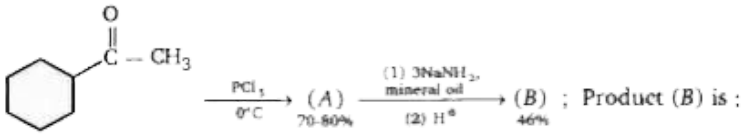
# CHEMISTRY

## BOOKS - MS CHOUHAN

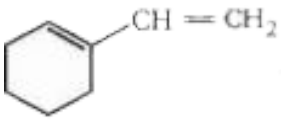
## HYDROCARBONS (ALKYNES)

**Level 1**

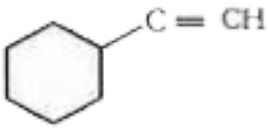
**1.** Complete the following reaction



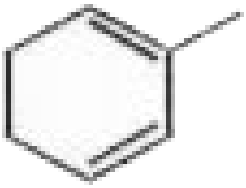

; Product (B) is :

A. 

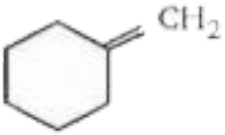
B.




C.



D.




**Answer: B**

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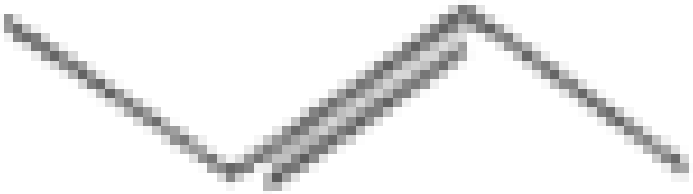

**2.**

$\xrightarrow[CCl_4]{Br_2} \xrightarrow[(ii)\, NaNH_2]{(i)\ \text{alc. KOH}} \underset{\text{major}}{(A)}$, 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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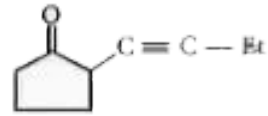
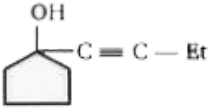
3. $CH_3CH_2C \equiv CH \xrightarrow[\text{liq. } NH_3]{NaNH_2} I$

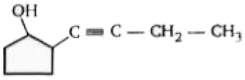

Product (K) of the above reaction is :



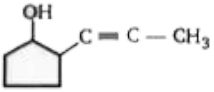

A.




B.




C.




D.

**Answer: B**

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**4.**

$$CH_3 - CH_2 - CH_2 - C \equiv CH + \underset{\text{Lithium amide}}{LiNH_2} \rightarrow (A) \xrightarrow{(CH_3)_2SO_4} (B)$$

Give the structural formula of compound (B) :

A. $CH_3 - (CH_2)_2 - C \equiv C - SO_3H$

B. $CH_3 - (CH_2)_2 - C \equiv C - CH_3$

C. $CH_3 - (CH_2)_2 - C \equiv C - CH_2 - O - \overset{\overset{O}{||}}{\underset{\underset{O}{||}}{S}} - H$

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

**Answer: B**

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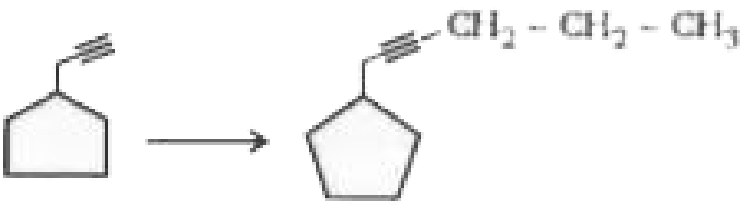
**5.**  , This conversion can be achieved by :

A. $NaNH_2, CH_3CHO$

B. $NaNH_2, CH_3 - CH_2 - CH_2 - Br$

C. $KOH, CH_3 - CH_2 - Br$

D. $KOH, \underset{\underset{Br}{|}}{CH_2} - \underset{\underset{Br}{|}}{CH_2}$

**Answer: B**

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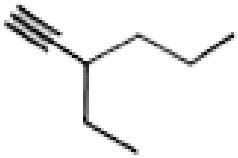
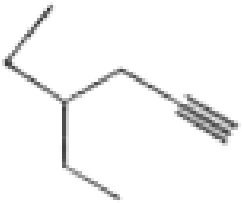
**6.** Which alkyl will give 3-ethylhexane on catalytic hydrogenation ?

A. 

B. 

C. 

D. All of these

**Answer: D**

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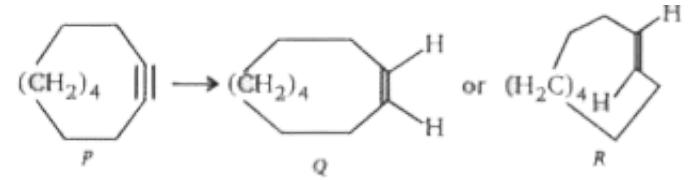
**7.** Reactant P gives products Q of R.




The possible reagents are :

(I) 2Na/liq. $NH_3$ (II) $H_2 / Pd / CaCO_3$ (quinoline) (III) $2H_2 / Pd / C$

The correct statement with respect to the above conversion is/are :

A. Q is obtained on treatment with reagent (I)

B. R and Q are obtained on treatment with reagent (II)

C. R is obtained on treatment with reagent (I)

D. R is obtained on treatment with reagent (II)

**Answer: C**

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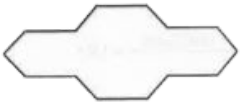
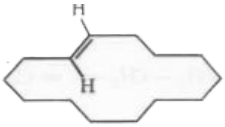
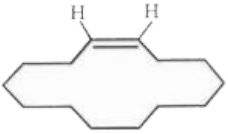
**8.** $Br-(CH_2)_{12}-C\equiv CH \xrightarrow{NaNH_2} (A) \xrightarrow[\text{Catalyst}]{\text{Lindlar}} (B)$, Product (B) is

A. 

B. 


C. 


D. $Br-(CH_2)-CH=CH_2$

**Answer: C**

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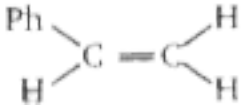
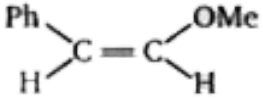
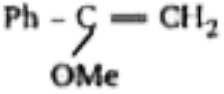
**9.** $Ph-C\equiv CH \xrightarrow[MeOH]{MeO^-}$ Major product of the reaction is :

A. 

B. 

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

D. 

**Answer: B**

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

A. $Ph - CH = CH_2$

B. $Ph - C \equiv CH$

C. $Ph - CH_2 - CH_3$

D. $Ph - C \equiv \overset{\ominus}{C}\overset{\oplus}{N}a$

**Answer: D**

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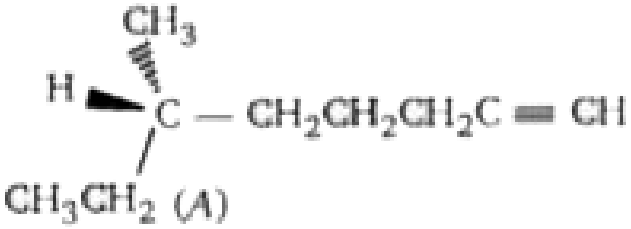
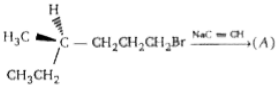
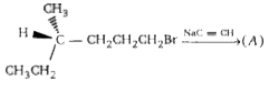
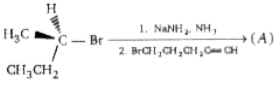
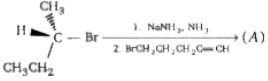
**11.** Which combination is best for preparation of the compound (A) shown below ?



A. 

B. 

C. 

D. 

**Answer: B**

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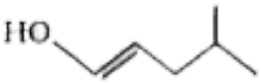
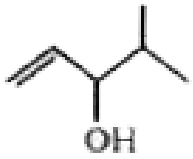
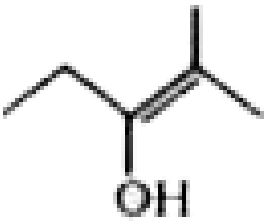
**12.** Which one of the following is the intermediate in the preparation of a ketone by hydration of an alkyne in the presence of sulfuric acid and mercury (II) sulphate ?

A. 

B. 

C. 


D.

**Answer: D**

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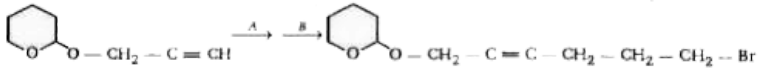
13. 

To carry out above conversion , (A) and (B) respectively, are :

A. $NaNH_2, Cl - CH_2 - CH_2 - CH_2 - Br$

B. $NaNH_2, F - CH_2 - CH_2 - CH_2 - Br$

C. $NaNH_2, I - CH_2 - CH_2 - CH_2 - Br$

D. $NaNH_2, I - CH_2 - CH_2 - CH_2 - I$

**Answer: C**

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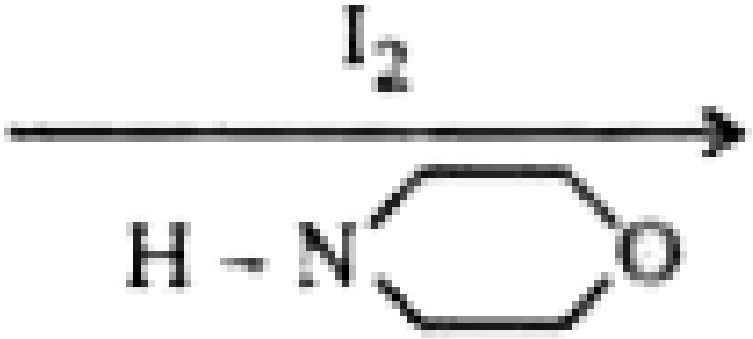
14. $H - C \equiv C - Ph$




, Product obtained in this reaction is :

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

B. $Ph - \underset{\underset{I}{|}}{CH} - CH_2 - I$

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

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

**Answer: C**

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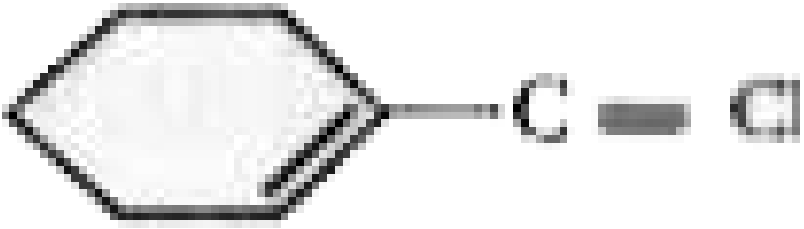
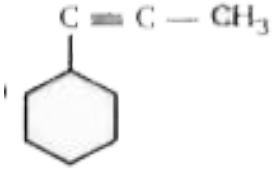


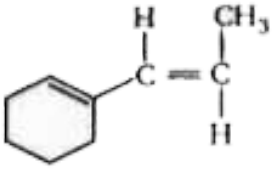
**15.**

$CH \xrightarrow[(ii)\,CH_3Br]{(i)\,NaNH_2,\,NH_3} (A) \xrightarrow[\text{Lindlar catalyst}]{H_2} (B)$, Product (B) is :

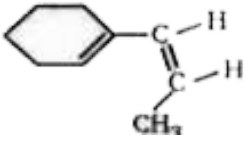
A.

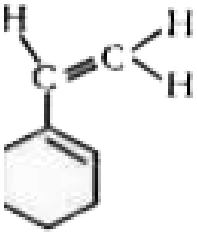


B.



C.



D. 

**Answer: C**

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**16.** Which of the following alkyne on treatment with $H_2$ (2 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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**17.** $\underset{\text{(Calcium carbide)}}{CaC_2} \xrightarrow{H_2O} (A) \xrightarrow{\text{Red hot Cu tube}} (B)$, product (B) of the reaction is :

A. Toluene

B. Ethyl-benzene

C. Benzene

D. Butyne

**Answer: C**

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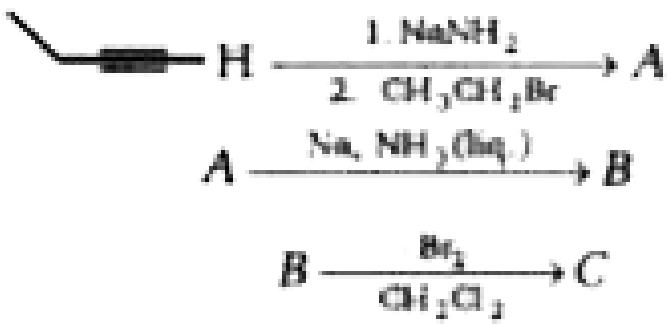
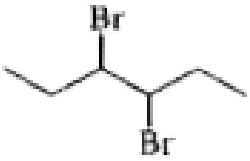
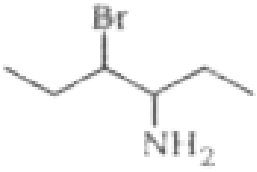
**18.** What is the final product, C, of the following reaction sequence ?



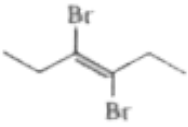




A.


B.




C.




D.

**Answer: A**

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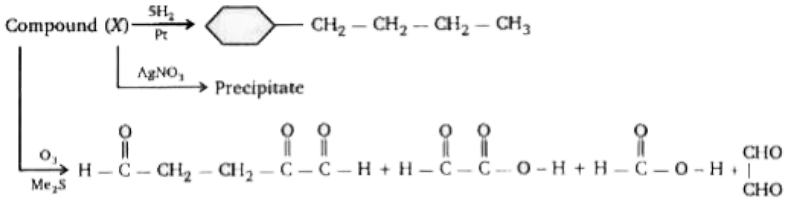
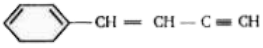
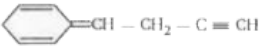
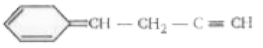
19. 


Compound (X) will be :

A. 


B. 


C. 


D. 


**Answer: A**

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**20.** Choose the sequence of steps that describes the best synthesis of 1-butene from ethanol :

A. $(1)NaC \equiv CH$, $(2)H_2$, Lindlar Pd

B. $(1)NaC \equiv CH$, $(2)Na$, $NH_3$

C. $(1)HBr$, heat , (2) $NaC \equiv CH$, $(3)H_2$, Lindlar Pd

D. (1) HBr, heat, (2) $KOC(CH_3)_2$, $DMSO$, $(3)NaC \equiv CH$, $(4)H_2$, Lindlar catalyst

**Answer: C**

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**21.** Which alkyne yields butanoic acid $(CH_3CH_2CH_2CO_2H)$ as the only organic product on treatment with ozone followed by the

hydrolysis ?

A. 1-Butyne

B. 4-Octyne

C. 1-Pentyne

D. 2-Hexyne

**Answer: B**

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Carlina oxide

**22.** (A)

Unit of unsaturation in compound (A) ?

A. 7

B. 8

C. 9

D. 10

**Answer: C**

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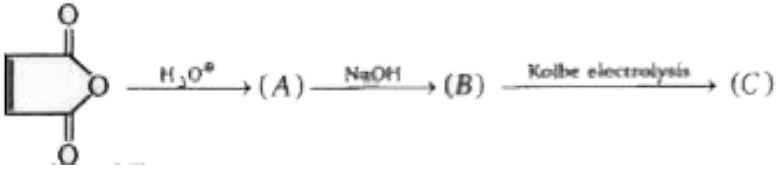
23. 


product (C) of above reaction is :

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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**24.** To convert 1-butyne to 1-D-butanal, one would carry out the following steps:

(I) Sodium amide, then $D_2O$

(II) Disiamy Iborane , then hydrogen peroxide/sodium hydroxide

(III) The transformation can not be carried out with the indicated reagents.

A. I, followed by II

B. II, followed by I

C. III

D. II

**Answer: C**

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**25.** 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) forma a white ppt. with ammonical silver nitrate solution. (A) may be :

A. But-1-yne

B. But-2-yne

C. But-1-ene

D. But-2-ene

**Answer: A**

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**26.** 1, 2-Dibromo propane on treatment with X moles of $NaNH_2$ followed by treatment with ethyl bromide gives a pentyne. The

value of X is :

A. One

B. Two

C. Three

D. Four

**Answer: C**

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**27.** $CH_3 - \overset{CH_3}{\overset{|}{C}}H - C \equiv CH \xrightarrow{\text{excess HBr}}$

The product of the above reaction is :

A. $CH_3 - \overset{CH_3}{\overset{|}{C}}H - \overset{Br}{\overset{|}{C}}H - \overset{Br}{\overset{|}{C}}H_2$

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

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

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

**Answer: C**

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

product (A) is :

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

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

C. $CH_3 - \overset{\overset{OH}{|}}{CH} - \overset{\overset{OH}{|}}{CH} - CH_3$

D. $O = CH - CH_3 - CH_2CH = O$

**Answer: B**

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**29.** In which reaction last product is $Ph - C \equiv CH$ ?

A. $C_6H_5 - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - CH_3 \xrightarrow[\text{Mineral oil, heat}]{3NaNH_2} \xrightarrow{NH_4Cl}$

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

C. $C_6H_5 - \overset{\overset{O}{||}}{C} - CH_3 \xrightarrow{PCl_5} \xrightarrow[\text{Mineral oi, heat}]{3NaNH_2} \xrightarrow{NH_4Cl}$

D. All

**Answer: D**

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**30.** Predict the product of the following reaction sequence.

ethyne $\xrightarrow[(2)\ \text{excess}\ \ I-CH_2-(CH_2)_2-CH_3]{(1)\ \text{excess}\ \ NaNH_2}$

A. 6-iodo-1-hexyne

B. 1-hexyne

C. 5-decyne

D. 1-iodo-1-hexene

**Answer: C**

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**31.** The best sequence of reactions to prepare 2-heptanone is

A. propyne $\xrightarrow{NaNH_2} X \xrightarrow{n-C_4H_9Br} Y \xrightarrow[H_2SO_4]{H_2O, Hg^{2+}}$

B. ethyne $\xrightarrow{NaNH_2} X \xrightarrow{n-C_5H_{12}Br} Y \xrightarrow[H_2SO_4]{H_2O, Hg^{2+}}$

C. 1-hexyne $\xrightarrow{NaNH_2} X \xrightarrow{CH_2Br} Y \xrightarrow[H_2SO_4]{H_2O, Hg^{2+}}$

D. 1-pentyne $\xrightarrow{NaNH_2} X \xrightarrow{C_2H_5Br} Y \xrightarrow[H_2SO_4]{H_2O, Hg^{2+}}$

**Answer: B**

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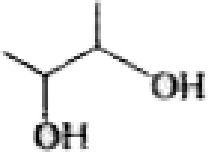
**32.** The major product of the reaction of 2-butene with cold alkaline $KMnO_4$, is

A.

B.

C.




D.

**Answer: D**

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