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6. Acetylene does not show which of the following reactions?

A. Condensation

B. Polymerization

C. Addition reactions

D. Combustion reaction.

Answer: A

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7. The monosodium salt of acetylene on treating with methyl chloride forms

A. $CH \equiv C.COOH$

B. $CH \equiv C - CH_3$

C. $CH_3C \equiv CCH_3$

D. $CH \equiv C.CH_2CH_3$

Answer: B

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8. x' on ozonolysis gives a dial while 'y' reacts with Baeyer's reagent to give a diol. Then 'x' and 'y' respectively are

A. $C_2H_2 \& C_6H_6$

B. $C_2H_4 \& C_2H_2$

C. $C_2H_2 \& C_2H_4$

D. $C_2H_4 \& C_6H_6$

Answer: C

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9. Which of the following is true.

A. Acetylene is more reactive than ethylene to an electrophilic attack

B. Acetylene is less reactive than ethylene towards electrophilic attack

C. Acetylene may show more reactivity or less reactivity towards electrophilic reagent.

D. Acetylene and ethylene show identical reactivities towards and electrophilic attack.

Answer: B

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Level 3

1. In the following sequence of reactions the products D is

$C \equiv CH \xrightarrow{HBr} A \xrightarrow{HBr} B \xrightarrow{alcKOH} C \xrightarrow{NaNH_2} D$. D is

A. Ethanol

B. Etyne

C. Ethanal

D. Ethene

Answer: B

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2. 1-Butyne on reductive ozonolysis gives.

A. $CH_3CH_2CH_2COOH$

B. $2CH_3COOH$

C. CH_3CH_2COCHO

D. $CH_3COOH + CH_3CHO$

Answer: C

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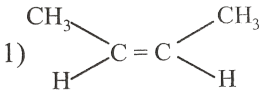
3. Which of the following hydrocarbons has the lowest dipole moment?

A. 

B. $CH_3C \equiv CCH_3$

C. $CH_3CH_2 \equiv CH$

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

Answer: B

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4. $CH \equiv CH \xrightarrow{NaNH_2} [A] \xrightarrow{CH_3Br} [B]$

A. $CH_2 = CH - CH = CH_2$

B. $HC \equiv C - CH_3$

C. $CH_2 = CH - CH_3$

D. $CH_3 - CH_2 - CH_3$

Answer: B

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5. Hydration of ethyne to ethanal takes place through the formation of

A. $CH_3CH(OH)_2$

B. $CH_2 = CHOH$

C. $CH_2 = CHO^-$

D. $CH \equiv C^-$

Answer: B

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6. A compound on dehydrohalogenatio with alcoholic KOH gives alkyne but on dehalogenation with zinc dust gives alkene. The compound

A. C_2H_5Br

B. CH_3CHBr_2

C. $CH_2Br - CH_2Br$

D. $CHBr_2 - CHBr_2$

Answer: C

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7. $CaC_2 \xrightarrow{\text{Hydrolysis}} A \xrightarrow{HgSO_4 + dil.\ H_2SO_4} B$. B is

A. Acetylene

B. Acetaldehyde

C. acetone

D. acetic acid

Answer: B

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8. $CaC_2 + H_2O \to A + B \xrightarrow{1\text{ mole } Na} C \xrightarrow{C_2H_5I} D$. D is

A. 1-butene

B. Propene

C. 1-pentene

D. 1-butyne

Answer: D

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9. $\underset{Cl}{\underset{|}{CH_2}} - \underset{Cl}{\underset{|}{CH_2}} \xrightarrow{Alc.\quad KOH} A(1mo \leq HCl) \rightarrow B$, B is

A. Ethyl chloride

B. 1,1 dichloro ethene

C. Vinyl chloride

D. Ethylidine chloride.

Answer: C

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10. $CH \equiv Ch \xrightarrow{HCl} A \xrightarrow{\text{Polymerisation}} B$

The polymer B is

A. orlon

B. PVC

C. nylon

D. teflon

Answer: B

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11. $H - C \equiv C - H + NaNH_2 \rightarrow A \xrightarrow[CH_3Cl]{2 \text{ mole}} B$ Then B is

A. 1-Butyne

B. 2-Butyne

C. 2-Pentyne

D. Propyne

Answer: B

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12. When 2-pentyn is treated with dilute H_2SO_4 and $HgSO_4$ the product formed is

A. 1-pentanol

B. 2-pentanol

C. 2-pentanone

D. 3-pentanone

Answer: C

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13. The cyclic polymerisation of methyl acetylene produces

A. Benzene

B. O-xylene

C. 1,3,5-Trimethyl benzene

D. 1,3,5-Tri methyl cyclo hexane

Answer: C

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14. The compound 1-butyne and 2-butyne can be distinguished by using

A. Bromine water

B. $KMnO_4$ solution

C. Tollen's reagent

D. Chlorine gas

Answer: C

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15. Which of the following orders regarding acidic strength is correct.

A. $CH_3COOH > CH_3CH_2OH > CH \equiv CH$

B. $CH_3COOH > CH \equiv CH > CH_3CH_2OH$

C. $CH \equiv CH > CH_3COOH > CH_3CH_2OH$

D. $CH \equiv CH > CH_3CH_2OH > CH_3COOH$

Answer: A

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16. An unknown compound (A) has a molecular formula C_4H_6. When (A) is treated with excess of Br_2 a new substance (B) with formula $C_4H_6Br_4$. Is formed (A) forms a white ppt. with ammonical silver nitrate solution. (A) may be,

A. Butyne-1

B. Butyne-2

C. Butene-2

D. Butene-1

Answer: A

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17. The reduction of $4-$ octyne with H_2 in the presence of $Pd/CaCO_3-$ quinoline gives-

A. Trans-4-octene

B. cis-4-octene

C. A mixture of cis and trans-4-octene

D. A completely reduced product C_6H_{18}

Answer: B

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18. The hydrolysis of Mg_2C_3 produces

A. Acetylene

B. Propyne

C. Butyne

D. Ethylene

Answer: B

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19. Pure acetylene has sweety smell, where as impure gives garlic odour due to presence of

A. NH_3

B. PH_3

C. SbH_3

D. HCl

Answer: B

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20. The stronger base is

A. $CH_3CH_2^-$

B. $CH_2 = CH^-$

C. $CH \equiv C^-$

D. Cl^-

Answer: A

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21. The colour of the precipitate formed when acetylene is passed through ammonical cuprous chloride solution is.

A. White

B. Red

C. Blue

D. Green

Answer: B

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22. What is the product when acetylene reacts with HCN

A. CH_3COCl

B. $CH_2 = CH - CN$

C. Cl_2CHCHO

D. $CICH_2COOH$

Answer: B

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23. Westron is the solvent obtained by the reaction of chlorine with

A. Ethylene glycol

B. Ethyne

C. Ethane

D. Mthane

Answer: B

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24. The final product formed when ethyne and acetic acid

A. Vinyl acetate

B. Ethyl acetate

C. Acetylene acetic acid

D. Ethylidene acetate

Answer: D

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25. A compound (C_5H_8) reacts with ammoniacal $AgNO_3$ to give a white precipitate and reacts with excess of $KMnO_4$ solution to give $(CH_3)_2CH-COOH$. The compound is

A. $CH_2=CH-CH=CH-CH_3$

B. $CH_3-CH_2-C\equiv C-CH_3$

C. $(CH_3)_2CHC\equiv CH$

D. $(CH_3)_2C=C=CH_2$

Answer: C

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26. 1-butyne on reaction with hot alkaline $KMnO_4$ gives:

A. $CH_3CH_2CH_2COOH$

B. $CH_3COOH + CH_3COOH$

C. CH_3COOH only

D. $CH_3CH_2COOH + HCOOH$

Answer: D

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27. Order of acidity of H_2O, NH_3 and acetylene is:

A. $NH_3 > CH \equiv CH > H_2O$

B. $H_2O > NH_3 > CH \equiv CH$

C. $H_2O > CH \equiv CH > NH_3$

D. $NH_3 > H_2O > CH \equiv CH$

Answer: C

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Level 4

1. Statement-I: Acetylene is formed when ethylene chloride or ethylidene chloride is heated with alcoholic KOH.

Statement-II: Both gem dihalides and vinicinal dihalides on dehydrohalogenation form alkyne.

A. S-I&II are correct, S-II is correct explanaion of S-I

B. S-I&II are correct, S-II is not correct explanation of S-I

C. S-I is true, but S-II is false

D. S-I is false, but S-II is true.

Answer: A

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2. S-I: Heavy metal acetylides can be used to purify alkynes

S-II: Terminal alkynes form acetylides which are soluble in acids.

A. S-I&II are correct, S-II is correct explanaion of S-I

B. S-I&II are correct, S-II is not correct explanation of S-I

C. S-I is true, but S-II is false

D. S-I is false, but S-II is true.

Answer: A

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3. S-I: Disubstituted acetylene on partial hydrogenation may give trans isomer.

S-II: Lindlar's catalyst is used for partial hydrognation.

A. S-I&II are correct, S-II is correct explanaion of S-I

B. S-I&II are correct, S-II is not correct explanation of S-I

C. S-I is true, but S-II is false

D. S-I is false, but S-II is true.

Answer: B

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4. S-I: Alkynes are more reactive than alkene towards catalytic hydrogenation

S-II: Alkynes are less reactive towards electrophilic reactio than alkenes

A. S-I&II are correct, S-II is correct explanaion of S-I

B. S-I&II are correct, S-II is not correct explanation of S-I

C. S-I is true, but S-II is false

D. S-I is false, but S-II is true.

Answer: B

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5. S-I: Addition of HBr to $HC \equiv CCH_2CH = CH_2$ give $HC = CBrCH_2CH = CH_2$

S-II: A triple bond is more reactive than a double.

A. S-I&II are correct, S-II is correct explanaion of S-I

B. S-I&II are correct, S-II is not correct explanation of S-I

C. S-I is true, but S-II is false

D. S-I is false, but S-II is true.

Answer: A

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6. S-I: Reaction of but-2-yne by Na/liq NH_3 gives trans but-2-ene

S-II: It is syn addition.

A. S-I&II are correct, S-II is correct explanaion of S-I

B. S-I&II are correct, S-II is not correct explanation of S-I

C. S-I is true, but S-II is false

D. S-I is false, but S-II is true.

Answer: C

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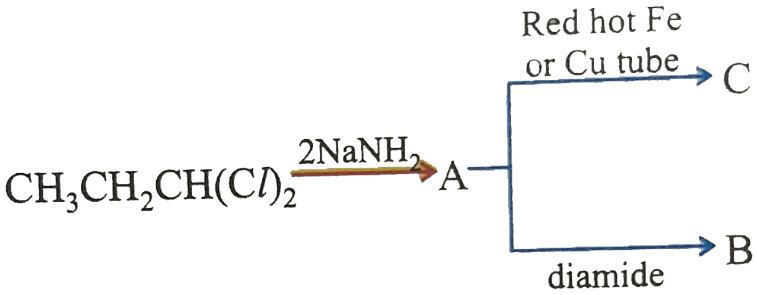

7.

A is

A. Propyne

B. Propene

C. Propanal

D. Propanone

Answer: A

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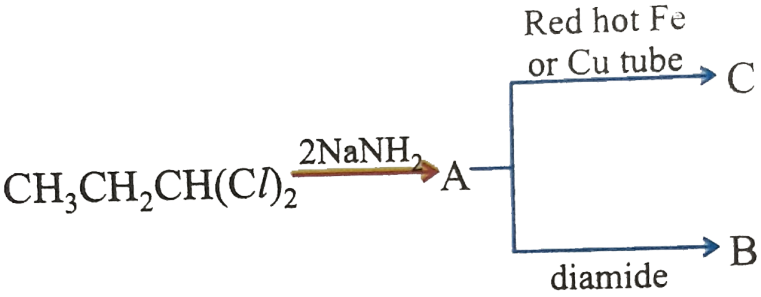

8.

B is

A. $CH_3CH = CH_2$

B. $CH_3CH_2CH_3$

C. CH_3COCH_3

D. CH_3CH_3

Answer: A

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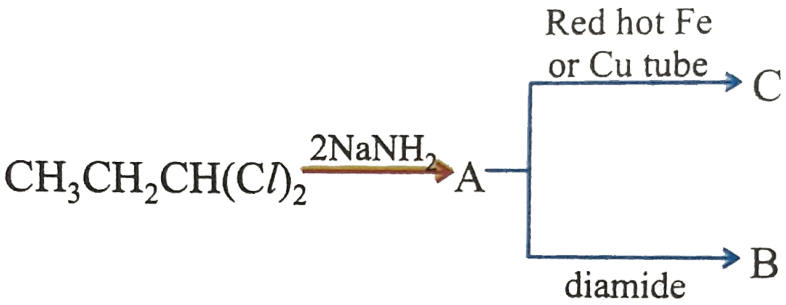

9.

Q. C is

A. Mesitylene

B. Benzene

C. Cyclooctatetraene

D. Benzaldehyde.

Answer: A

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10. Terminal alkynes hafvfe a acidic hydrogn/s. sodium salt of terminal alkynes behave as nucleophile as well as strong base. For primary alkyl halides it well as strong base. For primary alkyl halides it behave as nucleophile. Thus primary alkyl halides give SN reaction with its salt. Alkynes undergo give SN reaction with its salt. Alkynes undergo electrophilic as well as nucleophilic addition reaction. they also undergo hydroboration, oxidation and ozonolysis.

Q. When 1-pentyne is treated with dil. H_2SO_4 and $HgSO_4$ the product formed is

A. 1-pentanol

B. pentanal

C. 2-pentanone

D. 3-pentanone

Answer: C

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11. Terminal alkynes hafvfe a acidic hydrogn/s. sodium salt of terminal alkynes behave as nucleophile as well as strong base. For primary alkyl halides it well as strong base. For primary alkyl halides it behave as nucleophile. Thus primary alkyl halides give SN reaction with its salt. Alkynes undergo give SN reaction with its salt. Alkynes undergo electrophilic as well as nucleophilic addition reaction. they also undergo hydroboration, oxidation and ozonolysis.

Q. $CH_3C \equiv CH + HOX(2equ.) \rightarrow Y$. Y is

A. CH_3COCHX_2

B. CH_3COCH_3

C. $CH_3COCOOH$

D. $CH_3CHXCHO$

Answer: A

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12. Terminal alkynes hafvfe a acidic hydrogn/s. sodium salt of terminal alkynes behave as nucleophile as well as strong base. For primary alkyl halides it well as strong base. For primary alkyl halides it behave as nucleophile. Thus primary alkyl halides give SN reaction with its salt. Alkynes undergo give SN reaction with its salt. Alkynes undergo electrophilic as well as nucleophilic addition reaction. they also undergo hydroboration, oxidation and ozonolysis.

A) $R-CH=CH-R$ $\xrightarrow{cold\ dil\ KMnO_4}$ P) Meso

cis

B) $R-CH=CH-R$ $\xrightarrow[CCl_4]{Br_2}$ Q) cis-alkene

trans

C) $RC\equiv CR \xrightarrow[Pd-BaSO_4]{H_2}$ R) trans-

D) $RC\equiv CR \xrightarrow[Liq.NH_3]{Li}$ S) controlled reduction

T) Oxidation

Q.

A. $\begin{matrix} A & B & C & D \\ PT & P & QS & RS \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ RS & QS & PT & PT \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ QS & P & PT & RS \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ RS & P & PT & QS \end{matrix}$

Answer: A

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13. Terminal alkynes hafvfe a acidic hydrogn/s. sodium salt of terminal alkynes behave as nucleophile as well as strong base. For primary alkyl halides it well as strong base. For primary alkyl halides it behave as nucleophile. Thus primary alkyl halides give SN reaction with its salt. Alkynes undergo give SN reaction with its salt. Alkynes undergo electrophilic as well as nucleophilic addition reaction. they also undergo hydroboration, oxidation and ozonolysis.

Q. The correct match is

	A	B	C	D
1)	3	1	5	2
2)	2	1	5	4
3)	5	2	1	3
4)	3	1	2	4

A. $\begin{matrix} A & B & C & D \\ 3 & 1 & 5 & 2 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 2 & 1 & 5 & 4 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 5 & 2 & 1 & 3 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 3 & 1 & 2 & 4 \end{matrix}$

Answer: D

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14. Terminal alkynes hafvfe a acidic hydrogn/s. sodium salt of terminal alkynes behave as nucleophile as well as strong base. For primary alkyl halides it well as strong base. For primary alkyl halides it behave as nucleophile. Thus primary alkyl halides give SN reaction with its salt. Alkynes undergo give SN reaction with its salt. Alkynes undergo electrophilic as well as nucleophilic addition reaction. they also undergo hydroboration, oxidation and ozonolysis.

Q. Compound , Ozonolysis products

(A) Acetylene , 1 $HCOCH \& CH_3CHO$

(B) Ethylene , (2) CH_3CHO

(c) Benzene (3) One mole of $(CHO)_2$

(d) 2-Butene , (4) 2 moles of $(CHO)_2$

(5) CH_2O

A. $\begin{matrix} A & B & C & D \\ 3 & 2 & 5 & 4 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 4 & 2 & 1 & 3 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 3 & 5 & 4 & 2 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 5 & 3 & 1 & 4 \end{matrix}$

Answer: C

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Level 1 H W

1. The number of open chain structural isomers possible formul C_5H_8 is

A. 7

B. 6

C. 5

D. 4

Answer: A

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2. Alkynes exhibit functional isomerism with

A. Alkanes

B. Alkenes

C. Alkadienes

D. Alcohols

Answer: C

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3. Bond angle betwee C-C in alkyne

A. $109^\circ.28$

B. 120°

C. 180°

D. 60°

Answer: C

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4. The molecule havi linear structure is

A. Methane

B. Ethylene

C. Acetylene

D. Water

Answer: C

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5. $X + 2Zn \xrightarrow{\text{Alcohol}} H - C \equiv C - H$ here 'X' is

A. 1,1-Dibromoethane

B. 1,2-Dibromoethane

C. Di bromo ethane

D. 1,1,2,2-Tetra bromoethane

Answer: D

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6. Correct order of boiling of Hydrocarbons

A. Alkyne=Alkene=Alkane

B. AlkyneltAlkeneltAlkane

C. AlkynegtAlkenegtAlkane

D. Alkyne=AlkenegtAlkane

Answer: C

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7. In its reaction with silver nitrate acetylene shows

A. Oxidizing property

B. Reducing property

C. Basic nature

D. Acidic nature.

Answer: D

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

A. Ethane

B. Ethanal

C. Ethanol

D. Ethanoic acid

Answer: B

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9. $HC \equiv CH + HX \xrightarrow{\text{dark}} X \xrightarrow[HX]{dark} Y$. Find X&Y.

A. $CH_2 = CH_2 \& \overset{X}{\overset{|}{C}}H_2 - \overset{X}{\overset{|}{C}}H_2$

B. $CH_2 = CHX \& CH_3 - CHX_2$

C. $CH_2 = CHX \& \overset{X}{\overset{|}{C}}H_2 - \overset{X}{\overset{|}{C}}H_2$

D. $CH_2 = CHX \& X_2CH - CHX_2$

Answer: B

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10. Find the product formed when C_2H_2 reacts with Tollen's reagent

A. $AgCH = CHAg$

B. $AgC \equiv Cag$

C. $H_2C = CH_2$

D. $AgCH_2 = CH_2Ag$

Answer: B

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11. Which of these will not react with acetylene?

A. $NaOH$

B. Na

C. Ammonical $AgNO_3$

D. HCl

Answer: A

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12. What is Lindlar's Catalyst

A. $LiAlH_4$

B. $H_2 - Pd/BaSO_4$

C. $Li/liq.\ NH_3$

D. $Hg^{2+}/H^+/H_2O$

Answer: B

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13. Acetylene is stored and Transported in

A. Aectone

B. H_2O

C. Alcohol

D. all the above

Answer: A

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Level 2 H W

1. Tetrabromoethane on treatment with Zn gives

A. CH_3OH

B. $CH \equiv CH$

C. $CH_3 - CH_3$

D. $CH_2 = CH_2$

Answer: B

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2. Which of the following carbide on hydrolysis gives Acetylene gas

A. Al_4C_3

B. Be_2C

C. Be_2C

D. CaC_2

Answer: D

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3. $CH_3 - C \equiv CH \xrightarrow[Hg^{2+}]{dil\,H_2SO_4} CH_3 - \underset{(X)}{\overset{OH}{\overset{|}{C}}} - CH_2 \leftrightarrow CH_3 - \underset{(Y)}{\overset{O}{\overset{||}{C}}} - CH_3$

By what phenomenon X converts into Y.

A. Isomerisation

B. Aromatisation

C. Tautomerism

D. Metamerism.

Answer: C

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4. The number of acidic hydrogen atoms in 1-butyne and 2-butyne respectively are

A. 1,0

B. 0,1

C. 1,1

D. 1,2

Answer: A

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5. Acetylene with excess of Br_2 / CCl_4 gives

A. Decolorisation, $CHBr_2 - CH_3$

B. Decolorisation, $CHBr_2 - CHBr_2$

C. redish brown colour, $CHBr_2 - CH_3$

D. redish brown colour, $CHBr_2 - CHBr_2$

Answer: B

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6. Acetylene is passed through red hot iron tubes to give

A. C_6H_6

B. C_2H_6

C. C_2H_4

D. all the above

Answer: A

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7. $CH \equiv Ch \xrightarrow{\text{Excess } NaNH_2} A \xrightarrow{C_2H_5Cl} B$, find the B.

A. $C_2H_5 - C \equiv C - C_2H_5$

B. $HC \equiv C - C_2H_5$

C. $H_2C = CH - C_2H_5$

D. $CiHC = CHC_2H_5$

Answer: A

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8. Acetylene on ozonolysis with

$(O_3 + Zn/H_2O)$ gives

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

B. $HO - \overset{O}{\overset{||}{C}} - \overset{O}{\overset{||}{C}} - OH$

C. $H_2\overset{HO}{\overset{|}{C}} - \overset{OH}{\overset{|}{C}}H_2$

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

Answer: A

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Level 5

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

A. Propanol

B. Propyl hydrogen sulphate

C. Acetone

D. Propanol

Answer: C

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2. Which of the following reacts with ammonical $AgNO_3$ solution.

A. Ethyne

B. Ethyne

C. But-2-yne

D. Ethane

Answer: A

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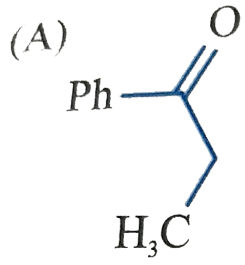
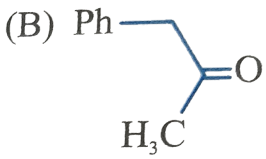
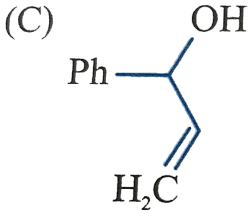
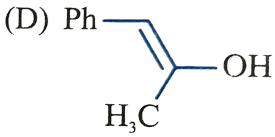
3. In the reaction

$$Ph - C \equiv C - CH_3 \xrightarrow[HgSO_4]{H_3O^+} A,$$ A is

A. 

B. 

C. 

D. 

Answer: A

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4. 2-Butyne which treated with lithium I presence of liquid ammonia gives

A. cis-2-butene

B. trans-2-butene

C. n-butane

D. 1-butyne

Answer: B

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5. In the following sequence of reactions the products D is

$C \equiv CH \xrightarrow{HBr} A \xrightarrow{HBr} B \xrightarrow{alcKOH} C \xrightarrow{NaNH_2} D$. D is

A. Ethanol

B. Ethyne

C. Ethanal

D. Ethene

Answer: B

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6. Acidic hydrogen is present in:

A. Ethyne

B. Ethane

C. Benzene

D. Ethene

Answer: A

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7. Which is the most suitable reagent among the following to distinguish compound (iii) from the rest of the compounds

i. $CH_3 - C \equiv C - CH_3$

ii. $CH_2 - CH_2 - CH_2 - CH_3$

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

iv. $CH_3 - CH = CH_2$

A. Br_2 in CCl_4

B. cold aq Alk $KMnO_4$

C. Ammonical $AgNO_3$ solution

D. All of these

Answer: C

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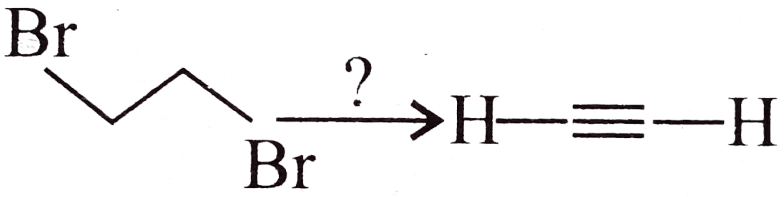
8. The reagent(s) for the following conversion



is/are:

A. alcoholic KOH

B. alcoholic KOH followed by $NaNH_2$

C. aqueous KOH followed by $NaNH_2$

D. Zn/CH_3OH

Answer: B

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9. The compound $1,2-$ butadiene has :

A. only sp-hybridized carbon atoms

B. only sp^2-hybridized carbon atoms

C. bot sp & sp^2-hybridized carbon atoms

D. sp, sp^2 and sp^3 hybridized carbon atoms.

Answer: D

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10. In the reaction:

$H_2C = CH - CH = CH_2 \xrightarrow[180^\circ C]{Br_2} [X]$, [X] will be

A. $BrCH_2 - CH = CH - CH_2 - Br$

B. $CH_2Br - CHBr - CH = CH_2$

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

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

Answer: A

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11. Ozonolysis of $CH_3—CH=C=CH_2$ will give

A. Only CH_3-CHO

B. Only CH_2O

C. only CO_2

D. mixture of CH_3CHO, $HCHO$ and CO_2

Answer: D

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12. Which of the following is cummulative diene?

A. $H_2C=C=CH_2$

B. $H_2C = CH - CH_2 - CH = CH_2$

C. $H_2C = CH - CH = CH_2$

D. All of these

Answer: A

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13. Arrange the compounds (1),(2) and (3) in their decreasing order of stability:

$\underset{(1)}{H_2C = C = CH_2}$ $\underset{(2)}{H_2C = CH - CH_2 - CH = CH_2}$

$\underset{(3)}{H_2C = CH - CH = CH_2}$

A. 1gt2gt3

B. 2gt3gt1

C. 3gt1gt2

D. 3gt2gt1

Answer: D

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14. Which of the following will yield a mixture of 2-chlorobutene and 3-chlorobutene on treatment with HCl?

A. $H_2C = C = CH - CH_3$

B. $H_2C = \underset{\underset{CH_3}{|}}{C} - CH = CH_2$

C. $H_2C = CH - CH = CH_2$

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

Answer: A

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15. Which of the following statements regarding 1,2- or 1,4- conjugate addition of HBr to 1,3-butadiene is false?

A. The kinetic product,3-bromo-1-butene, aroses from the more stable carbocation intermediate

B. The thermodynamic product, 1-bromo-2-butene, is the more stable product.

C. The kinetic product is favored by carrying out the reaction at high temperature.

D. Formation of the two products arises from a common resosnance stabilized carbocation intermediate.

Answer: C

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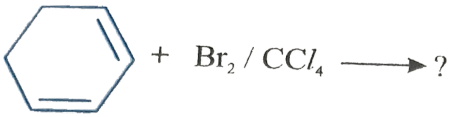
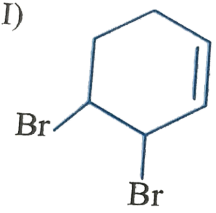


I)



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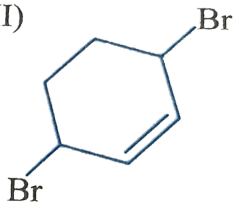

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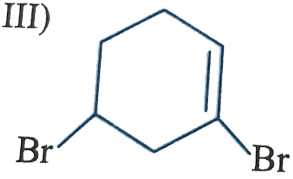
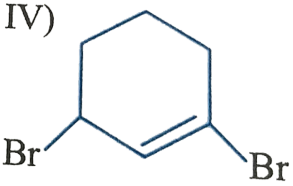


IV)



16.

What is/are the product(s) from the following reaction?

A. I and II

B. I and III

C. I and IV

D. II and III

Answer: A

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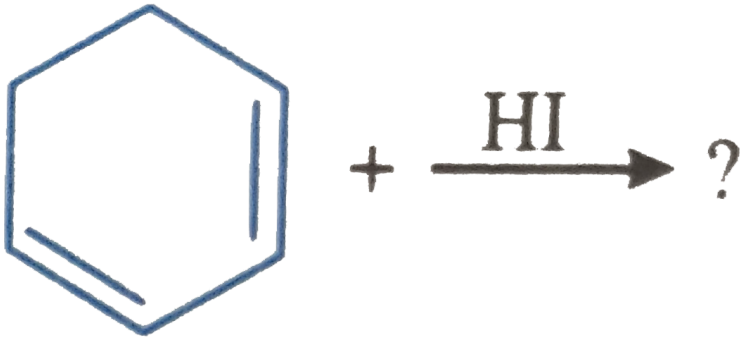
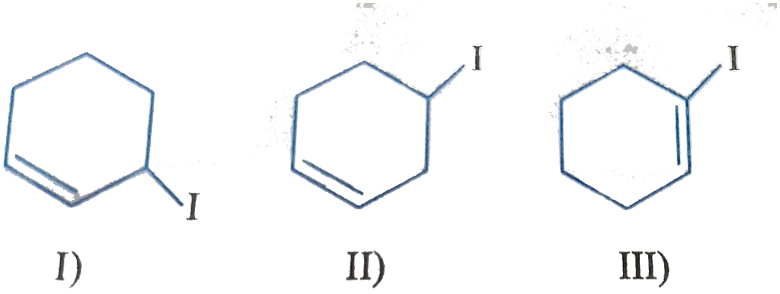


17.

Which of the following is/are the major product(s) of the following reaction?



A. I

B. I and II

C. I and III

D. II

Answer: A

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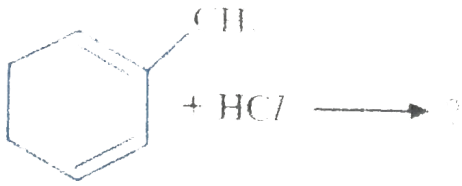
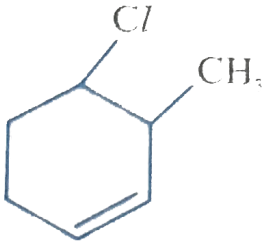
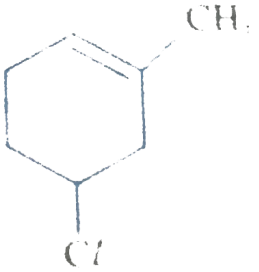
18. What is the kinetic product for the following reaction?



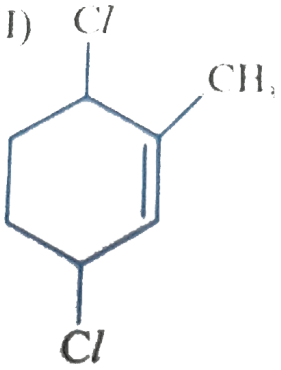
I)



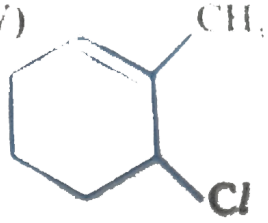
II)



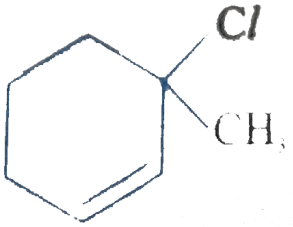
III)



IV)



V)



A. I

B. V

C. III

D. IV

Answer: B

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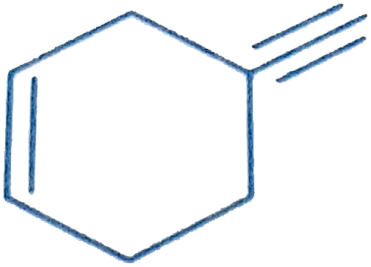
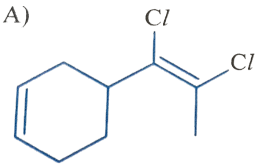


$$\xrightarrow[CCl_4]{3\ eq.\ Cl_2} ?$$

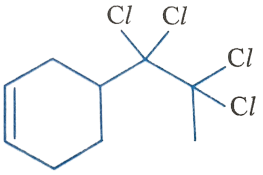
19.

What is the product of the following reaction?

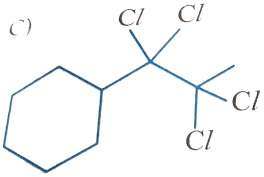
A.



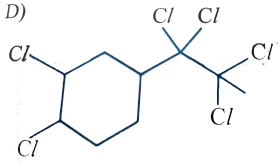
B.



C.



D.



Answer: B

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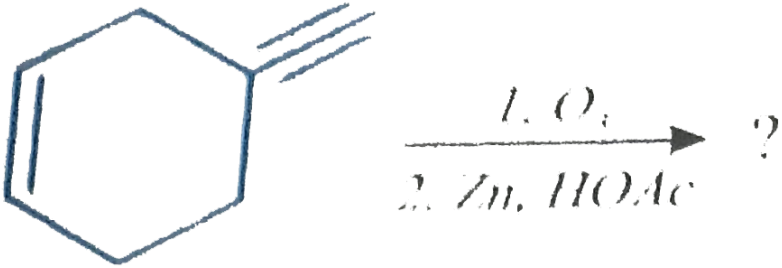
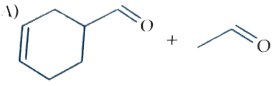
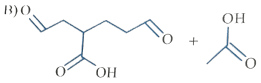
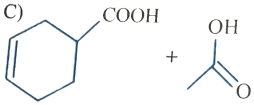
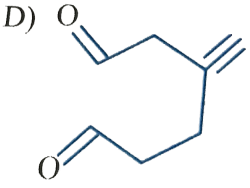
20. What is the product of the following reaction?



A. 

B. 

C. 

D. 

Answer: B

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21. $Ph - C \equiv C - Me \xrightarrow{20\%\, D_2SO_4 \text{ in } D_2O / Hg^{++}} (P)$

Principal organic product is.

A. $Ph - \overset{H}{\overset{||}{O}}C - CD_2 - Me$

B. $Ph - CD_2 - \overset{O}{\overset{||}{C}} - Me$

C. $Ph - \overset{\overset{O}{\|}}{C} - CH_2 - CHD_2$

D. $Ph - \overset{\overset{O}{\|}}{C} - \overset{\overset{H}{|}}{\underset{\underset{D}{|}}{C}} - CH_2D$

Answer: A

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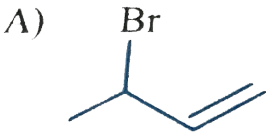
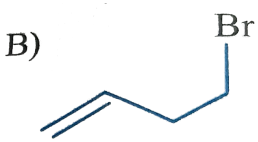
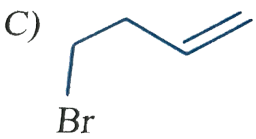
22. 

Major product.

A. 

B. 

C. 

D. None of these

Answer: B

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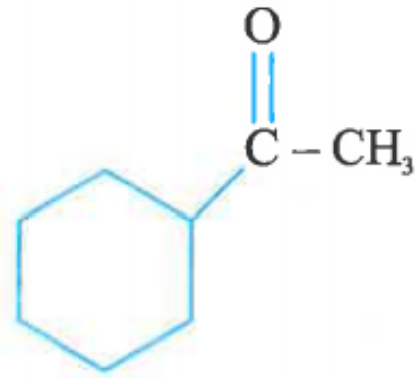
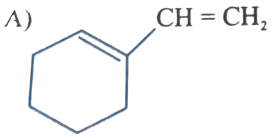
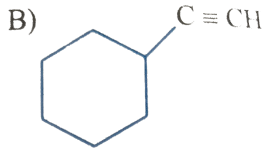


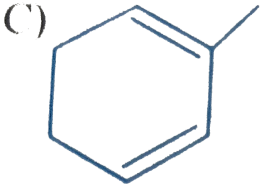
$$\xrightarrow[0^0 C]{PCl_5} (A) \underset{70-80\%}{} \xrightarrow[(2)H^{\oplus}]{(1)3\,NaNH_2, \min\ eraloil} (B); \underset{46\%}{}$$

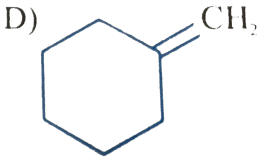
23. Product (B) is

Product (B) is

A. 

B. 

C. 

D. 

Answer: B

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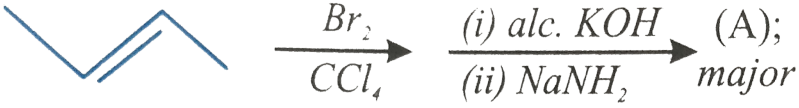
24.



Product (A) is

A. $H_2C = CH - CH = CH_2$

B. $CH_3 - C \equiv C - CH_3$

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

D. $CH_3 - CH = C = CH_2$

Answer: B

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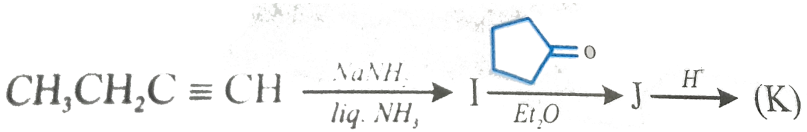
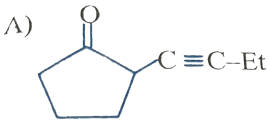
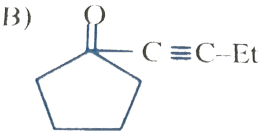
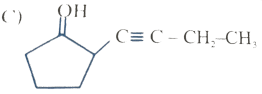
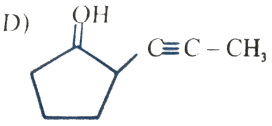
25. 

Product (K) of the above reaction is:

A. 

B. 

C. 

D) 

D.

Answer: B

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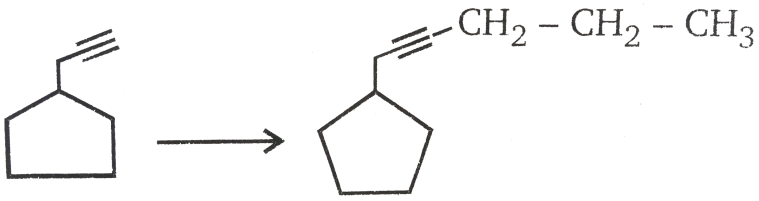
26. 

, This conversion can be achieved by:

A. $NaNH_2, CH_2CHO$

B. $NaCH_2, CH_3 - CH_2 - CH_2 - Br$

C. $KOH, CH_3 - CH_2 - Br$

D. $KOH, CH_2Br - CH_2Br$

Answer: B

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27. $Ph - C \equiv Ch \xrightarrow[MeOH]{MeO^-}$ Major product of the reaction is:

A. $Ph - CH = CH_2$

B. $PhCH - CH(OMe)$

C. $Ph - C \equiv C - OMe$

D. $Ph - C(OMe) = CH_2$

Answer: B

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28. $Ph - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_3 \xrightarrow{3NaNH_2} \underset{\text{product}}{(A)}$, Product (A) is :

A. $Ph - CH = CH_2$

B. $Ph - C \equiv CH$

C. $Ph - CH_2 - CH_3$

D. $Ph - C \equiv \overset{(-)}{C}\overset{\oplus}{Na}$

Answer: D

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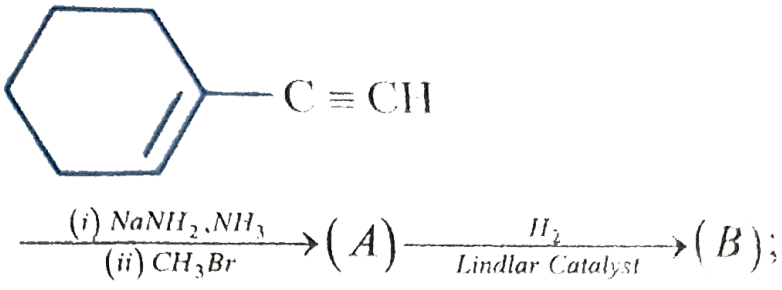
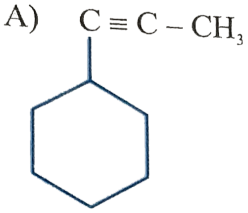
29.

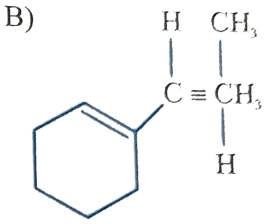


Product (B) is

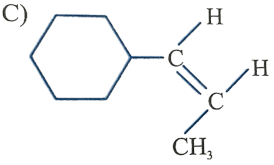
A.



B.

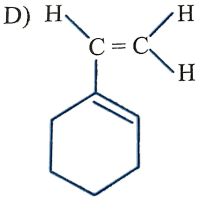


C)



C.

D)



D.

Answer: C

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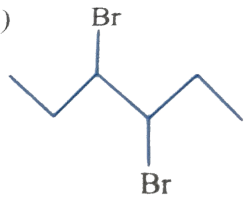
30. What is the final product, C, of the following reaction sequence?

$$CH_3 - CH_2 - C \equiv C - H \xrightarrow[(ii)\ .CH_3CH_2Br]{(i)\ NaNH_2} A$$

$$A \xrightarrow{Na, NH_3\,(liq.)} B$$

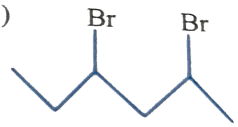
$$B \xrightarrow[CH_2Cl_2]{Br_2} C$$

A)

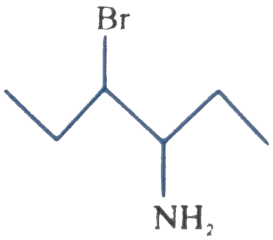


A.

B)

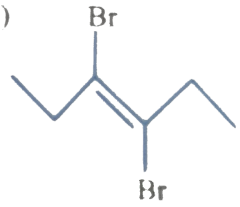


B.



C.

D)



D.

Answer: A

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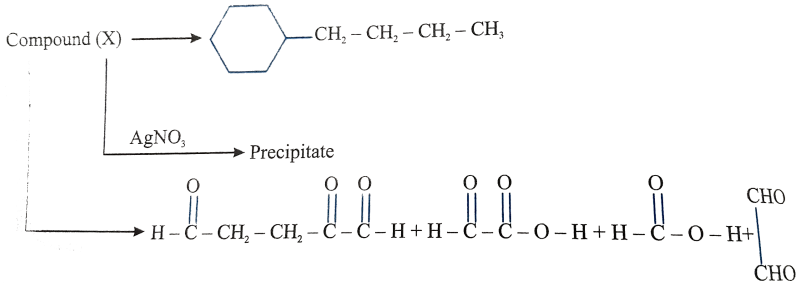
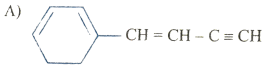
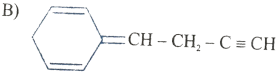
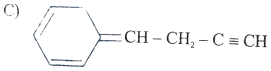


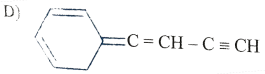
31.

Compound X will be

A. 

B. 

C. 

D. 

Answer: A

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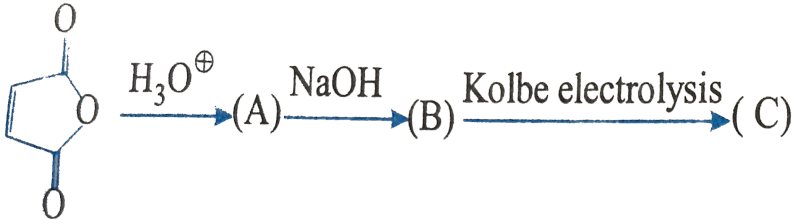
32. Match the following columns



A. $H_2C = CH_2$

B. $CH_3 - C \equiv C - CH_3$

C. $HC \equiv CH$

D. $CH_3 - CH = CH - CH_3$

Answer: C

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33. One mole of 1,2-dibromopropane on treatment with X moles of $NaNH_2$ followed by treatment with ethyl bromide gave a pentyne. The value of X is:

A. One

B. Two

C. Three

D. Four

Answer: C

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34. $CH_3 - C \equiv C - CH_3 \xrightarrow{\text{Cold } KMnO_4} (A)$

Product (A) is :

A. $CH_3 - CH_2 - CO - CHO$

B. $CH_3 - CO - CO - CH_3$

C. $CH_3 - CH(OH) - CH(OH) - CH_3$

D. $O = CH - CH_2 - CH_2CH = O$

Answer: B

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35. In which reaction last production is $Ph - C \equiv CH$?

A. $C_6H_5 - CBr_2 - CH_3 \xrightarrow[\text{Mineral oil, Heat}]{3NaNH_2} \xrightarrow{NH_4Cl}$

B. $C_6H_5CH = CH_2 \xrightarrow[CCl_4]{Br_2} \xrightarrow[\text{Mineral Oil, Heat}]{3NaNH_2} \xrightarrow{NH_4Cl}$

C. $C_6H_5 - CO - CH_3 \xrightarrow{PCl_5} \xrightarrow[\text{Mineral oil, heat}]{3NaNH_2} \xrightarrow{NH_4Cl}$

D. All

Answer: D

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36. Predict the product of the following reaction sequence:

Ethyne $\xrightarrow[(3)\, H^{\oplus}]{(1)\ \text{Excess}\ \ NaNH_2 \quad (2)\ \text{excess}\ 1 - CH_2 - (CH_2)_2 - CH_3}$

A. 6-iodo-1-hexyne

B. 1-hexyne

C. 5-decyne

D. 1-iodo-1-hexene

Answer: C

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37. $\underset{(A)}{C_4H_6} \xrightarrow[Pd/BaSO_4]{H_2} \underset{(B)}{C_4H_8} \xrightarrow{O_3, H_2O} 2CH_3COOH$

which of the following does not represent compound A & B correctly

A. $CH_3 - C \equiv C - CH_3, CH_3 - CH = CH - CH_3$

B. $CH_2 = CH - CH = CH_2, CH_3 - CH = CH - CH_3$

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

D. (D)  , $CH_3—CH=CH—CH_3$

Answer: B::C::D

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38. Which of the following on reductive ozonolysis give only glyoxal?

A. Ethylene glycol

B. Benzene

C. Toluene

D. Cyclobuta-1,3-diene

Answer: B::D

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39. Which of the following reduces 2-butyne into cis-2-butene.

A. $Na / NH_3(I0l)$

B. BH_3 followed by CH_3COOH

C. $H_2 / Pd - BaSO_4$

D. $Li / NH_3(l)$

Answer: B::C

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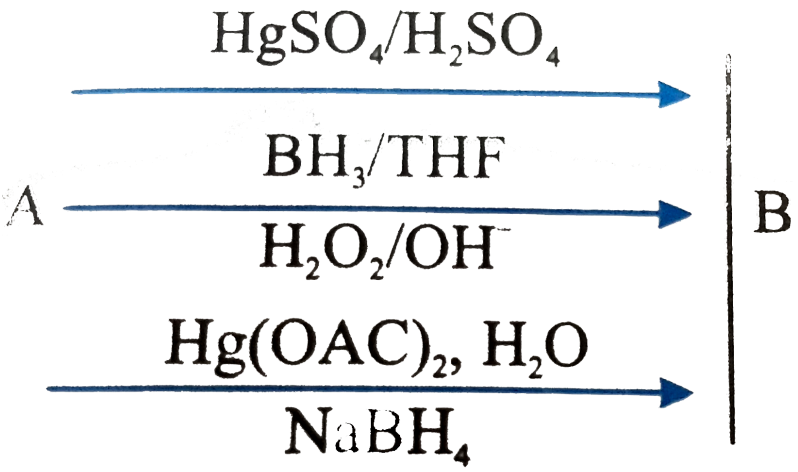

40.

B is identical when A is

A. $CH \equiv CH$

B. $CH_3 - CH \equiv CH$

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

D. $CH_3 - CH_2 - CH \equiv CH$

Answer: A::C

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41. Ammonical silver nitrate reacts with

A. ethyne

B. ethylene

C. butyne-1

D. butyne-2

Answer: A::C

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42. Which of the following statement are correct:

A. Hydrogenation of 2-butyne in presence of Na and liquid ammonia yields trans -2-butene

B. Hydrogenation of 2-butyne is presence of lindlar's catalyst yields cis-2-butene

C. Hydrogenation of 2-butyne in presence of Pt catalyst gives trans-2-butene

D. Hydrogenation of 2-butyne in presence of Pt catalyst gives cis-2-butene

Answer: A::B::D

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43. Which is/are true statement/reactions?

A. $Al_4C_3 + H_2O \rightarrow CH_4$

B. $CaC_2 + H_2O \rightarrow C_2H_2$

C. $Mg_2C_3 + H_2O \rightarrow CH_3C \equiv CH$

D. $SiC + 4H_2O \rightarrow CH_4 + Si(OH)_4$

Answer: A::B::C

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44. Which gases are poisonous?

A. Lewisite

B. Mustard gas

C. Phosgene

D. MIC

Answer: A::B::C::D

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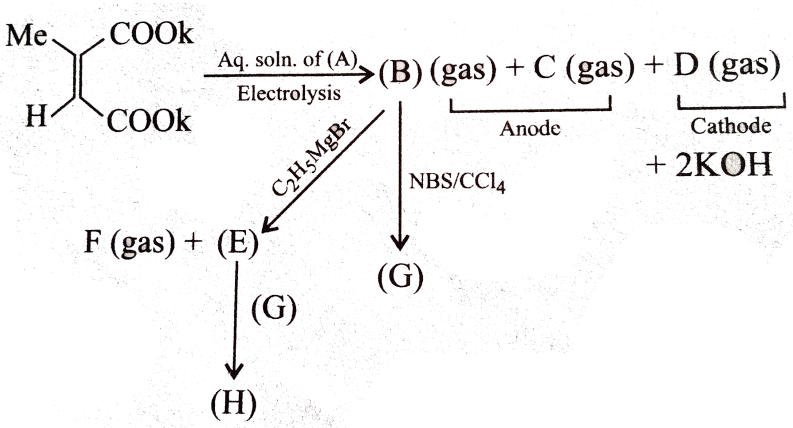
45. In the following sequence of reactions, products (A) to (H) are formed:

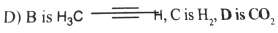


The gases (B), (C), and (D), respectively, are:

A. B is $CH \equiv CH$, C is CO_2, D is H_2

B. B is $CH \equiv CH$, is H_2, D is CO_2

C. 

D. 

Answer: C

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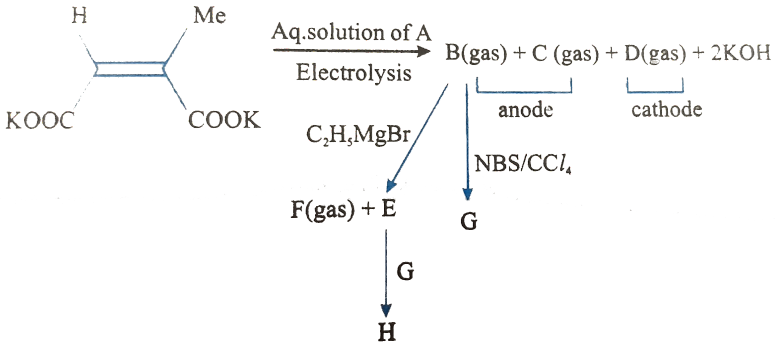
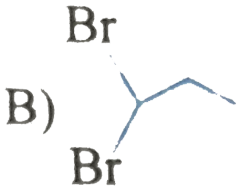
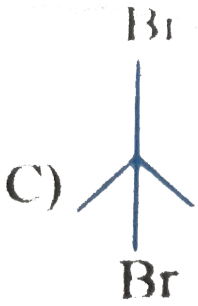
46. In the following sequence of reactions products (A) to (H) are formed.

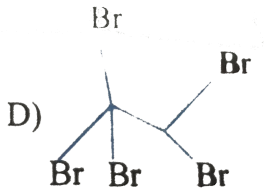


Q. Compound G is

A. 

B. 

C. 

D. 

Answer: A

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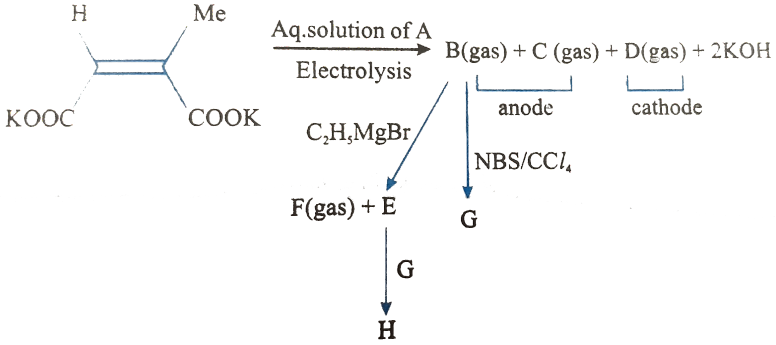
47. In the following sequence of reactions products (A) to (H) are formed.



Q. Compound F is

A. C_2H_6

B. $CH_3 - C \equiv CH$

C. 

D. D) 

Answer: D

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48. In the following sequence of reactions, the products (A) to (G) are formed:

i. $2CH_4(g) \xrightarrow[1773K]{\Delta} (A)(g) + B(g)$

ii. $4molof(A) \xrightarrow[Ni(CN)_4+THF]{\Delta} (C) \xrightarrow{O_3/oxid.} (D)only$

iii. $(A) \xrightarrow[(2)\,C_2H_5I]{(1)\,1molofNaNH_2} (E) \xrightarrow[Redhottube]{3molofE} \underset{(G)\,only}{\overset{\downarrow O_3/Red.}{F}}$

Compounds (A) and (B), respectively, are:

A. Ethane and O_2

B. Ethene and H_2

C. Ethyne and O_2

D. Ethyne and H_2

Answer: D

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49. In the following sequence of reactions the products A to G are formed:

(i). $2CH_4(g) \xrightarrow[1773K]{\Delta} A(g) + B(g)$

(ii). 4 moles of $A \xrightarrow[Ni(CN)_4+THF]{\Delta} \xrightarrow{O_3 \text{ / oxidation}} D$ only

(iii). $A \xrightarrow[C_2H_3I]{1 \text{ mole of } NaNH_2} E \xrightarrow[\text{Red hot tube}]{3 \text{ mole of E}} F \xrightarrow{O_3 \text{ / reductive}} G$ only

Q. Compound C is:

A. benzene

B. Mesitylene

C. Cycloocta-1,3,5j-triene

D. Cycloocta-1,3,5,7-tetraene

Answer: D

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50. In the following sequence of reactions the products A to G are formed:

(i). $2CH_4(g) \xrightarrow[1773K]{\Delta} A(g) + B(g)$

(ii). 4 moles of $A \xrightarrow[Ni(CN)_4+THF]{\Delta} \xrightarrow{O_3 \text{ / oxidation}} D$ only

(iii). $A \xrightarrow[C_2H_3I]{\text{1 mole of } NaNH_2} E \xrightarrow[\text{Red hot tube}]{\text{3 mole of E}} F \xrightarrow{O_3 \text{ / reductive}} G$ only

Q. Compound G is

A. 2-oxobutanal

B. 2-oxobutanoic acid

C. methyl glyoxal

D. 2-oxopropanoic acid

Answer: A

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51. Match the column

Column – I	Column - II
(A) n-Hexane $\longrightarrow$ Benzene	(p) Wurtz reaction
(B) Acetylene $\longrightarrow$ Benzene	(q) Frankland reaction
(C) $CH_3 - CH_2 - Br \longrightarrow$ n-Butane	(r) Aromatisation
(D) $(CH_3)_3 C - X \longrightarrow (CH_3)_3C - C(CH_3)_3$	(s) Polymerisation

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Column – I	Column - II
(A) $CH_3 - CH = CH_2 \xrightarrow{HCl}$	(p) Nucleophilic addition
(B) $CH_3 - CH = CH_2 \xrightarrow{NBS}$	(q) Free radical addition
(C) $CH_3 - CH = CH_2 \xrightarrow[\text{peroxide}]{HBr}$	(r) Electrophilic addition
(D) $CH \equiv CH \xrightarrow{HgSO_4/H_3O^+}$	(s) Free radical substitution reaction

52. Mathc the column

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Column – I	Column - II
(A) $CH_3 - C \equiv C - CH_3$	(p)cis-product with $H_2 / Pd - BaSO_4$
(B) $CH_3 - CH_2 - C \equiv CH$	(q)Trans-product with Na/ liq. NH_3
(C) $CH_3 - C \equiv CH$	(r) White with amm. $AgNO_3$
(D) $CH_3 - C \equiv C - Et$	(s) H_2 gas with Na

53. Match the column .

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54. One mole of 1,2-dibromopropane on treatment with X moles of $NaNH_2$ followed by treatment with ethyl bromide gave a pentyne. The value of X is:

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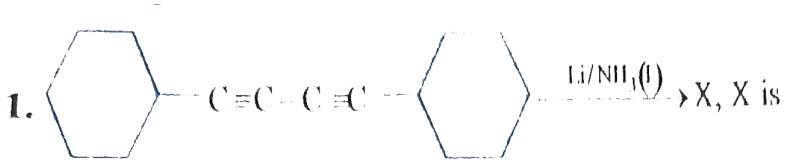
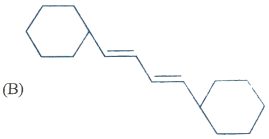
Level 6

1. Complete the following reaction



A.


B.


C.


D.


Answer: B

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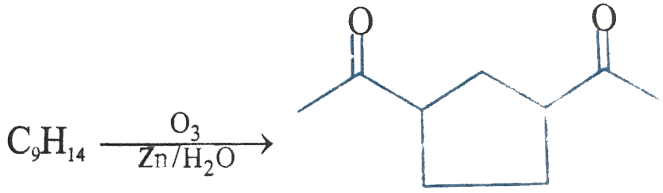
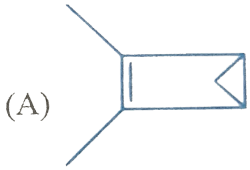
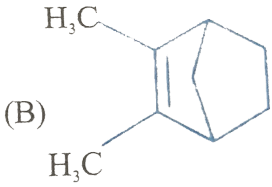
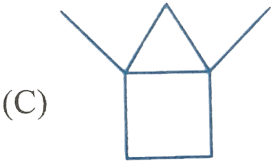
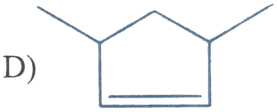
2. 

The Reactant A is

A. 

B. 

C. 

D. 

Answer: B

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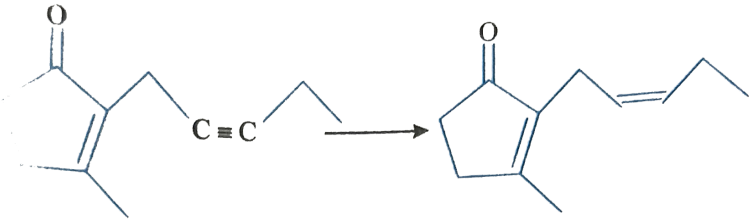
3. 

Which reagent will be used for the above conversion?

A. $Na / Liq.\ NH_3$

B. $H_2, Pd - CaCO_3$

C. $Li, Ph - NH_2$

D. H_2, Pt

Answer: B

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4. $H_2C = CH - C = CH + HCI \rightarrow X, X'is:$

A. $H_3C - \overset{\overset{Cl}{|}}{CH} - C \equiv CH$

B. $H_2C = CH - \underset{\underset{Cl}{|}}{C} = CH_2$

C. $CH_3 - \overset{\overset{Cl}{|}}{\overset{Cl}{|}CH} - CH \equiv CH_2$

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

Answer: B

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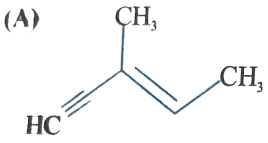
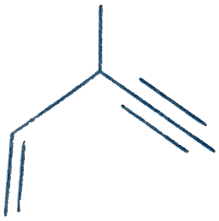
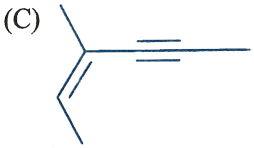
5. Which would produce chiral molecule after treatment with Lindlar catalst?

A. 

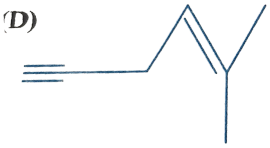
B.



C.



D.



Answer: B

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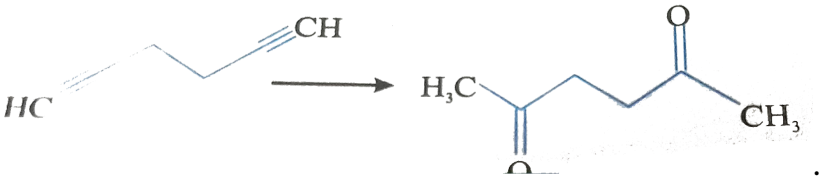
6. How is the following transformation best carried out?



A. OsO_4, $NaHSO_3$

B. H_2SO_4 / H_2O

C. $HgSO_4 / H_2SO_4$

D. HIO_4

Answer: C

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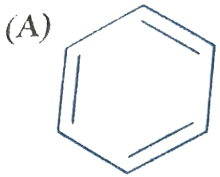
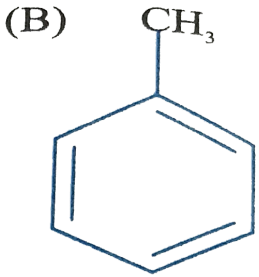
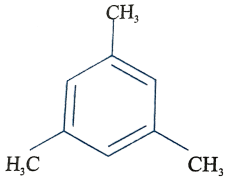
7. $3CH_3 - C = Ch \xrightarrow[Cutube]{Redhot}$

A.

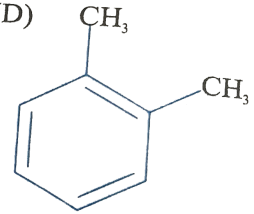


B.





C.

(D) 

D.

Answer: C

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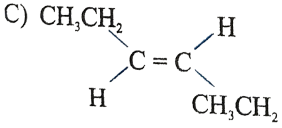
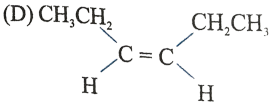
8. $CH_3CH_2C = Ch \xrightarrow{NaNH_2/NH_3(l)} \xrightarrow{CH_3CH_2Br} Li, NH_3(l) \rightarrow$

A. $CH_3CH_2CH = CH - CH_3$

B. $CH_3CH_2CH = CH_2$

C) 

C.

D. 

Answer: C

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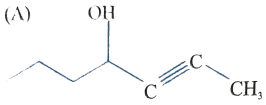
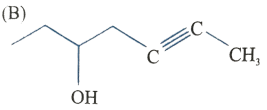
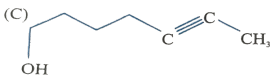
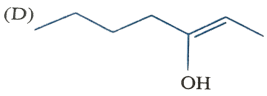
9. $CH_3CH_2CH_2 - \overset{O}{\overset{||}{C}} - H + CH_3 - C \equiv CH \xrightarrow{Na, NH_3(l)}$

A. 

B. 

C. 

D. 

Answer: A

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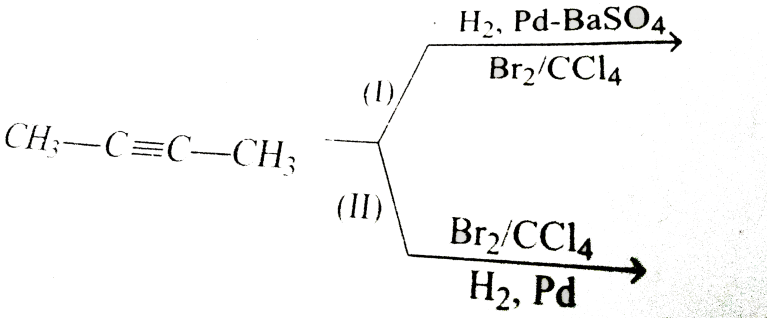
10. The Products of the following I and II sequences are related as:



A. Diastereomers

B. identical

C. enantiomers

D. heometrical isomers.

Answer: B

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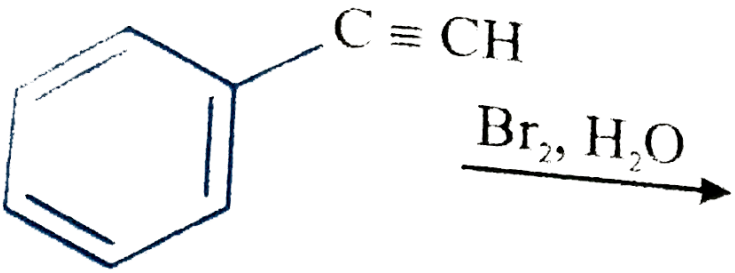
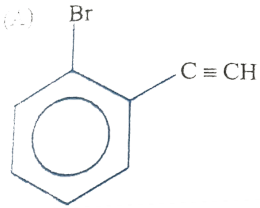
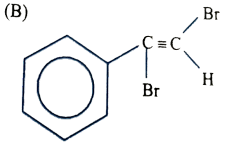
11. Complete the following reaction



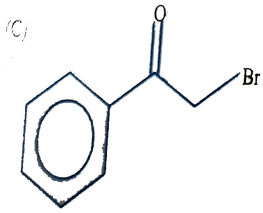
A.



B.



C.



D.

Answer: C

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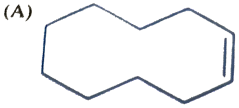
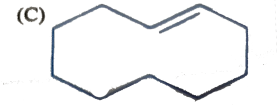
12.

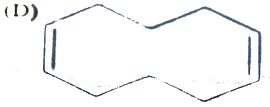
$HC = Ch \overset{KNH_2}{u} nderst(CI - (CH_2)_8 - CI) \rightarrow Aoverst(H_2)underst(Pd$

overset(Na,NH_(3)(l))rarrE,E is:

A. 

B. 

C. 

D. 

Answer: C

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13. Which is the most suitable reagent among the following distinguish comound (3) from the others?

(1) $CH_3C \equiv C - CH_3$ (2) $CH_3CH_2 - CH_2 - CH_3$

(3) $CH_3CH_2C \equiv CH$ (4) $CH_3CH = CH_2$

A. Br_2 in CCl_4

B. Br_2 in CH_3COOH

C. Alk. $KMnO_4$

D. $AgNO_3 / NH_4OH$

Answer: D

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14. Two gases P and Q both decolourise aquieous bromine buyt only one of them gives white ppt. with Tollen's reagent.P and Q likely to be:

A. $H_2C = CH_2 \& CH_3 - C \equiv C - CH_3$

B. $HC \equiv CH \& CH_3 - CH_2 - C \equiv CH$

C. $HC \equiv CH \& CH_3 - C \equiv CH$

D. $CH_3 - CH_2 - C \equiv CH \& CH_3 - C \equiv C - CH_3$

Answer: D

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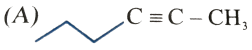
15. Which of the following hydrocarbons should be choosen as a starting material to prepare 3- hexanone by the hydration?

A. 

B. 

C. 

D. 

Answer: D

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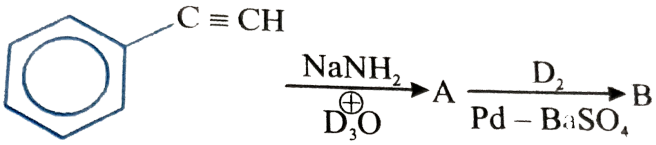
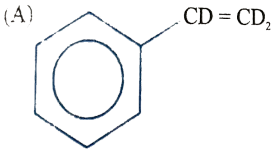
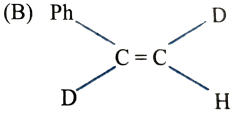
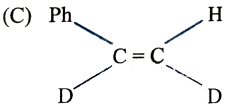
16. 

16.

End product B is :

A. 

B. 

C. 

D. $Ph - C \equiv CD$

Answer: A

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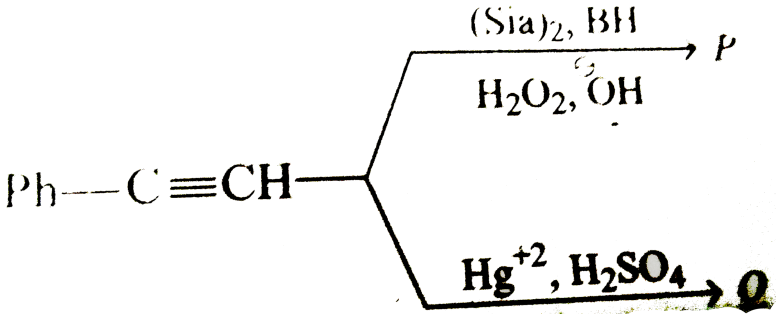
17. 

P and Q are respectively:

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

B. $Ph - CH_2 - CHO \& Ph - \overset{O}{\overset{||}{C}} - H$

C. $Ph - \overset{O}{\overset{||}{C}} - CH_3 \& Ph - \overset{O}{\overset{||}{C}} - CH_3$

D. $Ph - CH_2 - CHO \& Ph - CH_2 - CHO$

Answer: B

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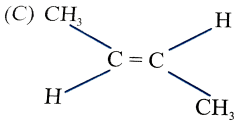
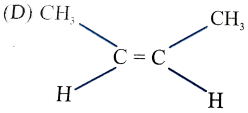
18. `CH_(3)C=CH_(3)overset(BH_(3).THF)underset(CH_(3)COOH)rarrMajor porduct:

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

B. $CH_3CH_2CH_2 - \overset{\overset{O}{||}}{C} - H$

C. 

D. 

Answer: D

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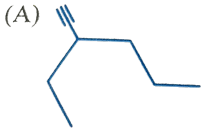
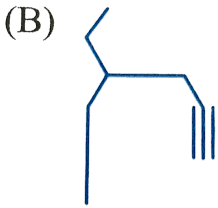
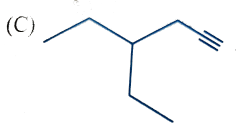
19. Which alkyne will give 3-ethylhexane on catalytic hydrogenation?

A. 

B. 

C. 

D. All of these

Answer: D

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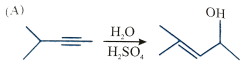
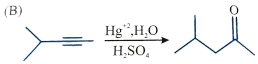
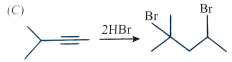
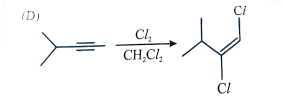
20. Which reaction yields the major product shown?

A. 

B. 

C. 

D. 

Answer: B

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1. $Ph - C \equiv C - H \xrightarrow[N:]{I_2}$ **Major product :**

21. Major product:

A. $Ph - \overset{I}{\underset{|}{C}} - CH - I$

B. $Ph - \overset{I}{\underset{|}{C}}H - CH_2 - I$

C. $Ph - C \equiv C - I$

D. $I - C \equiv C - I$

Answer: C

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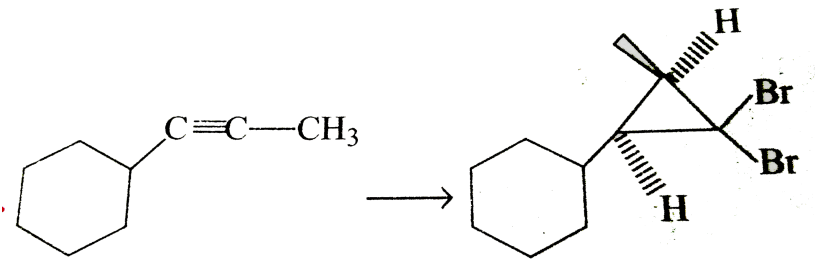
22.



To carry out above conversion which reagent will be used?

A. $CHBr_3 / NaOH, Na / NH_3(l)$

B. $Na / NH_3(l), CHBr_3 / NaOH$

C. $H_2 / Pd - BaSO_4, CHBr_3 / NaOH$

D. $H_2 / Pd - CaCO_3, CHCl_3 / KOH$

Answer: C

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23. What is the IUPAC name for the following compound?

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

A. 4-vinyl-2-pentyne

B. 4-methylhex-2-yn-5-ene

C. 3-methylhex-4-yn-1-ene

D. 3-methylhex-1-en-4-yne

Answer: D

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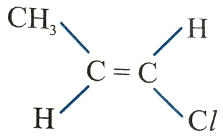
24. What is the major poduct expected from the following reaction?

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

B. 

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

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

Answer: D

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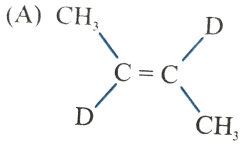
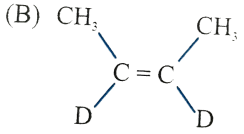
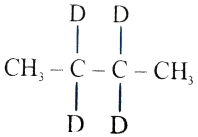
25. What is the major product expected from the following reaction?

$$CH_3 - C \equiv C - CH_3 \xrightarrow[\text{low pressure poisoned catalyst}]{D_2 \quad \text{one mole}}$$

A. (A) 

B. (B) 

C. (C) 

D. $CD_3 - \overset{\overset{D}{|}}{\underset{\underset{D}{|}}{C}} - \overset{\overset{D}{|}}{\underset{\underset{D}{|}}{C}} - CD_3$

Answer: B

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26. What is the major product expected from the following reaction

$$CH_3 - C \equiv C - H \xrightarrow[NH_3]{NaNH_2}$$

A. $CH_3 - C \equiv C\overset{\ominus}{N}\overset{\oplus}{a}$

B. $H - C \equiv C - \overset{\ominus}{C}H_2\overset{\oplus}{N}a$

C. $CH_3 - \overset{NH_2}{\overset{|}{C}} = CH_2$

D. $H_2N - CH_2 - C \equiv C - H$

Answer: A

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27. What is the major product expected from the following reaction?

$$H - C \equiv C - CH_2 - CH = CH_2 \xrightarrow[HgSO_4]{H_2O, H_2SO_4}$$

A. $H - C \equiv C - CH_2 - \overset{OH}{\overset{|}{C}}H - CH_3$

B. $H_2C = \overset{OH}{\overset{|}{C}} - CH_2 - \overset{OH}{\overset{|}{C}}H - CH_3$

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

D. $CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - \overset{OH}{\overset{|}{C}}H - CH_3$

Answer: D

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28. Vinyl acetelyne $\xrightarrow{x}$ chloroprene: x is

A. Cl_2 / CCl_4

B. HCl

C. HCN

D. Br_2

Answer: B

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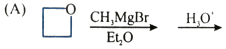
29. Which of the following reactions will produce the 2-pentyne in good yield?

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

A. 

B. $CH_3 - C \equiv CNa \xrightarrow{CH_3CH_2Br}$

C. $CH_3 - CH_2 - \overset{\overset{O}{||}}{C} - H \xrightarrow[Et_2O]{CH_3CH_2MgBr} \xrightarrow{H_3O^+}$

D. $CH_3 - CH_2 - CH_2 - \underset{\underset{Br}{|}}{CH} - CH_2 - Br \xrightarrow[\text{heat}]{NaOH}$

Answer: B

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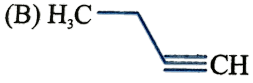
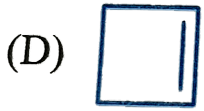
30. Which of the following compounds will produce butanone when treated with H_2SO_4, $HgSO_4$ and water?

A. $CH_3 - CH_2 - CH = CH_2$

B. 

C. $CH_3 - CH_2 - CH_2 - C \equiv N$

D. 

Answer: B

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31. Which of the following is redox reaction?

A. 1-Butyne $\xrightarrow[BaSO_4]{Pd/C-H_2}$

B. 2-Butyne $\xrightarrow{NaNH_2}$

C. 1-Butyne $\xrightarrow{Alc.KOH}$

D. $HC \equiv CH \xrightarrow[\text{Copper tube}]{\text{red hot}}$

Answer: A

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32. Number of collinear carbons in 2,4-hexa diyne

A. 3

B. 2

C. 6

D. 4

Answer: C

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33. IUPAC name of the product obtained on reductive ozonolysis of acetylene

A. Glyoxal

B. Ethane Dial

C. Ethane diol

D. Ethanedioic acid

Answer: B

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34. Which of the following can give nucleophilic addition on alkyne

A. Cl_2

B. HBr

C. HCl

D. $H_2O / HgSO_4 / H_2SO_4$

Answer: D

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35. The compounds 1-butyne and 2-butyne can be distinguished by using

A. Tollens reagent

B. Bromine

C. Bayer's reagent

D. Combustion

Answer: A

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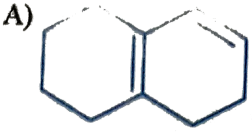
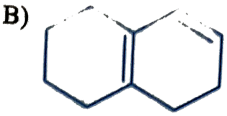
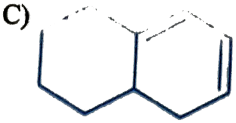
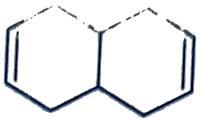
36. Which of the following is havin highest heat of hydrogenation?

A. 

B. 

C. 

D)



D.

Answer: D

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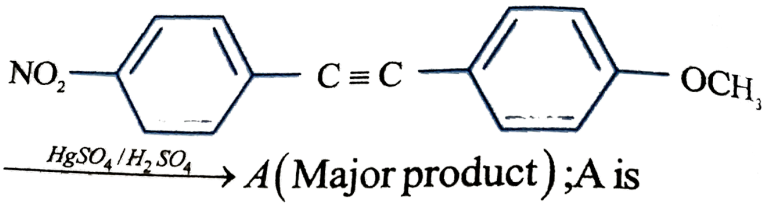
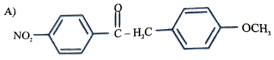


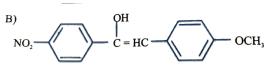
37.

A is.

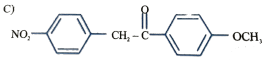
A.



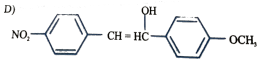
B.



C.



D.



Answer: C

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38. Which of the following alkyne on treatment with $H_2(2\,\text{mole})$/Pt gives an optically inactive compound?

A. 3-Methyl-1-pentyne

B. 4-methyl-1-hexyne

C. 3-methyl-1-heptyne

D. None of the above

Answer: A

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39. Arrange the following carbanions in order of their decreasing stability.

(I). $H_3C - C \equiv C^-$

(II). $H - C \equiv C^-$

(III). $H_3C - CH_2^-$

A. lgtIlgtIII

B. IIgtIgtIII

C. IIIgtIIgtI

D. IIIgtIgtII

Answer: B

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40. $CH \equiv CH \xrightarrow[dil.\ H_2SO_4]{Hg^{2+}} A \xrightarrow[HCl]{Zn-Hg} B$ B is

A. C_2H_4

B. C_4H_6

C. C_2H_6

D. C_6H_6

Answer: C

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41. $HO-CH_2-CH_2-C\equiv CH \xrightarrow[CH_3-CH_2-X]{1eq\overset{\odot}{N}H_2}$

A. $CH_3-CH_2-O-CH_2-CH_2-C\equiv CH$

B. $HO-CH_2-CH_2-C\equiv C-CH_2-CH_3$

C. $CH_3-CH_2-OCH_2-CH_2-C\equiv C-CH_2-CH_3$

D. All the above

Answer: A

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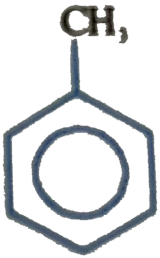
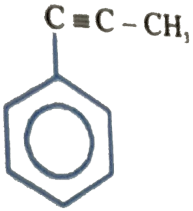
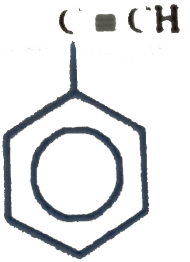
42. Cyclic structure

$C_6H_5-CH=CH_2 \xrightarrow{Br_2} A \xrightarrow[NaNH_2]{\text{Three equivalent}} B \xrightarrow{CH_3I} C$ compound C in the sequence is

A. a) 

B. b) 

C. c) 

D. d) 

Answer: B

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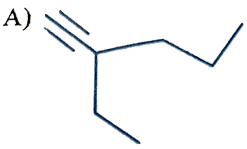
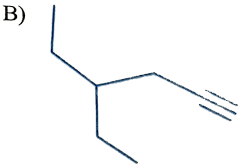
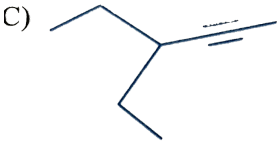
43. Which alkyne will give 3-ethylhexane on catalytic hydrogenation?

A. 

B. 

C. 

D. None of these

Answer: D

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44. Which of the following statements best explain the greater acidity of terminal alkynes $(RC \equiv CH)$ compared with monosubstituted alkenes $(RCH = CH_2)$?

A. The sp-hybridized carbon atoms of the alkynes are less electronegative than the sp^2 carbons of the alkene.

B. The two π bonds of the alkyne are better able to stabilize th negative charge of the anion by resonance.

C. The sp-hybridized carbons of the alkyne are more electronegative than the sp^2 carbon of the alkene.

D. The question is incorrect-alkenes are more acidic than alkynes.

Answer: C

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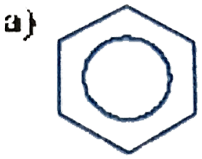
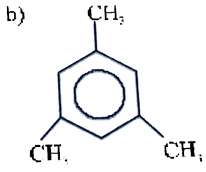
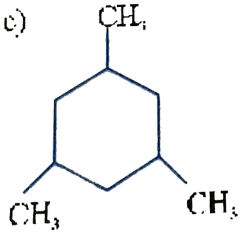
45.

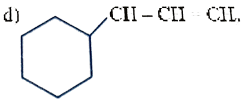
$\xrightarrow[irontube]{Redhot}$ X . X is

O is

A. 

B. 

C. 

D. 

Answer: B

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46. $X \xrightarrow[(2)\,H_2O/H^+]{(1)\,O_3} CH_3 - CH_2 - COOH^+$

$HOOC - CH_2 - CH_2 - COOH + HCOOH$

A. $CH_3 - CH_2 - C \equiv C - (CH_2)_2 - C \equiv CH$

B. $CH_3 - C \equiv C - (CH_2)_3 - C \equiv CH$

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

D. $HC \equiv \ - (CH_2)_4 - C \equiv CH$

Answer: A

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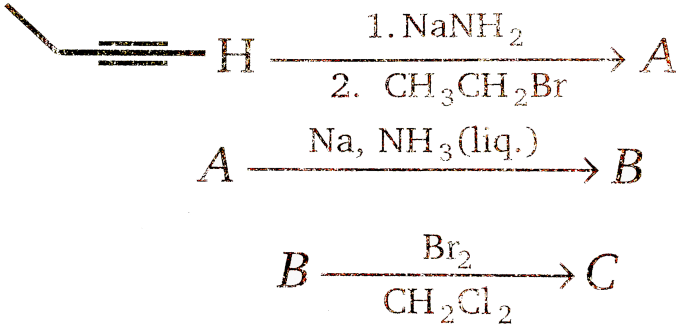
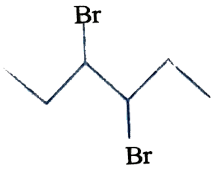
47. What is the final product, C of the following reaction sequence?

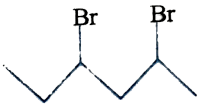


A)

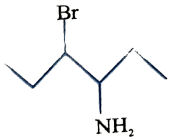


A.

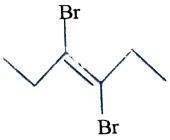
B. B)



C. C)



D. D)



Answer: A

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48. Which of the following compounds on hydrolysis gives acetylene ?

A. CaC_2

B. Mg_2C_3

C. Al_4C_3

D. Cu_2Cl_2

Answer: B

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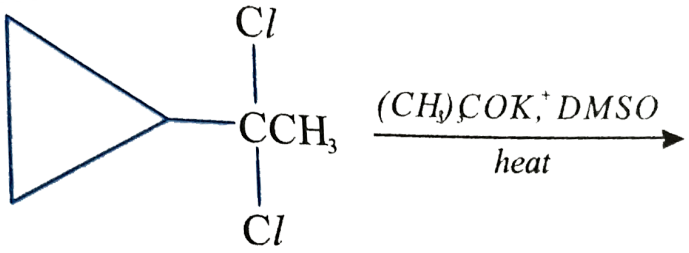
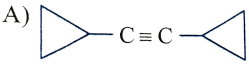
49.

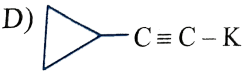


$\xrightarrow[heat]{(CH_3)_3COK^+, DMSO}$ Identify the product.

A. 

B. 

C. $H - C \equiv C - H$

D. 

Answer: D

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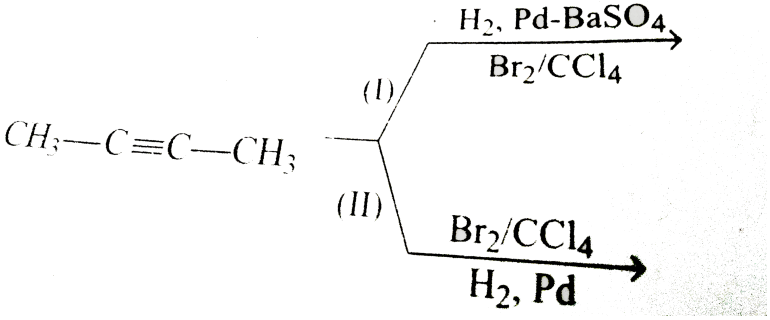
50. The Products of the following I and II sequences are related as:



A. Diastereomers

B. Identical

C. Enentiomers

D. Geometricl isomers.

Answer: B

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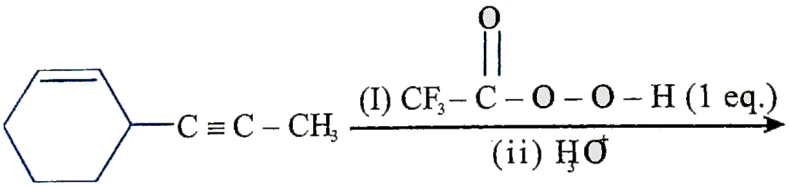
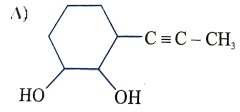
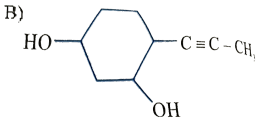
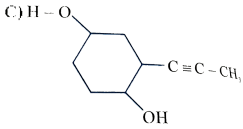
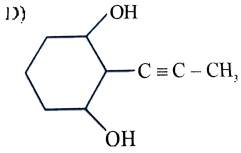
51. 

Identify the product?

A. 

B. 

C. 

D. 

Answer: A

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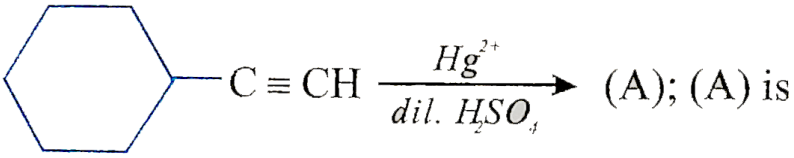
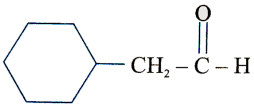
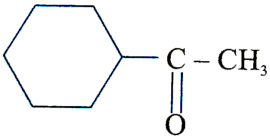
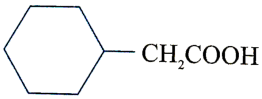


52.

(A) is

A. 

B. 

C. 

D. None of these

Answer: A

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53. The set of reagents that needed to carry out the following conversion are

$$CH_3 - CH_2 - C \equiv CH \rightarrow CH_3 - CH_2 - CH_2 - CHO$$

A. $H_2O / HgSO_4 / H_2SO_4$

B. $B_2H_6 / THF, H_2O_2 / OH^-$

C. H_2O / H^+

D. $Hg(OAC)_2, H_2O, NaBH_4$

Answer: B

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54. $2-$ Hexyne gives trans $-2-$ hexene on treatment with :

A. Li / NH_3

B. $Pd / BaSO_4$

C. $LiAlH_4$

D. Pt / H_2

Answer: A

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55. Arrange the following compounds in decreasing order of acidic charater

I. Butene

II. But1-1-ene

III. But-1-yne

IV. Pt / H_2

A. IgtIIgtIIIgtIV

B. IVgtIIgtIIIgtI

C. IVgtIIIgtIIgtI

D. IgtIIIgtIIgtIV

Answer: C

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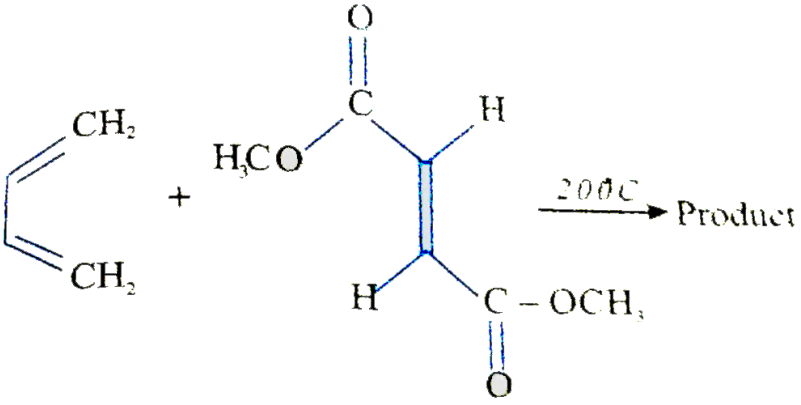
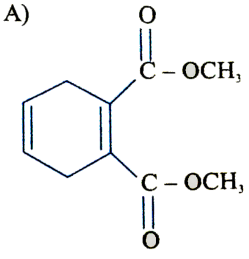


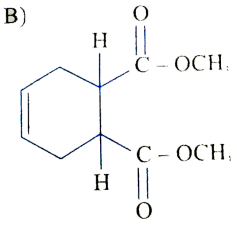
56.

Here the product will be

A.



B.



C. Both A and B in equimolar

D.

Answer: B

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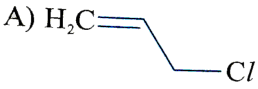
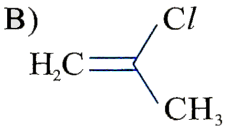
57. Addition of 1 equivalent of HCL to $CH_2 = C = CH_2$ gives

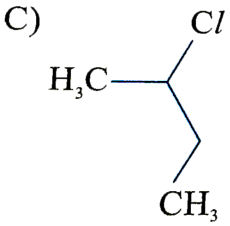
A.



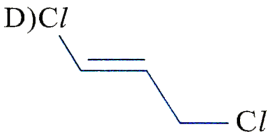
B.



C.



D.



Answer: B

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58. Which of the following reactions are ot feasible?

A. $HC \equiv CH + KOH \rightarrow$

B. $HC \equiv CH + NaNH_2 \rightarrow$

C. $HC \equiv CH + NaOH \rightarrow$

D. $HC \equiv \overset{(-)}{C}\ K^{(+)} + (CH_3)_3C - Br \rightarrow$

Answer: A::C

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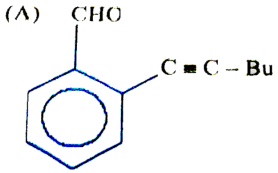
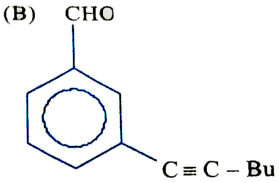
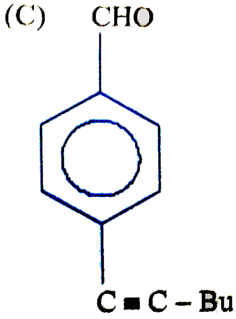
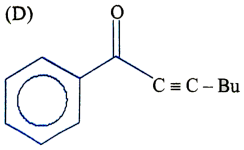
59. $Bu - C = CH \overset{NaNH_2}{\rightarrow} A \xrightarrow[H_2O]{Ph-CHO} \xrightarrow{MnO_2} C$

Compound C of the reaction cannot be:

A. 

B. 

C. 

D. 

Answer: A::B::C

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60. Acetone is the major product in:

I $H_2C = C = CH_2 \xrightarrow{H_3O}$

II $H_3C - CH = \xrightarrow{Hg^{+2}/H_2SO_4}$

III $H_3C - CH = \overset{BH_3.THF}{u}nderst(H_2O_2/OH \rightarrow$

A. I

B. II

C. III

D. IV

Answer: A::B

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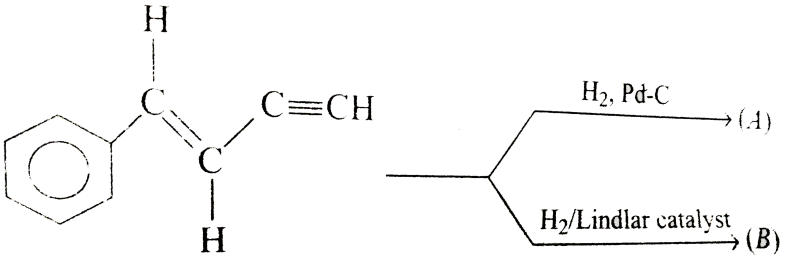
61. Predict the products of following reactions:



A. A is $Ph - CH_2 - CH_2 - CH_2 - CH_3$

B. B is $Ph - CH = CH - CH = CH_2$

C. A is $Ph - CH = CH - CH = CH_2$

D. B is $Ph - CH_2 - CH_2 - CH = CH_2$

Answer: A::B

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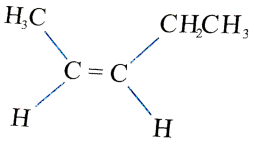
62. $H_3C - C = Ch \xrightarrow[2.CH_3CH_2Br]{1.NaNH_2} A \underset{Pd-BaSO_4B:}{H_2}$

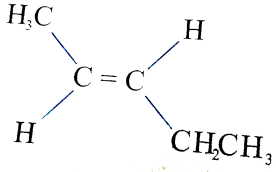
A. A is $H_3C - CH_2 - C \equiv CH$

B. A is $CH_3 - C \equiv C - CH_2 - CH_3$

C.



D.



Answer: B::C

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63. $H_3C - C \equiv Ch \xrightarrow{NaNH_2} X \xrightarrow[H_2O]{\text{Acetone}} Y \xrightarrow[\Delta]{Conc.H_2SO_4} Z$:

A. X is $H_3C - CH = CH - CH_3$

B. X is $H_3C - C \equiv C^{(-)}Na^{(+)}$

C. Y is $H_3C - C \equiv C - \underset{\underset{CH_3}{|}}{\overset{\overset{OH}{|}}{C}} - CH_3$

D. Z is $H_3C - C \equiv C - \underset{\underset{CH_3}{|}}{C} = CH_2$

Answer: B::C::D

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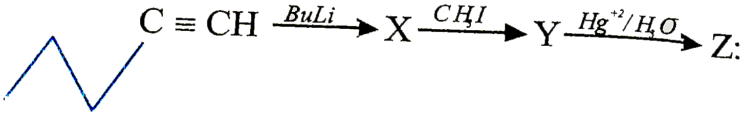
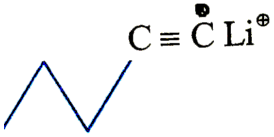
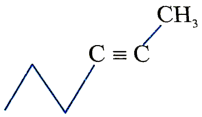
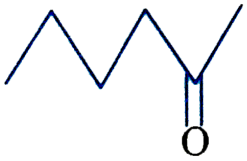
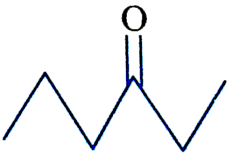
64. 

A. 

B. 

C. 

D. 

Answer: A::B::C

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65. Which of the following solubility orders in water are correct ?

A. $H_3C - C \equiv CH < H_3C - O - CH_3$

B. $H_3C - C \equiv CH > CH_3 - O - CH_3$

C. $H_2C = CH - CH_3 < H_3C - CH_2 - CH_3$

D.

Answer: A::D

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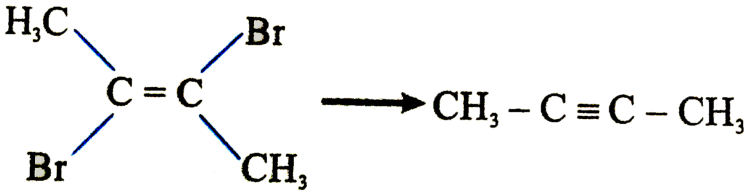
66. The reagents used to convert (E)-2,3-dibromo-2-butene to 2-butyne



A. Zn duct/D

B. Mg,D

C. NaI/Acetone/D

D. alc. KOH

Answer: A::B::C

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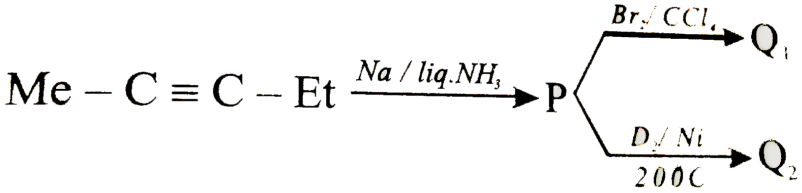

67.

some statement regarding the reaction:

are given below. Select the correct statement(s).

A. P is a trans alkene

B. Q_1 is a pure compound and optically inactive due to internal

C. In the P to Q_1 conversion step and Br_2 adds on P in a sy manner and the intermediate formed is a cyclic brominium ion.

D. Q_2 is a binary mixture and is optically inactive.

Answer: A::D

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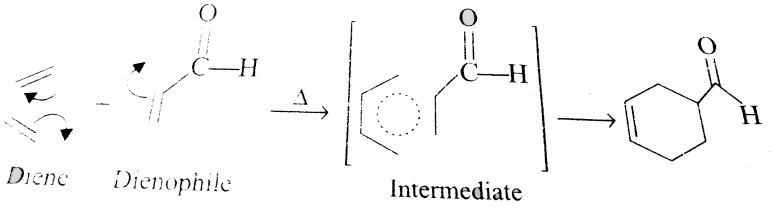
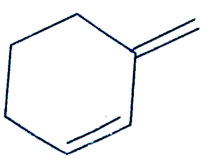
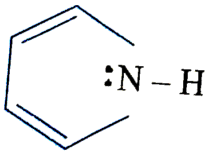
68. Conjugated diene reacts with unsaturated hydrocarbon in presence of heat to lkproduce six membered cyclic product this reaction is known as Diels Alder reaction For this reaction conjugated diene should be in cisiod form. Aromatic hydrocarbon do not give Diels Alder reaction:

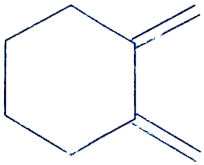


Which of the following conjugated unsaturated hydrocarbons will give Diels-Alder reaction?

A. (A) 

B. B) 

C. (C) 

D. (D) 

Answer: D

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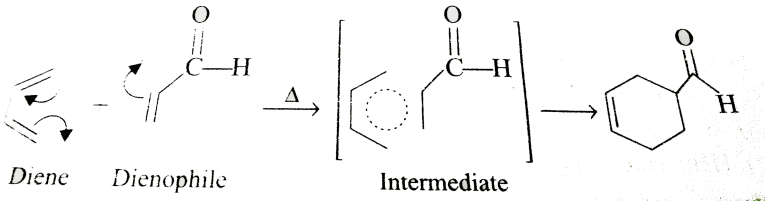
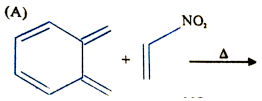
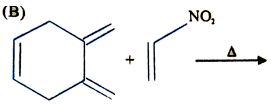
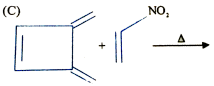
69. Conjugated diene reacts with unsaturated hydrocarbon in presence of heat to lkproduce six membered cyclic product this reaction is known as Diels Alder reaction For this reaction conjugated diene should be in cisiod form. Aromatic hydrocarbon do not give Diels Alder reaction:

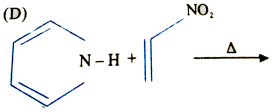


Which of the folowing Diels-Alder reactions is fastest?

A. 

B. 

C. 

D. 

Answer: A

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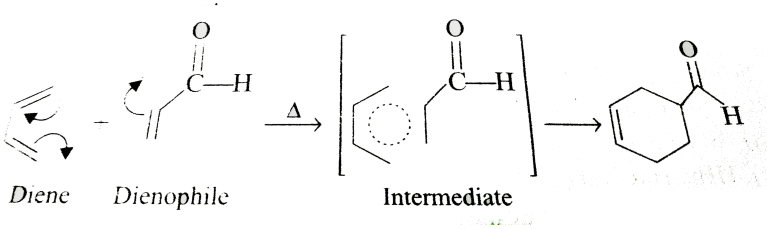
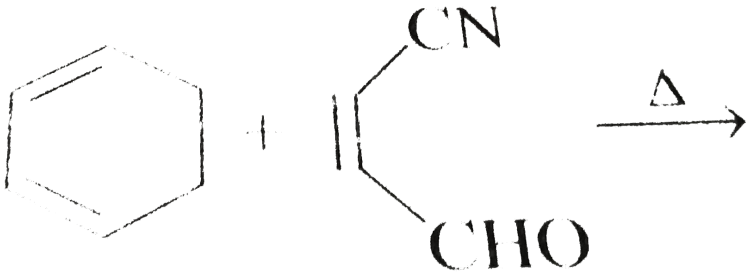
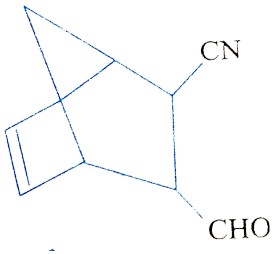
70. Conjugated diene reacts with unsaturated hydrocarbon in presence of heat to lkproduce six membered cyclic product this reaction is known as Diels Alder reaction For this reaction conjugated diene should be in cisiod form. Aromatic hydrocarbon do not give Diels Alder reaction:

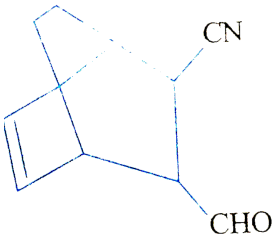


Find the product of folowing reaction:



A.





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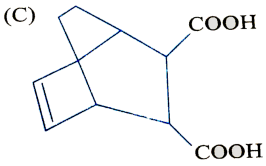

C.

D. No reaction

Answer: B

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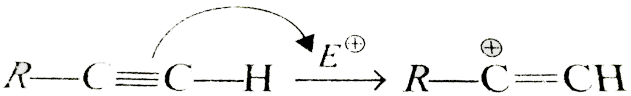
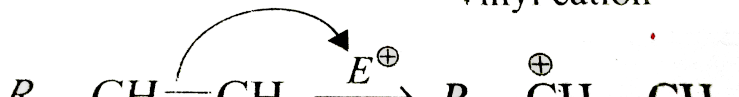
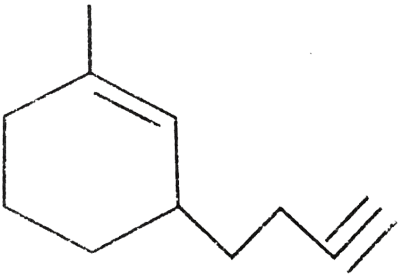
71. Alkene and alkyne both undergo electrophilic additon beacuise of π electron density, they behave as elctron rich species, alknens are more reactive toward this reaction because the intermiediate formed when an $E^{\oplus}$ adds to an alkyne is a vinylic cation wheras sthe intermediate formed when an $E^{\oplus}$ adds to akene is alkyl cation, which is mopre stable.



Vinyl cation

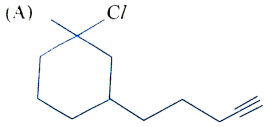


Alkyl cation

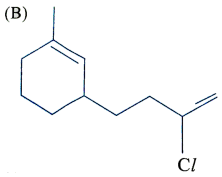


HCl (1 Mole) ⟶

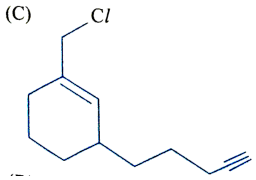
A.

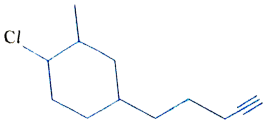


B.



C.





D.

Answer: A

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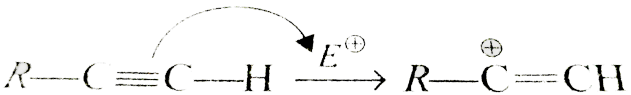
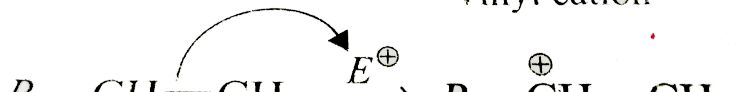
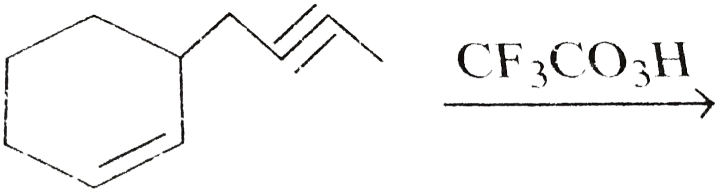
72. Alkene and alkyne both undergo electrophilic additon beacuise of π electron density, they behave as elctron rich species, alknens are more reactive toward this reaction because the intermiediate formed when an $E^{\oplus}$ adds to an alkyne is a vinylic cation wheras sthe intermediate formed when an $E^{\oplus}$ adds to akene is alkyl cation, which is mopre stable.



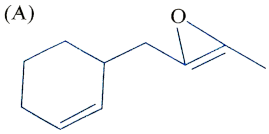
Vinyl cation



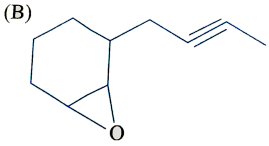
Alkyl cation



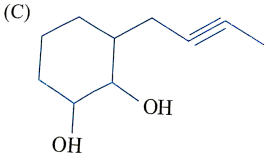
A.



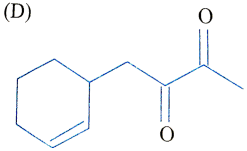
B.



C.



D.



Answer: B

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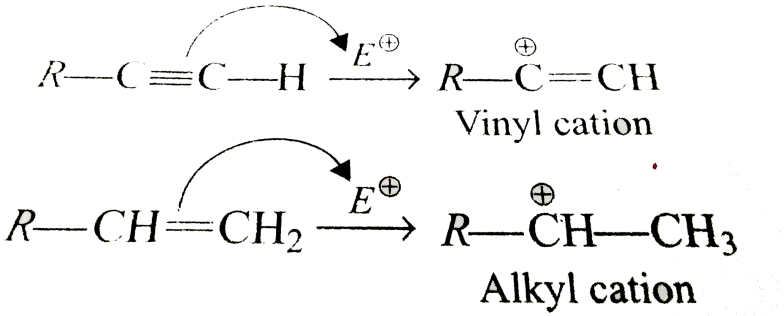
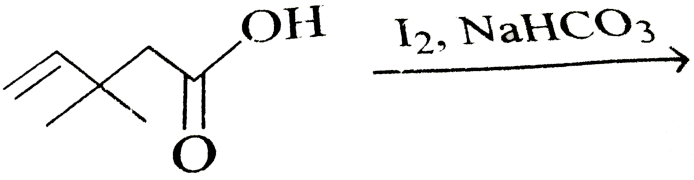
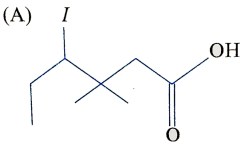
73. Alkene and alkyne both undergo electrophilic additon beacuise of π electron density, they behave as elctron rich species, alknens are more reactive toward this reaction because the intermiediate formed when an $E^{\oplus}$ adds to an alkyne is a vinylic cation wheras sthe intermediate formed when an $E^{\oplus}$ adds to akene is alkyl cation, which is mopre stable.



In the reaction:



A.



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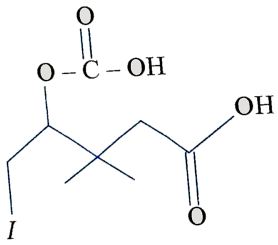
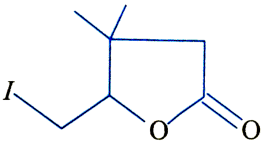
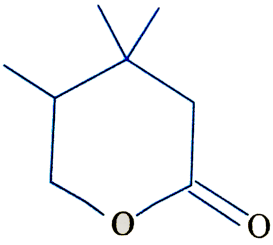


C.



D.



Answer: C

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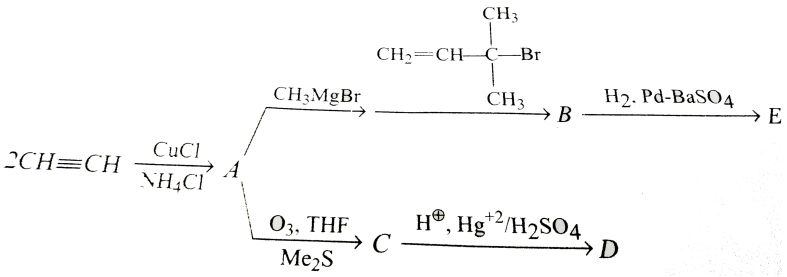
74.



Find structure of compound A:

A. $CH_2 = CH - \overset{Cl}{\underset{|}{C}}H - CH_3$

B. $H_2C = CH - CH = CH_2$

C. $HC \equiv C - C \equiv CH$

D. $H_2C = CH - C \equiv CH$

Answer: D

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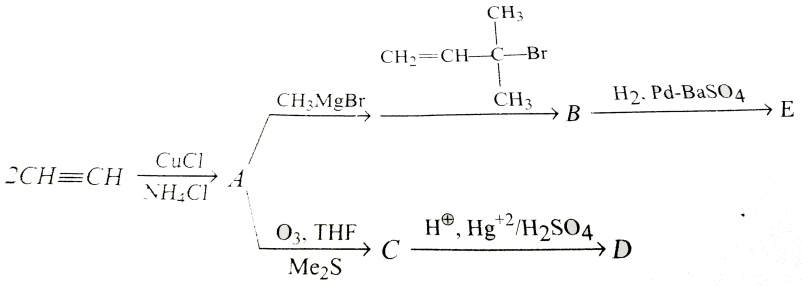
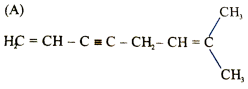
75.

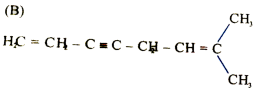


Find structure of compound E:

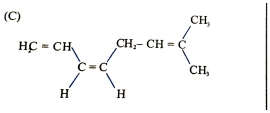
A.



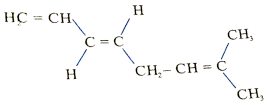
B.



C.



D.



Answer: C

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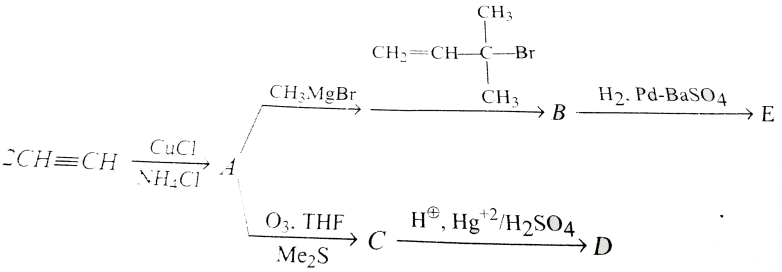
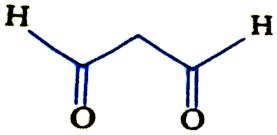
76.

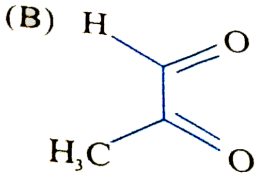


Find structure of compound D:

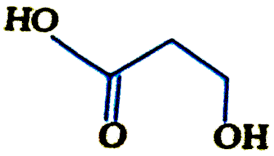
A.



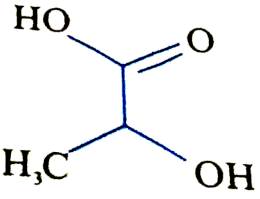
B.



C.



D.



Answer: B

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77. $CH_3 - C \equiv C - CH_3 \xrightarrow{\text{Cold } KMnO_4} (A)$

Product (A) is :

A. $CH_3 - COOH$

B. $CH_3 - CHO$

C. $CH_3 - CH_2OH - CH_2OH - CH_3$

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

Answer: D

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78. Dil, cold, alkaline $KMnO_4$ is baeyers reagent. It acts as oxidizing agent

Q. $HC = CH \xrightarrow{\text{Baeyer's reagent}} B(\text{major})$ B is

A. $HCHO$

B. $\begin{array}{l} COOH \\ | \\ COOH \end{array}$

C. $\begin{array}{l} CHO \\ | \\ CHO \end{array}$

D. CO_2

Answer: B

View Text Solution

79. Dil, cold, alkaline $KMnO_4$ is baeyers reagent. It acts as oxidizing agent

Q. $R - CH_2 - C \equiv C - CH_2 - R \xrightarrow[\Delta]{KMnO_4, OH^-} C$ is

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

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

C. $R - CH_2 - undersert(O)\underset{||}{C} - \underset{\underset{O}{||}}{C} - CH_2 - R$

D. $R - CH_2 - \underset{\underset{O}{|}}{CH} - \overset{\overset{O}{||}}{C} - CH_2 - R$

Answer: A

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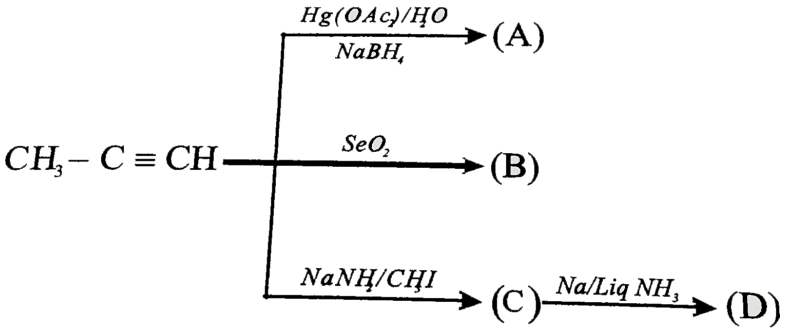

80.

Q. Structure of A is

A. $CH_3 - CH_2 - CH_2OH$

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

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

D. CH_3CH_2CHO

Answer: C

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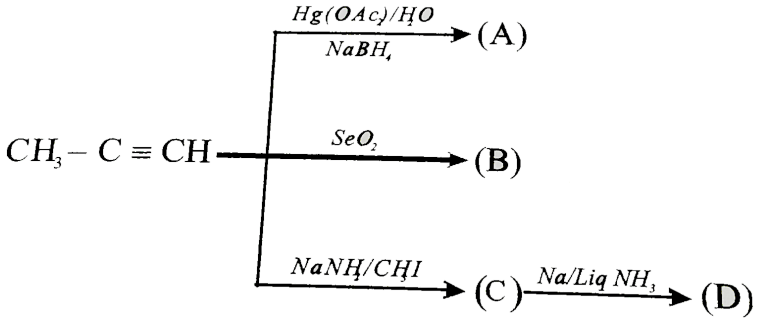

81.

Q. Structure of B is

A. $CH_3 - CH_2 - CHO$

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

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

D. $\overset{O}{\overset{||}{HC}} - CH_2 - \overset{O}{\overset{||}{C}} - H$

Answer: C

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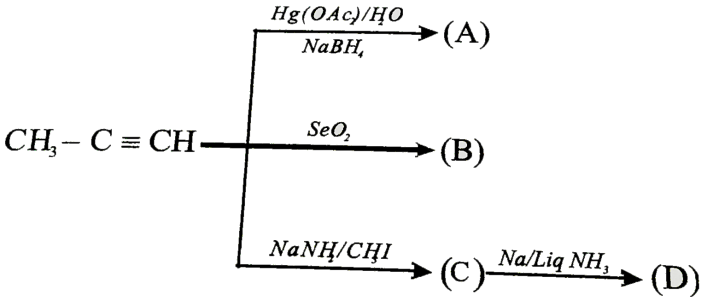

82.

Q. Structure of D

A. Butane

B. 1-Butene

C. Cis-2-butene

D. trans-2-butene

Answer: D

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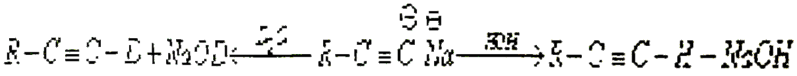
83. Terminal alkyne is very weak acid, it forms salt with very strong base such as $NaNH_2$ and sodium metal.

$$R-C\equiv C-H \xrightarrow[NH_3(l)]{NaNH_2} R-C\equiv \overset{\ominus}{C}\overset{\oplus}{Na}+\frac{1}{2}H_2$$

Sodium salt of alkyne is known as shown alkynide. sodium alkynide is hydrolysed with water because it is salt.



$$R-C\equiv C-H \xrightarrow[NH_3(l)]{NaNH_2} R-C\equiv C\ \overset{\oplus}{Na}$$

Weak acid *Strong base*

Sodium salt behaves as nucleophile as well as strong base. for P-alkyl halides it behaves as a cucleophile. thus primary alkylhalides gives SN reaction halids it behaves as strong base hence they undergo elimination reaction.

Q. $R-CH_2-C=ClI \xrightarrow[NH_3(l)]{Na} P \xrightarrow{CH_3-CH_2Br} R$. R is

A. $R-C\equiv C-CH_2-CH_2-CH_3$

B. $R-CH_2-CH_2-C\equiv C-CH_3$

C. $R-CH_2-C\equiv C-CH_2-CH_3$

D. $R-CH_2-CH_2-CH_2-C\equiv CH$

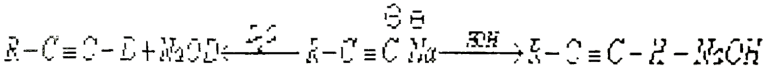
Answer: C

View Text Solution

84. Terminal alkyne is very weak acid, it forms salt with very strong base such as $NaNH_2$ and sodium metal.

$$R-C\equiv C-H \xrightarrow[NH_3(l)]{NaNH_2} R-C\equiv \overset{\ominus}{C}\overset{\oplus}{N}a+\frac{1}{2}H_2$$

Sodium salt of alkyne is known as shown alkynide. sodium alkynide is hydrolysed with water because it is salt.



$$R-C\equiv C-H \xrightarrow[NH_3(l)]{NaNH_2} R-C\equiv C^{\ominus}\ \overset{\oplus}{Na}$$

Weak acid Strong base

Sodium salt behaves as nucleophile as well as strong base. for P-alkyl

halides it behaves as a cucleophile. thus primary alkylhalides gives SN reaction halids it behaves as strong base hence they undergo elimination reaction.

Q. $CH_3 - \overset{Br}{\overset{|}{C}}H - CH_3 \xrightarrow{R-C\equiv \overline{C}\overset{+}{N}a} S + T + Br^-$ S and T are

A. $CH_3 - CH_2 - CH_3, R - C \equiv CH$

B. $CH_3 - CH = CH_2, R - C \equiv CH$

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

D. $CH_3 - C \equiv CH, R - C \equiv CH$

Answer: B

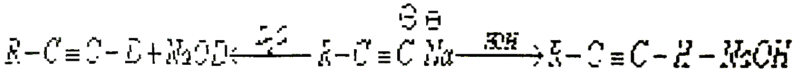
View Text Solution

85. Terminal alkyne is very weak acid, it forms salt with very strong base such as $NaNH_2$ and sodium metal.

$$R - C \equiv C - H \xrightarrow[NH_3(l)]{NaNH_2} R - C \equiv \overset{\ominus}{C}\overset{\oplus}{N}a + \frac{1}{2}H_2$$

Sodium salt of alkyne is known as shown alkynide. sodium alkynide is

hydrolysed with water because it is salt.



$$R-C\equiv C-H \xrightarrow[NH_3(l)]{NaNH_2} R-C\equiv C^{\ominus}\ Na^{\oplus}$$

Weak acid *Strong base*

Sodium salt behaves as nucleophile as well as strong base. for P-alkyl halides it behaves as a cucleophile. thus primary alkylhalides gives SN reaction halids it behaves as strong base hence they undergo elimination reaction.

Q. $CH_3-\underset{\displaystyle Br}{\overset{\displaystyle |}{C}}H-\underset{\displaystyle Br}{\overset{\displaystyle |}{C}}H_2 \xrightarrow[(ii)\,NaNH_3\,\Delta]{(i)\,C_2H_3ONa,\,\Delta} V \xrightarrow[(ii)\,H_2O]{(i)\,.CO_2} W$ is

A. $CH_3-CH_2CH_2COOH$

B. $CH_3C\equiv C-COOH$

C. $CH_3-CH=CH-COOH$

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

Answer: B

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86. A hydrocarbon (A) having molecular formula C_7H_{14} is capable to exhibit both geometrical and optical isomerism on oxidation with hot conc. MnO_4 followed by heating with sodalime yields two alkanes (B) and (C). Mixture of B and C can also be formed by oxidatio with hot concentration alkaline MnO_4^- of hydrocarbon (D) having molecular formula C_7H_{12}, followed by heating with sodalime.

Q. The hydrocarbon (A) is

A. 2-methyl-2-hexene

B. 3-methyl-2-hexene

C. 5-methyl-2-hexene

D. 4-methyl-2-hexene

Answer: D

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87. A hydrocarbon (A) having molecular formula C_7H_{14} is capable to exhibit both geometrical and optical isomerism on oxidation with hot conc. MnO_4 followed by heating with sodalime yields two alkanes (B) and (C). Mixture of B and C can also be formed by oxidatio with hot concentration alkaline MnO_4^- of hydrocarbon (D) having molecular formula C_7H_{12}, followed by heating with sodalime.

Q. Two compounds (B) and (C)

A. ethane and propane

B. two molecules of propane

C. methane and iso butane

D. Methane and n-butane

Answer: D

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88. A hydrocarbon (A) having molecular formula C_7H_{14} is capable to exhibit both geometrical and optical isomerism on oxidation with hot conc. MnO_4 followed by heating with sodalime yields two alkanes (B) and (C). Mixture of B and C can also be formed by oxidatio with hot concentration alkaline MnO_4^- of hydrocarbon (D) having molecular formula C_7H_{12}, followed by heating with sodalime.

Q. The hydrocarbon (D) is

A. 5 methyl 2 hexyne

B. 1 methyl 2 hexyne

C. 4-methyl-2-hexyne

D. 6 methyl 2 hexyne

Answer: C

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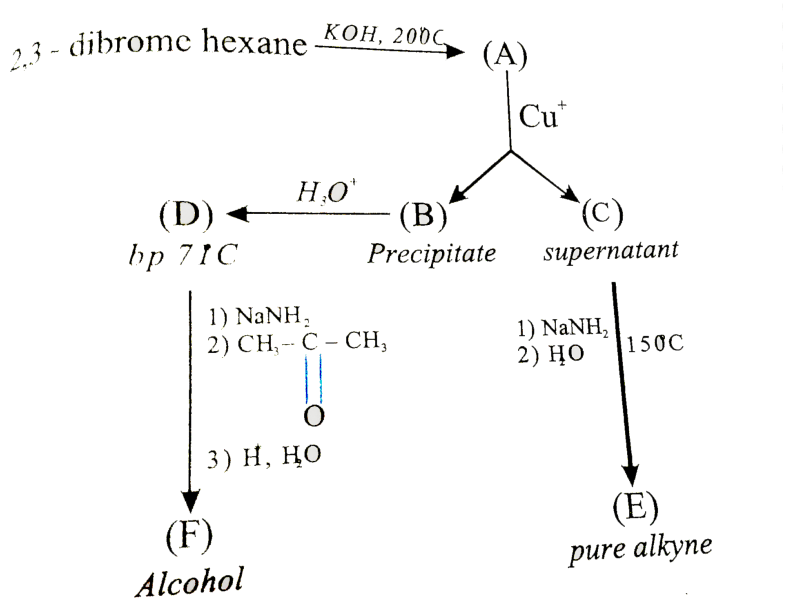

89.

Q. 'B' in the above passage is

A. $Cu - C \equiv C - CH_2CH_2CH_2CH_3$

B. $CH_3CH_2C \equiv C - CH_2CH_3$

C. $CH_3 - CH_2 - C \equiv C - Cu$

D. All of these

Answer: A

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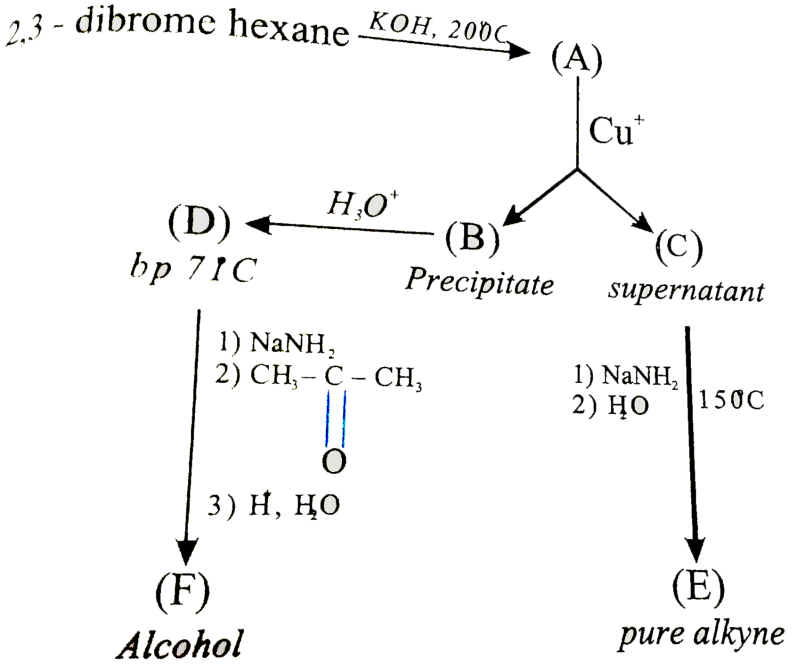

90.

Q. The conversion of (D) to (F) involves

A. Electrophilic addition

B. Nucleophilic addition

C. Electrophilic substitution

D. Nucleophilic substitution

Answer: D

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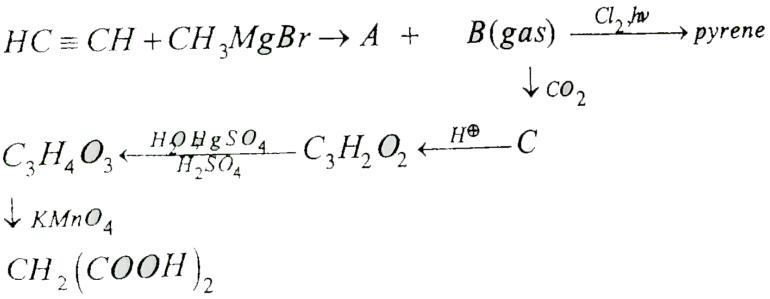

91.

Q. The molecule $C_3H_4O_3$ is sequential reaction is

A. $HO-CH=CH-COOH$

B. $CH_2=\underset{\underset{OH}{|}}{C}-COOH$

C. $CH_2=\underset{\underset{O}{||}}{C}-\underset{\underset{O}{||}}{C}-OH$

D. $H-\underset{\underset{O}{||}}{C}-CH_2-\underset{\underset{O}{||}}{C}-OH$

Answer: D

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$$HC \equiv CH + CH_3MgBr \rightarrow A + B(gas) \xrightarrow{Cl_2, h\nu} pyrene$$

$$\downarrow CO_2$$

$$C_3H_4O_3 \xleftarrow[H_2SO_4]{HO\,HgSO_4} C_3H_2O_2 \xleftarrow{H^{\oplus}} C$$

$$\downarrow KMnO_4$$

$$CH_2(COOH)_2$$

92.

Q. $C_3H_2O_2 \xrightarrow[KMnO_4]{\text{Hot alkaline}}$ Product. One of the products is

A. $\begin{matrix} CHO \\ | \\ CHO \end{matrix}$

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

C. $O = CH - CH_2 - COOH$

D. $CH_3 - \underset{\underset{O}{||}}{C} - COOH$

Answer: B

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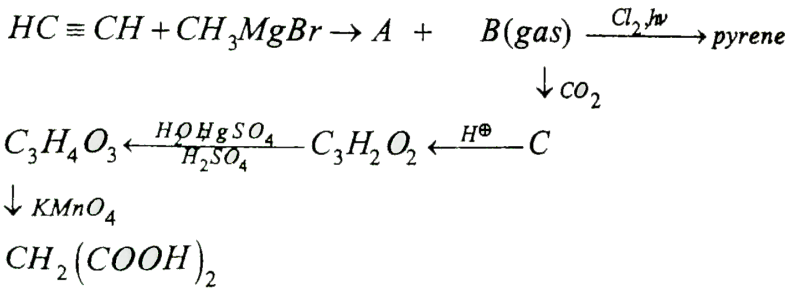

93.

Q. In the sequential reaction, if instead of CO_2, $(CH_3)_3C-Br$ is used.

Product will be

A. $HC \equiv HC$

B. $(CH_3)_3CH$

C. $HC \equiv C-C(CH_3)_3$

D. $BrCH=CH-C(CH_3)_3$

Answer: A

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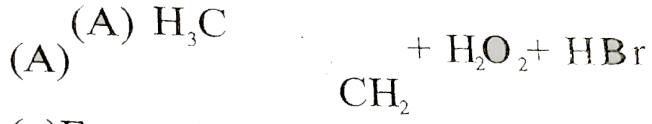
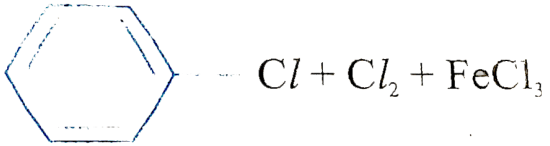
94. From the given sets, mathc appropriately

Column – I **Column – II**

(A) 

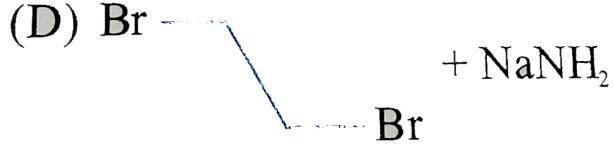
(p)Free radical mechanism

(B) 

(q)Elimination

(C) $H_3C-C\equiv CH + HCl$

(r)Electrophilic aromatic substitution

(D) 

(s)Electrophilic addition

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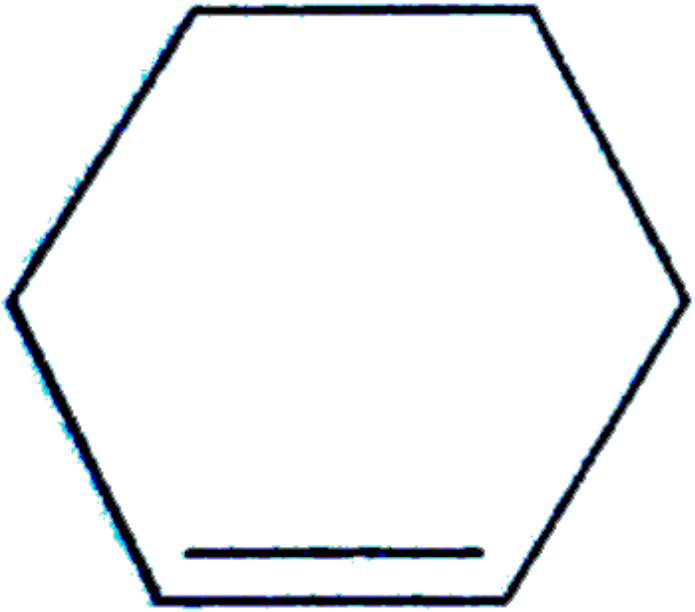
95. Match each of the following compound in column-I with the characteristic reaction in column-II



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96. Match each of the compound in column I with the product of reductive ozonolysis in column-II

Column -I	Column -II
(A) 	(P) Formaldehyde
(B) $CH_2 = CH - CH = CH - CH_3$	(Q) Glyoxal
(C) $(CH_3)_2 C = CH - CH = CH_2$	(R) Propane-1,3-dial
(D) $CH_3 - CH = CH_2$	(S) Acetone
	(T) Acetaldehyde

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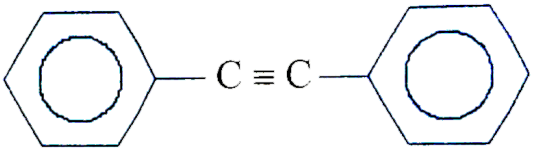
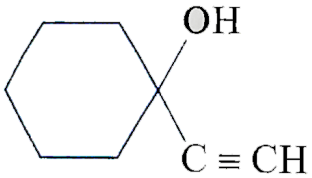
97. Match the following

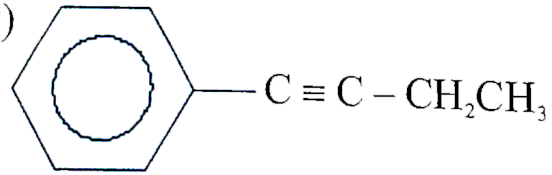
Column -I **Column -II**

(A) 

(p) Reacts with $H_2 - Pd / CaCO_3$

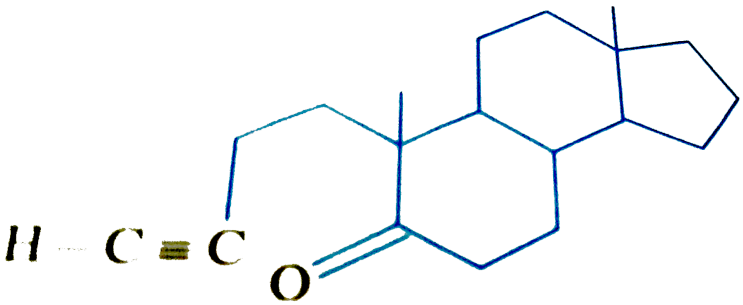
(B) 

(q) Trans alkene will form when reacted with Na/ Liq. NH_3

(C) 

(r) Reacts with ammoniacal $AgNO_3$

(D)



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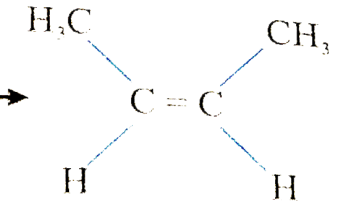
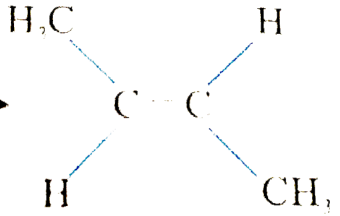
98. Match the following

Column-I | **Column-II**

(A) $H_3C-C\equiv C-CH_3 \longrightarrow$ 

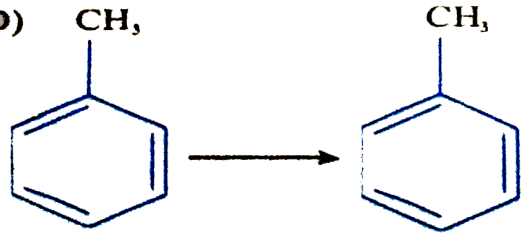
p) $H_2, Pd-BaSO_4$

(B) $H_3C-C\equiv C-CH_3 \longrightarrow$ 

(q) $Li, Liq NH_3$

(C) $H_3C-CH=CH-CH_3 \rightarrow CH_3-CH_2-CH_2-CH_3$

(r) $HN=NH, \Delta$

(D) 

Q. (s) B_2H_6, CH_3COOH

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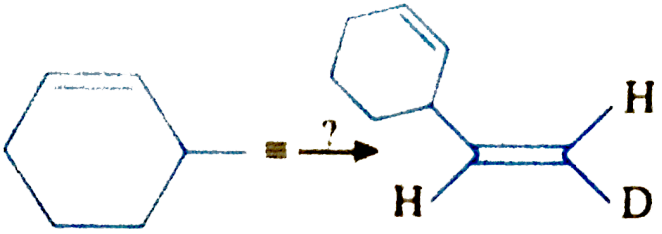
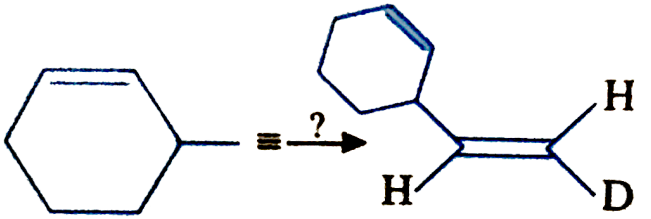
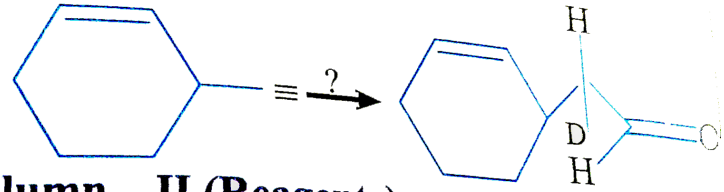
99. Matc the following column-I with column-II

B)



C)





Column – II (Reagents)

P) $H_2 + Ni_2B$

Q) $Sia_2BH + D_2O_2/OD$

R) $Cs + Liq.\ NH_3 + EtOH$

S) $Sia_2BH + CH_3COOD$

T) H_2 + Poisoned Pd

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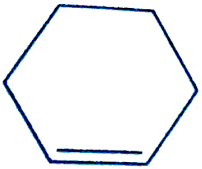
100. Match the following

Column I

(a) $H-C\equiv C-H$

(b) $CH_3-CH=CH_2$

(c) $CH_3-C\equiv C-CH_3$

(d) 

(s)Ozonolysis

Column II

(p) reduction with

q) Hydroboration oxidation

(r) Reaction with ammonical $AgNO_3$ solution

(t) Reaction with NBS

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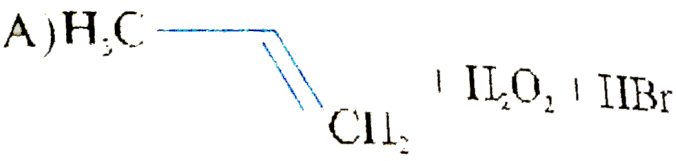
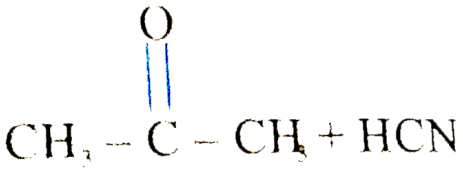
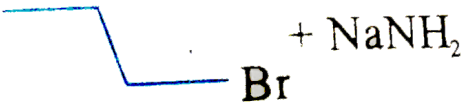
101. Match the following

Column I

A) 

B) 

C) $H_3C - C \equiv CH + HCl$

D) 

Column II

p) Free radical mechanism

q) Elimination

r) Nucleophilic addition

s) Electrophilic addition

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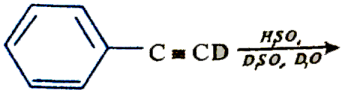
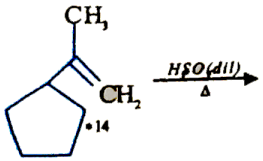
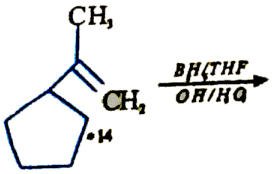
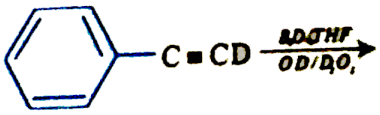
102. Match the following reaction in column-I with their products in column-II

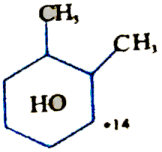
Column I **Column II**

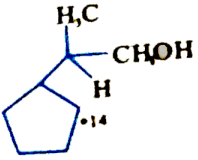
a) 

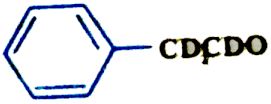
b) 

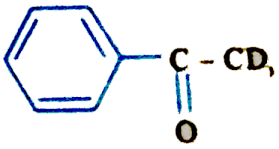
c) 

d) 

p) 

q) 

r) 

s) 

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103. Match the following

Column-I	Column-II
a) $CH_3-C\equiv CH \xrightarrow{2HCl}$	p) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-H$
b) $CH_3-C\equiv CH \xrightarrow[H_2O_2,OH^-]{B_2H_6,THF}$	q) $CH_3-\overset{\overset{Cl}{\|}}{\underset{\underset{Cl}{\|}}{C}}-CH_3$
c) $CH_3-C\equiv C-CH_3 \xrightarrow[CH_3-\overset{\overset{O}{\|}}{C}-OH]{Sia_2BH,THF}$	r) $CH_3-\overset{\overset{H}{\|}}{C}=\underset{\underset{H}{\|}}{C}-CH_3$ Trans
d) $CH_3-C\equiv C-CH_3 \xrightarrow{Na/Liq.NH_3}$	s) $CH_3-\underset{\underset{H}{\|}}{C}=\underset{\underset{H}{\|}}{C}-CH_3$ (Cis)

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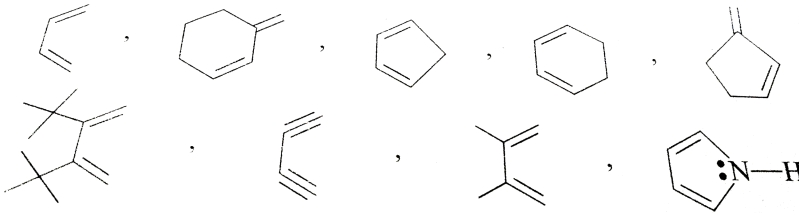
104. Of the following compund, find out numbers of conjugated unsatureated hydrocarbon those would not shown Dliels alder reactions



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105. A Saturated polyhalogen compound (A) on heating with zinc gives 2-Butyne. What should be the minimum number of halogen in one molecule of the reactant (A) to give the product.

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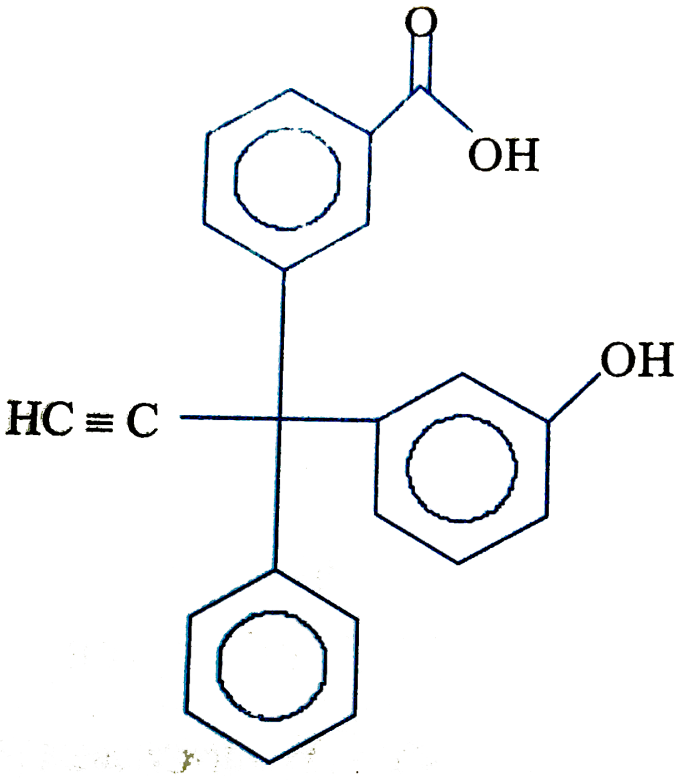

A)

106.

How many moles of methane are produced on reaction with CH_3MgBr

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107. $CH_3 - \underset{OH}{\underset{|}{C}}H - C \equiv C - \underset{OH}{\underset{|}{C}}H - CH_3$

Total no. of streoisomers of the product when (X) is reduce by Na/lilq. NH_3 (Birch reduction) of 'A' with CH_3MgBr.

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108. How may of the following reagents can be used to distinguish between hex-1-yne and hex-2-yne?

(a). $CuCl/NH_3$

(b). $AgNO_3/NH_3$

(c). Na metal

(d). Neutral $FeCl_3$

(e). Fehling's reagent

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109. The number of reagetns among the following which cannot add to propene by free radical mechanism in presence of organic peroxides is

(a). HCl

(b). HBr

(c) HI

(d). CH_3SH

$BrCCl_3$

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110. 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.

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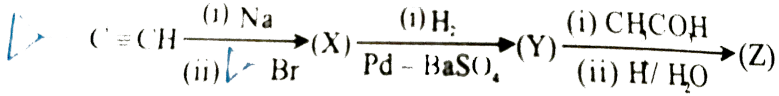
111. 

Identify X, Y and Z in the following sequence of reactions giving stereochemical structures wherever possible.

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112. A hydrocarbon A of the molecular formula C_8H_{10}. On ozonolysis gives only the compound $B(C_4H_6O_2)$. The compound B can also be obtained from the alkyl bromide $C(C_3H_5Br)$ upon treatment with Mg in dry ether followed by the addition of CO_2 and acidification. Identify A, B and C and also give equations for the reactions.

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